COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

April 21, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
CL&P/T-Mobile co-location
Site ID CT11426A
670 Chapel St., CL&P Pole 1321, Stratford, CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Connecticut Light & Power Company ("CL&P") owns the existing electric transmission tower and related facility at 670 Chapel St., CL&P Pole 1321, Stratford Connecticut (latitude 41.23785 / longitude -73.12244). T-Mobile intends to replace three antennas and related equipment at this existing telecommunications facility in Stratford ("Stratford Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor John A. Harkins and the property owner, CL&P.

The existing Stratford Facility consists of a 101 foot tall transmission line lattice structure with a Powermount extending to a height of 124 feet. The facility currently supports the equipment of T-Mobile and AT&T.

T-Mobile plans to replace three antennas and remove three TMAs (tower mounted amplifiers) at an elevation of 109 feet. (See the plans revised to March 10, 2014 attached hereto as Exhibit A). T-Mobile will also replace an equipment cabinet on the existing concrete pad and install new coax cable. The existing Facility is structurally capable of supporting T-Mobile' proposed modifications, as indicated in the structural analysis revised to February 25, 2014 and attached hereto as Exhibit B. (T-Mobile will implement the structural modifications set out in Section 4 of Exhibit B.) CL&P has reviewed and approved T-Mobile's proposed

modifications, as evidenced by the letter dated March 18, 2014, attached hereto as Exhibit C.

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

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at the 109 foot level. The enclosed tower drawing confirms that the proposed antennas will merely be replacing antennas already at the 109 foot elevation.

2. The installation of the T-Mobile replacement equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound and leased area as shown on Pages 1 and 2 of Exhibit A.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated March 12, 2014 T-Mobile's operations would add 0.803% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 23.123% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit D.

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Stratford Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Stratford, Mayor John A. Harkins
Connecticut Light & Power Company
Sheldon J. Freincle, Northeast Site Solutions

EXHIBIT A

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

SITE PLAN

SCALE: 1"=80'-0"

CONFIGURATION

4B

SUBMITTALS	
LE REV A	10.28.13
LE REV 0	03.10.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11426A

SITE NAME:
STRATFORD/MP/JAMES FARM

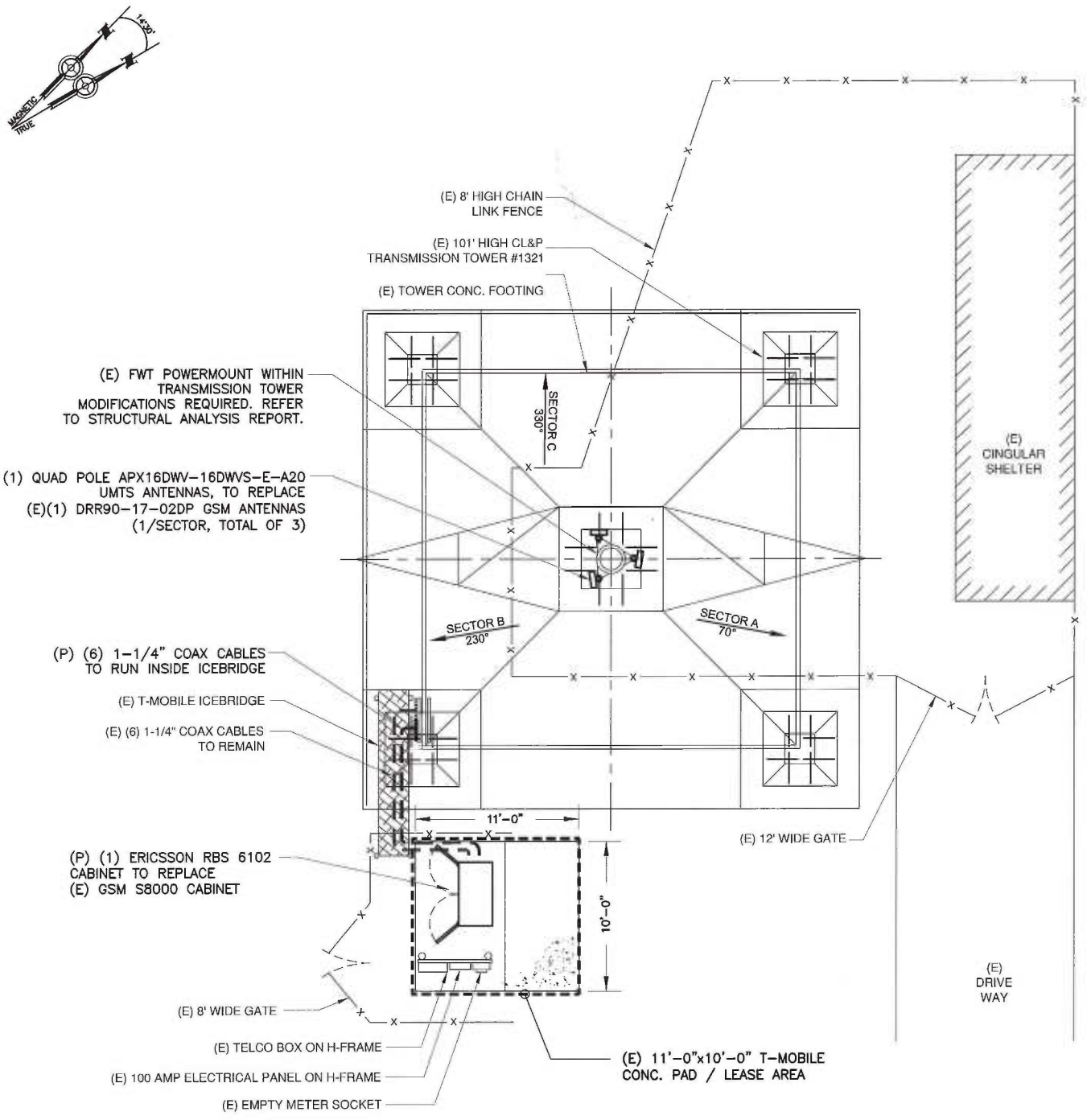
SITE ADDRESS:
670 CHAPEL STRRET
STRATFORD, CT 06614

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: EB | CHECKED BY: SM



ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

COMPOUND PLAN

SCALE: 1" = 10'-0"

1
LE-3

CONFIGURATION
4B

SUBMITTALS	
LE REV A	10.28.13
LE REV 0	03.10.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

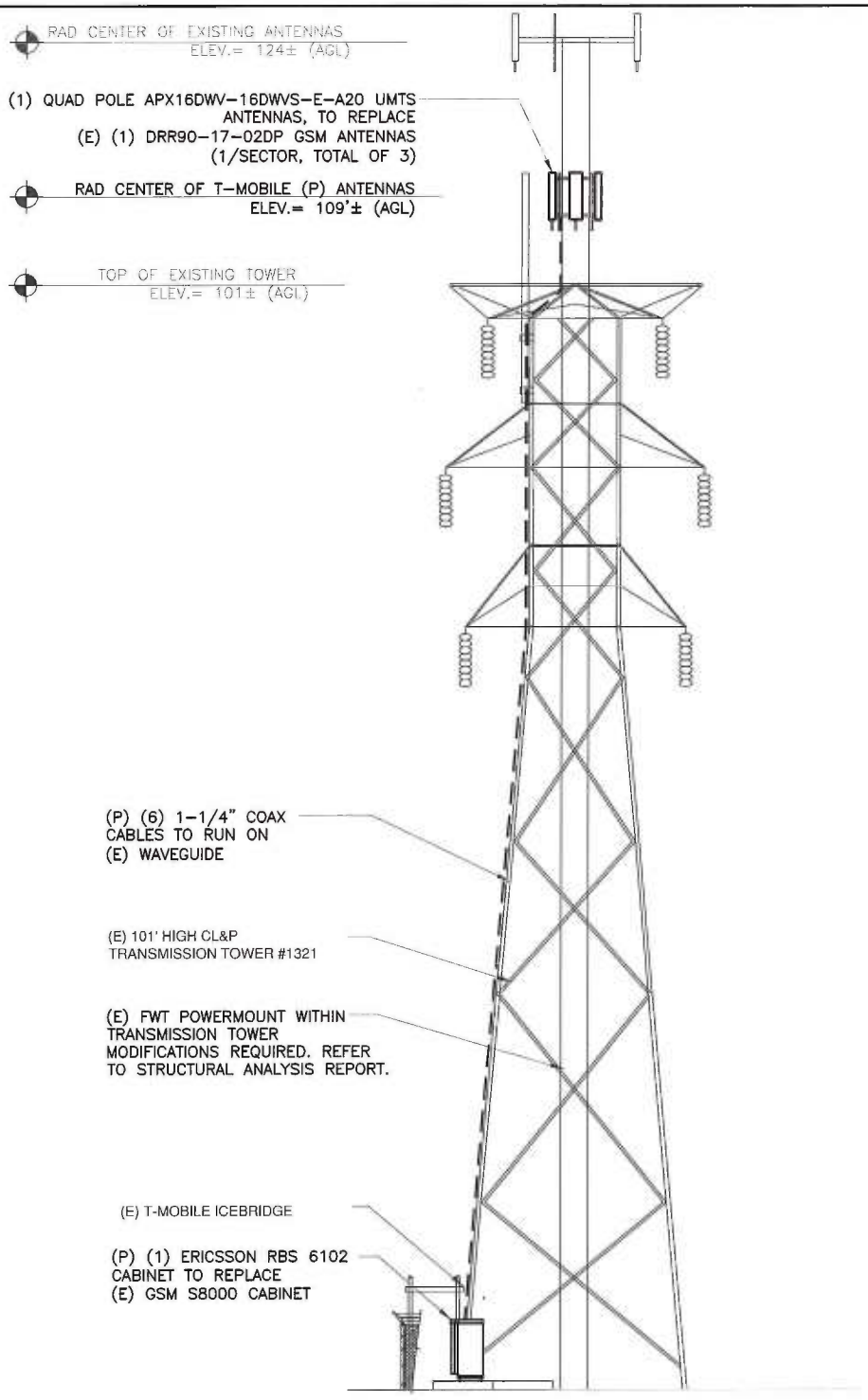
SITE NUMBER:
CT11426A

SITE NAME:
STRATFORD/MP/JAMES FARM

SITE ADDRESS:
670 CHAPEL STRRET
STRATFORD, CT 06614

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237
FOR
T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: EB | CHECKED BY: SM



ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

ELEVATION

SCALE: 1" = 16'-0"

CONFIGURATION

4B

SUBMITTALS	
LE REV A	10.28.13
LE REV 0	03.10.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11426A

SITE NAME:
STRATFORD/MP/JAMES FARM

SITE ADDRESS:
670 CHAPEL STRRET
STRATFORD, CT 06614

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: EB | CHECKED BY: SM

EXHIBIT B

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Powermount and CL&P Tower

T-Mobile Site Ref: CT11426A

CL&P Structure No. 1321
101' Electric Transmission Lattice Tower

670 Chapel Street
Stratford, CT

CENTEK Project No. 13317.000

~~Date: November 22, 2013~~
~~Rev 1: January 27, 2014~~
Rev 2: February 25, 2014

Prepared for:
T-Mobile Towers
4 Sylvan Way
Parsippany, NJ 07054

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

Table of Contents

Introduction

The purpose of this report is to analyze the existing powermount and 101' CL&P tower located at 670 Chapel Street in Stratford, CT for the proposed antenna and equipment upgrade by T-Mobile.

The existing and proposed loads consist of the following:

- AT&T (Existing to Remain):
  Antennas: Six (6) Powerwave 7770 panel antennas, three (3) Powerwave P65-16-XHL-RR panel antennas, twelve (12) Powerwave LGP214 TMA's and three (3) CCI DTMABP7819VG12A TMA's mounted on a low profile platform with a RAD center elevation of 124-ft above grade.
  Coax Cables: Eighteen (18) 1-1/4" ∅ coax cables running on the inside of the existing FWT Powermount.
- T-MOBILE (Existing to be Removed):
  Antennas: Two (2) RR90-17-02DP panel antennas and two (2) TMA's mounted on a PCS mast with a RAD center elevation of 109-ft above grade. One (1) RR90-17-02DP panel antenna and one (1) TMA's flush mounted to the FWT Powermount with a RAD center elevation of 109-ft above grade.
  Mast: 4-in SCH. 40 pipe (O.D. = 4.5") and related hardware.
- T-MOBILE (Existing to remain):
  Coax Cables: Six (6) 1-1/4" ∅ coax cables running on the outside of the tower as indicated in section 4 of this report.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas mounted the existing FWT Powermount with a RAD center elevation of 109-ft above grade.
  Coax Cables: Six (6) 1-1/4" ∅ coax cables running on the outside of the 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 HSS18"x0.375" pipe conforming to ASTM A500 Grade B (Fy = 42ksi) connected at six points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

Structural analysis of the existing 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 101-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

With the proposed reinforcements detailed in Section 4 of this report the existing powermount was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
HSS 18" x 0.375" Pipe	Bending	69.3%	**PASS**
L2.5x2.5x3/16 Brace	Bending	80.8%	**PASS**
Connection	Shear	87.4%	**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 **94.01%** occurs in the utility tower 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 g37X	94.01%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 2-ft square tapering to 5-ft square x 5-ft-8" long reinforced concrete piers and four (4) 8-ft square x 2-ft thick reinforced concrete pads with a 33-ft-6in square x 3-ft-6-in thick concrete mat flush with the top of the piers. The base of the tower is connected to the foundation by four (4) 1-1/4" ∅ ASTM A36 anchor bolts per leg. Foundation information was obtained from NUSCO drawing # 01021-60001 and construction drawings prepared by Centek engineering project no. 10021.CO3 dated 10/6/2010 marked rev 2.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	10.22 kips	31.31 kips	53.05 kips
NESC Extreme Wind	21.27 kips	76.44 kips	93.15 kips

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

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	87.2%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Required FS (1)	Proposed Loading FS (2)	Result
Reinf. Conc. Pad & Pier w/ Mat	Uplift	1.0	2.06	**PASS**
	Bearing Pressure	4 ksf	1.09 ksf	**PASS**

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

Conclusion

This analysis shows that the subject utility tower **with the proposed reinforcements outlined below and detailed in Section 4 of this report is adequate** to support the proposed T-Mobile equipment installaiton.

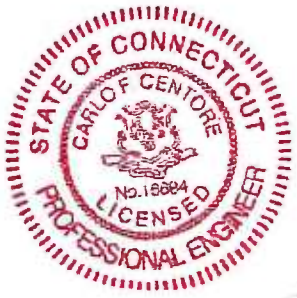
- Replacement of the existing powermount connection brackets at 101-ft and 96-ft AGL.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer



Prepared by:

Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222.
- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

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

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

Results Features:

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

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

PCS Mast

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

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

ELECTRIC TRANSMISSION TOWER

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

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

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

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

Attachment A

NU Design Criteria

			Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole (on two faces)	----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
High Wind Condtion	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
NESC Extreme Ice with Wind Conditon*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
		* Only for Structures Installed after 2007						

Shape Factor Criteria shall be per TIA Shape Factors.

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

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

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

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

c) Electric Transmission Structure

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

ii) Shape Factor Multiplier:

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

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

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.3

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

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

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

Northeast Utilities System

Job :		Spec. Number	Page of
Description: T-Mobile		Computed by	Sheet of
		Checked by	Date 7/27/10
			Date

INPUT DATA

TOWER ID: 1321

Structure Height (ft) : 101

Wind Zone : Central CT (green)

Wind Speed : 90.5711047 mph

Tower Type : (●) Suspension ( ) Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

	BACK	AHEAD
NAME =	*3/8 CW*	*3/8 CW*
DESCRIPTION =	3/8	3/8
STRANDING =	7 #8 Cu Weld	7 #8 Cu Weld
DIAMETER =	0.385 in	0.385 in
WEIGHT =	0.324 lb/ft	0.324 lb/ft

Conductor Properties:

		BACK	AHEAD		
	NAME =	*TERN*	*TERN*		
Number of Conductors per phase	1	795.000 45/7 ACSR	795.000 45/7 ACSR	1	Number of Conductors per phase
	DIAMETER =	1.063 in	1.063 in		
	WEIGHT =	0.895 lb/ft	0.895 lb/ft		

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,800	7,000	3,800	7,000
EXTREME WIND =	3,038	7,356	3,061	8,027
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,280	2,733	1,073	2,736

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	1	AHEAD:	1	**2**
WIND SPAN (ft) =	BACK:	402	AHEAD:	402	**804**
WEIGHT SPAN (ft) =	BACK:	489	AHEAD:	489	**978**

Northeast Utilities System

Job :		Page	of
Description: T-Mobile	Spec. Number	Sheet	of
	Computed by	Date	7/27/10
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1321

Wind Span =	804 ft	Broken Wire Span =	AHEAD SPAN
Weight Span =	978 ft	Type of Insulator Attachment =	SUSPENSION
Total Angle =	2 degrees		

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,147 lb	0 lb	1,282 lb	573 lb	6,269 lb	641 lb
Conductor =	1,785 lb	0 lb	2,739 lb	893 lb	11,548 lb	1,369 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	705 lb	26 lb	364 lb
Conductor =	1,917 lb	772 lb	1,007 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	364 lb
Conductor =	#VALUE!	#VALUE!	1,007 lb

4. NESC RULE 250D Extreme Ice & Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	2,001 lb
Conductor =	#VALUE!	#VALUE!	3,384 lb

5. NESC RULE 250B w/o OLF's

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	855 lb
Conductor =	#VALUE!	#VALUE!	1,826 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	41 lb	207 lb	317 lb
Conductor =	95 lb	3 lb	875 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	62 lb	310 lb	475 lb
Conductor =	143 lb	4 lb	1,313 lb

Northeast Utilities System

Job :		Page	of
Description: T-Mobile	Spec. Number	Sheet	of
	Computed by	Date	7/27/10
	Checked by	Date	

INPUT DATA

TOWER ID: 1321

Structure Height (ft) : 101

Wind Zone : Central CT (green)

Wind Speed : 90.5711047 mph

Tower Type : (●) Suspension ( ) Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

	BACK	AHEAD
NAME =	*3/8 AW*	*3/8 AW*
DESCRIPTION =	3/8	3/8
STRANDING =	7 #8 Al Weld	7 #8 Al Weld
DIAMETER =	0.385 in	0.385 in
WEIGHT =	0.262 lb/ft	0.262 lb/ft

Conductor Properties:

		BACK	AHEAD		
	NAME =	*TERN*	*TERN*		
Number of Conductors per phase	1	795.000 45/7 ACSR	795.000 45/7 ACSR	1	Number of Conductors per phase
	DIAMETER =	1.063 in	1.063 in		
	WEIGHT =	0.895 lb/ft	0.895 lb/ft		

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,600	7,000	3,600	7,000
EXTREME WIND =	2,846	7,356	2,838	8,027
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,094	2,733	783	2,736

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	1	AHEAD:	1	**2**
WIND SPAN (ft) =	BACK:	402	AHEAD:	402	**804**
WEIGHT SPAN (ft) =	BACK:	489	AHEAD:	489	**978**

Northeast Utilities System

Job :		Spec. Number	Page of
Description: T-Mobile		Computed by	Sheet of
		Checked by	Date 7/27/10
			Date

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1321

Wind Span =	804	ft	
Weight Span =	978	ft	
Total Angle =	2	degrees	

Broken Wire Span = AHEAD SPAN

Type of Insulator Attachment = SUSPENSION

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,135 lb	0 lb	1,191 lb	568 lb	5,939 lb	596 lb
Conductor =	1,785 lb	0 lb	2,739 lb	893 lb	11,548 lb	1,369 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	697 lb	9 lb	294 lb
Conductor =	1,917 lb	772 lb	1,007 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	294 lb
Conductor =	#VALUE!	#VALUE!	1,007 lb

4. NESC RULE 250D Extreme Ice & Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,940 lb
Conductor =	#VALUE!	#VALUE!	3,384 lb

5. NESC RULE 250B w/o OLF's

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	794 lb
Conductor =	#VALUE!	#VALUE!	1,826 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	33 lb	311 lb	256 lb
Conductor =	95 lb	3 lb	875 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	49 lb	466 lb	384 lb
Conductor =	143 lb	4 lb	1,313 lb

Connecticut Light & Power

POWERMOUNT REINFORCEMENT DESIGN

CL&P STRUCT. NO. 1321
670 CHAPEL STREET
STRATFORD, CT 06614

VICINITY MAP

PROJECT SUMMARY

SITE ADDRESS:	670 CHAPEL STREET STRATFORD, CT 06614
PROJECT COORDINATES:	LAT: 41°-14'-16.80"N LON: 73°-07'-20.50"W ELEV:±152' AMSL
CL&P STRUCT NO:	1321
CL&P CONTACT:	ROBERT GRAY 860.665.3175
T-MOBILE SITE REF.:	CT11426A
T-MOBILE CONTACT:	MARK RICHARD 860.692.7143
ANTENNA CL HEIGHT:	109'-0"
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CENTEK CONTACT:	CARLO F. CENTORE, PE 203.488.0580 ext. 122

SHEET INDEX

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

DESIGNED BY: TJL
DRAWN BY: TJL
CHKD BY: CFC

ISSUED FOR CONSTRUCTION
01/27/14

PROFESSIONAL ENGINEER SEAL

T-MOBILE
CT11-426A
CL&P STRUCTURE 1321
670 CHAPEL STREET
STRATFORD, CT 06614

DATE: 01/27/14
SCALE: AS SHOWN
JOB NO. 13317.000

TITLE SHEET

SHEET NO.
T-1

DESIGN BASIS

1. GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CT STATE BUILDING CODE AND 2009 AMENDMENTS.
2. TIA/EIA-222-F-1996, ASCE MANUAL NO. 72 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2007 AND NORTHEAST UTILITIES DESIGN CRITERIA.
3. DESIGN CRITERIA

   WIND LOAD: (PCS MAST)
   BASIC WIND SPEED (V) =85 MPH (FASTEST MILE); BASED ON TIA/EIA-222F AND NU MAST DESIGN CRITERIA EXCEPTION 1.

   WIND LOAD: (UTILITY POLE & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3-SECOND GUST) BASED ON NESC C2-2007, SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., FOR T-MOBILE, DATED 2/25/14.
2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE TOWER DESIGN DRAWINGS PREPARED BY R.D. COOMBS & CO.; DATED APRIL 12, 1957.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.
4. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
5. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.
6. ALL WORK SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
7. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
8. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
9. NO DRILLING WELDING OR TAPING IS PERMITTED ON CL&P OWNED EQUIPMENT.

DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: CFC

CENTEK

T-MOBILE

CT11-426A
CL&P STRUCTURE 1321

DATE: 01/27/14
SCALE: AS SHOWN
JOB NO. 13317.000

DESIGN BASIS AND GENERAL NOTES

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

STRUCTURAL STEEL

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

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL STEEL (TOWER REINF. SOLID ROUND BAR)--- ASTM A572_GR50 (50 KSI)
   D. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   E. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   F. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.
   E. BLIND BOLTS---AS1252 PROPERTY CLASS 8.8 (FU=120 KSI).

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

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

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

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

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

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

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

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

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

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

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

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

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

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

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

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

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

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

22. FABRICATE BEAMS WITH MILL CAMBER UP.

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

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

DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: CFC

DATE	DRAWN BY	ISSUED FOR CONSTRUCTION
01/27/14	TJL	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-MOBILE
CT11-426A
C&P STRUCTURE 1321
674 CHAPEL STREET
BRANFORD, CT 06405

DATE: 01/27/14
SCALE: AS SHOWN
JOB NO. 13317.000

STRUCTURAL STEEL NOTES

SHEET NO.
N-2

MODIFICATION INSPECTION REPORT REQUIREMENTS

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

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

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

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

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON-SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

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

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

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

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

REQUIRED PHOTOGRAPHS

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

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

DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: DMC

ISSUED FOR CONSTRUCTION
ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

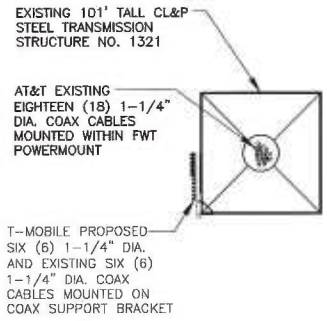
CENTEK engineering

T-MOBILE
CT11-426A
CL&P STRUCTURE 1321
874 CHAPEL STREET
BRANFORD, CT 06405

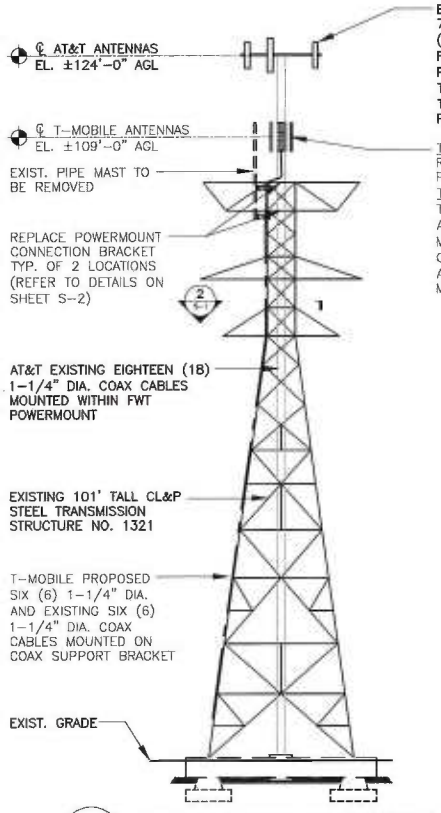
DATE: 01/27/14
SCALE: AS SHOWN
JOB NO. 13317.000

MODIFICATION INSPECTION REQUIREMENTS

SHEET NO.
MI-1
Sheet No. 1 of 2



2 / S-1 **COAX CABLE PLAN**
SCALE: NOT TO SCALE



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

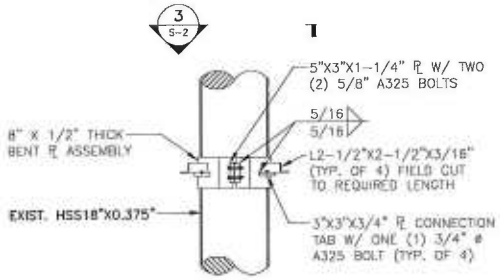
DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: DFC
ISSUED FOR CONSTRUCTION
ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

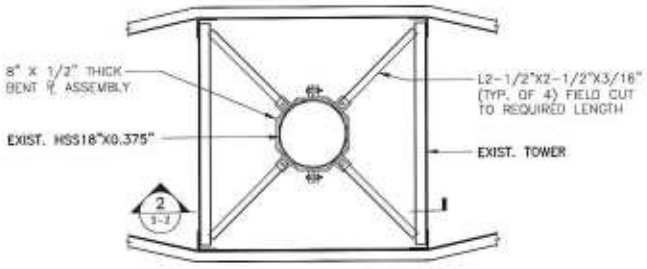
T-MOBILE
CT11-426A
CL&P STRUCTURE 1321
870 DIVINE STREET
BRANFORD, CT 06405
01/22/14
SCALE: AS SHOWN
JOB NO. 13317.000

TOWER ELEVATION AND FEEDLINE PLAN

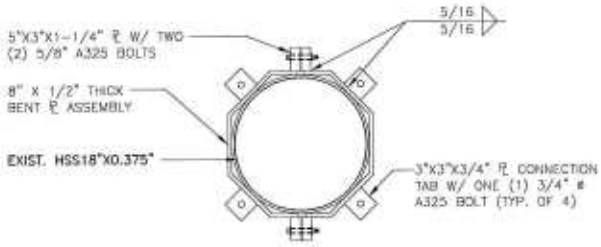
SHEET NO.
S-1
Sheet No. 1 of 5



2 S-2 **BRACKET ELEVATION**
SCALE: 1/2" = 1'-0"



1 S-2 **BRACKET PLAN**
SCALE: 1/2" = 1'-0"



3 S-2 **BRACKET DETAIL**
SCALE: 1" = 1'-0"

DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: CTD

1	01/27/14	ISSUED FOR CONSTRUCTION
0	01/22/14	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

PROFESSIONAL ENGINEER SEAL

CENTEK Engineering

T-MOBILE
FORMERLY ATTOMA WIRELESS

CT11-426A
CL&P STRUCTURE 1321
870 DUARS STREET
BRANFORD, CT 06405

DATE: 01/27/14
SCALE: AS SHOWN
JOB NO. 13317.000

POWERMOUNT CONNECTION DETAILS

SHEET NO.
S-2
Sheet No. 5 of 5

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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	$z_{pmnt1} := 105$	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)
AT&T	$z_{att} := 124$	ft	(User Input)
T-Mobile	$z_{tm} := 109$	ft	(User Input)
Coax Cable	$z_{coax} := 105$	ft	(User Input)

Exposure Coefficients, kz

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

Powermount Section 1: $Kz_{pmnt1} := \left(\frac{z_{pmnt1}}{33}\right)^{\frac{2}{7}} = 1.392$

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

AT&T: $Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.46$

T-Mobile: $Kz_{tm} := \left(\frac{z_{tm}}{33}\right)^{\frac{2}{7}} = 1.407$

Coax Cable: $Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.392$

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Powermount Section 1	$qz_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V^2 = 25.745$
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	$qz_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V^2 = 14.765$
AT&T	$qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 26.998$
T-Mobile	$qz_{tm} := 0.00256 \cdot Kz_{tm} \cdot V^2 = 26.022$
Coax Cable	$qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 25.745$

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

Powermount Section 1	$qzICE_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V_i^2 = 19.513$
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	$qzICE_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V_i^2 = 11.191$
AT&T	$qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 20.463$
T-Mobile	$qzICE_{tm} := 0.00256 \cdot Kz_{tm} \cdot V_i^2 = 19.723$
Coax Cable	$qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 19.513$

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)

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Powermount Data: (HSS 18 x 0.375)

Powermount Shape =	Round		(User Input)
Powermount Diameter =	$D_{pmnt} := 18$	in	(User Input)
Powermount Length =	$L_{pmnt} := 124$	ft	(User Input)
Powermount Thickness =	$t_{pmnt} := 0.375$	in	(User Input)
Velocity Coefficient =	$C := \sqrt{Kz_{pmnt4}} \cdot V \cdot \frac{D_{pmnt}}{12} = 114$		
Powermount Force Coefficient =	$CF_{pmnt} = 0.59$		(per TIA/EIA-222-F Table 1)

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

Powermount Projected Surface Area =	$A_{pmnt} := \frac{D_{pmnt}}{12} = 1.5$	sf/ft	
Total Powermount Section 1 Wind Force =	$qz_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 39$	plf	BLC 5
Total Powermount Section 2 Wind Force =	$qz_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 35$	plf	BLC 5
Total Powermount Section 3 Wind Force =	$qz_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 30$	plf	BLC 5
Total Powermount Section 4 Wind Force =	$qz_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 22$	plf	BLC 5

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

Powermount Projected Surface Area w/ Ice =	$AICE_{pmnt} := \frac{(D_{pmnt} + 2 \cdot Ir)}{12} = 1.583$	sf/ft	
Total Powermount Section 1 Wind Force w/ Ice =	$qzICE_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 31$	plf	BLC 4
Total Powermount Section 2 Wind Force w/ Ice =	$qzICE_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 28$	plf	BLC 4
Total Powermount Section 3 Wind Force w/ Ice =	$qzICE_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 24$	plf	BLC 4
Total Powermount Section 4 Wind Force w/ Ice =	$qzICE_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 18$	plf	BLC 4

Gravity Loads (without ice)

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

Gravity Loads (ice only)

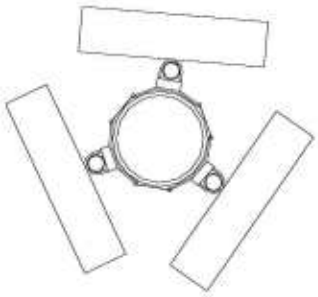
Ice Area per Linear Foot =	$Ai_{pmnt} := \frac{\pi}{4}\left[(D_{pmnt} + Ir \cdot 2)^2 - D_{pmnt}^2\right] = 29.1$	sq in	
Weight of Ice on Powermount =	$W_{ICEpmnt} := Id \cdot \frac{Ai_{pmnt}}{144} = 11$	plf	BLC 3

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Antenna Data: (T-Mobile)



Antenna Model =	RFS APX 16DWV-16DWVS-E-A20			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)	
Antenna Width =	$W_{ant} := 13.0$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 40.7$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{tm} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 932$	lbs	**BLC 5**

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

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{tm} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 774$	lbs	**BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 99$	lbs	**BLC 3**

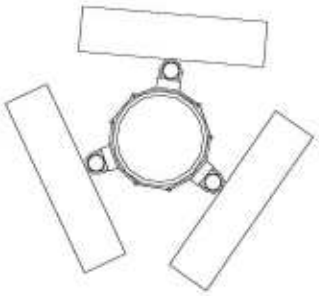
CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Mount Data: (T-Mobile)

Mount Type: Microflect Tri-Sector Chain Mount w/ 3 Pipes



Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 66$	in	(User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)
Tri Sector Chain Mount Weight =	$W_{tsc.mnt} := 101$	lbs	(User Input)
Mount Aspect Ratio =	$Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 28$		
Mount Force Coefficient =	$Ca_{mnt} = 1.2$		(per TIA/EIA-222-F Table 3)

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area =	$A_{mnt} := 0.0$	sf	
Total Mount Wind Force =	$F_{mnt} := qz_{tm} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 0$	lbs	**BLC 5**

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area w/ Ice =	$A_{ICEmnt} := 0.0$	sf	
Total Mount Wind Force =	$Fi_{mnt} := qzICE_{tm} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 0$	lbs	**BLC 4**

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

Weight Each Pipe Mount =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$	lbs	
Weight of All Mounts =	$WT_{mnt} \cdot N_{mnt} + W_{tsc.mnt} = 161$	lbs	**BLC 2**

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

Volume of Each Pipe =	$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 292$	cu in	
Volume of Ice on Each Pipe =	$V_{ice} := \left[\frac{\pi}{4} \cdot \left[(D_{mnt} + 1)^2\right] \cdot (L_{mnt} + 1)\right] - V_{mnt} = 307$	cu in	
Weight of Ice each mount (incl, hardware) =	$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs	
Weight of Ice on All Mounts =	$W_{ICEmnt} \cdot N_{mnt} + 5 = 35$	lbs	**BLC 3**

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Coax Cable Data: (T-Mobile)

Coax Type 1 = HELIAX 1-1/4"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax1} := 1.55$ in (User Input)

Coax Cable Length = $L_{coax1} := 8$ ft (User Input)

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf (User Input)

Total Number of Coax = $N_{coax1} := 12$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax1} := 2$ (User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax1} \cdot 12)}{D_{coax1}} = 61.9$

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 = $A_{coax} := \frac{(NP_{coax1} D_{coax1})}{12} = 0.3$ ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 13$ plf **BLC 5**

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

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax1} \cdot D_{coax1} + 2 \cdot Ir)}{12} = 0.3$ ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 14$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} = 8$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax1} := \frac{\pi}{4}\left[\left(D_{coax1} + 2 \cdot Ir\right)^2 - D_{coax1}^2\right] = 3.2$ sq in

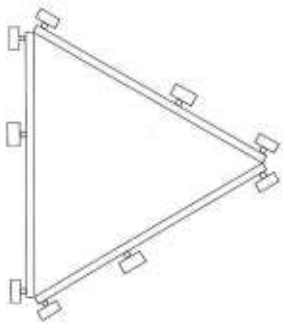
Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(N_{coax1} \cdot \frac{Ai_{coax1}}{144}\right) = 15$ plf **BLC 3**

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Antenna Data: (AT&T)



Antenna Model =	Powerwave 7770		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55$	in	(User Input)
Antenna Width =	$W_{ant} := 11$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 39$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

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

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 25.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1610$	lbs	**BLC 5**

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 =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1356$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 234$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 196$	lbs	**BLC 3**

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

Subject: Load Analysis of Powermount on CL&P Tower # 1321

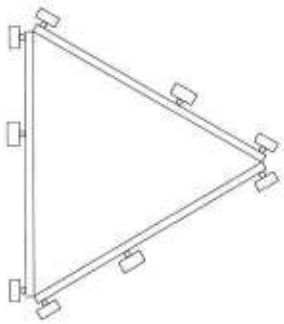
Location: Stratford, CT

Rev. 0: 11/20/13

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 13317.000

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

Antenna Data: (AT&T)



Antenna Model =	Powerwave P65-16-XLH-RR			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 72$	in	(User Input)	
Antenna Width =	$W_{ant} := 12$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 6$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 64$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.0$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

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

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1150$	lbs	**BLC 5**

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 =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.8$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 957$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 192$	lbs	**BLC 2**

Gravity Loads (ice only)

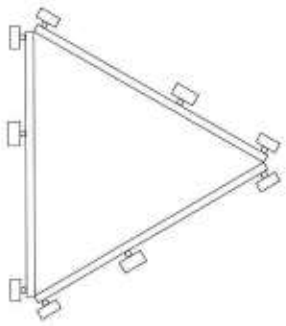
Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5184$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1459$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 47$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 142$	lbs	**BLC 3**

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

TMA Data: (AT&T)



TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{tma} := 9.2$	in	(User Input)
TMA Width =	$W_{tma} := 14.4$	in	(User Input)
TMA Thickness =	$T_{tma} := 2.6$	in	(User Input)
TMA Weight =	$WT_{tma} := 14.1$	lbs	(User Input)
Number of TMAs =	$N_{tma} := 12$		(User Input)
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 0.6$		
TMA Force Coefficient =	$Ca_{tma} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

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

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 11$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 705$	lbs	**BLC 5**

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

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 13.1$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 634$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 169$	lbs	**BLC 2**

Gravity Loads (ice only)

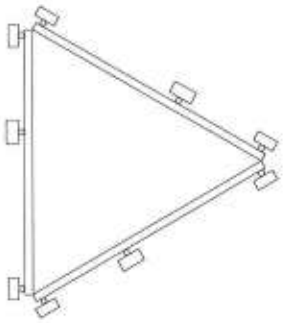
Volume of Each TMA =	$V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{tma} + 1)(W_{tma} + 1) \cdot (T_{tma} + 1) - V_{tma} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMAs =	$W_{ICEtma} \cdot N_{tma} = 86$	lbs	**BLC 3**

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

TMA Data: (AT&T)



TMA Model =	CCI DTMABP7819VG12A TMA		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{tma} := 14.25$	in	(User Input)
TMA Width =	$W_{tma} := 11.46$	in	(User Input)
TMA Thickness =	$T_{tma} := 4.17$	in	(User Input)
TMA Weight =	$WT_{tma} := 20$	lbs	(User Input)
Number of TMAs =	$N_{tma} := 3$		(User Input)
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 1.2$		
TMA Force Coefficient =	$Ca_{tma} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

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

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 1.1$	sf	
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 3.4$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 217$	lbs	**BLC 5**

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

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 4$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 192$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 60$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each TMA =	$V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 681$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{tma} + 1)(W_{tma} + 1) \cdot (T_{tma} + 1) - V_{tma} = 301$	cu in	
Weight of Ice on Each TMA =	$W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs	
Weight of Ice on All TMAs =	$W_{ICEtma} \cdot N_{tma} = 29$	lbs	**BLC 3**

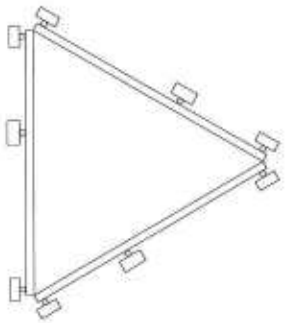
CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Platform Data: (AT&T)

Platform Model =	10' Low Profile Platform			
Platform Shape =	Flat		(User Input)	
Platform Area =	$A_{plt} := 10.58$	sq ft	(User Input)	
Platform Area w/ Ice =	$A_{ICE.plt} := 13.38$	sq ft	(User Input)	
Platform Weight =	$WT_{plt} := 2902$	lbs	(User Input)	
Platform Weight w/ Ice =	$WT_{ICE.plt} := 3953$	lbs	(User Input)	
Platform Force Coefficient =	$Ca_{plt} := 2.0$		(per TIA/EIA-222-F-1996 Table 3)	



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

Total Platform Wind Force =	$F_{plt} := qz_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{plt} = 965$	lbs	**BLC 5**

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

Total Platform Wind Force w/ Ice =	$Fi_{plt} := qzICE_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{ICE.plt} = 925$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of Platform =	$WT_{plt} = 2902$	lbs	**BLC 2**

Gravity Loads (ice only)

Weight of Ice on Platform =	$WT_{ICE.plt} - WT_{plt} = 1051$	lbs	**BLC 3**

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

Coax Cable Data: (AT&T)

Coax Type 1 = HELIAX 1-1/4"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax1} := 1.55$ in (User Input)

Coax Cable Length = $L_{coax1} := 124$ ft (User Input)

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf (User Input)

Total Number of Coax = $N_{coax1} := 18$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax1} := 0$ (User Input) (Coax within Powermount)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax1} \cdot 12)}{D_{coax1}} = 960$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$ TIA/EIA-222-F-96 Table 3

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

Coax projected surface area = $A_{coax} := 0$ ft

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

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

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

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

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} = 12$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax1} := 0$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(N_{coax1} \cdot \frac{Ai_{coax1}}{144} \right) = 0$ plf **BLC 3**

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

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

Antenna Shape = Flat (User Input)

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

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

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

Length = $L_{mem} := 42$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 16.8$

Member Force Coefficient = $Ca_{mem} = 1.73$ (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 = $F_{mem} := qz_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 16$ plf **BLC 5**

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 = $Fi_{mem} := qzICE_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 17$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 6 \text{ sq in}$$

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

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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 = $L_{mem} := 123$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 35.1$

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 = $F_{mem} := qz_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 20$ plf **BLC 5**

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 = $Fi_{mem} := qzICE_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 19$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

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

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

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

Subject:	Load Analysis of Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

Member Data: L5x5x3/8

Antenna Shape = Flat (User Input)

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

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

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

Length = $L_{mem} := 168$ in (User Input)

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

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 = $A_{mem} := \frac{H_{mem}}{12} = 0.4$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 21$ plf **BLC 5**

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

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

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 19$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 11 \text{ sq in}$$

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

CENTEK engineering, INC. **Consulting Engineers** 63-2 North Branford Road Branford, CT 06405 Ph. 203-488-0580 / Fax. 203-488-8587	Subject: Location: Date: 11/21/13	**Analysis of TIA/EIA Wind and Ice Loads for Analysis of Powermount** **Tabulated Load Cases** **Stratford, CT** Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

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

CENTEK engineering, INC.
Consulting Engineers
63-2 North Branford Road
Branford, CT 06405
Ph. 203-488-0580 / Fax. 203-488-8587

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

Location: **Stratford, CT**

Date: 11/21/13 Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

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

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

Global

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

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

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

Global, Continued

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y swayz sway	Function
1	M1	Powermo..	124											Lateral
2	M2	L2.5x2.5x..	3.536											Lateral
3	M3	L2.5x2.5x..	3.536											Lateral
4	M4	L2.5x2.5x..	3.536											Lateral
5	M5	L2.5x2.5x..	3.536											Lateral
6	M6	L2.5x2.5x..	3.536											Lateral
7	M7	L2.5x2.5x..	3.536											Lateral
8	M8	L2.5x2.5x..	3.536											Lateral
9	M9	L2.5x2.5x..	3.536											Lateral
10	M10	L2.5x2.5x..	3.536											Lateral
11	M11	L2.5x2.5x..	3.536											Lateral
12	M12	L2.5x2.5x..	3.536											Lateral
13	M13	L2.5x2.5x..	3.536											Lateral
14	M14	L2.5x2.5x..	3.536											Lateral
15	M15	L2.5x2.5x..	3.536											Lateral
16	M16	L2.5x2.5x..	3.536											Lateral
17	M17	L2.5x2.5x..	3.536											Lateral
18	M18	L3.5x3.5x..	10.253											Lateral
19	M19	L3.5x3.5x..	10.253											Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y swayz sway	Function
20	M20	L3.5x3.5x...	10.253											Lateral
21	M21	L3.5x3.5x...	10.253											Lateral
22	M22	L5x5x3/8	14.142											Lateral
23	M23	L5x5x3/8	14.142											Lateral
24	M24	L5x5x3/8	14.142											Lateral
25	M25	L5x5x3/8	14.142											Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	HSS18x0.3...	Beam	Pipe	A500 Gr.42	Typical	19.4	754	754	1510
2	L2.5x2.5x3/16	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
3	L3.5x3.5x1/4	L3.5x3.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.7	2	2	.039
4	L5x5x3/8	L5x5x6	Beam	Single Angle	A36 Gr.36	Typical	3.65	8.76	8.76	.183

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N8			Powermount	Beam	Pipe	A500 Gr...	Typical
2	M2	N7	N32			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N7	N31			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N7	N30			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N7	N29			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N6	N28			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N6	N27			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N6	N26			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N6	N25			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N5	N24			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N5	N23			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N5	N22			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N5	N21			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N4	N20			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N4	N19			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N4	N18			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N4	N17			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N3	N16			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N3	N15			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N3	N14			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N3	N13			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
22	M22	N2	N12			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
23	M23	N2	N11			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N2	N10			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N2	N9			L5x5x3/8	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	40	0	0	
4	N4	0	74	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
5	N5	0	84	0	0	
6	N6	0	96	0	0	
7	N7	0	101	0	0	
8	N8	0	124	0	0	
9	N9	10	20	10	0	
10	N10	10	20	-10	0	
11	N11	-10	20	10	0	
12	N12	-10	20	-10	0	
13	N13	7.25	40	7.25	0	
14	N14	7.25	40	-7.25	0	
15	N15	-7.25	40	7.25	0	
16	N16	-7.25	40	-7.25	0	
17	N17	2.5	74	2.5	0	
18	N18	2.5	74	-2.5	0	
19	N19	-2.5	74	2.5	0	
20	N20	-2.5	74	-2.5	0	
21	N21	2.5	84	2.5	0	
22	N22	2.5	84	-2.5	0	
23	N23	-2.5	84	2.5	0	
24	N24	-2.5	84	-2.5	0	
25	N25	2.5	96	2.5	0	
26	N26	2.5	96	-2.5	0	
27	N27	-2.5	96	2.5	0	
28	N28	-2.5	96	-2.5	0	
29	N29	2.5	101	2.5	0	
30	N30	2.5	101	-2.5	0	
31	N31	-2.5	101	2.5	0	
32	N32	-2.5	101	-2.5	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N2							
3	N3							
4	N4							
5	N5							
6	N6							
7	N7							
8	N8							
9	N9	Reaction	Reaction	Reaction				
10	N10	Reaction	Reaction	Reaction				
11	N11	Reaction	Reaction	Reaction				
12	N12	Reaction	Reaction	Reaction				
13	N13	Reaction	Reaction	Reaction				
14	N14	Reaction	Reaction	Reaction				
15	N15	Reaction	Reaction	Reaction				
16	N16	Reaction	Reaction	Reaction				
17	N17	Reaction	Reaction	Reaction				
18	N18	Reaction	Reaction	Reaction				
19	N19	Reaction	Reaction	Reaction				
20	N20	Reaction	Reaction	Reaction				

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
21	N21	Reaction	Reaction	Reaction				
22	N22	Reaction	Reaction	Reaction				
23	N23	Reaction	Reaction	Reaction				
24	N24	Reaction	Reaction	Reaction				
25	N25	Reaction	Reaction	Reaction				
26	N26	Reaction	Reaction	Reaction				
27	N27	Reaction	Reaction	Reaction				
28	N28	Reaction	Reaction	Reaction				
29	N29	Reaction	Reaction	Reaction				
30	N30	Reaction	Reaction	Reaction				
31	N31	Reaction	Reaction	Reaction				
32	N32	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.122	109
2	M1	Y	-.161	109
3	M1	Y	-.234	123.5
4	M1	Y	-.192	123.5
5	M1	Y	-.169	123.5
6	M1	Y	-.06	123.5
7	M1	Y	-2.902	123.5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.099	109
2	M1	Y	-.035	109
3	M1	Y	-.196	123.5
4	M1	Y	-.142	123.5
5	M1	Y	-.086	123.5
6	M1	Y	-.029	123.5
7	M1	Y	-1.051	123.5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.774	109
2	M1	X	1.356	123.5
3	M1	X	.957	123.5
4	M1	X	.634	123.5
5	M1	X	.192	123.5
6	M1	X	.925	123.5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.932	109
2	M1	X	1.61	123.5
3	M1	X	1.15	123.5
4	M1	X	.705	123.5
5	M1	X	.217	123.5
6	M1	X	.965	123.5

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 Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	101	109
2	M1	Y	-.012	-.012	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.011	-.011	0	0
2	M1	Y	-.015	-.015	101	109
3	M2	Y	-.002	-.002	0	0
4	M3	Y	-.002	-.002	0	0
5	M5	Y	-.002	-.002	0	0
6	M4	Y	-.002	-.002	0	0
7	M6	Y	-.002	-.002	0	0
8	M7	Y	-.002	-.002	0	0
9	M9	Y	-.002	-.002	0	0
10	M8	Y	-.002	-.002	0	0
11	M10	Y	-.002	-.002	0	0
12	M11	Y	-.002	-.002	0	0
13	M13	Y	-.002	-.002	0	0
14	M12	Y	-.002	-.002	0	0
15	M14	Y	-.002	-.002	0	0
16	M15	Y	-.002	-.002	0	0
17	M17	Y	-.002	-.002	0	0
18	M16	Y	-.002	-.002	0	0
19	M18	Y	-.003	-.003	0	0
20	M19	Y	-.003	-.003	0	0
21	M21	Y	-.003	-.003	0	0
22	M20	Y	-.003	-.003	0	0
23	M22	Y	-.004	-.004	0	0
24	M23	Y	-.004	-.004	0	0
25	M25	Y	-.004	-.004	0	0
26	M24	Y	-.004	-.004	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.031	.031	90	124
2	M1	X	.028	.028	60	90
3	M1	X	.024	.024	30	60
4	M1	X	.018	.018	0	30
5	M1	X	.014	.014	101	109
6	M2	X	.017	.017	0	0
7	M4	X	.017	.017	0	0
8	M3	X	.017	.017	0	0
9	M5	X	.017	.017	0	0
10	M6	X	.017	.017	0	0
11	M8	X	.017	.017	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
12	M7	X	.017	.017	0	0
13	M9	X	.017	.017	0	0
14	M10	X	.017	.017	0	0
15	M12	X	.017	.017	0	0
16	M11	X	.017	.017	0	0
17	M13	X	.017	.017	0	0
18	M14	X	.017	.017	0	0
19	M16	X	.017	.017	0	0
20	M15	X	.017	.017	0	0
21	M17	X	.017	.017	0	0
22	M18	X	.019	.019	0	0
23	M20	X	.019	.019	0	0
24	M19	X	.019	.019	0	0
25	M21	X	.019	.019	0	0
26	M22	X	.019	.019	0	0
27	M24	X	.019	.019	0	0
28	M23	X	.019	.019	0	0
29	M25	X	.019	.019	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.039	.039	90	124
2	M1	X	.035	.035	60	90
3	M1	X	.03	.03	30	60
4	M1	X	.022	.022	0	30
5	M1	X	.013	.013	101	109
6	M2	X	.016	.016	0	0
7	M3	X	.016	.016	0	0
8	M4	X	.016	.016	0	0
9	M5	X	.016	.016	0	0
10	M6	X	.016	.016	0	0
11	M7	X	.016	.016	0	0
12	M8	X	.016	.016	0	0
13	M9	X	.016	.016	0	0
14	M10	X	.016	.016	0	0
15	M11	X	.016	.016	0	0
16	M12	X	.016	.016	0	0
17	M13	X	.016	.016	0	0
18	M14	X	.016	.016	0	0
19	M15	X	.016	.016	0	0
20	M16	X	.016	.016	0	0
21	M17	X	.016	.016	0	0
22	M18	X	.02	.02	0	0
23	M19	X	.02	.02	0	0
24	M20	X	.02	.02	0	0
25	M21	X	.02	.02	0	0
26	M22	X	.021	.021	0	0
27	M24	X	.021	.021	0	0
28	M23	X	.021	.021	0	0
29	M25	X	.021	.021	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (Powermount)	None		-1						
2	Weight of Appurtenances	None					7	2		
3	Weight of Ice Only on PCS Struct	None					7	26		
4	TIA/EIA Wind with Ice on P	None					6	29		
5	TIA/EIA Wind on PCS Struct	None					6	29		

Load Combinations

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	TIA/EIA Wind + Ice on PCS Str...	Yes			1	1	2	1	3	1	4	1								
2	TIA/EIA Wind on PCS Structure	Yes			1	1	2	1	5	1										
3	Self Weight																			

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	17.488	1	.249	2	0	1	0	1	0	1	.971	2
2			min	14.134	2	.204	1	0	1	0	1	0	1	.796	1
3		2	max	14.264	1	-.084	1	0	1	0	1	0	1	.133	2
4			min	11.365	2	-.105	2	0	1	0	1	0	1	.098	1
5		3	max	11.324	1	-.135	1	0	1	0	1	0	1	-1.187	1
6			min	8.828	2	-.167	2	0	1	0	1	0	1	-1.5	2
7		4	max	8.493	1	-1.132	1	0	1	0	1	0	1	5.982	2
8			min	6.366	2	-1.318	2	0	1	0	1	0	1	5.192	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	-8.949	1	.009	1	-.02	2	0	1	0	1	0	1
12			min	-10.345	2	.005	2	-.021	1	0	1	0	1	0	1
13		2	max	-8.959	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
14			min	-10.355	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
15		3	max	-8.97	1	0	1	0	1	0	1	-.008	1	-.016	2
16			min	-10.365	2	0	1	0	1	0	1	-.009	2	-.019	1
17		4	max	-8.981	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
18			min	-10.375	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
19		5	max	-8.991	1	-.005	2	.021	1	0	1	0	1	0	1
20			min	-10.385	2	-.009	1	.02	2	0	1	0	1	0	1
21	M3	1	max	-8.949	1	.009	1	.021	1	0	1	0	1	0	1
22			min	-10.345	2	.005	2	.02	2	0	1	0	1	0	1
23		2	max	-8.959	1	.004	1	.011	1	0	1	.014	1	.007	2
24			min	-10.355	2	.003	2	.01	2	0	1	.012	2	.006	1
25		3	max	-8.97	1	0	1	0	1	0	1	.019	1	.009	2
26			min	-10.365	2	0	1	0	1	0	1	.016	2	.008	1
27		4	max	-8.981	1	-.003	2	-.01	2	0	1	.014	1	.007	2
28			min	-10.375	2	-.004	1	-.011	1	0	1	.012	2	.006	1
29		5	max	-8.991	1	-.005	2	-.02	2	0	1	0	1	0	1
30			min	-10.385	2	-.009	1	-.021	1	0	1	0	1	0	1
31	M4	1	max	10.345	2	.009	1	-.02	2	0	1	0	1	0	1
32			min	8.949	1	.005	2	-.021	1	0	1	0	1	0	1
33		2	max	10.355	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
34			min	8.959	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
35		3	max	10.365	2	0	1	0	1	0	1	-.008	1	-.016	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
36			min	8.97	1	0	1	0	1	0	1	-.009	2	-.019	1
37		4	max	10.375	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
38			min	8.981	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
39		5	max	10.385	2	-.005	2	.021	1	0	1	0	1	0	1
40			min	8.991	1	-.009	1	.02	2	0	1	0	1	0	1
41	M5	1	max	10.345	2	.009	1	.021	1	0	1	0	1	0	1
42			min	8.949	1	.005	2	.02	2	0	1	0	1	0	1
43		2	max	10.355	2	.004	1	.011	1	0	1	.014	1	.007	2
44			min	8.959	1	.003	2	.01	2	0	1	.012	2	.006	1
45		3	max	10.365	2	0	1	0	1	0	1	.019	1	.009	2
46			min	8.97	1	0	1	0	1	0	1	.016	2	.008	1
47		4	max	10.375	2	-.003	2	-.01	2	0	1	.014	1	.007	2
48			min	8.981	1	-.004	1	-.011	1	0	1	.012	2	.006	1
49		5	max	10.385	2	-.005	2	-.02	2	0	1	0	1	0	1
50			min	8.991	1	-.009	1	-.021	1	0	1	0	1	0	1
51	M6	1	max	7.402	2	.009	1	-.02	2	0	1	0	1	0	1
52			min	6.416	1	.005	2	-.021	1	0	1	0	1	0	1
53		2	max	7.392	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
54			min	6.406	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
55		3	max	7.382	2	0	1	0	1	0	1	-.008	1	-.016	2
56			min	6.395	1	0	1	0	1	0	1	-.009	2	-.019	1
57		4	max	7.372	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
58			min	6.384	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
59		5	max	7.362	2	-.005	2	.021	1	0	1	0	1	0	1
60			min	6.374	1	-.009	1	.02	2	0	1	0	1	0	1
61	M7	1	max	7.402	2	.009	1	.021	1	0	1	0	1	0	1
62			min	6.416	1	.005	2	.02	2	0	1	0	1	0	1
63		2	max	7.392	2	.004	1	.011	1	0	1	.014	1	.007	2
64			min	6.406	1	.003	2	.01	2	0	1	.012	2	.006	1
65		3	max	7.382	2	0	1	0	1	0	1	.019	1	.009	2
66			min	6.395	1	0	1	0	1	0	1	.016	2	.008	1
67		4	max	7.372	2	-.003	2	-.01	2	0	1	.014	1	.007	2
68			min	6.384	1	-.004	1	-.011	1	0	1	.012	2	.006	1
69		5	max	7.362	2	-.005	2	-.02	2	0	1	0	1	0	1
70			min	6.374	1	-.009	1	-.021	1	0	1	0	1	0	1
71	M8	1	max	-6.416	1	.009	1	-.02	2	0	1	0	1	0	1
72			min	-7.402	2	.005	2	-.021	1	0	1	0	1	0	1
73		2	max	-6.406	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
74			min	-7.392	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
75		3	max	-6.395	1	0	1	0	1	0	1	-.008	1	-.016	2
76			min	-7.382	2	0	1	0	1	0	1	-.009	2	-.019	1
77		4	max	-6.384	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
78			min	-7.372	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
79		5	max	-6.374	1	-.005	2	.021	1	0	1	0	1	0	1
80			min	-7.362	2	-.009	1	.02	2	0	1	0	1	0	1
81	M9	1	max	-6.416	1	.009	1	.021	1	0	1	0	1	0	1
82			min	-7.402	2	.005	2	.02	2	0	1	0	1	0	1
83		2	max	-6.406	1	.004	1	.011	1	0	1	.014	1	.007	2
84			min	-7.392	2	.003	2	.01	2	0	1	.012	2	.006	1
85		3	max	-6.395	1	0	1	0	1	0	1	.019	1	.009	2
86			min	-7.382	2	0	1	0	1	0	1	.016	2	.008	1
87		4	max	-6.384	1	-.003	2	-.01	2	0	1	.014	1	.007	2
88			min	-7.372	2	-.004	1	-.011	1	0	1	.012	2	.006	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
89		5	max	-6.374	1	-.005	2	-.02	2	0	1	0	1	0	1
90			min	-7.362	2	-.009	1	-.021	1	0	1	0	1	0	1
91	M10	1	max	.53	2	.009	1	-.02	2	0	1	0	1	0	1
92			min	.458	1	.005	2	-.021	1	0	1	0	1	0	1
93		2	max	.52	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
94			min	.447	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
95		3	max	.51	2	0	1	0	1	0	1	-.008	1	-.016	2
96			min	.436	1	0	1	0	1	0	1	-.009	2	-.019	1
97		4	max	.5	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
98			min	.426	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
99		5	max	.49	2	-.005	2	.021	1	0	1	0	1	0	1
100			min	.415	1	-.009	1	.02	2	0	1	0	1	0	1
101	M11	1	max	.53	2	.009	1	.021	1	0	1	0	1	0	1
102			min	.458	1	.005	2	.02	2	0	1	0	1	0	1
103		2	max	.52	2	.004	1	.011	1	0	1	.014	1	.007	2
104			min	.447	1	.003	2	.01	2	0	1	.012	2	.006	1
105		3	max	.51	2	0	1	0	1	0	1	.019	1	.009	2
106			min	.436	1	0	1	0	1	0	1	.016	2	.008	1
107		4	max	.5	2	-.003	2	-.01	2	0	1	.014	1	.007	2
108			min	.426	1	-.004	1	-.011	1	0	1	.012	2	.006	1
109		5	max	.49	2	-.005	2	-.02	2	0	1	0	1	0	1
110			min	.415	1	-.009	1	-.021	1	0	1	0	1	0	1
111	M12	1	max	-.458	1	.009	1	-.02	2	0	1	0	1	0	1
112			min	-.53	2	.005	2	-.021	1	0	1	0	1	0	1
113		2	max	-.447	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
114			min	-.52	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
115		3	max	-.436	1	0	1	0	1	0	1	-.008	1	-.016	2
116			min	-.51	2	0	1	0	1	0	1	-.009	2	-.019	1
117		4	max	-.426	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
118			min	-.5	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
119		5	max	-.415	1	-.005	2	.021	1	0	1	0	1	0	1
120			min	-.49	2	-.009	1	.02	2	0	1	0	1	0	1
121	M13	1	max	-.458	1	.009	1	.021	1	0	1	0	1	0	1
122			min	-.53	2	.005	2	.02	2	0	1	0	1	0	1
123		2	max	-.447	1	.004	1	.011	1	0	1	.014	1	.007	2
124			min	-.52	2	.003	2	.01	2	0	1	.012	2	.006	1
125		3	max	-.436	1	0	1	0	1	0	1	.019	1	.009	2
126			min	-.51	2	0	1	0	1	0	1	.016	2	.008	1
127		4	max	-.426	1	-.003	2	-.01	2	0	1	.014	1	.007	2
128			min	-.5	2	-.004	1	-.011	1	0	1	.012	2	.006	1
129		5	max	-.415	1	-.005	2	-.02	2	0	1	0	1	0	1
130			min	-.49	2	-.009	1	-.021	1	0	1	0	1	0	1
131	M14	1	max	-.458	1	.009	1	-.02	2	0	1	0	1	0	1
132			min	-.551	2	.005	2	-.021	1	0	1	0	1	0	1
133		2	max	-.468	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
134			min	-.561	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
135		3	max	-.479	1	0	1	0	1	0	1	-.008	1	-.016	2
136			min	-.571	2	0	1	0	1	0	1	-.009	2	-.019	1
137		4	max	-.489	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
138			min	-.581	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
139		5	max	-.5	1	-.005	2	.021	1	0	1	0	1	0	1
140			min	-.591	2	-.009	1	.02	2	0	1	0	1	0	1
141	M15	1	max	-.458	1	.009	1	.021	1	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
142			min	-.551	2	.005	2	.02	2	0	1	0	1	0	1
143		2	max	-.468	1	.004	1	.011	1	0	1	.014	1	.007	2
144			min	-.561	2	.003	2	.01	2	0	1	.012	2	.006	1
145		3	max	-.479	1	0	1	0	1	0	1	.019	1	.009	2
146			min	-.571	2	0	1	0	1	0	1	.016	2	.008	1
147		4	max	-.489	1	-.003	2	-.01	2	0	1	.014	1	.007	2
148			min	-.581	2	-.004	1	-.011	1	0	1	.012	2	.006	1
149		5	max	-.5	1	-.005	2	-.02	2	0	1	0	1	0	1
150			min	-.591	2	-.009	1	-.021	1	0	1	0	1	0	1
151	M16	1	max	.551	2	.009	1	-.02	2	0	1	0	1	0	1
152			min	.458	1	.005	2	-.021	1	0	1	0	1	0	1
153		2	max	.561	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
154			min	.468	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
155		3	max	.571	2	0	1	0	1	0	1	-.008	1	-.016	2
156			min	.479	1	0	1	0	1	0	1	-.009	2	-.019	1
157		4	max	.581	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
158			min	.489	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
159		5	max	.591	2	-.005	2	.021	1	0	1	0	1	0	1
160			min	.5	1	-.009	1	.02	2	0	1	0	1	0	1
161	M17	1	max	.551	2	.009	1	.021	1	0	1	0	1	0	1
162			min	.458	1	.005	2	.02	2	0	1	0	1	0	1
163		2	max	.561	2	.004	1	.011	1	0	1	.014	1	.007	2
164			min	.468	1	.003	2	.01	2	0	1	.012	2	.006	1
165		3	max	.571	2	0	1	0	1	0	1	.019	1	.009	2
166			min	.479	1	0	1	0	1	0	1	.016	2	.008	1
167		4	max	.581	2	-.003	2	-.01	2	0	1	.014	1	.007	2
168			min	.489	1	-.004	1	-.011	1	0	1	.012	2	.006	1
169		5	max	.591	2	-.005	2	-.02	2	0	1	0	1	0	1
170			min	.5	1	-.009	1	-.021	1	0	1	0	1	0	1
171	M18	1	max	-.317	1	.045	1	-.069	1	0	1	0	1	0	1
172			min	-.383	2	.03	2	-.072	2	0	1	0	1	0	1
173		2	max	-.351	1	.023	1	-.034	1	0	1	-.032	1	-.139	2
174			min	-.419	2	.015	2	-.036	2	0	1	-.058	2	-.155	1
175		3	max	-.386	1	0	1	0	1	0	1	-.043	1	-.185	2
176			min	-.456	2	0	1	0	1	0	1	-.078	2	-.206	1
177		4	max	-.42	1	-.015	2	.036	2	0	1	-.032	1	-.139	2
178			min	-.492	2	-.023	1	.034	1	0	1	-.058	2	-.155	1
179		5	max	-.455	1	-.03	2	.073	2	0	1	0	1	0	1
180			min	-.528	2	-.045	1	.069	1	0	1	0	1	0	1
181	M19	1	max	-.317	1	.045	1	.073	2	0	1	0	1	0	1
182			min	-.383	2	.03	2	.069	1	0	1	0	1	0	1
183		2	max	-.351	1	.023	1	.036	2	0	1	.155	1	.058	2
184			min	-.419	2	.015	2	.034	1	0	1	.139	2	.032	1
185		3	max	-.386	1	0	1	0	1	0	1	.206	1	.078	2
186			min	-.456	2	0	1	0	1	0	1	.185	2	.043	1
187		4	max	-.42	1	-.015	2	-.034	1	0	1	.155	1	.058	2
188			min	-.492	2	-.023	1	-.036	2	0	1	.139	2	.032	1
189		5	max	-.455	1	-.03	2	-.069	1	0	1	0	1	0	1
190			min	-.528	2	-.045	1	-.073	2	0	1	0	1	0	1
191	M20	1	max	.383	2	.045	1	-.069	1	0	1	0	1	0	1
192			min	.317	1	.03	2	-.073	2	0	1	0	1	0	1
193		2	max	.419	2	.023	1	-.034	1	0	1	-.032	1	-.139	2
194			min	.351	1	.015	2	-.036	2	0	1	-.058	2	-.155	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
195		3	max	.456	2	0	1	0	1	0	1	-.043	1	-.185	2
196			min	.386	1	0	1	0	1	0	1	-.078	2	-.206	1
197		4	max	.492	2	-.015	2	.036	2	0	1	-.032	1	-.139	2
198			min	.42	1	-.023	1	.034	1	0	1	-.058	2	-.155	1
199		5	max	.528	2	-.03	2	.073	2	0	1	0	1	0	1
200			min	.455	1	-.045	1	.069	1	0	1	0	1	0	1
201	M21	1	max	.383	2	.045	1	.072	2	0	1	0	1	0	1
202			min	.317	1	.03	2	.069	1	0	1	0	1	0	1
203		2	max	.419	2	.023	1	.036	2	0	1	.155	1	.058	2
204			min	.351	1	.015	2	.034	1	0	1	.139	2	.032	1
205		3	max	.456	2	0	1	0	1	0	1	.206	1	.078	2
206			min	.386	1	0	1	0	1	0	1	.185	2	.043	1
207		4	max	.492	2	-.015	2	-.034	1	0	1	.155	1	.058	2
208			min	.42	1	-.023	1	-.036	2	0	1	.139	2	.032	1
209		5	max	.528	2	-.03	2	-.069	1	0	1	0	1	0	1
210			min	.455	1	-.045	1	-.073	2	0	1	0	1	0	1
211	M22	1	max	-.193	1	.116	1	-.095	1	0	1	0	1	0	1
212			min	-.224	2	.088	2	-.105	2	0	1	0	1	0	1
213		2	max	-.24	1	.058	1	-.048	1	0	1	.039	1	-.362	2
214			min	-.276	2	.044	2	-.053	2	0	1	-.032	2	-.396	1
215		3	max	-.288	1	0	1	0	1	0	1	.053	1	-.482	2
216			min	-.329	2	0	1	0	1	0	1	-.043	2	-.528	1
217		4	max	-.335	1	-.044	2	.052	2	0	1	.039	1	-.362	2
218			min	-.381	2	-.058	1	.048	1	0	1	-.032	2	-.396	1
219		5	max	-.383	1	-.088	2	.105	2	0	1	0	1	0	1
220			min	-.434	2	-.116	1	.095	1	0	1	0	1	0	1
221	M23	1	max	-.193	1	.116	1	.105	2	0	1	0	1	0	1
222			min	-.224	2	.088	2	.095	1	0	1	0	1	0	1
223		2	max	-.24	1	.058	1	.053	2	0	1	.396	1	.032	2
224			min	-.276	2	.044	2	.048	1	0	1	.362	2	-.04	1
225		3	max	-.288	1	0	1	0	1	0	1	.528	1	.043	2
226			min	-.329	2	0	1	0	1	0	1	.482	2	-.053	1
227		4	max	-.335	1	-.044	2	-.047	1	0	1	.396	1	.032	2
228			min	-.381	2	-.058	1	-.052	2	0	1	.362	2	-.04	1
229		5	max	-.383	1	-.088	2	-.095	1	0	1	0	1	0	1
230			min	-.434	2	-.116	1	-.105	2	0	1	0	1	0	1
231	M24	1	max	.224	2	.116	1	-.095	1	0	1	0	1	0	1
232			min	.193	1	.088	2	-.105	2	0	1	0	1	0	1
233		2	max	.276	2	.058	1	-.048	1	0	1	.039	1	-.362	2
234			min	.24	1	.044	2	-.053	2	0	1	-.032	2	-.396	1
235		3	max	.329	2	0	1	0	1	0	1	.053	1	-.482	2
236			min	.288	1	0	1	0	1	0	1	-.043	2	-.528	1
237		4	max	.381	2	-.044	2	.052	2	0	1	.039	1	-.362	2
238			min	.335	1	-.058	1	.047	1	0	1	-.032	2	-.396	1
239		5	max	.434	2	-.088	2	.105	2	0	1	0	1	0	1
240			min	.383	1	-.116	1	.095	1	0	1	0	1	0	1
241	M25	1	max	.224	2	.116	1	.105	2	0	1	0	1	0	1
242			min	.193	1	.088	2	.095	1	0	1	0	1	0	1
243		2	max	.276	2	.058	1	.053	2	0	1	.396	1	.032	2
244			min	.24	1	.044	2	.048	1	0	1	.362	2	-.04	1
245		3	max	.329	2	0	1	0	1	0	1	.528	1	.043	2
246			min	.288	1	0	1	0	1	0	1	.482	2	-.053	1
247		4	max	.381	2	-.044	2	-.047	1	0	1	.396	1	.032	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
248			min	.335	1	-.058	1	-.052	2	0	1	.362	2	-.04	1
249		5	max	.434	2	-.088	2	-.095	1	0	1	0	1	0	1
250			min	.383	1	-.116	1	-.105	2	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	.901	1	.026	2	0	1	-.114	1	.139	2	0	1	0	1
2			min	.729	2	.021	1	0	1	-.139	2	.114	1	0	1	0	1
3		2	max	.735	1	-.009	1	0	1	-.014	1	.019	2	0	1	0	1
4			min	.586	2	-.011	2	0	1	-.019	2	.014	1	0	1	0	1
5		3	max	.584	1	-.014	1	0	1	.215	2	-.17	1	0	1	0	1
6			min	.455	2	-.017	2	0	1	.17	1	-.215	2	0	1	0	1
7		4	max	.438	1	-.117	1	0	1	-.744	1	.857	2	0	1	0	1
8			min	.328	2	-.136	2	0	1	-.857	2	.744	1	0	1	0	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	-9.932	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
12			min	-11.482	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
13		2	max	-9.944	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
14			min	-11.493	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
15		3	max	-9.956	1	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
16			min	-11.504	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
17		4	max	-9.968	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
18			min	-11.515	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
19		5	max	-9.979	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
20			min	-11.526	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
21	M3	1	max	-9.932	1	.023	1	.054	1	0	1	0	1	0	1	0	1
22			min	-11.482	2	.014	2	.051	2	0	1	0	1	0	1	0	1
23		2	max	-9.944	1	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
24			min	-11.493	2	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
25		3	max	-9.956	1	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
26			min	-11.504	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
27		4	max	-9.968	1	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
28			min	-11.515	2	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
29		5	max	-9.979	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
30			min	-11.526	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
31	M4	1	max	11.482	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
32			min	9.932	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
33		2	max	11.493	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
34			min	9.944	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
35		3	max	11.504	2	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
36			min	9.956	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
37		4	max	11.515	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
38			min	9.968	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
39		5	max	11.526	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
40			min	9.979	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
41	M5	1	max	11.482	2	.023	1	.054	1	0	1	0	1	0	1	0	1
42			min	9.932	1	.014	2	.051	2	0	1	0	1	0	1	0	1
43		2	max	11.493	2	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
44			min	9.944	1	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
45		3	max	11.504	2	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2

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
46			min	9.956	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
47		4	max	11.515	2	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
48			min	9.968	1	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
49		5	max	11.526	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
50			min	9.979	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
51	M6	1	max	8.216	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
52			min	7.121	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
53		2	max	8.205	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
54			min	7.11	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
55		3	max	8.193	2	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
56			min	7.098	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
57		4	max	8.182	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
58			min	7.086	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
59		5	max	8.171	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
60			min	7.074	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
61	M7	1	max	8.216	2	.023	1	.054	1	0	1	0	1	0	1	0	1
62			min	7.121	1	.014	2	.051	2	0	1	0	1	0	1	0	1
63		2	max	8.205	2	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
64			min	7.11	1	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
65		3	max	8.193	2	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
66			min	7.098	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
67		4	max	8.182	2	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
68			min	7.086	1	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
69		5	max	8.171	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
70			min	7.074	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
71	M8	1	max	-7.121	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
72			min	-8.216	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
73		2	max	-7.11	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
74			min	-8.205	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
75		3	max	-7.098	1	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
76			min	-8.193	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
77		4	max	-7.086	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
78			min	-8.182	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
79		5	max	-7.074	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
80			min	-8.171	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
81	M9	1	max	-7.121	1	.023	1	.054	1	0	1	0	1	0	1	0	1
82			min	-8.216	2	.014	2	.051	2	0	1	0	1	0	1	0	1
83		2	max	-7.11	1	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
84			min	-8.205	2	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
85		3	max	-7.098	1	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
86			min	-8.193	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
87		4	max	-7.086	1	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
88			min	-8.182	2	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
89		5	max	-7.074	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
90			min	-8.171	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
91	M10	1	max	.588	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
92			min	.508	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
93		2	max	.577	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
94			min	.496	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
95		3	max	.566	2	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
96			min	.484	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
97		4	max	.555	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
98			min	.472	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	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
99		5	max	.544	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
100			min	.461	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
101	M11	1	max	.588	2	.023	1	.054	1	0	1	0	1	0	1	0	1
102			min	.508	1	.014	2	.051	2	0	1	0	1	0	1	0	1
103		2	max	.577	2	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
104			min	.496	1	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
105		3	max	.566	2	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
106			min	.484	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
107		4	max	.555	2	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
108			min	.472	1	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
109		5	max	.544	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
110			min	.461	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
111	M12	1	max	-.508	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
112			min	-.588	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
113		2	max	-.496	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
114			min	-.577	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
115		3	max	-.484	1	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
116			min	-.566	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
117		4	max	-.472	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
118			min	-.555	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
119		5	max	-.461	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
120			min	-.544	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
121	M13	1	max	-.508	1	.023	1	.054	1	0	1	0	1	0	1	0	1
122			min	-.588	2	.014	2	.051	2	0	1	0	1	0	1	0	1
123		2	max	-.496	1	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
124			min	-.577	2	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
125		3	max	-.484	1	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
126			min	-.566	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
127		4	max	-.472	1	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
128			min	-.555	2	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
129		5	max	-.461	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
130			min	-.544	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
131	M14	1	max	-.508	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
132			min	-.612	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
133		2	max	-.52	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
134			min	-.623	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
135		3	max	-.531	1	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
136			min	-.634	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
137		4	max	-.543	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
138			min	-.645	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
139		5	max	-.555	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
140			min	-.656	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
141	M15	1	max	-.508	1	.023	1	.054	1	0	1	0	1	0	1	0	1
142			min	-.612	2	.014	2	.051	2	0	1	0	1	0	1	0	1
143		2	max	-.52	1	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
144			min	-.623	2	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
145		3	max	-.531	1	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
146			min	-.634	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
147		4	max	-.543	1	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
148			min	-.645	2	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
149		5	max	-.555	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
150			min	-.656	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
151	M16	1	max	.612	2	.023	1	-.051	2	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
152			min	.508	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
153		2	max	.623	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
154			min	.52	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
155		3	max	.634	2	0	1	0	1	.448	1	-.377	2	-.381	1	.508	2
156			min	.531	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
157		4	max	.645	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
158			min	.543	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
159		5	max	.656	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
160			min	.555	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
161	M17	1	max	.612	2	.023	1	.054	1	0	1	0	1	0	1	0	1
162			min	.508	1	.014	2	.051	2	0	1	0	1	0	1	0	1
163		2	max	.623	2	.011	1	.027	1	-.137	1	.162	2	.701	1	-.664	2
164			min	.52	1	.007	2	.026	2	-.162	2	.137	1	.59	2	-.789	1
165		3	max	.634	2	0	1	0	1	-.182	1	.216	2	.934	1	-.885	2
166			min	.531	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.052	1
167		4	max	.645	2	-.007	2	-.026	2	-.137	1	.162	2	.701	1	-.664	2
168			min	.543	1	-.011	1	-.027	1	-.162	2	.137	1	.59	2	-.789	1
169		5	max	.656	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
170			min	.555	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
171	M18	1	max	-.186	1	.062	1	-.094	1	0	1	0	1	0	1	0	1
172			min	-.225	2	.041	2	-.099	2	0	1	0	1	0	1	0	1
173		2	max	-.207	1	.031	1	-.047	1	1.388	1	-1.244	2	-.588	1	1.173	2
174			min	-.247	2	.02	2	-.05	2	1.245	2	-1.387	1	-1.056	2	.653	1
175		3	max	-.227	1	0	1	0	1	1.851	1	-1.659	2	-.784	1	1.564	2
176			min	-.268	2	0	1	0	1	1.66	2	-1.85	1	-1.408	2	.871	1
177		4	max	-.247	1	-.02	2	.05	2	1.388	1	-1.244	2	-.588	1	1.173	2
178			min	-.289	2	-.031	1	.047	1	1.245	2	-1.387	1	-1.056	2	.653	1
179		5	max	-.268	1	-.041	2	.099	2	0	1	0	1	0	1	0	1
180			min	-.311	2	-.062	1	.094	1	0	1	0	1	0	1	0	1
181	M19	1	max	-.186	1	.062	1	.099	2	0	1	0	1	0	1	0	1
182			min	-.225	2	.041	2	.094	1	0	1	0	1	0	1	0	1
183		2	max	-.207	1	.031	1	.05	2	-.29	1	.521	2	2.806	1	-2.794	2
184			min	-.247	2	.02	2	.047	1	-.522	2	.29	1	2.517	2	-3.116	1
185		3	max	-.227	1	0	1	0	1	-.387	1	.695	2	3.741	1	-3.726	2
186			min	-.268	2	0	1	0	1	-.695	2	.386	1	3.356	2	-4.154	1
187		4	max	-.247	1	-.02	2	-.047	1	-.29	1	.521	2	2.806	1	-2.794	2
188			min	-.289	2	-.031	1	-.05	2	-.522	2	.29	1	2.517	2	-3.116	1
189		5	max	-.268	1	-.041	2	-.094	1	0	1	0	1	0	1	0	1
190			min	-.311	2	-.062	1	-.099	2	0	1	0	1	0	1	0	1
191	M20	1	max	.225	2	.062	1	-.094	1	0	1	0	1	0	1	0	1
192			min	.186	1	.041	2	-.099	2	0	1	0	1	0	1	0	1
193		2	max	.247	2	.031	1	-.047	1	1.388	1	-1.244	2	-.588	1	1.173	2
194			min	.207	1	.02	2	-.05	2	1.245	2	-1.387	1	-1.056	2	.653	1
195		3	max	.268	2	0	1	0	1	1.851	1	-1.659	2	-.784	1	1.564	2
196			min	.227	1	0	1	0	1	1.66	2	-1.85	1	-1.408	2	.871	1
197		4	max	.289	2	-.02	2	.05	2	1.388	1	-1.244	2	-.588	1	1.173	2
198			min	.247	1	-.031	1	.047	1	1.245	2	-1.387	1	-1.056	2	.653	1
199		5	max	.311	2	-.041	2	.099	2	0	1	0	1	0	1	0	1
200			min	.268	1	-.062	1	.094	1	0	1	0	1	0	1	0	1
201	M21	1	max	.225	2	.062	1	.099	2	0	1	0	1	0	1	0	1
202			min	.186	1	.041	2	.094	1	0	1	0	1	0	1	0	1
203		2	max	.247	2	.031	1	.05	2	-.29	1	.521	2	2.806	1	-2.794	2
204			min	.207	1	.02	2	.047	1	-.522	2	.29	1	2.517	2	-3.116	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
205		3	max	.268	2	0	1	0	1	-.387	1	.695	2	3.741	1	-3.726	2
206			min	.227	1	0	1	0	1	-.695	2	.386	1	3.356	2	-4.154	1
207		4	max	.289	2	-.02	2	-.047	1	-.29	1	.521	2	2.806	1	-2.794	2
208			min	.247	1	-.031	1	-.05	2	-.522	2	.29	1	2.517	2	-3.116	1
209		5	max	.311	2	-.041	2	-.094	1	0	1	0	1	0	1	0	1
210			min	.268	1	-.062	1	-.099	2	0	1	0	1	0	1	0	1
211	M22	1	max	-.053	1	.074	1	-.061	1	0	1	0	1	0	1	0	1
212			min	-.061	2	.056	2	-.067	2	0	1	0	1	0	1	0	1
213		2	max	-.066	1	.037	1	-.03	1	1.157	1	-1.056	2	.231	1	.212	2
214			min	-.076	2	.028	2	-.034	2	1.057	2	-1.157	1	-.189	2	-.258	1
215		3	max	-.079	1	0	1	0	1	1.543	1	-1.409	2	.308	1	.283	2
216			min	-.09	2	0	1	0	1	1.409	2	-1.542	1	-.253	2	-.344	1
217		4	max	-.092	1	-.028	2	.034	2	1.157	1	-1.056	2	.231	1	.212	2
218			min	-.104	2	-.037	1	.03	1	1.057	2	-1.157	1	-.189	2	-.258	1
219		5	max	-.105	1	-.056	2	.067	2	0	1	0	1	0	1	0	1
220			min	-.119	2	-.074	1	.061	1	0	1	0	1	0	1	0	1
221	M23	1	max	-.053	1	.074	1	.067	2	0	1	0	1	0	1	0	1
222			min	-.061	2	.056	2	.061	1	0	1	0	1	0	1	0	1
223		2	max	-.066	1	.037	1	.034	2	.116	1	.094	2	2.318	1	-2.369	2
224			min	-.076	2	.028	2	.03	1	-.094	2	-.116	1	2.118	2	-2.593	1
225		3	max	-.079	1	0	1	0	1	.155	1	.125	2	3.091	1	-3.159	2
226			min	-.09	2	0	1	0	1	-.125	2	-.155	1	2.824	2	-3.458	1
227		4	max	-.092	1	-.028	2	-.03	1	.116	1	.094	2	2.318	1	-2.369	2
228			min	-.104	2	-.037	1	-.034	2	-.094	2	-.116	1	2.118	2	-2.593	1
229		5	max	-.105	1	-.056	2	-.061	1	0	1	0	1	0	1	0	1
230			min	-.119	2	-.074	1	-.067	2	0	1	0	1	0	1	0	1
231	M24	1	max	.061	2	.074	1	-.061	1	0	1	0	1	0	1	0	1
232			min	.053	1	.056	2	-.067	2	0	1	0	1	0	1	0	1
233		2	max	.076	2	.037	1	-.03	1	1.157	1	-1.056	2	.231	1	.212	2
234			min	.066	1	.028	2	-.034	2	1.057	2	-1.157	1	-.189	2	-.258	1
235		3	max	.09	2	0	1	0	1	1.543	1	-1.409	2	.308	1	.283	2
236			min	.079	1	0	1	0	1	1.409	2	-1.542	1	-.253	2	-.344	1
237		4	max	.104	2	-.028	2	.034	2	1.157	1	-1.056	2	.231	1	.212	2
238			min	.092	1	-.037	1	.03	1	1.057	2	-1.157	1	-.189	2	-.258	1
239		5	max	.119	2	-.056	2	.067	2	0	1	0	1	0	1	0	1
240			min	.105	1	-.074	1	.061	1	0	1	0	1	0	1	0	1
241	M25	1	max	.061	2	.074	1	.067	2	0	1	0	1	0	1	0	1
242			min	.053	1	.056	2	.061	1	0	1	0	1	0	1	0	1
243		2	max	.076	2	.037	1	.034	2	.116	1	.094	2	2.318	1	-2.369	2
244			min	.066	1	.028	2	.03	1	-.094	2	-.116	1	2.118	2	-2.593	1
245		3	max	.09	2	0	1	0	1	.155	1	.125	2	3.091	1	-3.159	2
246			min	.079	1	0	1	0	1	-.125	2	-.155	1	2.824	2	-3.458	1
247		4	max	.104	2	-.028	2	-.03	1	.116	1	.094	2	2.318	1	-2.369	2
248			min	.092	1	-.037	1	-.034	2	-.094	2	-.116	1	2.118	2	-2.593	1
249		5	max	.119	2	-.056	2	-.061	1	0	1	0	1	0	1	0	1
250			min	.105	1	-.074	1	-.067	2	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	-.204	1	17.488	1	0	2	0	2	0	1	.971	2
2		min	-.249	2	14.134	2	0	1	0	1	0	1	.796	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
3	N9	max	-.338	1	.116	1	-.203	1	0	1	0	1	0	1
4		min	-.381	2	.088	2	-.232	2	0	1	0	1	0	1
5	N10	max	-.338	1	.116	1	.232	2	0	1	0	1	0	1
6		min	-.381	2	.088	2	.203	1	0	1	0	1	0	1
7	N11	max	-.338	1	.116	1	.232	2	0	1	0	1	0	1
8		min	-.381	2	.088	2	.203	1	0	1	0	1	0	1
9	N12	max	-.338	1	.116	1	-.203	1	0	1	0	1	0	1
10		min	-.381	2	.088	2	-.232	2	0	1	0	1	0	1
11	N13	max	-.37	1	.045	1	-.273	1	0	1	0	1	0	1
12		min	-.425	2	.03	2	-.322	2	0	1	0	1	0	1
13	N14	max	-.37	1	.045	1	.322	2	0	1	0	1	0	1
14		min	-.425	2	.03	2	.273	1	0	1	0	1	0	1
15	N15	max	-.37	1	.045	1	.322	2	0	1	0	1	0	1
16		min	-.425	2	.03	2	.273	1	0	1	0	1	0	1
17	N16	max	-.37	1	.045	1	-.273	1	0	1	0	1	0	1
18		min	-.425	2	.03	2	-.322	2	0	1	0	1	0	1
19	N17	max	-.369	1	.009	1	-.339	1	0	1	0	1	0	1
20		min	-.432	2	.005	2	-.404	2	0	1	0	1	0	1
21	N18	max	-.369	1	.009	1	.404	2	0	1	0	1	0	1
22		min	-.432	2	.005	2	.339	1	0	1	0	1	0	1
23	N19	max	-.369	1	.009	1	.404	2	0	1	0	1	0	1
24		min	-.432	2	.005	2	.339	1	0	1	0	1	0	1
25	N20	max	-.369	1	.009	1	-.339	1	0	1	0	1	0	1
26		min	-.432	2	.005	2	-.404	2	0	1	0	1	0	1
27	N21	max	.332	2	.009	1	.361	2	0	1	0	1	0	1
28		min	.278	1	.005	2	.309	1	0	1	0	1	0	1
29	N22	max	.332	2	.009	1	-.309	1	0	1	0	1	0	1
30		min	.278	1	.005	2	-.361	2	0	1	0	1	0	1
31	N23	max	.332	2	.009	1	-.309	1	0	1	0	1	0	1
32		min	.278	1	.005	2	-.361	2	0	1	0	1	0	1
33	N24	max	.332	2	.009	1	.361	2	0	1	0	1	0	1
34		min	.278	1	.005	2	.309	1	0	1	0	1	0	1
35	N25	max	5.192	2	.009	1	5.22	2	0	1	0	1	0	1
36		min	4.492	1	.005	2	4.522	1	0	1	0	1	0	1
37	N26	max	5.192	2	.009	1	-4.522	1	0	1	0	1	0	1
38		min	4.492	1	.005	2	-5.22	2	0	1	0	1	0	1
39	N27	max	5.192	2	.009	1	-4.522	1	0	1	0	1	0	1
40		min	4.492	1	.005	2	-5.22	2	0	1	0	1	0	1
41	N28	max	5.192	2	.009	1	5.22	2	0	1	0	1	0	1
42		min	4.492	1	.005	2	4.522	1	0	1	0	1	0	1
43	N29	max	-6.373	1	.009	1	-6.343	1	0	1	0	1	0	1
44		min	-7.358	2	.005	2	-7.329	2	0	1	0	1	0	1
45	N30	max	-6.373	1	.009	1	7.329	2	0	1	0	1	0	1
46		min	-7.358	2	.005	2	6.343	1	0	1	0	1	0	1
47	N31	max	-6.373	1	.009	1	7.329	2	0	1	0	1	0	1
48		min	-7.358	2	.005	2	6.343	1	0	1	0	1	0	1
49	N32	max	-6.373	1	.009	1	-6.343	1	0	1	0	1	0	1
50		min	-7.358	2	.005	2	-7.329	2	0	1	0	1	0	1
51	Totals:	max	-10.92	1	18.275	1	0	1						
52		min	-12.532	2	14.691	2	0	1						

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	1	0	1	0	1	0	1
2		min	0	1	0	1	0	2	0	2	0	1	0	2
3	N2	max	0	2	-.006	2	0	2	0	2	0	1	7.085e-6	2
4		min	0	1	-.007	1	0	1	0	1	0	1	5.409e-6	1
5	N3	max	.002	2	-.011	2	0	2	0	1	0	1	-4.403e-5	1
6		min	.001	1	-.013	1	0	1	0	2	0	1	-5.553e-5	2
7	N4	max	.001	2	-.017	2	0	1	0	2	0	1	3.587e-5	2
8		min	.001	1	-.022	1	0	2	0	1	0	1	2.724e-5	1
9	N5	max	-.001	1	-.019	2	0	2	0	1	0	1	9.96e-5	2
10		min	-.001	2	-.024	1	0	1	0	2	0	1	8.708e-5	1
11	N6	max	-.015	1	-.021	2	0	2	0	2	0	1	-7.989e-5	1
12		min	-.017	2	-.026	1	0	1	0	1	0	1	-9.201e-5	2
13	N7	max	.024	2	-.021	2	0	2	0	2	0	1	-1.971e-3	1
14		min	.021	1	-.027	1	0	1	0	1	0	1	-2.277e-3	2
15	N8	max	2.263	2	-.023	2	0	2	0	2	0	1	-9.331e-3	1
16		min	1.963	1	-.03	1	0	1	0	1	0	1	-1.075e-2	2
17	N9	max	0	2	0	2	0	2	-1.575e-3	2	-2.305e-3	2	1.818e-3	1
18		min	0	1	0	1	0	1	-1.812e-3	1	-2.404e-3	1	1.582e-3	2
19	N10	max	0	2	0	2	0	1	6.436e-4	1	7.767e-4	2	6.49e-4	1
20		min	0	1	0	1	0	2	2.828e-4	2	3.838e-4	1	2.899e-4	2
21	N11	max	0	2	0	2	0	1	-1.582e-3	2	-2.305e-3	2	-1.575e-3	2
22		min	0	1	0	1	0	2	-1.818e-3	1	-2.404e-3	1	-1.812e-3	1
23	N12	max	0	2	0	2	0	2	6.49e-4	1	7.767e-4	2	-2.828e-4	2
24		min	0	1	0	1	0	1	2.899e-4	2	3.838e-4	1	-6.436e-4	1
25	N13	max	0	2	0	2	0	2	-1.835e-3	2	-3.065e-3	2	2.117e-3	1
26		min	0	1	0	1	0	1	-2.161e-3	1	-3.252e-3	1	1.78e-3	2
27	N14	max	0	2	0	2	0	1	1.91e-4	1	1.866e-3	2	1.47e-4	1
28		min	0	1	0	1	0	2	-2.383e-4	2	1.431e-3	1	-2.938e-4	2
29	N15	max	0	2	0	2	0	1	-1.78e-3	2	-3.065e-3	2	-1.835e-3	2
30		min	0	1	0	1	0	2	-2.117e-3	1	-3.252e-3	1	-2.161e-3	1
31	N16	max	0	2	0	2	0	2	1.47e-4	1	1.866e-3	2	2.383e-4	2
32		min	0	1	0	1	0	1	-2.938e-4	2	1.431e-3	1	-1.91e-4	1
33	N17	max	0	2	0	2	0	2	-4.611e-4	2	-3.81e-4	2	6.14e-4	1
34		min	0	1	0	1	0	1	-5.868e-4	1	-4.298e-4	1	4.969e-4	2
35	N18	max	0	2	0	2	0	1	3.058e-4	1	2.797e-4	2	3.33e-4	1
36		min	0	1	0	1	0	2	1.966e-4	2	2.624e-4	1	2.325e-4	2
37	N19	max	0	2	0	2	0	1	-4.969e-4	2	-3.81e-4	2	-4.611e-4	2
38		min	0	1	0	1	0	2	-6.14e-4	1	-4.298e-4	1	-5.868e-4	1
39	N20	max	0	2	0	2	0	2	3.33e-4	1	2.797e-4	2	-1.966e-4	2
40		min	0	1	0	1	0	1	2.325e-4	2	2.624e-4	1	-3.058e-4	1
41	N21	max	0	1	0	2	0	1	-4.558e-4	2	-3.396e-4	2	6.787e-4	1
42		min	0	2	0	1	0	2	-5.916e-4	1	-3.948e-4	1	5.554e-4	2
43	N22	max	0	1	0	2	0	2	3.106e-4	1	2.383e-4	2	3.977e-4	1
44		min	0	2	0	1	0	1	1.913e-4	2	2.273e-4	1	2.909e-4	2
45	N23	max	0	1	0	2	0	2	-5.554e-4	2	-3.396e-4	2	-4.558e-4	2
46		min	0	2	0	1	0	1	-6.787e-4	1	-3.948e-4	1	-5.916e-4	1
47	N24	max	0	1	0	2	0	1	3.977e-4	1	2.383e-4	2	-1.913e-4	2
48		min	0	2	0	1	0	2	2.909e-4	2	2.273e-4	1	-3.106e-4	1
49	N25	max	0	1	0	2	0	1	-5.798e-4	2	-7.664e-5	2	6.326e-4	1
50		min	0	2	0	1	0	2	-7.124e-4	1	-1.668e-4	1	4.877e-4	2
51	N26	max	0	1	0	2	0	2	4.315e-4	1	-7.097e-7	1	3.516e-4	1
52		min	0	2	0	1	0	1	3.153e-4	2	-2.472e-5	2	2.233e-4	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
53	N27	max	0	1	0	2	0	2	-4.877e-4	2	-7.664e-5	2	-5.798e-4	2
54		min	0	2	0	1	0	1	-6.326e-4	1	-1.668e-4	1	-7.124e-4	1
55	N28	max	0	1	0	2	0	1	3.516e-4	1	-7.097e-7	1	-3.153e-4	2
56		min	0	2	0	1	0	2	2.233e-4	2	-2.472e-5	2	-4.315e-4	1
57	N29	max	0	2	0	2	0	2	-1.672e-3	1	-7.548e-4	1	-2.989e-4	1
58		min	0	1	0	1	0	1	-1.683e-3	2	-7.559e-4	2	-5.941e-4	2
59	N30	max	0	2	0	2	0	1	1.418e-3	2	6.545e-4	2	-5.799e-4	1
60		min	0	1	0	1	0	2	1.391e-3	1	5.873e-4	1	-8.586e-4	2
61	N31	max	0	2	0	2	0	1	5.941e-4	2	-7.548e-4	1	-1.672e-3	1
62		min	0	1	0	1	0	2	2.989e-4	1	-7.559e-4	2	-1.683e-3	2
63	N32	max	0	2	0	2	0	2	-5.799e-4	1	6.545e-4	2	-1.391e-3	1
64		min	0	1	0	1	0	1	-8.586e-4	2	5.873e-4	1	-1.418e-3	2

Envelope AISC ASD Steel Code Checks

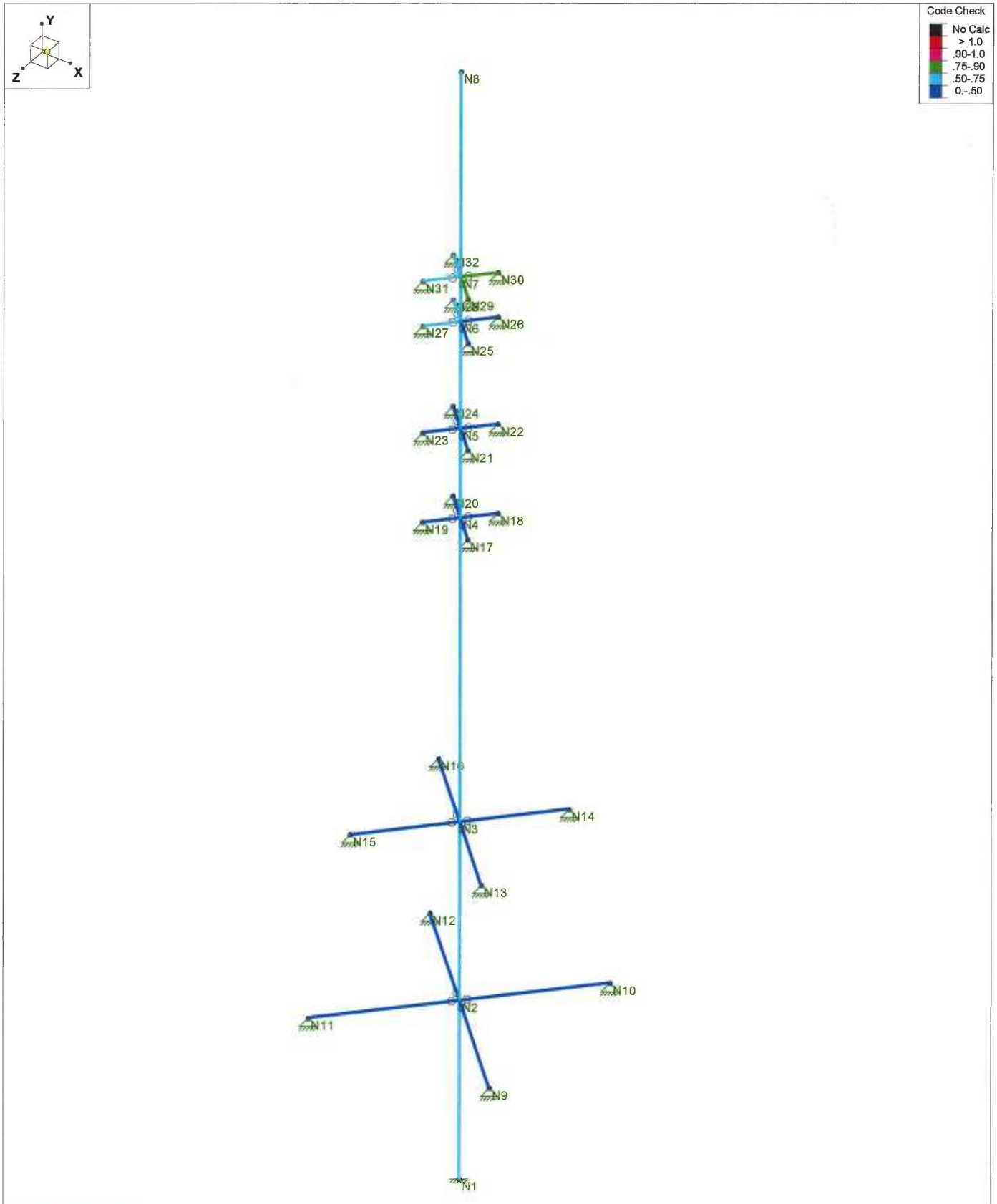
	Mem...	Shape	Code Check	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	Fa [...	Ft [...	Fb y...	Fb z...	...	C...	C...	AS...
1	M1	HSS18x...	.693	100.75	2	.139	100.75		2	2.621	25.2	27.72	27.72	1	.6	.85	H1-1
2	M2	L2.5x2.5x3	.534	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H2-1
3	M3	L2.5x2.5x3	.534	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H2-1
4	M4	L2.5x2.5x3	.808	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H1-1
5	M5	L2.5x2.5x3	.808	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H1-1
6	M6	L2.5x2.5x3	.576	0	2	.004	0	z	1	14.2...	21.6	- Co...					H1-1
7	M7	L2.5x2.5x3	.576	0	2	.004	0	z	1	14.2...	21.6	- Co...					H1-1
8	M8	L2.5x2.5x3	.380	0	2	.004	0	z	1	14.2...	21.6	- Co...					H2-1
9	M9	L2.5x2.5x3	.380	0	2	.004	0	z	1	14.2...	21.6	- Co...					H2-1
10	M10	L2.5x2.5x3	.041	0	2	.004	3.536	z	1	14.2...	21.6	- Co...					H1-1
11	M11	L2.5x2.5x3	.041	0	2	.004	3.536	z	1	14.2...	21.6	- Co...					H1-1
12	M12	L2.5x2.5x3	.027	0	2	.004	3.536	z	1	14.2...	21.6	- Co...					H2-1
13	M13	L2.5x2.5x3	.027	0	2	.004	0	z	1	14.2...	21.6	- Co...					H2-1
14	M14	L2.5x2.5x3	.030	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H2-1
15	M15	L2.5x2.5x3	.030	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H2-1
16	M16	L2.5x2.5x3	.046	3.536	2	.004	0	z	1	14.2...	21.6	- Co...					H1-1
17	M17	L2.5x2.5x3	.046	3.536	2	.004	3.536	z	1	14.2...	21.6	- Co...					H1-1
18	M18	L3.5x3.5x4	.014	10.253	2	.007	10.253	z	2	4.669	21.6	- Co...					H2-1
19	M19	L3.5x3.5x4	.014	10.253	2	.007	10.253	z	2	4.669	21.6	- Co...					H2-1
20	M20	L3.5x3.5x4	.067	10.253	2	.007	10.253	z	2	4.669	21.6	- Co...					H1-1
21	M21	L3.5x3.5x4	.067	10.253	2	.007	10.253	z	2	4.669	21.6	- Co...					H1-1
22	M22	L5x5x6	.005	14.142	2	.005	14.142	y	1	5.041	21.6	- Co...					H2-1
23	M23	L5x5x6	.005	14.142	2	.005	14.142	y	1	5.041	21.6	- Co...					H2-1
24	M24	L5x5x6	.024	14.142	2	.005	14.142	y	1	5.041	21.6	- Co...					H1-1
25	M25	L5x5x6	.024	14.142	2	.005	14.142	y	1	5.041	21.6	- Co...					H1-1

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.204	17.488	0	0	0	.796
2	1	N9	-.338	.116	-.203	0	0	0
3	1	N10	-.338	.116	.203	0	0	0
4	1	N11	-.338	.116	.203	0	0	0
5	1	N12	-.338	.116	-.203	0	0	0
6	1	N13	-.37	.045	-.273	0	0	0
7	1	N14	-.37	.045	.273	0	0	0
8	1	N15	-.37	.045	.273	0	0	0
9	1	N16	-.37	.045	-.273	0	0	0
10	1	N17	-.369	.009	-.339	0	0	0
11	1	N18	-.369	.009	.339	0	0	0
12	1	N19	-.369	.009	.339	0	0	0
13	1	N20	-.369	.009	-.339	0	0	0
14	1	N21	.278	.009	.309	0	0	0
15	1	N22	.278	.009	-.309	0	0	0
16	1	N23	.278	.009	-.309	0	0	0
17	1	N24	.278	.009	.309	0	0	0
18	1	N25	4.492	.009	4.522	0	0	0
19	1	N26	4.492	.009	-4.522	0	0	0
20	1	N27	4.492	.009	-4.522	0	0	0
21	1	N28	4.492	.009	4.522	0	0	0
22	1	N29	-6.373	.009	-6.343	0	0	0
23	1	N30	-6.373	.009	6.343	0	0	0
24	1	N31	-6.373	.009	6.343	0	0	0
25	1	N32	-6.373	.009	-6.343	0	0	0
26	1	Totals:	-10.92	18.275	0			
27	1	COG (ft):	X: 0	Y: 78.388	Z: 0			

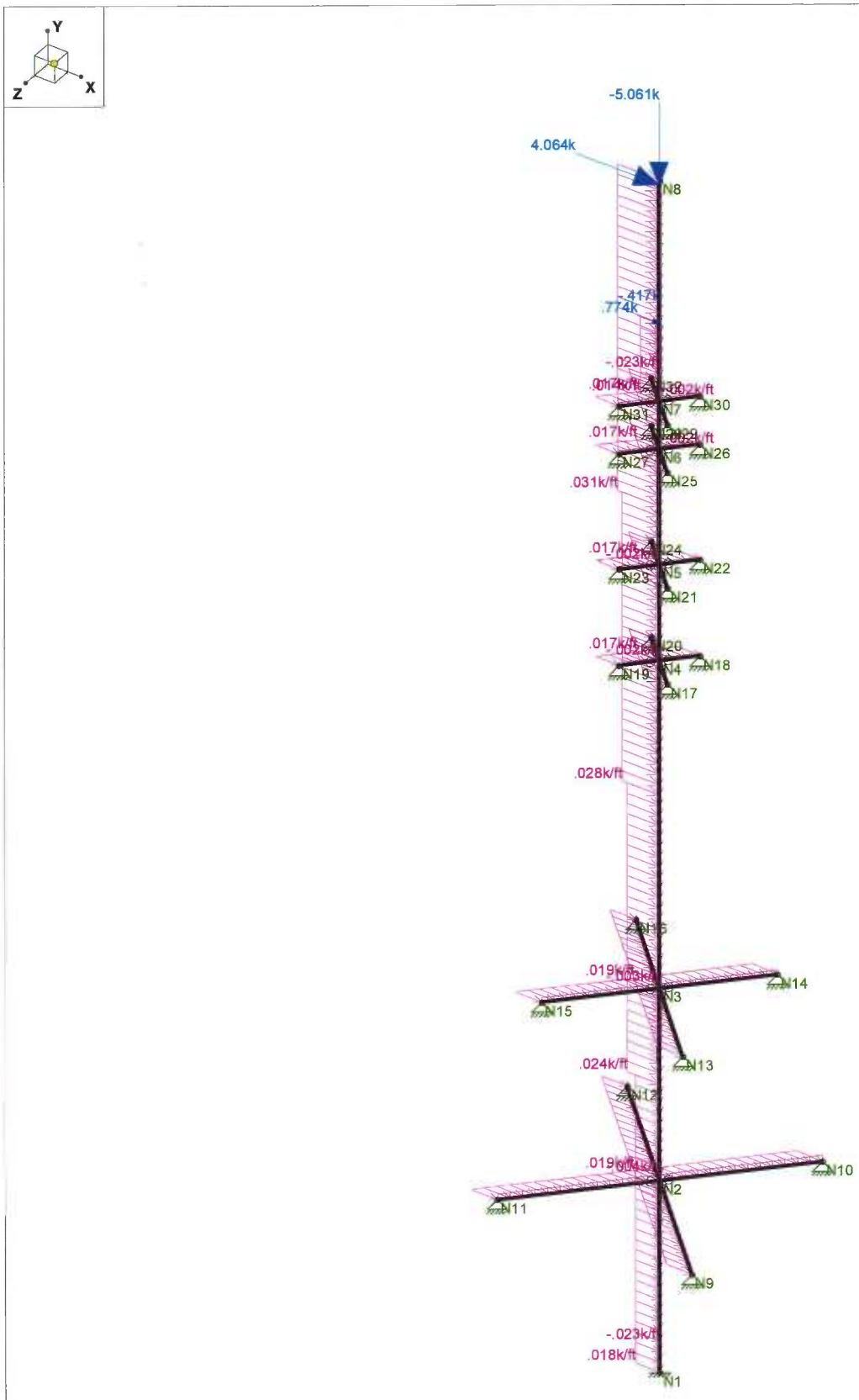
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.249	14.134	0	0	0	.971
2	2	N9	-.381	.088	-.232	0	0	0
3	2	N10	-.381	.088	.232	0	0	0
4	2	N11	-.381	.088	.232	0	0	0
5	2	N12	-.381	.088	-.232	0	0	0
6	2	N13	-.425	.03	-.322	0	0	0
7	2	N14	-.425	.03	.322	0	0	0
8	2	N15	-.425	.03	.322	0	0	0
9	2	N16	-.425	.03	-.322	0	0	0
10	2	N17	-.432	.005	-.404	0	0	0
11	2	N18	-.432	.005	.404	0	0	0
12	2	N19	-.432	.005	.404	0	0	0
13	2	N20	-.432	.005	-.404	0	0	0
14	2	N21	.332	.005	.361	0	0	0
15	2	N22	.332	.005	-.361	0	0	0
16	2	N23	.332	.005	-.361	0	0	0
17	2	N24	.332	.005	.361	0	0	0
18	2	N25	5.192	.005	5.22	0	0	0
19	2	N26	5.192	.005	-5.22	0	0	0
20	2	N27	5.192	.005	-5.22	0	0	0
21	2	N28	5.192	.005	5.22	0	0	0
22	2	N29	-7.358	.005	-7.329	0	0	0
23	2	N30	-7.358	.005	7.329	0	0	0
24	2	N31	-7.358	.005	7.329	0	0	0
25	2	N32	-7.358	.005	-7.329	0	0	0
26	2	Totals:	-12.532	14.691	0			
27	2	COG (ft):	X: 0	Y: 75.935	Z: 0			



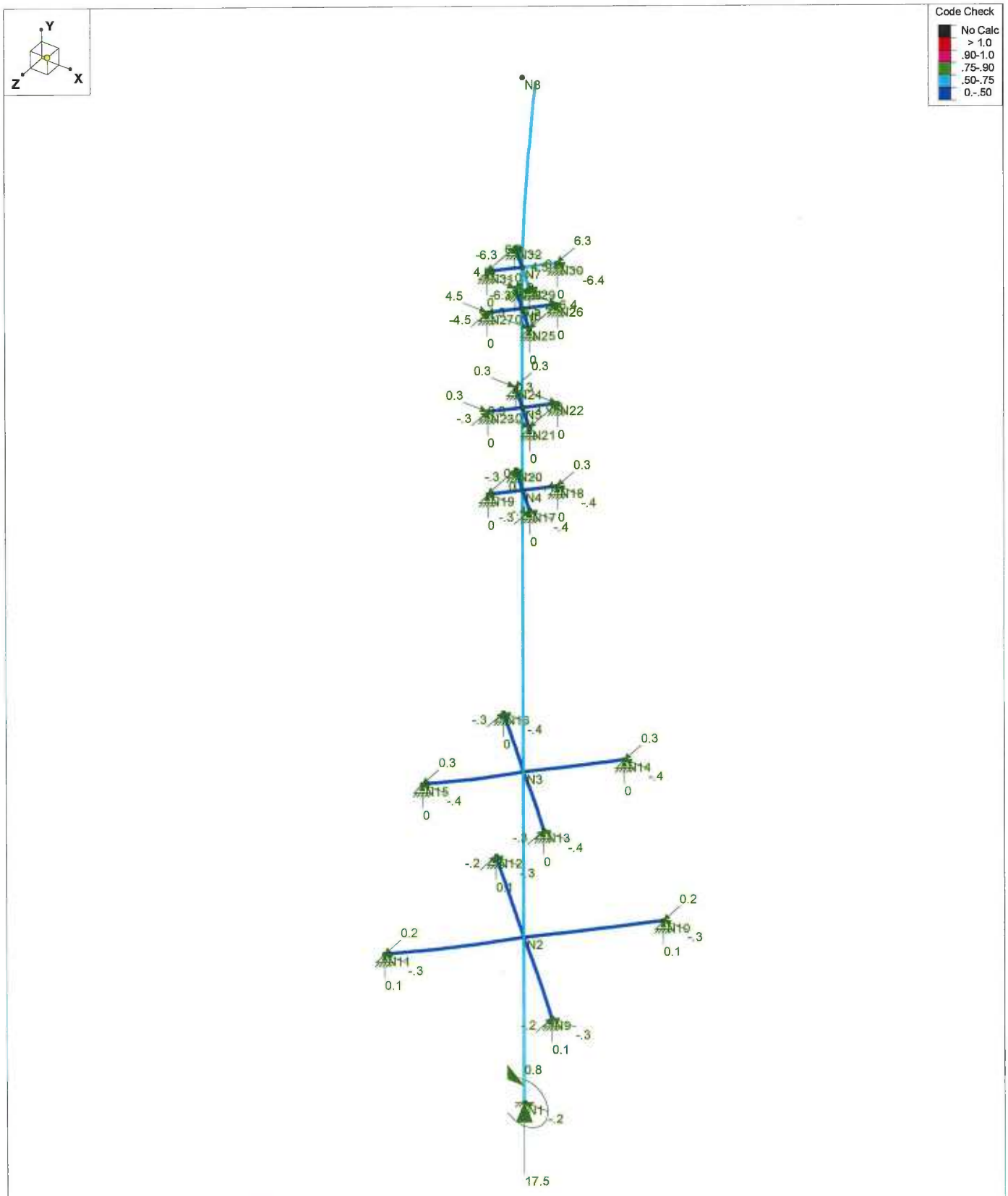
Solution: Envelope

CENTEK Engineering, INC.		
tjl, cfc	CL&P Pole # 1321 - Powermount	Jan 23, 2014 at 10:16 AM
13317.000 - CT11426A	Unity Check	EIA-TIA - Powermount.r3d



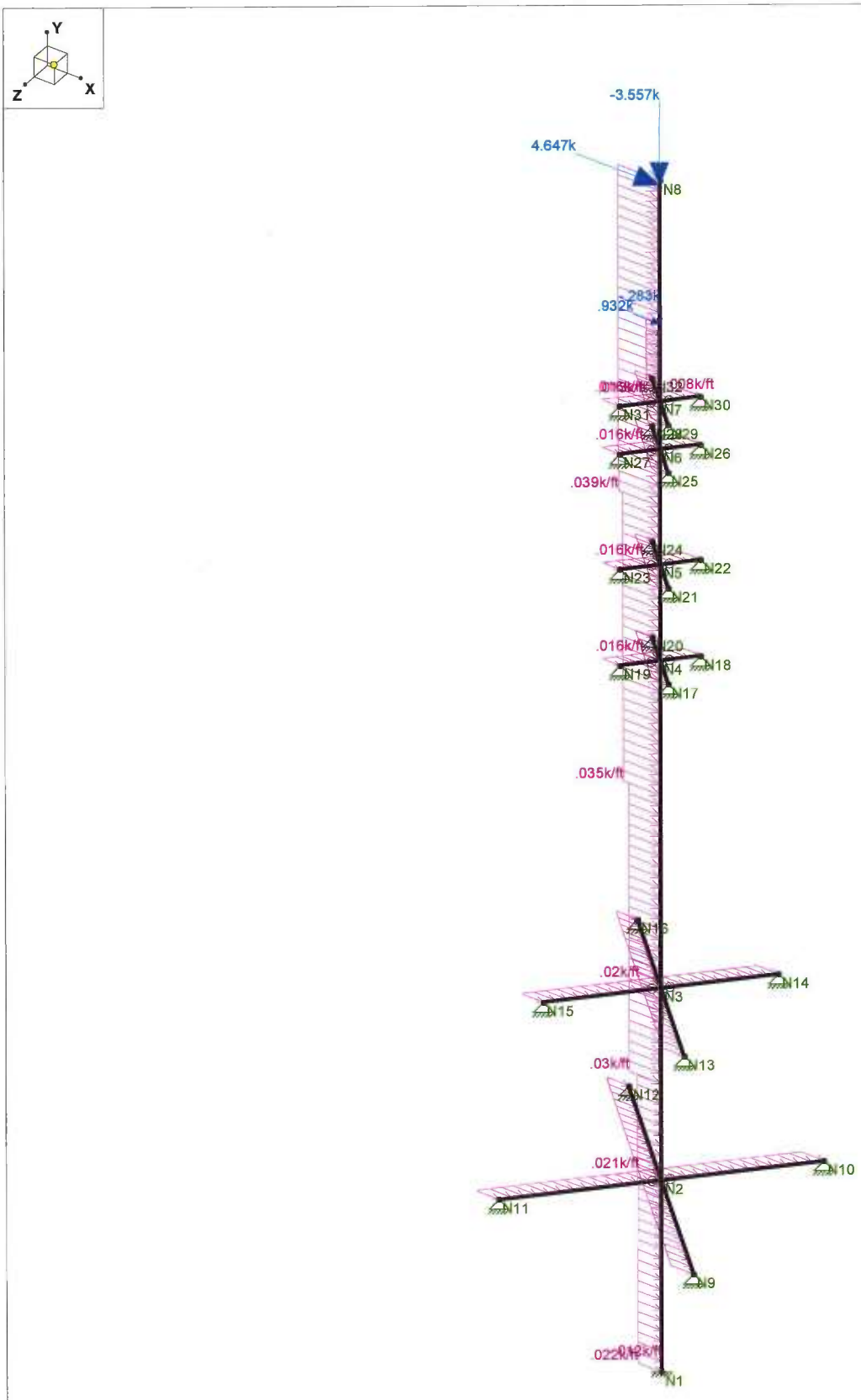
Loads: LC 1, TIA/EIA Wind + Ice on PCS Structure

CENTEK Engineering, INC.		
tjl, cfc	CL&P Pole # 1321 - Powermount	Jan 23, 2014 at 10:17 AM
13317.000 - CT11426A	LC #1 Loads	EIA-TIA - Powermount.r3d

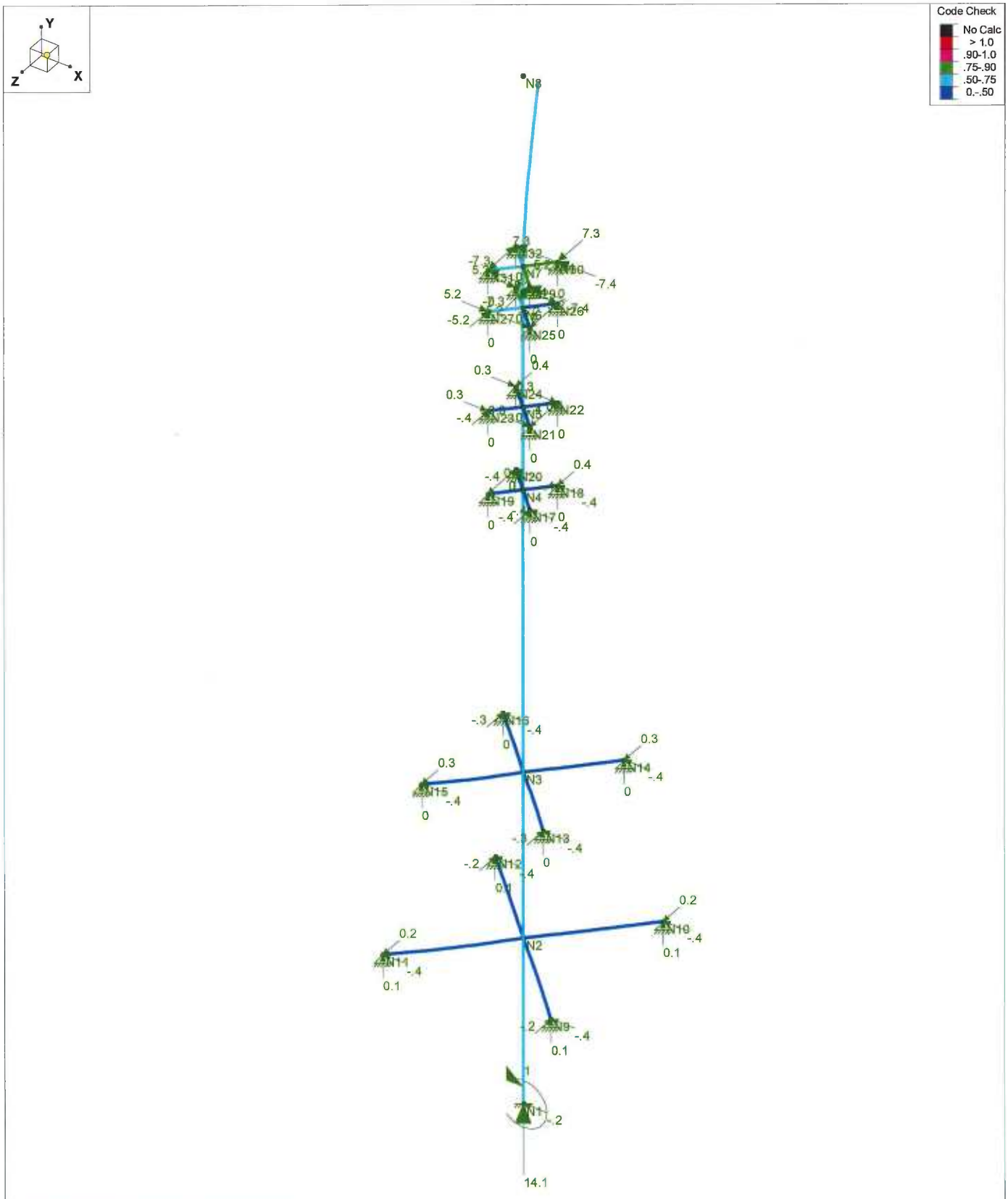


Results for LC 1, TIA/EIA Wind + Ice on PCS Structure
Z-moment Reaction units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	CL&P Pole # 1321 - Powermount	Jan 23, 2014 at 10:18 AM
13317.000 - CT11426A	LC # 1 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d



CENTEK Engineering, INC.		
tjl, cfc	CL&P Pole # 1321 - Powermount	Jan 23, 2014 at 10:17 AM
13317.000 - CT11426A	LC #2 Loads	EIA-TIA - Powermount.r3d



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

CENTEK Engineering, INC.		
tjl, cfc	CL&P Pole # 1321 - Powermount	Jan 23, 2014 at 10:19 AM
13317.000 - CT11426A	LC # 2 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

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

Subject:	Connection of Powermount to CL&P Tower # 1321
Location:	Stratford, CT
Rev. 1: 01/27/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

Powermount Connection to CL&P Tower:

Reactions:

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

Pipe Collar:

Bolt Data:

Bolt Type = ASTM A325 (User Input)

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

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

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

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

Plate Data:

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

Plate Thickness = $t_{plt} := 1.25 \cdot in$ (User Input)

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

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

Weld Data:

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

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

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

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

Check Pipe Collar Bolts:

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

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 56.16 \cdot \%$

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

$Bolt\_Tension = "OK"$

Check Pipe Collar Plate:

Allowable Bending Strength = $F_b := 0.75F_y = 27 \cdot ksi$

Plate Section Modulus = $S_{plt} := \frac{1}{6} \cdot W_{plt} \cdot t_{plt}^{2} = 1.302 \cdot in^{3}$

Plate Bending Moment = $M := \frac{Horz}{2} \cdot d_{st} = 27.125 \cdot in \cdot kips$

Plate Bending Stress = $f_b := \frac{M}{S_{plt}} = 20.832 \cdot ksi$

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

$Plate\_Bending = "OK"$

Check Pipe Collar Weld:

Allowable Weld Strength = $F_w := 0.3 \cdot F_w = 21 \cdot ksi$

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

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

Plate Stress = $f_w := \frac{Horz}{A_w \cdot n_w} = 14.031 \cdot ksi$

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

$Weld = "OK"$

Reactions:

Angle Brace Force =	Fab := 10.4·kips	(User Input)

Angle Plate:

Bolt Data:

Bolt Type =	ASTM A325	(User Input)
Bolt Diameter =	D := 0.75·in	(User Input)
Number of Bolts =	$N_b := 1$	(User Input)
Allowable Tensile Strength =	$F_t := 19.9 \cdot kips$	(User Input)
Allowable Shear Strength =	$F_v := 11.9 \cdot kips$	(User Input)

Plate Data:

Plate Width =	$W_{plt} := 3 \cdot in$	(User Input)
Plate Thickness =	$t_{plt} := 0.75 \cdot in$	(User Input)
Distance from Bolt to Collar =	$d_{st} := 1.5 \cdot in$	(User Input)
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)
Tensile Strength =	$F_u := 58 \cdot ksi$	(User Input)
Hole Diamter =	$Hole_d := .8125 \cdot in$	(User Input)

Weld Data:

Weld Size =	$sw := \frac{5}{16} \cdot in$	(User Input)
Weld Length =	$l_w := 3 \cdot in$	(User Input)
Number of Welds =	$n_w := 2$	(User Input)
Weld Strength =	$F_w := 70 \cdot ksi$	(User Input)

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 10.4 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 87.39 \cdot \%$

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

$Bolt\_Shear = "OK"$

Check Angle Connection Plate:

Plate Gross Area = $A_g := W_{plt} \cdot t_{plt} = 2.25 in^2$

Plate Net Area = $A_n := \left[W_{plt} - \left(Hole_d + .0625 \cdot in\right)\right] \cdot t_{plt} = 1.594 in^2$

Shear Lag Factor = $U := 1.0$

Plate Effective Net Area = $A_e := A_n \cdot U = 1.594 in^2$

Yielding Safety Factor = $\Omega_t := 1.67$

Rupture Safety Factor = $\Omega_r := 2.0$

Bearing Strength Safety Factor = $\Omega_b := 2.0$

Clear Distance = $l_c := d_{st} - \frac{Hole_d}{2} = 1.094 in$

Tensile Yielding = $P_{at} := \frac{F_y \cdot A_g}{\Omega_t} = 48.503 kips$

Tensile Rupture = $P_{ar} := \frac{F_u \cdot A_e}{\Omega_r} = 46.219 kips$

Bearing Strength = $R_a := \frac{1.2 \cdot l_c \cdot t_{plt} \cdot F_u}{\Omega_b} = 28.547 kips$

$Pa := \min\left(P_{at}, P_{ar}, R_a\right) = 28.547 kips$

$Plate := if\left(Fab < Pa, "OK", "Overstressed"\right)$

$Plate = "OK"$

Check Angle Connection Plate Weld:

Allowable Weld Strength = $F_w := 0.3 \cdot F_w = 21 \cdot ksi$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 0.663 \cdot in^2$

Plate Stress = $f_w := \frac{Fab}{A_w \cdot n_w} = 7.845 \cdot ksi$

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

$Weld = "OK"$

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

Subject:	Load Analysis of Powermount on CL&P Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

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 := 124	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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.324$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.303$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.826$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.853$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 35$ 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:

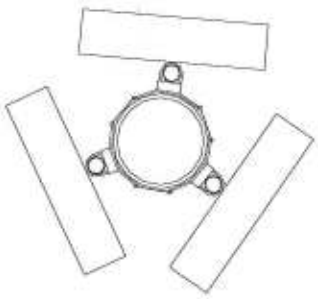
NESC Heavy Loading =	**1.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

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 Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)



Antenna Model =	RFS APX 16DWV-16DWVS-E-A20			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)	
Antenna Width =	$W_{ant} := 13.0$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 40.7$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$	sf	
Total Antenna Wind Force =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1059$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 106$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant1} := (WT_{ant} \cdot N_{ant}) = 122$	lbs	**BLC 2**

Gravity Load (ice only)

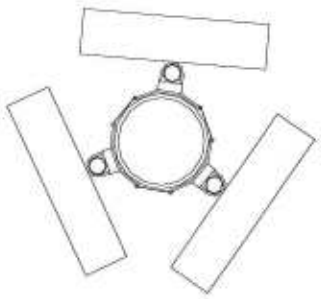
Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 99$	lbs	**BLC 3**

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

Subject:		Load Analysis of Powermount on CL&P Structure #1321
Location:		Stratford, CT
Rev. 0: 11/20/13		Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile)



Mount Type:	Microflect Tri-Sector Chain Mount w/ 3 Pipes			
Mount Shape =	Round		(User Input)	
Pipe Mount Length =	$L_{mnt} := 66$	in	(User Input)	
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)	
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)	
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)	
Tri Sector Chain Mount Weight =	$W_{tsc.mnt} := 101$	lbs	(User Input)	

Wind Load (NESC Extreme)

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area =	$A_{mnt} := 0.0$	sf	
Total Mount Wind Force =	$F_{mnt1} := qz \cdot Cd_F \cdot A_{mnt} \cdot m = 0$	lbs	BLC 5

Wind Load (NESC Heavy)

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area w/ Ice =	$A_{ICEmnt} := 0.0$	sf	
Total Mount Wind Force =	$Fi_{mnt1} := p \cdot Cd_F \cdot A_{ICEmnt} = 0$	lbs	BLC 4

Gravity Loads (without ice)

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

Weight Each Pipe Mount =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$	lbs	
Weight of All Mounts =	$Wt_{mnt1} := \left(WT_{mnt} \cdot N_{mnt}\right) = 60$	lbs	BLC 2

Gravity Load (ice only)

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

Volume of Each Pipe =	$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 292$	cu in	
Volume of Ice on Each Pipe =	$V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 307$	cu in	
Weight of Ice each mount (incl, hardware) =	$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot ld = 10$	lbs	
Weight of Ice on All Mounts =	$Wt_{ice.mnt1} := W_{ICEmnt} \cdot N_{mnt} = 30$	lbs	BLC 3

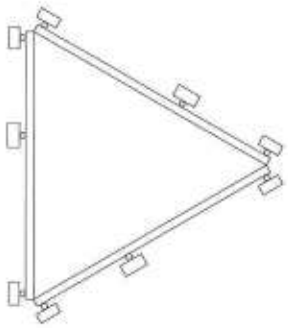
CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Powerwave 7770		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55$	in	(User Input)
Antenna Width =	$W_{ant} := 11$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 39$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 25.2$	sf	
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1764$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 179$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant2} := (WT_{ant} \cdot N_{ant}) = 234$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 196$	lbs	**BLC 3**

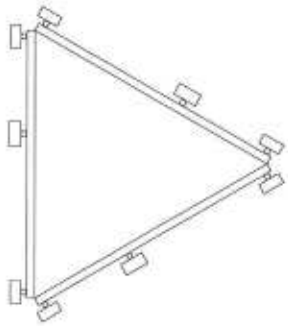
CENTEK engineering
Centered on Solutions
www.centekeng.com
63-2 North Branford Road
Branford, CT 06405
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Powerwave P65-16-XLH-RR		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 64$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18$	sf	
Total Antenna Wind Force =	$F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1259$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.8$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 127$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant3} := (WT_{ant} \cdot N_{ant}) = 192$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5184$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1459$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 47$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 142$	lbs	**BLC 3**

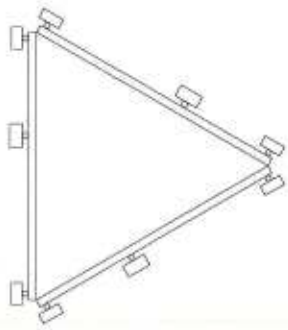
CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 9.2$	in	(User Input)
TMA Width =	$W_{TMA} := 14.4$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.6$	in	(User Input)
TMA Weight =	$WT_{TMA} := 14.1$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 12$		(User Input)



Wind Load (NESC Extreme Wind)

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

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 11$	sf	
Total TMA Wind Force =	$F_{TMA1} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 772$	lbs	BLC 5

Wind Load (NESC Heavy Wind)

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

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 13.1$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA1} := p \cdot Cd_F \cdot A_{ICETMA} = 84$	lbs	BLC 4

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA1} := (WT_{TMA} \cdot N_{TMA}) = 169$	lbs	BLC 2

Gravity Load (ice)

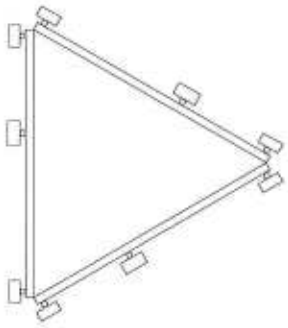
Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA1} := W_{ICETMA} \cdot N_{TMA} = 86$	lbs	BLC 3

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

Subject:		Load Analysis of Powermount on CL&P Structure #1321
Location:		Stratford, CT
Rev. 0: 11/20/13		Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)



TMA Model =	CCI DTMABP7819VG12A TMA			
TMA Shape =	Flat		(User Input)	
TMA Height =	$L_{TMA} := 14.25$	in	(User Input)	
TMA Width =	$W_{TMA} := 1.46$	in	(User Input)	
TMA Thickness =	$T_{TMA} := 4.17$	in	(User Input)	
TMA Weight =	$WT_{TMA} := 20$	lbs	(User Input)	
Number of TMA's =	$N_{TMA} := 3$		(User Input)	

Wind Load (NESC Extreme Wind)

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

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.1$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 0.4$	sf	
Total TMA Wind Force =	$F_{TMA2} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 30$	lbs	BLC 5

Wind Load (NESC Heavy Wind)

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

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 0.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 0.8$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA2} := p \cdot Cd_F \cdot A_{ICETMA} = 5$	lbs	BLC 4

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA2} := (WT_{TMA} \cdot N_{TMA}) = 60$	lbs	BLC 2

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 87$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 107$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 3$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA2} := W_{ICETMA} \cdot N_{TMA} = 10$	lbs	BLC 3

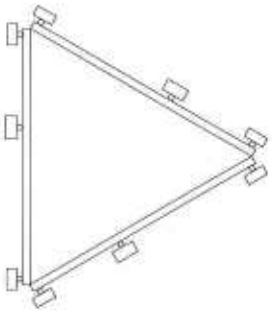
CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Structure #1321
Location:	Stratford, CT
Rev. 0: 11/20/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Development of Wind & Ice Load on Platform

Platform Data: (AT&T)

Platform Model =	10' Low Profile Platform		(User Input)
Platform Shape =	Flat		(User Input)
Platform Area =	$A_{plt} := 10.58$	sq ft	(User Input)
Platform Area w/ Ice =	$A_{ICEplt} := 13.38$	sq ft	(User Input)
Platform Weight =	$WT_{plt} := 2902$	lbs	(User Input)
Platform Weight w/ Ice =	$WT_{ICEplt} := 3953$	lbs	(User Input)



Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt2} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 740$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt2} := p \cdot Cd_F \cdot A_{ICEplt} = 86$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt2} := WT_{plt} = 2902$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt2} := WT_{ICEplt} - WT_{plt} = 1051$ lbs **BLC 3**

Total Equipment Loads:

AT&T @ 124-ft AGL

NESC Heavy Wind Vertical =

$$\left(Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{TMA1} + Wt_{ice.TMA1} + Wt_{TMA2} + Wt_{ice.TMA2} + Wt_{mnt2} + Wt_{ice.mnt2}\right)\cdot 1.5 = 7563$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant2} + Fi_{ant3} + Fi_{TMA1} + Fi_{TMA2} + Fi_{mnt2}\right)\cdot 2.5 = 1200$

NESC Extreme Wind Vertical = $\left(Wt_{ant2} + Wt_{ant3} + Wt_{TMA1} + Wt_{TMA2} + Wt_{mnt2}\right) = 3557$

NESC Extreme Wind Trasnsverse = $\left(F_{ant2} + F_{ant3} + F_{TMA1} + F_{TMA2} + F_{mnt2}\right) = 4566$

T-Mobile @ 109-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 467$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{mnt1}\right)\cdot 2.5 = 266$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{mnt1}\right) = 182$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{mnt1}\right) = 1059$

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

Subject:	Coax Cable on Powermount on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/22/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Coax Cable within Powermount

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 11.5 \\ 14 \\ 8.5 \\ 11 \\ 22 \\ 27 \\ 30 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

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

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

Extreme Wind Pressure = $qz := 35 \cdot psf$ *(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 = $W_{ice} := 0$

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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 205 \\ 249 \\ 151 \\ 196 \\ 392 \\ 481 \\ 535 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 137 \\ 166 \\ 101 \\ 131 \\ 261 \\ 321 \\ 356 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

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

Subject:	Coax Cable on CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 11/21/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13317.000

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 5 \\ 8 \\ 9 \\ 11 \\ 10 \\ 11 \\ 17 \\ 30 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

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

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 12$ *(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 = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 19.6 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 18.6 \cdot in$

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

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

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 172 \\ 275 \\ 310 \\ 379 \\ 344 \\ 379 \\ 585 \\ 1033 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 131 \\ 209 \\ 235 \\ 287 \\ 261 \\ 287 \\ 444 \\ 784 \end{pmatrix} lb$$

Extreme Vertical Load =

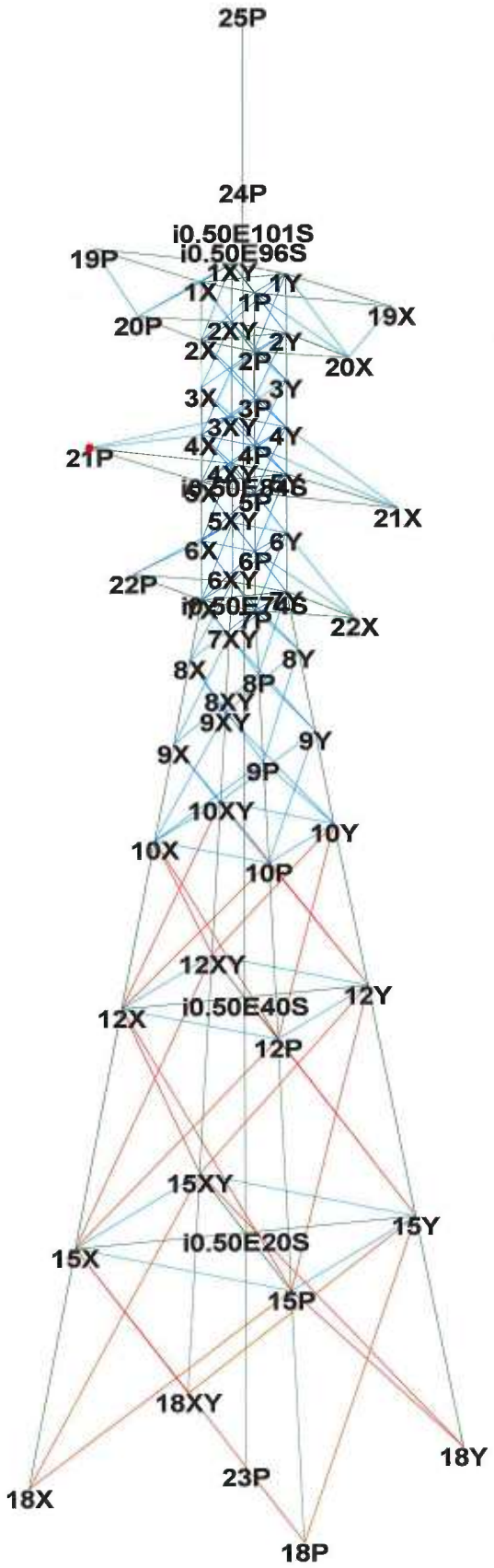
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 40 \\ 63 \\ 71 \\ 87 \\ 79 \\ 87 \\ 135 \\ 238 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 430 \\ 688 \\ 775 \\ 947 \\ 861 \\ 947 \\ 1463 \\ 2582 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p tower #1321"
Tower Version 12.50, 10:35:55 AM Tuesday, February 25, 2014
Undeformed geometry displayed



Project Name : 13317.000 - Stratford, CT
Project Notes: CL&P Structure # 1321/ T-Mobile CT11426A
Project File : J:\Jobs\1331700.WI\Structural\Backup Documentation\Calcs\Rev (2)\PLS Tower\cl&p tower #1321.tow
Date run : 10:34:32 AM Tuesday, February 25, 2014
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "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. ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??
Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 34 warnings. ??

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

Loads from file: j:\jobs\1331700.wi\structural\backup documentation\calcs\rev (2)\pls tower\cl&p # 1321.lca

*** Analysis Results:

Maximum element usage is 94.01% for Angle "g37X" in load case "NESC Extreme"
Maximum insulator usage is 17.09% for Clamp "Clamp28" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	18P	-7.24	-7.22	-53.05	10.22	0.24	0.11	0.26	0.02	0.00
NESC Heavy	23P	0.16	-1.02	-26.57	1.03	12.49	2.32	12.70	-0.64	0.00
NESC Heavy	18X	6.12	-7.79	31.31	9.91	0.32	0.04	0.33	0.01	0.00
NESC Heavy	18XY	-5.86	-6.34	30.13	8.63	0.21	-0.03	0.21	-0.04	0.00
NESC Heavy	18Y	6.82	-6.81	-50.03	9.64	0.18	0.10	0.21	-0.03	0.00
NESC Extreme	18P	-12.95	-13.38	-93.15	18.62	0.50	0.23	0.55	0.01	0.00
NESC Extreme	23P	0.42	-1.70	-10.65	1.76	23.19	5.84	23.92	-1.74	0.00
NESC Extreme	18X	12.63	-17.12	64.27	21.27	0.69	0.05	0.69	-0.01	0.00
NESC Extreme	18XY	-14.77	-15.02	76.44	21.06	0.29	-0.08	0.30	-0.09	0.00
NESC Extreme	18Y	9.99	-10.71	-73.35	14.65	0.32	0.26	0.41	-0.07	0.00

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

Load Case	Support Joint	Origin Joint	Member	Leg	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	18P	15P	g14X		54.028	0.096	0.098	-0.057	-0.080	-7.24	-7.22	-53.05
NESC Heavy	18X	15X	g14P		-32.614	3.865	3.931	-1.817	3.485	6.12	-7.79	31.31
NESC Heavy	18XY	15XY	g14Y		-31.224	2.738	2.788	1.721	2.194	-5.86	-6.34	30.13
NESC Heavy	18Y	15Y	g14XY		50.953	0.090	0.092	0.055	-0.073	6.82	-6.81	-50.03
NESC Extreme	18P	15P	g14X		94.995	0.581	0.589	0.137	0.573	-12.95	-13.38	-93.15
NESC Extreme	18X	15X	g14P		-67.106	8.959	9.106	-3.791	8.280	12.63	-17.12	64.27
NESC Extreme	18XY	15XY	g14Y		-79.053	6.084	6.198	4.256	4.506	-14.77	-15.02	76.44
NESC Extreme	18Y	15Y	g14XY		74.794	0.625	0.629	0.091	0.622	9.99	-10.71	-73.35

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)

3	124.000	74.000	42	147	0.00	5.00	192.500	0.00	20.50	629.500	Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??	
2	74.000	40.000	22	61	5.00	14.46	330.830	5.00	14.46	330.830		
1	40.000	0.000	15	34	14.46	25.50	799.600	14.46	25.50	799.600		

*** 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 Cont-rol	Usage In Comp.	Max Comp. Member	Comp. Force	Comp. Control Load Case	L/R Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R
				(ksi)		%		(kips)		(kips)	(kips)	(kips)				
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	65.89	Tens 61.72	g8X	-55.236	NESC Ext	89.489	166.500	210.937	1.000	1.000	1.000	60.36
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	78.32	Comp 78.32	g10X	-71.598	NESC Ext	91.422	166.500	210.937	1.000	1.000	1.000	71.33
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	75.60	Comp 75.60	g14X	-94.096	NESC Ext	124.467	199.800	303.750	0.333	0.333	0.333	68.42
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	56.35	Comp 56.35	g15P	-9.852	NESC Ext	17.484	33.300	25.312	0.500	0.750	0.500	106.07
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	26.60	Comp 26.60	g21P	-6.460	NESC Ext	24.281	33.300	33.750	0.500	0.750	0.500	97.34
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.77	Cross 34.77	g26Y	-8.433	NESC Ext	24.256	49.950	50.625	1.000	0.500	0.500	110.34
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	10.05	Cross 10.05	g28P	-2.831	NESC Ext	28.168	33.300	42.187	1.000	0.560	0.560	120.07
M1	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
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	32.23	Comp 32.23	g60X	-5.043	NESC Ext	15.646	33.300	33.750	1.000	0.500	0.500	164.79
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	25.77	Comp 25.77	g41P	-6.760	NESC Ext	26.226	33.300	33.750	1.000	1.000	1.000	113.64
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp 15.45	g42P	-4.806	NESC Hea	31.104	49.950	50.625	1.000	0.500	0.500	98.95
M5	L4x3x1/4	SAU	4X3X0.25	33.0	23.29	Comp 23.29	g62X	-6.703	NESC Ext	28.782	33.300	33.750	1.000	0.500	0.500	135.56
M6	L4x4x1/4	SAE	4X4X0.25	33.0	28.31	Comp 28.31	g63P	-5.824	NESC Ext	20.575	33.300	33.750	1.000	0.500	0.500	192.00
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.59	Comp 24.59	g45P	-1.760	NESC Hea	7.160	16.650	12.656	1.000	1.000	1.000	179.95
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.91	Tens 0.00	g50Y	0.000		3.334	33.300	33.750	1.000	1.000	1.000	358.34
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	94.01	Tens 57.62	g33P	-2.495	NESC Hea	4.330	33.300	33.750	0.580	0.790	0.580	309.85
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	83.05	Tens 61.16	g57X	-7.181	NESC Ext	11.742	16.650	12.656	1.000	1.000	1.000	140.52

Group KL/R	Length	Curve	No. Of Bolts	No. Of Comp. Member
Leg1	60.36	5.000	1	10
Leg2	71.33	7.133	1	10
Leg3	68.42	20.375	1	12
Diag1	109.55	7.071	2	2
Diag2	103.01	6.403	2	2
Diag3	115.17	7.071	3	3
Diag4	120.04	7.614	6	2
M1	0.00	0.000	0	0
M2	147.54	10.560	6	2
M3	116.82	5.000	3	2
M4	109.48	7.669	3	3
M5	129.57	14.460	6	2
M6	164.28	20.000	6	2
M7	179.95	6.403	4	1
M8	301.66	12.661	5	2
Diag5	264.71	18.876	5	2
M9				

140.52 5.000 4 1
M10 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 33.0 85.54 Tens 80.39 g70Y -8.479NESC Ext 20.689 16.800 10.547 1.000 1.000 1.000 85.71
102.85 3.536 3 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g70X g70XY ??
M11 L5x5x3/8 SAE 5X5X0.375 33.0 27.29 Comp 27.29 g65XY -4.585NESC Ext 35.163 16.800 21.094 1.000 1.000 1.000 171.42
171.42 14.142 4 1
M12 L3.5x3.5x1/4 SAE 3.5X3.5X0.25 33.0 22.05 Comp 22.05 g66Y -3.101NESC Ext 15.475 16.800 14.062 1.000 1.000 1.000 176.80
176.80 10.225 4 1
PM Powermount Pwmnt Pipe 18" Std. 50.0 2.80 Comp 2.80 g71P -25.400NESC Hea 907.332 0.000 0.000 1.000 1.000 1.000 38.46
38.46 20.000 1 0
M13 L4x3x1/4 SAU 4X3X0.25 33.0 15.61 Comp 15.61 g47P -5.310NESC Hea 34.023 66.600 67.500 1.000 0.500 0.500 112.62
116.31 12.013 3 4
M14 Bar 2-1/2 x 1/4 Bar 2x1/4 33.0 30.31 Tens 0.00 g58Y 0.000 14.788 33.300 33.750 1.000 1.000 1.000 60.00
60.00 5.000 1 2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Member (ft)	No. Of Bolts Tens.	No. Of Holes Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	65.89	Tens	65.89	g8Y	46.203NESC Ext		70.122	166.500	210.937	183.823	5.000	10	3.310 0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	78.32	Comp	70.59	g10Y	63.946NESC Ext		90.582	166.500	210.937	183.823	7.133	10	3.310 0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	75.60	Comp	65.32	g14Y	70.568NESC Ext		108.039	199.800	303.750	281.250	20.375	12	3.310 0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	56.35	Comp	50.08	g15XY	9.608NESC Ext		19.184	33.300	25.312	21.094	7.071	2	1.000 0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	26.60	Comp	25.73	g21XY	6.428NESC Ext		24.985	33.300	33.750	26.766	6.403	2	1.000 0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.77	Cross	27.31	g23X	7.878NESC Ext		28.846	49.950	50.625	42.187	7.071	3	1.000 0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	10.05	Cross	10.02	g28X	3.335NESC Ext		35.241	33.300	42.187	35.156	7.614	2	1.000 0.875
M1	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
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	32.23	Comp	4.90	g60P	1.078NESC Ext		28.846	33.300	33.750	21.984	10.560	2	1.000 0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	25.77	Comp	19.60	g41X	5.763NESC Ext		32.410	33.300	33.750	29.412	5.000	2	1.000 0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	6.80	g40Y	3.233NESC Hea		47.520	0.000	0.000	0.000	5.000	0	0.000 0
M5	L4x3x1/4	SAU	4X3X0.25	33.0	23.29	Comp	8.35	g62P	2.093NESC Ext		36.271	33.300	33.750	25.078	14.460	2	1.000 0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	28.31	Comp	11.77	g64P	3.310NESC Ext		44.624	33.300	33.750	28.125	20.000	2	2.000 0.875
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.59	Comp	21.38	g46P	3.856NESC Hea		19.184	33.300	25.312	18.035	9.155	2	1.000 0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.91	Tens	20.91	g50XY	4.597NESC Hea		24.985	33.300	33.750	21.984	12.661	2	1.000 0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	94.01	Tens	94.01	g37X	11.149NESC Ext		24.985	16.650	16.875	11.859	30.416	1	1.000

0.875																
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	83.05	Tens	83.05	g57P	7.387NESC Ext	19.184	16.650	12.656	8.895	5.000	1	1.000
0.875																
M10	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**33.0**	**85.54**	**Tens**	**85.54**	**g70XY**	**9.022NESC Ext**	**22.961**	**16.800**	**10.547**	**11.719**	**3.536**	**1**	**1.000**
0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??																
M11	L5x5x3/8	SAE	5X5X0.375	33.0	27.29	Comp	0.00	g65Y	0.000	99.560	16.800	21.094	23.437	14.142	1	1.000
0.6875																
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	22.05	Comp	0.00	g66Y	0.000	45.088	16.800	14.062	15.625	10.225	1	1.000
0.6875																
PM	Powermount Pwmnt		Pipe 18" Std.	50.0	2.80	Comp	0.00	g78P	0.000	969.998	0.000	0.000	0.000	15.000	0	0.000
0																
M13	L4x3x1/4	SAU	4X3X0.25	33.0	15.61	Comp	1.23	g47XY	0.539NESC Ext	43.696	66.600	67.500	56.250	12.013	4	1.000
0.875																
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	33.0	30.31	Tens	30.31	g51P	2.813NESC Hea	9.281	33.300	33.750	28.125	5.000	2	1.000
0.875																

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	57.62	g33P	Angle
NESC Extreme	94.01	g37X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.64	NESC Heavy	0.0
Clamp2	Clamp	3.44	NESC Heavy	0.0
Clamp3	Clamp	6.81	NESC Heavy	0.0
Clamp4	Clamp	6.73	NESC Heavy	0.0
Clamp5	Clamp	6.91	NESC Heavy	0.0
Clamp6	Clamp	6.85	NESC Heavy	0.0
Clamp7	Clamp	6.78	NESC Heavy	0.0
Clamp8	Clamp	6.71	NESC Heavy	0.0
Clamp9	Clamp	1.92	NESC Extreme	0.0
Clamp10	Clamp	2.09	NESC Extreme	0.0
Clamp11	Clamp	3.45	NESC Extreme	0.0
Clamp12	Clamp	2.71	NESC Extreme	0.0
Clamp13	Clamp	2.88	NESC Extreme	0.0
Clamp14	Clamp	5.68	NESC Extreme	0.0
Clamp15	Clamp	6.85	NESC Extreme	0.0
Clamp17	Clamp	2.05	NESC Heavy	0.0
Clamp18	Clamp	2.34	NESC Heavy	0.0
Clamp19	Clamp	3.11	NESC Heavy	0.0
Clamp20	Clamp	5.96	NESC Heavy	0.0
Clamp21	Clamp	7.72	NESC Heavy	0.0
Clamp22	Clamp	7.18	NESC Heavy	0.0
Clamp23	Clamp	1.41	NESC Extreme	0.0
Clamp24	Clamp	0.61	NESC Extreme	0.0

Clamp25	Clamp	0.61	NESC Extreme	0.0
Clamp26	Clamp	0.61	NESC Extreme	0.0
Clamp27	Clamp	4.25	NESC Heavy	0.0
Clamp28	Clamp	17.09	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	23724.7
Total:	23724.7

*** End of Report

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

Project Name : 13317.000 - Stratford, CT
Project Notes: CL&P Structure # 1321/ T-Mobile CT11426A
Project File : J:\Jobs\1331700.WI\Structural\Backup Documentation\Calcs\Rev (2)\PLS Tower\cl&p tower #1321.tow
Date run     : 10:34:31 AM Tuesday, February 25, 2014
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "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. ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??
```

KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??
Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 34 warnings. ??

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

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	2.5	2.5	101	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	96	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	2.5	92	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2.5	2.5	88	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	84	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	79	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	2.5	2.5	74	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.2	3.2	69	Free	Free	Free	Free	Free	Free

9P	XY-Symmetry	4.17	4.17	62	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	5.28	5.28	54	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	7.23	7.23	40	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	10	10	20	Free	Free	Free	Free	Free	Free
18P	XY-Symmetry	12.75	12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19P	X-Symmetry	0	-13.75	101	Free	Free	Free	Free	Free	Free
20P	X-Symmetry	0	-9.75	96	Free	Free	Free	Free	Free	Free
21P	X-Symmetry	0	-14.25	84	Free	Free	Free	Free	Free	Free
22P	X-Symmetry	0	-10.25	74	Free	Free	Free	Free	Free	Free
23P	None	0	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
24P	None	0	0	109	Free	Free	Free	Free	Free	Free
25P	None	0	0	124	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	-2.5	101	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	101	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	101	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2.5	-2.5	96	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	96	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	96	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	92	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	92	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	92	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	88	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	88	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	88	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	84	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	84	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	84	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	79	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	79	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	79	Free	Free	Free	Free	Free	Free
7X	X-GenXY	2.5	-2.5	74	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-2.5	-2.5	74	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-2.5	2.5	74	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.2	-3.2	69	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.2	-3.2	69	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.2	3.2	69	Free	Free	Free	Free	Free	Free
9X	X-GenXY	4.17	-4.17	62	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-4.17	-4.17	62	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-4.17	4.17	62	Free	Free	Free	Free	Free	Free
10X	X-GenXY	5.28	-5.28	54	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-5.28	-5.28	54	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-5.28	5.28	54	Free	Free	Free	Free	Free	Free
12X	X-GenXY	7.23	-7.23	40	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-7.23	-7.23	40	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-7.23	7.23	40	Free	Free	Free	Free	Free	Free
15X	X-GenXY	10	-10	20	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-10	-10	20	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-10	10	20	Free	Free	Free	Free	Free	Free
18X	X-GenXY	12.75	-12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18XY	XY-GenXY	-12.75	-12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18Y	Y-GenXY	-12.75	12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19X	X-Gen	0	13.75	101	Free	Free	Free	Free	Free	Free
20X	X-Gen	0	9.75	96	Free	Free	Free	Free	Free	Free
21X	X-Gen	0	14.25	84	Free	Free	Free	Free	Free	Free
22X	X-Gen	0	10.25	74	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint	Symmetry Origin	End Fraction	Elevation	X Disp.	Y Disp.	Z Disp.	X Rot.	Y Rot.	Z Rot.

Label	Code	Joint	Joint	(ft)		Rest.	Rest.	Rest.	Rest.	Rest.	Rest.
i0.50E20S	None	15X	15Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E40S	None	12X	12Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E74S	None	7X	7Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E84S	None	5X	5Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E96S	None	2XY	2P	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E101S	None	1XY	1P	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 63 primary and 6 secondary joints for a total of 69 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A7	2.9e+004	33	60	0	0	0	0	0	0
A500-50	2.9e+004	50	62	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
3/4 A394 TYPE0 N	0.75	0.875	16.65	1.35	1.8	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
3/4 A394 TYPE0 N	550
5/8 A325	24

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	6X6X0.3125	6	6	0.3125	12.5	3.65	16.6	1.89	1.89	1.2	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	5X5X0.3125	5	5	0.3125	10.3	3.03	13.4	1.57	1.57	0.994	1	5	2.5	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.3125	2.5	2.5	0.3125	5	1.46	6	0.761	0.761	0.489	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
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	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0

SAU	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
Pwmnt	Pipe 18" Std.	18	17.25	0	70.66	19.4	1	6.24	6.24	6.24	1	18	0	0	0.0000	0
Bar	2x1/4	2	0	0.25	1.7	0.5	8	1	1	1	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. Add. Angle Width For Optimize (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	A7	Beam	Leg	None	0.000
Leg2	L6x6x5/16	SAE	6X6X0.3125	A7	Beam	Leg	None	0.000
Leg3	L6x6x3/8	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	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	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	Truss	Crossing Diagonal	None	0.000
M1	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Beam	Other	None	0.000
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
M3	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
M4	L3x3x1/4	SAE	3X3X0.25	A7	Beam	Other	None	0.000
M5	L4x3x1/4	SAU	4X3X0.25	A7	Truss	Other	None	0.000
M6	L4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None	0.000
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
M8	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Other	None	0.000
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
M10	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Beam	Other	None	0.000
M11	L5x5x3/8	SAE	5X5X0.375	A7	Beam	Other	None	0.000
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
PM	Powermount	Pwmnt	Pipe 18" Std.	A500-50	Beam	Other	None	0.000
M13	L4x3x1/4	SAU	4X3X0.25	A7	Beam	Other	None	0.000
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	A7	Truss	Other	None	0.000

Aggregate Angle Information:

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

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	5X5X0.3125	A7	108.00	180.00	1112.40
SAE	6X6X0.3125	A7	48.92	97.84	611.51
SAE	6X6X0.375	A7	252.70	505.41	3765.30
SAU	2.5X2X0.1875	A7	164.22	123.16	451.60
SAU	2.5X2X0.25	A7	811.00	608.25	2935.83
SAE	2.5X2.5X0.25	A7	336.51	280.43	1379.70
SAE	2.5X2.5X0.3125	A7	60.92	50.76	304.58
SAE	3X3X0.25	A7	139.35	139.35	682.80
SAU	3X2.5X0.25	A7	40.00	36.67	180.00
SAU	4X3X0.25	A7	115.89	135.21	672.17
Bar	2x1/4	A7	20.00	6.67	34.00
SAE	4X4X0.25	A7	80.00	106.67	528.00
SAE	5X5X0.375	A7	56.57	94.28	695.79
SAE	3.5X3.5X0.25	A7	40.90	47.72	237.21

SAE 2.5X2.5X0.1875	A7	56.57	47.14	173.67		
Pwmnt Pipe 18" Std.	A500-50	124.00	728.50	8761.84		

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
3	7X	1.050	3.300	3.300	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
2	12X	1.000	3.200	3.200	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
1	18X	1.100	3.400	3.400	1.000	1.000	0.000	0.000	0.000	0.000	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 Bolt Spacing (in)	End Shear Label Path	End Tension Label Path	Rest. Coef.	Length (in)	Length (in)
g3P	Leg1		XY-Symmetry	1X	2X	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g3X	Leg1		X-GenXY	1P	2P	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g3XY	Leg1		XY-GenXY	1Y	2Y	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g3Y	Leg1		Y-GenXY	1XY	2XY	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g4P	Leg1		XY-Symmetry	2X	3X	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g4X	Leg1		X-GenXY	2P	3P	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g4XY	Leg1		XY-GenXY	2Y	3Y	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g4Y	Leg1		Y-GenXY	2XY	3XY	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g5P	Leg1		XY-Symmetry	3X	4X	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g5X	Leg1		X-GenXY	3P	4P	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g5XY	Leg1		XY-GenXY	3Y	4Y	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g5Y	Leg1		Y-GenXY	3XY	4XY	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g6P	Leg1		XY-Symmetry	4X	5X	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g6X	Leg1		X-GenXY	4P	5P	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g6XY	Leg1		XY-GenXY	4Y	5Y	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0
g6Y	Leg1		Y-GenXY	4XY	5XY	1	4	1	1	1 3/4	A394 TYPE0 N	0	4	0		0	0	0	0	0	0	0	0

0		0		0	0																				
	g7P	Leg1		XY-Symmetry		5X	6X	1	4	1	1	1	3/4	A394	TYPE0	N	0	4	0		0	0			
0		0		0	0																				
	g7X	Leg1			X-GenXY	5P	6P	1	4	1	1	1	3/4	A394	TYPE0	N	0	4	0		0	0			
0		0		0	0																				
	g7XY	Leg1			XY-GenXY	5Y	6Y	1	4	1	1	1	3/4	A394	TYPE0	N	0	4	0		0	0			
0		0		0	0																				
	g7Y	Leg1			Y-GenXY	5XY	6XY	1	4	1	1	1	3/4	A394	TYPE0	N	0	4	0		0	0			
0		0		0	0																				
	g8P	Leg1		XY-Symmetry		6X	7X	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g8X	Leg1			X-GenXY	6P	7P	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g8XY	Leg1			XY-GenXY	6Y	7Y	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g8Y	Leg1			Y-GenXY	6XY	7XY	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g9P	Leg2		XY-Symmetry		7X	8X	1	4	1	1	1	3/4	A394	TYPE0	N	0	2.36	0		0	0			
0		0		0	0																				
	g9X	Leg2			X-GenXY	7P	8P	1	4	1	1	1	3/4	A394	TYPE0	N	0	2.36	0		0	0			
0		0		0	0																				
	g9XY	Leg2			XY-GenXY	7Y	8Y	1	4	1	1	1	3/4	A394	TYPE0	N	0	2.36	0		0	0			
0		0		0	0																				
	g9Y	Leg2			Y-GenXY	7XY	8XY	1	4	1	1	1	3/4	A394	TYPE0	N	0	2.36	0		0	0			
0		0		0	0																				
	g10P	Leg2		XY-Symmetry		8X	9X	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g10X	Leg2			X-GenXY	8P	9P	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g10XY	Leg2			XY-GenXY	8Y	9Y	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g10Y	Leg2			Y-GenXY	8XY	9XY	1	4	1	1	1	3/4	A394	TYPE0	N	10	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g11P	Leg3		XY-Symmetry		9X	10X	1	4	1	1	1	3/4	A394	TYPE0	N	0	3	0		0	0			
0		0		0	0																				
	g11X	Leg3			X-GenXY	9P	10P	1	4	1	1	1	3/4	A394	TYPE0	N	0	3	0		0	0			
0		0		0	0																				
	g11XY	Leg3			XY-GenXY	9Y	10Y	1	4	1	1	1	3/4	A394	TYPE0	N	0	3	0		0	0			
0		0		0	0																				
	g11Y	Leg3			Y-GenXY	9XY	10XY	1	4	1	1	1	3/4	A394	TYPE0	N	0	3	0		0	0			
0		0		0	0																				
	g12P	Leg3		XY-Symmetry		10X	12X	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375			
1.25		3	0	0	0																				
	g12X	Leg3			X-GenXY	10P	12P	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375			
1.25		3	0	0	0																				
	g12XY	Leg3			XY-GenXY	10Y	12Y	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375			
1.25		3	0	0	0																				
	g12Y	Leg3			Y-GenXY	10XY	12XY	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375			
1.25		3	0	0	0																				
	g13P	Leg3		XY-Symmetry		12X	15X	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g13X	Leg3			X-GenXY	12P	15P	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g13XY	Leg3			XY-GenXY	12Y	15Y	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g13Y	Leg3			Y-GenXY	12XY	15XY	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1	3			
1.25		3	0	0	0																				
	g14P	Leg3		XY-Symmetry		15X	18X	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375			
1.25		3	0	0	0																				

g14X	Leg3		X-GenXY	15P	18P	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375					
1.25	3	0	0	0																						
g14XY	Leg3		XY-GenXY	15Y	18Y	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375					
1.25	3	0	0	0																						
g14Y	Leg3		Y-GenXY	15XY	18XY	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375					
1.25	3	0	0	0																						
g15P	Diag1		XY-Symmetry	1X	2P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g15X	Diag1		X-GenXY	1P	2X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g15XY	Diag1		XY-GenXY	1Y	2XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g15Y	Diag1		Y-GenXY	1XY	2Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g16P	Diag1		XY-Symmetry	1P	2Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g16X	Diag1		X-GenXY	1X	2XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g16XY	Diag1		XY-GenXY	1XY	2X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g16Y	Diag1		Y-GenXY	1Y	2P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.8125	0	0	0																						
g17P	Diag2		XY-Symmetry	2X	3P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g17X	Diag2		X-GenXY	2P	3X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g17XY	Diag2		XY-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g17Y	Diag2		Y-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g18P	Diag2		XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g18X	Diag2		X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g18XY	Diag2		XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g18Y	Diag2		Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g19P	Diag2		XY-Symmetry	3X	4P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g19X	Diag2		X-GenXY	3P	4X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g19XY	Diag2		XY-GenXY	3Y	4XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g19Y	Diag2		Y-GenXY	3XY	4Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g20P	Diag2		XY-Symmetry	3P	4Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g20X	Diag2		X-GenXY	3X	4XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g20XY	Diag2		XY-GenXY	3XY	4X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g20Y	Diag2		Y-GenXY	3Y	4P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g21P	Diag2		XY-Symmetry	4X	5P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g21X	Diag2		X-GenXY	4P	5X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					
1.125	2.5313	0	0	0																						
g21XY	Diag2		XY-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					

1.125 2.5313	0	0 0																	
g21Y Diag2		Y-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125 2.5313	0	0 0																	
g22P Diag2		XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125 2.5313	0	0 0																	
g22X Diag2		X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125 2.5313	0	0 0																	
g22XY Diag2		XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125 2.5313	0	0 0																	
g22Y Diag2		Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125 2.5313	0	0 0																	
g23P Diag3		XY-Symmetry	5X	6P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g23X Diag3		X-GenXY	5P	6X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g23XY Diag3		XY-GenXY	5Y	6XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g23Y Diag3		Y-GenXY	5XY	6Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g24P Diag3		XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g24X Diag3		X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g24XY Diag3		XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g24Y Diag3		Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g25P Diag3		XY-Symmetry	6X	7P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g25X Diag3		X-GenXY	6P	7X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g25XY Diag3		XY-GenXY	6Y	7XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g25Y Diag3		Y-GenXY	6XY	7Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g26P Diag3		XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g26X Diag3		X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g26XY Diag3		XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g26Y Diag3		Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125 2.8125	0	0 0																	
g27P Diag4		XY-Symmetry	7X	8P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g27X Diag4		X-GenXY	7P	8X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g27XY Diag4		XY-GenXY	7Y	8XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g27Y Diag4		Y-GenXY	7XY	8Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g28P Diag4		XY-Symmetry	7P	8Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g28X Diag4		X-GenXY	7X	8XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g28XY Diag4		XY-GenXY	7XY	8X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	
g28Y Diag4		Y-GenXY	7Y	8P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125 3.0625	0	0 0																	

g29P Diag3		XY-Symmetry	8X	9P	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g29X Diag3		X-GenXY	8P	9X	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g29XY Diag3		XY-GenXY	8Y	9XY	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g29Y Diag3		Y-GenXY	8XY	9Y	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g30P Diag3		XY-Symmetry	8P	9Y	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g30X Diag3		X-GenXY	8X	9XY	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g30XY Diag3		XY-GenXY	8XY	9X	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g30Y Diag3		Y-GenXY	8Y	9P	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0																
g31P Diag3		XY-Symmetry	9X	10P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g31X Diag3		X-GenXY	9P	10X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g31XY Diag3		XY-GenXY	9Y	10XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g31Y Diag3		Y-GenXY	9XY	10Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g32P Diag3		XY-Symmetry	9P	10Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g32X Diag3		X-GenXY	9X	10XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g32XY Diag3		XY-GenXY	9XY	10X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g32Y Diag3		Y-GenXY	9Y	10P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0																
g33P Diag5		XY-Symmetry	10X	12P	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g33X Diag5		X-GenXY	10P	12X	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g33XY Diag5		XY-GenXY	10Y	12XY	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g33Y Diag5		Y-GenXY	10XY	12Y	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g34P Diag5		XY-Symmetry	10P	12Y	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g34X Diag5		X-GenXY	10X	12XY	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g34XY Diag5		XY-GenXY	10XY	12X	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g34Y Diag5		Y-GenXY	10Y	12P	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0																
g35P Diag5		XY-Symmetry	12X	15P	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0																
g35X Diag5		X-GenXY	12P	15X	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0																
g35XY Diag5		XY-GenXY	12Y	15XY	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0																
g35Y Diag5		Y-GenXY	12XY	15Y	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0																
g36P Diag5		XY-Symmetry	12P	15Y	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0																
g36X Diag5		X-GenXY	12X	15XY	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	

1.125	2	0	0	0															
g36XY	Diag5	XY-GenXY	12XY	15X	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0															
g36Y	Diag5	Y-GenXY	12Y	15P	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0															
g37P	Diag5	XY-Symmetry	15X	18P	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g37X	Diag5	X-GenXY	15P	18X	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g37XY	Diag5	XY-GenXY	15Y	18XY	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g37Y	Diag5	Y-GenXY	15XY	18Y	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g38P	Diag5	XY-Symmetry	15P	18Y	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g38X	Diag5	X-GenXY	15X	18XY	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g38XY	Diag5	XY-GenXY	15XY	18X	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g38Y	Diag5	Y-GenXY	15Y	18P	2	4	0.44	0.78	0.44	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	2	0	0	0															
g39P	M4	XY-Symmetry	19P	1X	3	6	0.5	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.5	0
1.125	3	0	0	0															
g39X	M4	X-GenXY	19X	1P	3	6	0.5	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.5	0
1.125	3	0	0	0															
g39XY	M4	XY-GenXY	19X	1Y	3	6	0.5	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.5	0
1.125	3	0	0	0															
g39Y	M4	Y-GenXY	19P	1XY	3	6	0.5	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.5	0
1.125	3	0	0	0															
g40P	M4	Y-Symmetry	1X	1P	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0															
g40Y	M4	Y-Gen	1XY	1Y	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0															
g41P	M3	X-Symmetry	1X	1XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0															
g41X	M3	X-Gen	1P	1Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0															
g42P	M4	XY-Symmetry	20P	2X	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0															
g42X	M4	X-GenXY	20X	2P	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0															
g42XY	M4	XY-GenXY	20X	2Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0															
g42Y	M4	Y-GenXY	20P	2XY	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0															
g43P	M4	Y-Symmetry	2X	2P	3	6	1	1	1	3/4	A394	TYPE0	N	0	0	0		0	0
0	0	0	0	0															
g43Y	M4	Y-Gen	2XY	2Y	3	6	1	1	1	3/4	A394	TYPE0	N	0	0	0		0	0
0	0	0	0	0															
g44P	M3	X-Symmetry	2X	2XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0															
g44X	M3	X-Gen	2P	2Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0															
g45P	M7	X-Symmetry	19P	20P	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0															
g45X	M7	X-Gen	19X	20X	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0															
g46P	M7	XY-Symmetry	20P	1X	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0															

g46X	M7		X-GenXY	20X	1P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g46XY	M7		XY-GenXY	20X	1Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g46Y	M7		Y-GenXY	20P	1XY	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g47P	M13		XY-Symmetry	21P	5X	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47X	M13		X-GenXY	21X	5P	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47XY	M13		XY-GenXY	21X	5Y	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47Y	M13		Y-GenXY	21P	5XY	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g48P	M13		Y-Symmetry	5X	5P	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g48Y	M13		Y-Gen	5XY	5Y	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g49P	M3		X-Symmetry	5X	5XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0																
g49X	M3		X-Gen	5P	5Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0																
g50P	M8		XY-Symmetry	21P	4X	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50X	M8		X-GenXY	21X	4P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50XY	M8		XY-GenXY	21X	4Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50Y	M8		Y-GenXY	21P	4XY	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g51P	M14		Y-Symmetry	4X	4P	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.125	0
1.125	2	0	0	0																
g51Y	M14		Y-Gen	4XY	4Y	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.125	0
1.125	2	0	0	0																
g52P	M9		X-Symmetry	4X	4XY	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0																
g52X	M9		X-Gen	4P	4Y	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0																
g53P	M4		XY-Symmetry	22P	7X	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53X	M4		X-GenXY	22X	7P	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53XY	M4		XY-GenXY	22X	7Y	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53Y	M4		Y-GenXY	22P	7XY	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g54P	M4		Y-Symmetry	7X	7P	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g54Y	M4		Y-Gen	7XY	7Y	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g55P	M3		X-Symmetry	7X	7XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.125	3	0	0	0																
g55X	M3		X-Gen	7P	7Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.125	3	0	0	0																
g56P	M7		XY-Symmetry	22P	6X	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g56X	M7		X-GenXY	22X	6P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g56XY	M7		XY-GenXY	22X	6Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0

1.125	2	0	0	0																					
g56Y	M7		Y-GenXY		22P	6XY	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0				
1.125	2	0	0	0																					
g57P	M9		X-Symmetry		6P	6Y	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0				
1.125	0	0	0	0																					
g57X	M9		X-Gen		6X	6XY	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0				
1.125	0	0	0	0																					
g58P	M14		Y-Symmetry		6X	6P	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.25	0				
1.125	2	0	0	0																					
g58Y	M14		Y-Gen		6XY	6Y	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.25	0				
1.125	2	0	0	0																					
g59P	M2		Y-Symmetry		10X	10P	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0				
1.125	2	0	0	0																					
g59Y	M2		Y-Gen		10XY	10Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0				
1.125	2	0	0	0																					
g60P	M2		X-Symmetry		10P	10Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0				
1.125	2	0	0	0																					
g60X	M2		X-Gen		10X	10XY	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0				
1.125	2	0	0	0																					
g61P	M5		Y-Symmetry		12X	12P	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.5	0				
1.125	2	0	0	0																					
g61Y	M5		Y-Gen		12XY	12Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.5	0				
1.125	2	0	0	0																					
g62P	M5		X-Symmetry		12P	12Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.5	0				
1.125	2	0	0	0																					
g62X	M5		X-Gen		12X	12XY	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	1	1	Short only	1.5	0				
1.125	2	0	0	0																					
g63P	M6		Y-Symmetry		15X	15P	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	2	1	Short only	2	0				
1.125	2	0	0	0																					
g63Y	M6		Y-Gen		15XY	15Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	2	1	Short only	2	0				
1.125	2	0	0	0																					
g64P	M6		X-Symmetry		15P	15Y	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	2	1	Short only	2	0				
1.125	2	0	0	0																					
g64X	M6		X-Gen		15X	15XY	3	6	1	0.5	0.5	3/4	A394	TYPE0	N	2	2	1	Short only	2	0				
1.125	2	0	0	0																					
g65P	M11		XY-Symmetry		i0.50E20S	15Y	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g65X	M11		X-GenXY		i0.50E20S	15XY	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g65XY	M11		XY-GenXY		i0.50E20S	15X	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g65Y	M11		Y-GenXY		i0.50E20S	15P	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g66P	M12		XY-Symmetry		i0.50E40S	12Y	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g66X	M12		X-GenXY		i0.50E40S	12XY	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g66XY	M12		XY-GenXY		i0.50E40S	12X	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g66Y	M12		Y-GenXY		i0.50E40S	12P	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g67P	M10		XY-Symmetry		i0.50E74S	7Y	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g67X	M10		X-GenXY		i0.50E74S	7XY	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g67XY	M10		XY-GenXY		i0.50E74S	7X	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					
g67Y	M10		Y-GenXY		i0.50E74S	7P	3	4	1	1	1		5/8	A325		1	1	1	Long only	0	0				
0	0	0	0	0																					

g68P	M10		XY-Symmetry	i0.50E84S	5Y	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g68X	M10		X-GenXY	i0.50E84S	5XY	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g68XY	M10		XY-GenXY	i0.50E84S	5X	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g68Y	M10		Y-GenXY	i0.50E84S	5P	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g69P	M10		XY-Symmetry	i0.50E96S	2P	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g69X	M10		X-GenXY	i0.50E96S	2X	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g69XY	M10		XY-GenXY	i0.50E96S	2XY	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g69Y	M10		Y-GenXY	i0.50E96S	2Y	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g70P	M10		XY-Symmetry	i0.50E101S	1P	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g70X	M10		X-GenXY	i0.50E101S	1X	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g70XY	M10		XY-GenXY	i0.50E101S	1XY	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g70Y	M10		Y-GenXY	i0.50E101S	1Y	3	4	1	1	1	5/8	A325	1	1	1	Long only	0	0	0	0	0	0
g71P	PM		None	23P	i0.50E20S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g72P	PM		None	i0.50E20S	i0.50E40S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g73P	PM		None	i0.50E40S	i0.50E74S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g74P	PM		None	i0.50E74S	i0.50E84S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g75P	PM		None	i0.50E84S	i0.50E96S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g76P	PM		None	i0.50E96S	i0.50E101S	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g77P	PM		None	i0.50E101S	24P	1	4	1	1	1			0	0	0		0	0	0	0	0	0
g78P	PM		None	24P	25P	1	4	1	1	1			0	0	0		0	0	0	0	0	0

Member Capacities and Overrides:

Member Label	Group Label	Design Comp.	Design Control	Tension Capacity	Tension Control Criterion	L/r Length (ft)	L/r Comp.	Connection Comp. Capacity (kips)	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity	Rupture Tension Capacity (kips)	RTE End Dist. Tension Capacity (kips)	RTE Edge Dist. Capacity (kips)	Override Comp. Capacity (kips)	Override Unsup. (kips)	Override Warnings or Errors
g3P	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000	

0.000		Automatic														
g3X	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g3XY	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g3Y	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7P	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7X	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7XY	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7Y	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g8P	Leg1	89.489	L/r	70.122	Net Sect	60	5.00	89.489	166.500	210.937	70.122	183.823	0.000	0.000	0.000	0.000
0.000		Automatic	Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g8X	Leg1	89.489	L/r	70.122	Net Sect	60	5.00	89.489	166.500	210.937	70.122	183.823	0.000	0.000	0.000	0.000
0.000		Automatic	Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g8XY	Leg1	89.489	L/r	70.122	Net Sect	60	5.00	89.489	166.500	210.937	70.122	183.823	0.000	0.000	0.000	0.000
0.000		Automatic	Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g8Y	Leg1	89.489	L/r	70.122	Net Sect	60	5.00	89.489	166.500	210.937	70.122	183.823	0.000	0.000	0.000	0.000
0.000		Automatic	Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g9P	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9X	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9XY	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9Y	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														

g10P	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g10X	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g10XY	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g10Y	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g11P	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
g11X	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
g11XY	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
g11Y	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
g12P	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g12X	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g12XY	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g12Y	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g13P	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	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	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	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	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	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	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	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	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	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	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	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	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	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	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g15P	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic															

g15X Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g15XY Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g15Y Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16P Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16X Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16XY Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16Y Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g17P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000

0.000	Automatic														
g22Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g23P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g23X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g23XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g23Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g24P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g24X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g24XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g24Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g25P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g25X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g25XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g25Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g26P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g26X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g26XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g26Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic														
g27P Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g27X Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g27XY Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g27Y Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g28P Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g28X Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g28XY Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g28Y Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic														
g29P Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g29X Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g29XY Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g29Y Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														

g30P Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g30X Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g30XY Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g30Y Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g31P Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g31X Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g31XY Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g31Y Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g32P Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g32X Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g32XY Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g32Y Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g33P Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g33X Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g33XY Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g33Y Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g34P Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g34X Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g34XY Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g34Y Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000	0.000
Automatic																
g35P Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g35X Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g35XY Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g35Y Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g36P Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g36X Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g36XY Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g36Y Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000	0.000
Automatic																
g37P Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000	0.000
Automatic																
g37X Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000	0.000

0.000		Automatic														
g37XY	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g37Y	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38P	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38X	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38XY	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38Y	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g39P	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39X	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39XY	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39Y	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g40P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g40Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g41P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g41X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g42P	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42X	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42XY	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42Y	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g43P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g43Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g44P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g44X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g45P	M7	7.160	L/r	8.895	Rupture	180	6.40	7.160	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g45X	M7	7.160	L/r	8.895	Rupture	180	6.40	7.160	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g46P	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??																
g46X	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??																
g46XY	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??																
g46Y	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**

0.000		Automatic														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??																
g47P	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47X	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47XY	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47Y	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g48P	M13	37.680	L/r	55.770	Net Sect	92	5.00	37.680	0.000	0.000	55.770	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g48Y	M13	37.680	L/r	55.770	Net Sect	92	5.00	37.680	0.000	0.000	55.770	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g49P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g49X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g50P	M8	3.334	L/r	21.984	Rupture	358	12.66	3.334	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??																
g50X	M8	3.334	L/r	21.984	Rupture	358	12.66	3.334	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??																
g50XY	M8	3.334	L/r	21.984	Rupture	358	12.66	3.334	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??																
g50Y	M8	3.334	L/r	21.984	Rupture	358	12.66	3.334	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??																
g51P	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g51Y	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g52P	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g52X	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g53P	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53X	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53XY	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53Y	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g54P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g54Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g55P	M3	26.226	L/r	28.125	Rupture	114	5.00	26.226	33.300	33.750	32.410	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g55X	M3	26.226	L/r	28.125	Rupture	114	5.00	26.226	33.300	33.750	32.410	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g56P	M7	4.262	L/r	16.488	Rupture	269	9.56	4.262	33.300	25.312	19.184	16.488	0.000	0.000	0.000	0.000
0.000		Automatic														
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??																
g56X	M7	4.262	L/r	16.488	Rupture	269	9.56	4.262	33.300	25.312	19.184	16.488	0.000	0.000	0.000	0.000
0.000		Automatic														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??

g56XY	M7	4.262	L/r	16.488	Rupture	269	9.56	4.262	33.300	25.312	19.184	16.488	0.000	0.000	0.000	0.000
0.000		Automatic														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??

g56Y	M7	4.262	L/r	16.488	Rupture	269	9.56	4.262	33.300	25.312	19.184	16.488	0.000	0.000	0.000	0.000
0.000		Automatic														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??

g57P	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g57X	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g58P	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g58Y	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g59P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g59Y	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g60P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g60X	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g61P	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g61Y	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g62P	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g62X	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g63P	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g63Y	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g64P	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g64X	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g65P	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65X	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65XY	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65Y	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g66P	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66X	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66XY	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66Y	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g67P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g67X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														

g67XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g67Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g71P	PM	907.332	L/r	969.998	Net Sect	38	20.00	907.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g72P	PM	907.332	L/r	969.998	Net Sect	38	20.00	907.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g73P	PM	788.892	L/r	969.998	Net Sect	65	34.00	788.892	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g74P	PM	954.332	L/r	969.998	Net Sect	19	10.00	954.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g75P	PM	947.438	L/r	969.998	Net Sect	23	12.00	947.438	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g76P	PM	966.082	L/r	969.998	Net Sect	10	5.00	966.082	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g77P	PM	959.972	L/r	969.998	Net Sect	15	8.00	959.972	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g78P	PM	934.748	L/r	969.998	Net Sect	29	15.00	934.748	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														

The model contains 242 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	0.115	5.508	4.079
2P	0.137	6.008	5.414
3P	0.0876	3.834	3.834
4P	0.122	5.544	4.846
5P	0.165	7.268	5.518
6P	0.134	5.976	5.701

7P	0.174	6.731	6.075
8P	0.156	6.140	6.140
9P	0.198	7.712	7.712
10P	0.33	12.212	12.212
12P	0.536	20.327	20.327
15P	0.729	25.623	25.623
18P	0.262	10.305	10.305
19P	0.0653	3.479	1.146
20P	0.0716	4.314	2.310
21P	0.116	6.503	1.816
22P	0.0662	3.859	1.790
23P	0.707	15.000	15.000
24P	0.813	17.250	17.250
25P	0.53	11.250	11.250
1X	0.115	5.508	4.079
1XY	0.115	5.508	4.079
1Y	0.115	5.508	4.079
2X	0.137	6.008	5.414
2XY	0.137	6.008	5.414
2Y	0.137	6.008	5.414
3X	0.0876	3.834	3.834
3XY	0.0876	3.834	3.834
3Y	0.0876	3.834	3.834
4X	0.122	5.544	4.846
4XY	0.122	5.544	4.846
4Y	0.122	5.544	4.846
5X	0.165	7.268	5.518
5XY	0.165	7.268	5.518
5Y	0.165	7.268	5.518
6X	0.134	5.976	5.701
6XY	0.134	5.976	5.701
6Y	0.134	5.976	5.701
7X	0.174	6.731	6.075
7XY	0.174	6.731	6.075
7Y	0.174	6.731	6.075
8X	0.156	6.140	6.140
8XY	0.156	6.140	6.140
8Y	0.156	6.140	6.140
9X	0.198	7.712	7.712
9XY	0.198	7.712	7.712
9Y	0.198	7.712	7.712
10X	0.33	12.212	12.212
10XY	0.33	12.212	12.212
10Y	0.33	12.212	12.212
12X	0.536	20.327	20.327
12XY	0.536	20.327	20.327
12Y	0.536	20.327	20.327
15X	0.729	25.623	25.623
15XY	0.729	25.623	25.623
15Y	0.729	25.623	25.623
18X	0.262	10.305	10.305
18XY	0.262	10.305	10.305
18Y	0.262	10.305	10.305
19X	0.0653	3.479	1.146
20X	0.0716	4.314	2.310
21X	0.116	6.503	1.816
22X	0.0662	3.859	1.790
i0.50E20S	1.76	38.333	38.333
i0.50E40S	2.03	44.718	44.718

i0.50E74S	1.58	34.042	34.042
i0.50E84S	0.799	17.542	17.542
i0.50E96S	0.622	13.792	13.792
i0.50E101S	0.481	10.792	10.792
Total	22.5	731.776	687.987

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)
3	7.708	268.639	224.850	157.737	122.008
2	6.690	211.489	211.489	112.724	112.724
1	8.129	251.649	251.649	130.666	130.666
Total	22.526	731.776	687.987	401.127	365.399

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)
3	7.708	8.093	1083.852	1138.044
2	6.690	6.690	902.796	902.796
1	8.129	8.942	1057.235	1162.959
Total	22.526	23.725	3043.883	3203.799

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
3	1X	101.000
3	2X	96.000
3	1P	101.000
3	2P	96.000
3	1Y	101.000
3	2Y	96.000
3	1XY	101.000
3	2XY	96.000
3	3X	92.000
3	3P	92.000
3	3Y	92.000
3	3XY	92.000
3	4X	88.000
3	4P	88.000
3	4Y	88.000
3	4XY	88.000
3	5X	84.000
3	5P	84.000
3	5Y	84.000
3	5XY	84.000
3	6X	79.000
3	6P	79.000
3	6Y	79.000
3	6XY	79.000
3	7X	74.000

3	7P	74.000
3	7Y	74.000
3	7XY	74.000
3	19P	101.000
3	19X	101.000
3	20P	96.000
3	20X	96.000
3	21P	84.000
3	21X	84.000
3	22P	74.000
3	22X	74.000
3	i0.50E74S	74.000
3	i0.50E84S	84.000
3	i0.50E96S	96.000
3	i0.50E101S	101.000
3	24P	109.000
3	25P	124.000
2	7X	74.000
2	8X	69.000
2	7P	74.000
2	8P	69.000
2	7Y	74.000
2	8Y	69.000
2	7XY	74.000
2	8XY	69.000
2	9X	62.000
2	9P	62.000
2	9Y	62.000
2	9XY	62.000
2	10X	54.000
2	10P	54.000
2	10Y	54.000
2	10XY	54.000
2	12X	40.000
2	12P	40.000
2	12Y	40.000
2	12XY	40.000
2	i0.50E40S	40.000
2	i0.50E74S	74.000
1	12X	40.000
1	15X	20.000
1	12P	40.000
1	15P	20.000
1	12Y	40.000
1	15Y	20.000
1	12XY	40.000
1	15XY	20.000
1	18X	0.000
1	18P	0.000
1	18Y	0.000
1	18XY	0.000
1	i0.50E20S	20.000
1	23P	0.000
1	i0.50E40S	40.000

Sections Information:

Section Label	Top Z	Bottom Z	Joint Count	Member Count	Tran. Face Top Width	Tran. Face Bot Width	Tran. Face Gross Area	Long. Face Top Width	Long. Face Bot Width	Long. Face Gross Area

	(ft)	(ft)			(ft)	(ft)	(ft^2)	(ft)	(ft)	(ft^2)	
3	124.000	74.000	42	147	0.00	5.00	192.500	0.00	20.50	629.500	Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
2	74.000	40.000	22	61	5.00	14.46	330.830	5.00	14.46	330.830	
1	40.000	0.000	15	34	14.46	25.50	799.600	14.46	25.50	799.600	

*** 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)
Clamp1	19P	C-EX1	No Limit
Clamp2	19X	C-EX1	No Limit
Clamp3	20P	C-EX1	No Limit
Clamp4	20X	C-EX1	No Limit
Clamp5	21P	C-EX1	No Limit
Clamp6	21X	C-EX1	No Limit
Clamp7	22P	C-EX1	No Limit
Clamp8	22X	C-EX1	No Limit
Clamp9	3X	C-EX1	No Limit
Clamp10	5X	C-EX1	No Limit
Clamp11	7X	C-EX1	No Limit
Clamp12	9X	C-EX1	No Limit
Clamp13	10X	C-EX1	No Limit
Clamp14	12X	C-EX1	No Limit
Clamp15	15X	C-EX1	No Limit
Clamp17	i0.50E101S	C-EX1	No Limit
Clamp18	i0.50E96S	C-EX1	No Limit
Clamp19	i0.50E84S	C-EX1	No Limit
Clamp20	i0.50E74S	C-EX1	No Limit
Clamp21	i0.50E40S	C-EX1	No Limit
Clamp22	i0.50E20S	C-EX1	No Limit
Clamp23	1X	C-EX1	No Limit
Clamp24	1XY	C-EX1	No Limit
Clamp25	2X	C-EX1	No Limit
Clamp26	2XY	C-EX1	No Limit
Clamp27	24P	C-EX1	No Limit
Clamp28	25P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1331700.wi\structural\backup documentation\calcs\rev (2)\pls tower\cl&p # 1321.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)	124.00	(ft)
Structure height	124.00	(ft)
Structure height above ground	124.00	(ft)
Tower Shape	Rectangular	

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	25 loads	Wind on Face	4	0	0.000	56.000	0.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	25 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
19P	1282	1147	0	Shield Wire
19X	1191	1135	0	Shield Wire
20P	2739	1785	0	Conductor
20X	2739	1785	0	Conductor
21P	2739	1785	0	Conductor
21X	2739	1785	0	Conductor
22P	2739	1785	0	Conductor
22X	2739	1785	0	Conductor
1X	172	131	0	Coax Cables - Tower
3X	275	209	0	Coax Cables - Tower
5X	310	235	0	Coax Cables - Tower
7X	379	287	0	Coax Cables - Tower
9X	344	261	0	Coax Cables - Tower
10X	379	287	0	Coax Cables - Tower
12X	585	444	0	Coax Cables - Tower
15X	1033	784	0	Coax Cables - Tower
24P	205	0	0	Coax Cables - Powermount
i0.50E101S	249	0	0	Coax Cables - Powermount
i0.50E96S	151	0	0	Coax Cables - Powermount
i0.50E84S	196	0	0	Coax Cables - Powermount

i0.50E74S	392	0	0	Coax Cables - Powermount
i0.50E40S	481	0	0	Coax Cables - Powermount
i0.50E20S	535	0	0	Coax Cables - Powermount
25P	7563	1200	0	AT&T Loading
24P	467	266	0	T-Mobile Loading

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)
3	124.00	74.00	99.00	10.00	10.00	3.300	4026.3	0.00	3.300	0.0	0	12140
2	74.00	40.00	57.00	10.00	10.00	3.200	3607.2	0.00	3.200	0.0	0	10035
1	40.00	0.00	20.00	10.00	10.00	3.400	4442.7	0.00	3.400	0.0	0	13412

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
19P	364	705	26	Shield Wire
19X	294	697	9	Shield Wire
20P	1007	1917	772	Conductor
20X	1007	1917	772	Conductor
21P	1007	1917	772	Conductor
21X	1007	1917	772	Conductor
22P	1007	1917	772	Conductor
22X	1007	1917	772	Conductor
1X	40	430	0	Coax Cables - Tower
3X	63	688	0	Coax Cables - Tower
5X	71	775	0	Coax Cables - Tower
7X	87	947	0	Coax Cables - Tower
9X	79	861	0	Coax Cables - Tower
10X	87	947	0	Coax Cables - Tower
12X	135	1463	0	Coax Cables - Tower
15X	238	2582	0	Coax Cables - Tower
24P	137	0	0	Coax Cables - Powermount
i0.50E101S	166	0	0	Coax Cables - Powermount
i0.50E96S	101	0	0	Coax Cables - Powermount
i0.50E84S	131	0	0	Coax Cables - Powermount
i0.50E74S	261	0	0	Coax Cables - Powermount
i0.50E40S	321	0	0	Coax Cables - Powermount
i0.50E20S	356	0	0	Coax Cables - Powermount
25P	3557	4566	0	AT&T Loading
24P	182	1059	0	T-Mobile Loading

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

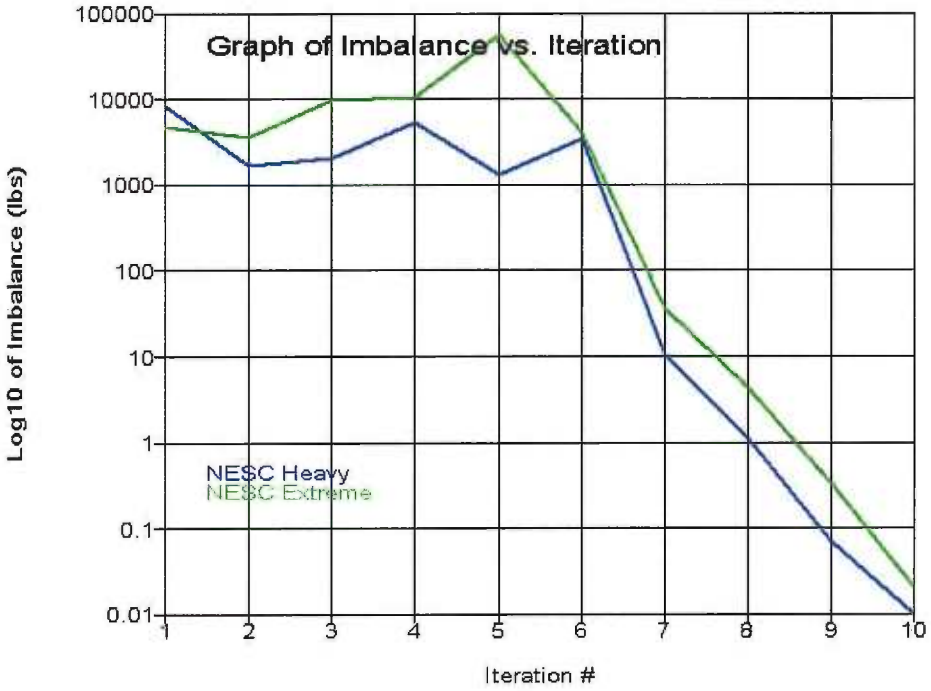
Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
i0.50E74S	392	0	0	10.00	10.00	0	0	0		0	0	0	0.00	0	0	0		0	0	0	0	0
i0.50E40S	481	0	0	10.00	10.00	0	0	0		0	0	0	0.00	0	0	0		0	0	0	0	0
i0.50E20S	535	0	0	10.00	10.00	0	0	0		0	0	0	0.00	0	0	0		0	0	0	0	0
25P	7563	1200	0	10.00	10.00	0	0	0		0	0	0	0.00	0	0	0		0	0	0	0	0
24P	467	266	0	10.00	10.00	0	0	0		0	0	0	0.00	0	0	0		0	0	0	0	0

(lbs)

--																				
	3	124.00	74.00	99.00	32.15	32.15	54.51	67.50	192.50	0.634	3.200	2.000	9947.9	0.00	82.74	75.00	629.50	0.251	3.200	2.000	0.0	0
8093																						
	2	74.00	40.00	57.00	32.15	32.15	61.72	51.00	330.83	0.341	3.200	2.000	9629.3	0.00	61.72	51.00	330.83	0.341	3.200	2.000	0.0	0
6690																						
	1	40.00	0.00	20.00	32.15	32.15	70.67	60.00	799.60	0.163	3.200	2.000	11128.0	0.00	70.67	60.00	799.60	0.163	3.200	2.000	0.0	0
8942																						

*** Analysis Results:

Maximum element usage is 94.01% for Angle "g37X" in load case "NESC Extreme"
Maximum insulator usage is 17.09% for Clamp "Clamp28" 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	g3P	9.37	5.986	0.000	0.752	5.986
Leg1	g3X	8.15	0.000	-7.296	-4.669	-7.296
Leg1	g3XY	8.49	0.000	-7.594	-4.617	-7.594
Leg1	g3Y	8.98	5.740	0.000	0.870	5.740

Leg1	g4P	24.82	15.859	0.000	5.812	15.859
Leg1	g4X	19.23	0.000	-17.936	-9.509	-17.936
Leg1	g4XY	18.58	0.000	-17.331	-9.455	-17.331
Leg1	g4Y	25.86	16.521	0.000	5.889	16.521
Leg1	g5P	34.50	22.042	0.000	8.539	22.042
Leg1	g5X	28.47	0.000	-26.554	-14.756	-26.554
Leg1	g5XY	26.36	0.000	-24.585	-14.680	-24.585
Leg1	g5Y	37.13	23.727	0.000	8.883	23.727
Leg1	g6P	42.22	26.980	0.000	10.644	26.980
Leg1	g6X	35.87	0.000	-33.459	-19.411	-33.459
Leg1	g6XY	32.68	0.000	-30.477	-19.238	-30.477
Leg1	g6Y	45.31	28.952	0.000	10.950	28.952
Leg1	g7P	54.03	34.522	0.000	15.392	34.522
Leg1	g7X	48.28	0.000	-43.202	-23.789	-43.202
Leg1	g7XY	40.81	0.000	-36.520	-23.872	-36.520
Leg1	g7Y	58.93	37.655	0.000	16.157	37.655
Leg1	g8P	61.06	42.818	0.000	19.469	42.818
Leg1	g8X	61.72	0.000	-55.236	-30.397	-55.236
Leg1	g8XY	48.96	0.000	-43.812	-31.135	-43.812
Leg1	g8Y	65.89	46.203	0.000	20.734	46.203
Leg2	g9P	51.38	50.945	0.000	25.019	50.945
Leg2	g9X	69.03	0.000	-67.628	-37.398	-67.628
Leg2	g9XY	54.62	0.000	-53.511	-38.292	-53.511
Leg2	g9Y	58.83	58.337	0.000	26.815	58.337
Leg2	g10P	56.51	51.189	0.000	27.048	51.189
Leg2	g10X	78.32	0.000	-71.598	-41.108	-71.598
Leg2	g10XY	64.43	0.000	-58.907	-41.811	-58.907
Leg2	g10Y	70.59	63.946	0.000	28.420	63.946
Leg3	g11P	45.31	50.473	0.000	27.489	50.473
Leg3	g11X	60.85	0.000	-70.491	-41.347	-70.491
Leg3	g11XY	51.79	0.000	-59.997	-41.838	-59.997
Leg3	g11Y	58.97	65.695	0.000	28.701	65.695
Leg3	g12P	42.18	45.574	0.000	27.091	45.574
Leg3	g12X	62.59	0.000	-76.622	-43.455	-76.622
Leg3	g12XY	52.13	0.000	-63.816	-43.461	-63.816
Leg3	g12Y	60.39	65.244	0.000	27.891	65.244
Leg3	g13P	43.62	47.122	0.000	25.851	47.122
Leg3	g13X	68.60	0.000	-85.382	-49.215	-85.382
Leg3	g13XY	56.21	0.000	-69.957	-47.422	-69.957
Leg3	g13Y	60.99	65.891	0.000	26.630	65.891
Leg3	g14P	50.79	54.871	0.000	27.397	54.871
Leg3	g14X	75.60	0.000	-94.096	-53.604	-94.096
Leg3	g14XY	59.54	0.000	-74.109	-50.529	-74.109
Leg3	g14Y	65.32	70.568	0.000	27.587	70.568
Diag1	g15P	56.35	0.000	-9.852	-4.245	-9.852
Diag1	g15X	49.36	9.469	0.000	3.922	9.469
Diag1	g15XY	50.08	9.608	0.000	3.870	9.608
Diag1	g15Y	54.26	0.000	-9.487	-4.168	-9.487
Diag1	g16P	3.62	0.000	-0.473	-0.473	-0.433
Diag1	g16X	3.06	0.588	-0.025	-0.025	0.588
Diag1	g16XY	0.80	0.153	-0.020	-0.020	0.153
Diag1	g16Y	5.57	0.000	-0.728	-0.491	-0.728
Diag2	g17P	24.85	0.000	-6.033	-4.280	-6.033
Diag2	g17X	18.93	4.730	0.000	2.007	4.730
Diag2	g17XY	19.43	4.854	0.000	2.079	4.854
Diag2	g17Y	23.62	0.000	-5.735	-4.231	-5.735
Diag2	g18P	0.47	0.117	0.000	0.117	0.039
Diag2	g18X	4.57	1.142	0.000	0.480	1.142
Diag2	g18XY	1.73	0.433	0.000	0.433	0.052

Diag2	g18Y	4.11	0.150	-0.779	0.150	-0.779
Diag2	g19P	23.79	0.000	-5.777	-2.251	-5.777
Diag2	g19X	24.97	6.239	0.000	4.378	6.239
Diag2	g19XY	24.04	6.007	0.000	4.325	6.007
Diag2	g19Y	20.58	0.000	-4.996	-2.072	-4.996
Diag2	g20P	1.75	0.437	-0.330	-0.330	0.437
Diag2	g20X	1.76	0.263	-0.335	-0.335	0.263
Diag2	g20XY	3.50	0.000	-0.850	-0.382	-0.850
Diag2	g20Y	1.63	0.000	-0.397	-0.297	-0.397
Diag2	g21P	26.60	0.000	-6.460	-2.925	-6.460
Diag2	g21X	23.90	5.972	0.000	3.800	5.972
Diag2	g21XY	25.73	6.428	0.000	3.740	6.428
Diag2	g21Y	21.57	0.000	-5.237	-2.818	-5.237
Diag2	g22P	10.40	0.000	-1.972	-1.508	-1.972
Diag2	g22X	11.97	2.990	0.000	0.916	2.990
Diag2	g22XY	6.34	1.584	0.000	0.868	1.584
Diag2	g22Y	16.66	0.000	-3.160	-1.483	-3.160
Diag3	g23P	30.54	0.000	-8.887	-4.987	-8.887
Diag3	g23X	27.31	7.878	0.000	4.539	7.878
Diag3	g23XY	25.26	7.286	0.000	4.609	7.286
Diag3	g23Y	23.04	0.000	-6.703	-4.944	-6.703
Diag3	g24P	11.82	0.000	-2.868	-2.567	-2.868
Diag3	g24X	16.70	4.818	0.000	1.801	4.818
Diag3	g24XY	9.47	2.731	0.000	1.535	2.731
Diag3	g24Y	22.09	0.000	-5.359	-2.200	-5.359
Diag3	g25P	32.45	0.000	-9.443	-4.973	-9.443
Diag3	g25X	26.71	7.703	0.000	4.512	7.703
Diag3	g25XY	26.81	7.734	0.000	4.692	7.734
Diag3	g25Y	22.65	0.000	-6.590	-5.052	-6.590
Diag3	g26P	23.41	0.000	-5.679	-4.590	-5.679
Diag3	g26X	26.20	7.557	0.000	2.944	7.557
Diag3	g26XY	17.70	5.105	0.000	2.707	5.105
Diag3	g26Y	34.77	0.000	-8.433	-4.277	-8.433
Diag4	g27P	5.31	0.000	-1.692	-1.692	-1.184
Diag4	g27X	2.28	0.758	-0.090	0.758	-0.090
Diag4	g27XY	3.45	1.150	0.000	0.412	1.150
Diag4	g27Y	4.45	0.000	-1.417	-1.417	-1.145
Diag4	g28P	10.05	0.000	-2.831	-1.405	-2.831
Diag4	g28X	10.02	3.335	0.000	0.907	3.335
Diag4	g28XY	2.69	0.895	0.000	0.895	0.228
Diag4	g28Y	6.13	0.000	-1.726	-1.269	-1.726
Diag3	g29P	5.65	0.000	-1.026	-1.026	-0.667
Diag3	g29X	4.46	1.254	0.000	1.175	1.254
Diag3	g29XY	4.69	1.320	0.000	0.958	1.320
Diag3	g29Y	9.07	0.000	-1.647	-0.726	-1.647
Diag3	g30P	4.04	1.138	0.000	0.922	1.138
Diag3	g30X	3.95	0.027	-0.648	-0.648	0.027
Diag3	g30XY	15.31	0.000	-2.509	-0.658	-2.509
Diag3	g30Y	7.56	2.127	0.000	0.996	2.127
Diag3	g31P	19.13	0.000	-2.602	-1.466	-2.602
Diag3	g31X	3.28	0.923	0.000	0.714	0.923
Diag3	g31XY	5.69	1.601	0.000	0.488	1.601
Diag3	g31Y	11.69	0.000	-1.590	-0.958	-1.590
Diag3	g32P	12.20	0.000	-1.517	-0.855	-1.517
Diag3	g32X	6.19	1.741	0.000	0.351	1.741
Diag3	g32XY	1.41	0.397	-0.134	0.397	-0.134
Diag3	g32Y	7.94	0.000	-0.987	-0.693	-0.987
Diag5	g33P	57.62	0.000	-2.495	-2.495	0.000
Diag5	g33X	21.10	5.272	0.000	0.249	5.272

Diag5	g33XY	7.81	1.950	-0.147	-0.147	1.950
Diag5	g33Y	44.70	0.000	-1.936	-1.786	-1.936
Diag5	g34P	16.67	0.000	-0.722	0.000	-0.722
Diag5	g34X	26.63	6.654	0.000	2.806	6.654
Diag5	g34XY	20.07	5.015	0.000	2.917	5.015
Diag5	g34Y	0.17	0.041	0.000	0.041	0.000
Diag5	g35P	0.00	0.000	0.000	0.000	0.000
Diag5	g35X	46.51	10.224	0.000	3.987	10.224
Diag5	g35XY	22.86	5.026	0.000	2.291	5.026
Diag5	g35Y	0.00	0.000	0.000	0.000	0.000
Diag5	g36P	0.00	0.000	0.000	0.000	0.000
Diag5	g36X	30.76	6.762	0.000	2.854	6.762
Diag5	g36XY	29.22	6.423	0.000	3.150	6.423
Diag5	g36Y	34.06	0.000	-0.832	0.000	-0.832
Diag5	g37P	0.00	0.000	0.000	0.000	0.000
Diag5	g37X	94.01	11.149	0.000	4.726	11.149
Diag5	g37XY	46.31	5.492	0.000	2.784	5.492
Diag5	g37Y	0.00	0.000	0.000	0.000	0.000
Diag5	g38P	0.00	0.000	0.000	0.000	0.000
Diag5	g38X	53.41	6.334	0.000	2.520	6.334
Diag5	g38XY	47.43	5.625	0.000	2.662	5.625
Diag5	g38Y	21.52	0.000	-0.282	0.000	-0.282
M4	g39P	1.16	0.000	-0.328	-0.051	-0.328
M4	g39X	3.94	1.109	0.000	1.109	0.653
M4	g39XY	3.95	1.112	0.000	1.112	0.700
M4	g39Y	0.69	0.000	-0.196	-0.045	-0.196
M4	g40P	6.70	3.183	0.000	3.183	0.928
M4	g40Y	6.80	3.233	0.000	3.233	1.557
M3	g41P	25.77	0.000	-6.760	-3.627	-6.760
M3	g41X	19.60	5.763	0.000	0.978	5.763
M4	g42P	15.45	0.000	-4.806	-4.806	-3.635
M4	g42X	8.82	0.000	-2.743	-2.743	-1.181
M4	g42XY	8.80	0.551	-2.739	-2.739	0.551
M4	g42Y	15.40	0.000	-4.791	-4.791	-1.764
M4	g43P	8.03	0.000	-2.468	-2.468	-1.650
M4	g43Y	8.15	0.000	-2.507	-2.507	-0.230
M3	g44P	13.89	4.085	0.000	2.781	4.085
M3	g44X	11.75	0.000	-3.082	-0.082	-3.082
M7	g45P	24.59	0.000	-1.760	-1.760	-0.700
M7	g45X	22.94	0.000	-1.643	-1.643	-0.609
M7	g46P	21.38	3.856	0.000	3.856	1.276
M7	g46X	20.86	3.763	0.000	3.763	1.119
M7	g46XY	20.85	3.761	0.000	3.761	1.884
M7	g46Y	21.33	3.847	0.000	3.847	1.886
M13	g47P	15.61	0.000	-5.310	-5.310	-4.179
M13	g47X	9.98	0.000	-3.396	-3.396	-1.821
M13	g47XY	10.10	0.539	-3.437	-3.437	0.539
M13	g47Y	15.56	0.000	-5.293	-5.293	-1.584
M13	g48P	10.85	0.000	-4.088	-4.088	-2.502
M13	g48Y	10.62	0.000	-4.003	-4.003	-1.027
M3	g49P	11.35	0.000	-2.976	-0.253	-2.976
M3	g49X	14.96	4.399	0.000	3.628	4.399
M8	g50P	20.89	4.592	0.000	4.592	1.274
M8	g50X	20.68	4.546	0.000	4.546	1.125
M8	g50XY	20.91	4.597	0.000	4.597	2.558
M8	g50Y	20.85	4.583	0.000	4.583	2.469
M14	g51P	30.31	2.813	0.000	2.813	1.049
M14	g51Y	29.88	2.773	0.000	2.773	1.388
M9	g52P	17.01	0.000	-1.998	-1.303	-1.998

M9	g52X	20.08	1.786	0.000	0.620	1.786
M4	g53P	11.01	0.000	-3.321	-3.321	-2.953
M4	g53X	4.27	0.000	-1.287	-1.287	-0.667
M4	g53XY	4.66	1.058	-1.405	-1.405	1.058
M4	g53Y	10.78	0.000	-3.252	-3.252	-1.280
M4	g54P	7.51	0.000	-2.309	-2.309	-2.118
M4	g54Y	7.13	0.000	-2.193	-2.193	-0.109
M3	g55P	3.91	1.100	0.000	1.100	0.998
M3	g55X	2.13	0.599	-0.203	0.599	-0.203
M7	g56P	16.68	2.750	0.000	2.750	0.651
M7	g56X	15.86	2.615	0.000	2.615	0.636
M7	g56XY	16.73	2.759	0.000	2.759	1.570
M7	g56Y	16.23	2.676	0.000	2.676	1.652
M9	g57P	83.05	7.387	0.000	4.005	7.387
M9	g57X	61.16	0.000	-7.181	-3.736	-7.181
M14	g58P	23.92	2.220	0.000	2.220	1.329
M14	g58Y	23.46	2.177	0.000	2.177	0.611
M2	g59P	12.80	0.684	-2.003	0.684	-2.003
M2	g59Y	2.91	0.640	-0.114	0.640	-0.114
M2	g60P	4.90	1.078	0.000	0.445	1.078
M2	g60X	32.23	0.000	-5.043	-2.529	-5.043
M5	g61P	15.45	0.000	-4.448	-0.859	-4.448
M5	g61Y	1.71	0.000	-0.491	-0.046	-0.491
M5	g62P	8.35	2.093	0.000	0.714	2.093
M5	g62X	23.29	0.000	-6.703	-3.537	-6.703
M6	g63P	28.31	0.000	-5.824	-2.497	-5.824
M6	g63Y	4.33	0.000	-0.890	-0.844	-0.890
M6	g64P	11.77	3.310	0.000	1.509	3.310
M6	g64X	27.84	0.000	-5.729	-2.711	-5.729
M11	g65P	25.84	0.000	-4.341	-2.322	-4.341
M11	g65X	23.71	0.000	-3.983	-1.790	-3.983
M11	g65XY	27.29	0.000	-4.585	-2.052	-4.585
M11	g65Y	24.30	0.000	-4.082	-2.286	-4.082
M12	g66P	11.82	0.000	-1.663	-1.118	-1.663
M12	g66X	20.40	0.000	-2.868	-0.753	-2.868
M12	g66XY	13.57	0.000	-1.908	-0.639	-1.908
M12	g66Y	22.05	0.000	-3.101	-1.212	-3.101
M10	g67P	23.94	0.000	-2.524	-1.445	-2.524
M10	g67X	18.69	1.971	0.000	0.710	1.971
M10	g67XY	5.36	0.565	0.000	0.565	0.408
M10	g67Y	13.63	0.000	-1.437	-1.437	-0.639
M10	g68P	11.17	1.178	-0.284	-0.284	1.178
M10	g68X	13.99	0.000	-1.475	-0.749	-1.475
M10	g68XY	12.02	0.000	-1.267	-0.975	-1.267
M10	g68Y	6.90	0.728	0.000	0.064	0.728
M10	g69P	56.13	5.920	0.000	1.858	5.920
M10	g69X	56.88	0.000	-5.999	-2.455	-5.999
M10	g69XY	57.33	0.000	-6.046	-2.391	-6.046
M10	g69Y	54.17	5.713	0.000	1.785	5.713
M10	g70P	79.98	0.000	-8.435	-2.702	-8.435
M10	g70X	83.84	8.843	0.000	3.819	8.843
M10	g70XY	85.54	9.022	0.000	3.829	9.022
M10	g70Y	80.39	0.000	-8.479	-2.696	-8.479
PM	g71P	2.80	0.000	-25.400	-25.400	-10.048
PM	g72P	2.42	0.000	-21.928	-21.928	-9.056
PM	g73P	2.32	0.000	-18.266	-18.266	-7.791
PM	g74P	1.58	0.000	-15.119	-15.119	-6.596
PM	g75P	1.40	0.000	-13.287	-13.287	-5.828
PM	g76P	1.22	0.000	-11.755	-11.755	-5.099

PM	g77P	1.08	0.000	-10.332	-10.332	-4.168
PM	g78P	0.90	0.000	-8.383	-8.383	-3.653

*** 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	0.002143	0.2357	-0.02074	-0.3198	0.0149	0.0366	2.502	2.736	101
2P	0.001216	0.2081	-0.0204	-0.3109	0.0071	0.0401	2.501	2.708	95.98
3P	0.0009313	0.1872	-0.01991	-0.2859	0.0093	0.0389	2.501	2.687	91.98
4P	-6.396e-005	0.1676	-0.01919	-0.2857	0.0124	0.0377	2.5	2.668	87.98
5P	-0.0005624	0.1476	-0.01826	-0.2739	0.0065	0.0365	2.499	2.648	83.98
6P	-0.001165	0.1257	-0.01685	-0.2457	0.0137	0.0377	2.499	2.626	78.98
7P	-0.002375	0.1051	-0.01508	-0.2038	0.0016	0.0390	2.498	2.605	73.98
8P	-0.002311	0.09007	-0.01533	-0.1595	-0.0086	0.0383	3.198	3.29	68.98
9P	-0.003985	0.0721	-0.0152	-0.1343	0.0195	0.0379	4.166	4.242	61.98
10P	-0.007814	0.05612	-0.01522	-0.1012	0.0071	0.0333	5.272	5.336	53.98
12P	-0.005259	0.03563	-0.0127	-0.0763	-0.0190	0.0201	7.225	7.266	39.99
15P	-0.002757	0.01248	-0.007467	-0.0525	-0.0139	0.0051	9.997	10.01	19.99
18P	0	0	0	0.0000	0.0000	0.0000	12.75	12.75	0
19P	0.01273	0.2339	0.06034	-0.2692	0.0101	0.0367	0.01273	-13.52	101.1
20P	0.00922	0.2079	0.04028	-0.2628	0.0103	0.0367	0.00922	-9.542	96.04
21P	0.01005	0.1479	0.04954	-0.2007	0.0099	0.0368	0.01005	-14.1	84.05
22P	0.005672	0.1046	0.03043	-0.2089	0.0074	0.0365	0.005672	-10.15	74.03
23P	0	0	0	0.0000	0.0000	0.0000	0	0	0
24P	0.005105	0.2931	-0.004212	-0.4648	0.0102	0.0235	0.005105	0.2931	109
25P	0.00772	0.4271	-0.005034	-0.5345	0.0102	0.0235	0.00772	0.4271	124
1X	0.005115	0.2354	0.004982	-0.3012	0.0100	0.0343	2.505	-2.265	101
1XY	0.005593	0.2321	0.005879	-0.3009	0.0105	0.0440	-2.494	-2.268	101
1Y	0.002015	0.2324	-0.01987	-0.3199	0.0052	0.0416	-2.498	2.732	101
2X	0.004661	0.2084	0.005012	-0.2996	0.0142	0.0393	2.505	-2.292	96.01
2XY	0.004297	0.2052	0.005902	-0.3000	0.0063	0.0386	-2.496	-2.295	96.01
2Y	0.001228	0.2048	-0.01953	-0.3109	0.0129	0.0378	-2.499	2.705	95.98
3X	0.003501	0.1875	0.004803	-0.3028	0.0140	0.0384	2.504	-2.313	92
3XY	0.00405	0.1842	0.005689	-0.3027	0.0065	0.0391	-2.496	-2.316	92.01
3Y	0.0001599	0.184	-0.01904	-0.2860	0.0105	0.0386	-2.5	2.684	91.98
4X	0.00294	0.1667	0.004468	-0.2830	0.0049	0.0375	2.503	-2.333	88
4XY	0.003219	0.1634	0.005339	-0.2825	0.0152	0.0395	-2.497	-2.337	88.01
4Y	-0.0001948	0.1643	-0.01833	-0.2854	0.0074	0.0393	-2.5	2.664	87.98
5X	0.002377	0.1481	0.004027	-0.2573	0.0162	0.0365	2.502	-2.352	84
5XY	0.002411	0.1448	0.004884	-0.2572	0.0039	0.0400	-2.498	-2.355	84
5Y	-0.001039	0.1444	-0.0174	-0.2737	0.0126	0.0400	-2.501	2.644	83.98
6X	0.001137	0.125	0.003205	-0.2524	0.0051	0.0343	2.501	-2.375	79
6XY	0.001933	0.1217	0.004018	-0.2524	0.0147	0.0404	-2.498	-2.378	79
6Y	-0.002017	0.1224	-0.01599	-0.2455	0.0047	0.0374	-2.502	2.622	78.98
7X	0.0008075	0.1055	0.002135	-0.1979	0.0188	0.0321	2.501	-2.395	74
7XY	0.0006638	0.1023	0.002876	-0.1952	-0.0019	0.0408	-2.499	-2.398	74
7Y	-0.002452	0.102	-0.01418	-0.2019	0.0190	0.0347	-2.502	2.602	73.99
8X	-0.0006278	0.08939	0.002981	-0.1696	0.0185	0.0310	3.199	-3.111	69
8XY	0.00161	0.0857	0.003777	-0.1656	-0.0039	0.0373	-3.198	-3.114	69
8Y	-0.005191	0.0863	-0.01409	-0.1554	0.0291	0.0309	-3.205	3.286	68.99
9X	-0.0006964	0.07191	0.003558	-0.1285	0.0022	0.0321	4.169	-4.098	62
9XY	0.001174	0.06753	0.004427	-0.1243	0.0098	0.0300	-4.169	-4.102	62
9Y	-0.007359	0.06781	-0.01346	-0.1291	0.0088	0.0263	-4.177	4.238	61.99
10X	-0.0003406	0.05593	0.004033	-0.1034	0.0051	0.0285	5.28	-5.224	54
10XY	0.0004344	0.05113	0.004937	-0.0983	0.0050	0.0274	-5.28	-5.229	54
10Y	-0.007949	0.0513	-0.0129	-0.0972	-0.0030	0.0221	-5.288	5.331	53.99

12X	-0.0006538	0.0359	0.003679	-0.0714	0.0063	0.0211	7.229	-7.194	40
12XY	0.0003909	0.03058	0.004612	-0.0648	0.0005	0.0240	-7.23	-7.199	40
12Y	-0.005468	0.03055	-0.01112	-0.0672	-0.0110	0.0200	-7.235	7.261	39.99
15X	-0.0005536	0.01337	0.002579	-0.0498	0.0093	0.0079	9.999	-9.987	20
15XY	0.0004103	0.01009	0.003082	-0.0398	-0.0049	0.0132	-10	-9.99	20
15Y	-0.003294	0.009791	-0.006498	-0.0380	-0.0017	0.0119	-10	10.01	19.99
18X	0	0	0	0.0000	0.0000	0.0000	12.75	-12.75	0
18XY	0	0	0	0.0000	0.0000	0.0000	-12.75	-12.75	0
18Y	0	0	0	0.0000	0.0000	0.0000	-12.75	12.75	0
19X	-0.005283	0.2342	-0.08716	-0.3512	0.0099	0.0366	-0.005283	13.98	100.9
20X	-0.003522	0.2058	-0.06372	-0.3612	0.0098	0.0367	-0.003522	9.956	95.94
21X	-0.008454	0.1449	-0.08589	-0.3599	0.0096	0.0368	-0.008454	14.39	83.91
22X	-0.007346	0.1032	-0.05047	-0.2920	0.0109	0.0362	-0.007346	10.35	73.95
i0.50E20S	-0.001685	0.01185	-0.0009065	-0.0543	-0.0056	0.0063	-0.001685	0.01185	20
i0.50E40S	-0.002809	0.03355	-0.001698	-0.0684	-0.0009	0.0120	-0.002809	0.03355	40
i0.50E74S	-0.0008355	0.1039	-0.002875	-0.2112	0.0083	0.0201	-0.0008355	0.1039	74
i0.50E84S	0.0007892	0.1463	-0.003233	-0.2656	0.0100	0.0218	0.0007892	0.1463	84
i0.50E96S	0.002852	0.2061	-0.003666	-0.3083	0.0100	0.0232	0.002852	0.2061	96
i0.50E101S	0.003716	0.2347	-0.003852	-0.3604	0.0101	0.0235	0.003716	0.2347	101

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
18P	-7.24	0.0	-7.22	0.0	0.0	-53.05	0.0	54.03	0.0	0.24	0.0	0.1	0.0	0.0	0.02	0.0	0.0
23P	0.16	0.0	-1.02	0.0	0.0	-26.57	0.0	26.59	0.0	12.49	0.0	2.3	0.0	0.0	-0.64	0.0	0.0
18X	6.12	0.0	-7.79	0.0	0.0	31.31	0.0	32.84	0.0	0.32	0.0	0.0	0.0	0.0	0.01	0.0	0.0
18XY	-5.86	0.0	-6.34	0.0	0.0	30.13	0.0	31.34	0.0	0.21	0.0	-0.0	0.0	0.0	-0.04	0.0	0.0
18Y	6.82	0.0	-6.81	0.0	0.0	-50.03	0.0	50.95	0.0	0.18	0.0	0.1	0.0	0.0	-0.03	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	-0.1810	0.0000	0.0000	0.1810	0.0021	0.2357	-0.0207
2P	0.0000	0.0000	-0.2153	0.0000	0.0000	0.2153	0.0012	0.2081	-0.0204
3P	0.0000	0.0000	-0.1379	-0.0000	0.0000	0.1379	0.0009	0.1872	-0.0199
4P	0.0000	0.0000	-0.1915	-0.0000	0.0000	0.1915	-0.0001	0.1676	-0.0192
5P	0.0000	0.0000	-0.2591	0.0000	0.0000	0.2591	-0.0006	0.1476	-0.0183
6P	0.0000	0.0000	-0.2107	-0.0000	0.0000	0.2107	-0.0012	0.1257	-0.0169
7P	0.0000	0.0000	-0.2681	0.0000	0.0000	0.2681	-0.0024	0.1051	-0.0151
8P	0.0000	0.0000	-0.2346	-0.0000	0.0000	0.2346	-0.0023	0.0901	-0.0153
9P	0.0000	0.0000	-0.2972	-0.0000	0.0000	0.2972	-0.0040	0.0721	-0.0152
10P	0.0000	0.0000	-0.4945	0.0000	0.0000	0.4945	-0.0078	0.0561	-0.0152
12P	0.0000	0.0000	-0.8413	-0.0000	0.0000	0.8413	-0.0053	0.0356	-0.0127
15P	0.0000	0.0000	-1.2025	-0.0000	0.0000	1.2025	-0.0028	0.0125	-0.0075
18P	0.0000	0.0000	-0.4321	7.2383	7.2153	-52.6208	0.0000	0.0000	0.0000
19P	0.0000	1.1848	-1.3848	0.0000	-1.1848	1.3848	0.0127	0.2339	0.0603
20P	0.0000	1.8612	-2.8517	0.0000	-1.8612	2.8517	0.0092	0.2079	0.0403
21P	0.0000	1.8449	-2.9209	0.0000	-1.8449	2.9209	0.0100	0.1479	0.0495
22P	0.0000	1.8441	-2.8432	0.0000	-1.8441	2.8432	0.0057	0.1046	0.0304
23P	0.0000	0.5100	-1.1659	-0.1553	0.5127	-25.4007	0.0000	0.0000	0.0000
24P	0.0000	0.8352	-1.9518	-0.0000	-0.8352	1.9518	0.0051	0.2931	-0.0042
25P	0.0000	1.5712	-8.3977	-0.0000	-1.5712	8.3977	0.0077	0.4271	-0.0050

1X	0.0000	0.2192	-0.3530	0.0000	-0.2192	0.3530	0.0051	0.2354	0.0050
1XY	0.0000	0.0882	-0.1810	-0.0000	-0.0882	0.1810	0.0056	0.2321	0.0059
1Y	0.0000	0.0000	-0.1810	-0.0000	0.0000	0.1810	0.0020	0.2324	-0.0199
2X	0.0000	0.1185	-0.2153	0.0000	-0.1185	0.2153	0.0047	0.2084	0.0050
2XY	0.0000	0.1185	-0.2153	0.0000	-0.1185	0.2153	0.0043	0.2052	0.0059
2Y	0.0000	0.0000	-0.2153	0.0000	0.0000	0.2153	0.0012	0.2048	-0.0195
3X	0.0000	0.3080	-0.4129	-0.0000	-0.3080	0.4129	0.0035	0.1875	0.0048
3XY	0.0000	0.0990	-0.1379	-0.0000	-0.0990	0.1379	0.0041	0.1842	0.0057
3Y	0.0000	0.0000	-0.1379	-0.0000	0.0000	0.1379	0.0002	0.1840	-0.0190
4X	0.0000	0.1324	-0.1915	-0.0000	-0.1324	0.1915	0.0029	0.1667	0.0045
4XY	0.0000	0.1324	-0.1915	-0.0000	-0.1324	0.1915	0.0032	0.1634	0.0053
4Y	0.0000	0.0000	-0.1915	-0.0000	0.0000	0.1915	-0.0002	0.1643	-0.0183
5X	0.0000	0.3569	-0.5691	0.0000	-0.3569	0.5691	0.0024	0.1481	0.0040
5XY	0.0000	0.1219	-0.2591	0.0000	-0.1219	0.2591	0.0024	0.1448	0.0049
5Y	0.0000	0.0000	-0.2591	0.0000	0.0000	0.2591	-0.0010	0.1444	-0.0174
6X	0.0000	0.1538	-0.2107	-0.0000	-0.1538	0.2107	0.0011	0.1250	0.0032
6XY	0.0000	0.1538	-0.2107	-0.0000	-0.1538	0.2107	0.0019	0.1217	0.0040
6Y	0.0000	0.0000	-0.2107	-0.0000	0.0000	0.2107	-0.0020	0.1224	-0.0160
7X	0.0000	0.4217	-0.6471	0.0000	-0.4217	0.6471	0.0008	0.1055	0.0021
7XY	0.0000	0.1347	-0.2681	0.0000	-0.1347	0.2681	0.0007	0.1023	0.0029
7Y	0.0000	0.0000	-0.2681	0.0000	0.0000	0.2681	-0.0025	0.1020	-0.0142
8X	0.0000	0.1561	-0.2346	-0.0000	-0.1561	0.2346	-0.0006	0.0894	0.0030
8XY	0.0000	0.1561	-0.2346	-0.0000	-0.1561	0.2346	0.0016	0.0857	0.0038
8Y	0.0000	0.0000	-0.2346	-0.0000	0.0000	0.2346	-0.0052	0.0863	-0.0141
9X	0.0000	0.4573	-0.6412	-0.0000	-0.4573	0.6412	-0.0007	0.0719	0.0036
9XY	0.0000	0.1963	-0.2972	-0.0000	-0.1963	0.2972	0.0012	0.0675	0.0044
9Y	0.0000	0.0000	-0.2972	-0.0000	0.0000	0.2972	-0.0074	0.0678	-0.0135
10X	0.0000	0.6037	-0.8735	0.0000	-0.6037	0.8735	-0.0003	0.0559	0.0040
10XY	0.0000	0.3167	-0.4945	0.0000	-0.3167	0.4945	0.0004	0.0511	0.0049
10Y	0.0000	0.0000	-0.4945	-0.0000	0.0000	0.4945	-0.0079	0.0513	-0.0129
12X	0.0000	0.9619	-1.4263	0.0000	-0.9619	1.4263	-0.0007	0.0359	0.0037
12XY	0.0000	0.5179	-0.8413	0.0000	-0.5179	0.8413	0.0004	0.0306	0.0046
12Y	0.0000	0.0000	-0.8413	-0.0000	0.0000	0.8413	-0.0055	0.0306	-0.0111
15X	0.0000	1.4413	-2.2355	0.0000	-1.4413	2.2355	-0.0006	0.0134	0.0026
15XY	0.0000	0.6573	-1.2025	0.0000	-0.6573	1.2025	0.0004	0.0101	0.0031
15Y	0.0000	0.0000	-1.2025	-0.0000	0.0000	1.2025	-0.0033	0.0098	-0.0065
18X	0.0000	0.2789	-0.4321	-6.1225	7.5118	31.7440	0.0000	0.0000	0.0000
18XY	0.0000	0.2789	-0.4321	5.8636	6.0583	30.5633	0.0000	0.0000	0.0000
18Y	0.0000	0.0000	-0.4321	-6.8241	6.8062	-49.6014	0.0000	0.0000	0.0000
19X	0.0000	1.1350	-1.2938	-0.0000	-1.1350	1.2938	-0.0053	0.2342	-0.0872
20X	0.0000	1.7850	-2.8517	-0.0000	-1.7850	2.8517	-0.0035	0.2058	-0.0637
21X	0.0000	1.7850	-2.9209	-0.0000	-1.7850	2.9209	-0.0085	0.1449	-0.0859
22X	0.0000	1.7850	-2.8432	-0.0000	-1.7850	2.8432	-0.0073	0.1032	-0.0505
i0.50E20S	0.0000	1.0200	-3.4408	0.0000	-1.0200	3.4408	-0.0017	0.0118	-0.0009
i0.50E40S	0.0000	1.3260	-3.6266	-0.0000	-1.3260	3.6266	-0.0028	0.0335	-0.0017
i0.50E74S	0.0000	1.0635	-2.7845	0.0000	-1.0635	2.7845	-0.0008	0.1039	-0.0029
i0.50E84S	0.0000	0.5445	-1.4544	-0.0000	-0.5445	1.4544	0.0008	0.1463	-0.0032
i0.50E96S	0.0000	0.2970	-1.1312	0.0000	-0.2970	1.1312	0.0029	0.2061	-0.0037
i0.50E101S	0.0000	0.1980	-1.0066	-0.0000	-0.1980	1.0066	0.0037	0.2347	-0.0039

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)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g16P	g16Y	Long only	-0.47	-0.49	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6

g16X	g16XY	Long only	-0.02	-0.02	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g16XY	g16X	Long only	-0.02	-0.02	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g16Y	g16P	Long only	-0.49	-0.47	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g20P	g20Y	Long only	-0.33	-0.30	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20X	g20XY	Long only	-0.33	-0.38	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20XY	g20X	Long only	-0.38	-0.33	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20Y	g20P	Long only	-0.30	-0.33	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22P	g22Y	Long only	-1.51	-1.48	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22Y	g22P	Long only	-1.48	-1.51	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g24P	g24Y	Short only	-2.57	-2.20	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g24Y	g24P	Short only	-2.20	-2.57	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26P	g26Y	Short only	-4.59	-4.28	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26Y	g26P	Short only	-4.28	-4.59	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g28P	g28Y	Short only	-1.41	-1.27	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28Y	g28P	Short only	-1.27	-1.41	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30X	g30XY	Short only	-0.65	-0.66	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g30XY	g30X	Short only	-0.66	-0.65	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g32P	g32Y	Short only	-0.86	-0.69	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g32Y	g32P	Short only	-0.69	-0.86	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.822	50.00	50.00	3.64
Clamp2	1.721	50.00	50.00	3.44
Clamp3	3.405	50.00	50.00	6.81
Clamp4	3.364	50.00	50.00	6.73
Clamp5	3.455	50.00	50.00	6.91
Clamp6	3.423	50.00	50.00	6.85
Clamp7	3.389	50.00	50.00	6.78
Clamp8	3.357	50.00	50.00	6.71
Clamp9	0.515	50.00	50.00	1.03
Clamp10	0.672	50.00	50.00	1.34
Clamp11	0.772	50.00	50.00	1.54
Clamp12	0.788	50.00	50.00	1.58
Clamp13	1.062	50.00	50.00	2.12
Clamp14	1.720	50.00	50.00	3.44
Clamp15	2.660	50.00	50.00	5.32
Clamp17	1.026	50.00	50.00	2.05
Clamp18	1.169	50.00	50.00	2.34
Clamp19	1.553	50.00	50.00	3.11
Clamp20	2.981	50.00	50.00	5.96
Clamp21	3.861	50.00	50.00	7.72
Clamp22	3.589	50.00	50.00	7.18
Clamp23	0.416	50.00	50.00	0.83
Clamp24	0.201	50.00	50.00	0.40
Clamp25	0.246	50.00	50.00	0.49
Clamp26	0.246	50.00	50.00	0.49
Clamp27	2.123	50.00	50.00	4.25
Clamp28	8.543	50.00	50.00	17.09

*** 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	0.04414	0.4282	-0.03299	-0.5883	0.0679	0.0738	2.544	2.928	101
2P	0.03858	0.377	-0.03231	-0.5661	0.0524	0.0843	2.539	2.877	95.97
3P	0.03548	0.339	-0.03131	-0.5295	0.0543	0.0817	2.535	2.839	91.97
4P	0.03092	0.3026	-0.02993	-0.5160	0.0653	0.0790	2.531	2.803	87.97
5P	0.02706	0.2675	-0.02825	-0.4817	0.0512	0.0765	2.527	2.767	83.97
6P	0.0227	0.2276	-0.02563	-0.4413	0.0632	0.0758	2.523	2.728	78.97
7P	0.01751	0.192	-0.02236	-0.3491	0.0275	0.0753	2.518	2.692	73.98
8P	0.0158	0.1661	-0.02283	-0.2702	0.0034	0.0769	3.216	3.366	68.98
9P	0.01122	0.1367	-0.02256	-0.2207	0.0309	0.0790	4.181	4.307	61.98
10P	0.003983	0.1097	-0.02264	-0.1848	0.0493	0.0782	5.284	5.39	53.98
12P	-0.01247	0.06999	-0.02158	-0.1509	0.0265	0.0653	7.218	7.3	39.98
15P	-0.008032	0.02527	-0.01309	-0.1082	-0.0449	0.0212	9.992	10.03	19.99
18P	0	0	0	0.0000	0.0000	0.0000	12.75	12.75	0
19P	0.06694	0.4253	0.1282	-0.5655	0.0577	0.0798	0.06694	-13.32	101.1
20P	0.05667	0.3749	0.08855	-0.5702	0.0569	0.0849	0.05667	-9.375	96.09
21P	0.05138	0.2656	0.112	-0.4789	0.0555	0.0869	0.05138	-13.98	84.11
22P	0.03488	0.1896	0.06483	-0.4297	0.0532	0.0820	0.03488	-10.06	74.06
23P	0	0	0	0.0000	0.0000	0.0000	0	0	0
24P	0.05534	0.5491	-0.003812	-1.0090	0.0586	0.0532	0.05534	0.5491	109
25P	0.07042	0.8497	-0.006928	-1.2156	0.0587	0.0534	0.07042	0.8497	124
1X	0.05038	0.4283	0.01429	-0.5722	0.0565	0.0745	2.55	-2.072	101
1XY	0.05128	0.4212	0.01928	-0.5726	0.0596	0.0951	-2.449	-2.079	101
1Y	0.04339	0.4212	-0.028	-0.5868	0.0472	0.0920	-2.457	2.921	101
2X	0.04607	0.3774	0.01421	-0.5599	0.0670	0.0870	2.546	-2.123	96.01
2XY	0.04554	0.3704	0.01922	-0.5583	0.0508	0.0829	-2.454	-2.13	96.02
2Y	0.03899	0.3701	-0.02731	-0.5671	0.0647	0.0789	-2.461	2.87	95.97
3X	0.04102	0.3393	0.01368	-0.5374	0.0649	0.0847	2.541	-2.161	92.01
3XY	0.04243	0.3324	0.01865	-0.5358	0.0536	0.0840	-2.458	-2.168	92.02
3Y	0.034	0.332	-0.02633	-0.5289	0.0629	0.0798	-2.466	2.832	91.97
4X	0.03746	0.3024	0.01285	-0.5143	0.0491	0.0826	2.537	-2.198	88.01
4XY	0.03789	0.2955	0.01774	-0.5147	0.0680	0.0849	-2.462	-2.205	88.02
4Y	0.03055	0.2958	-0.02505	-0.5125	0.0503	0.0808	-2.469	2.796	87.97
5X	0.03346	0.2679	0.01177	-0.4726	0.0697	0.0801	2.533	-2.232	84.01
5XY	0.03385	0.2611	0.01657	-0.4695	0.0462	0.0861	-2.466	-2.239	84.02
5Y	0.02649	0.2608	-0.02351	-0.4826	0.0627	0.0816	-2.474	2.761	83.98
6X	0.02792	0.2273	0.009972	-0.4441	0.0470	0.0781	2.528	-2.273	79.01
6XY	0.02946	0.2209	0.0146	-0.4432	0.0674	0.0834	-2.471	-2.279	79.01
6Y	0.02114	0.221	-0.02127	-0.4365	0.0484	0.0781	-2.479	2.721	78.98
7X	0.02391	0.1923	0.007659	-0.3467	0.0749	0.0757	2.524	-2.308	74.01
7XY	0.02379	0.1856	0.01209	-0.3498	0.0339	0.0810	-2.476	-2.314	74.01
7Y	0.01755	0.1855	-0.01865	-0.3608	0.0562	0.0745	-2.482	2.685	73.98
8X	0.01787	0.1654	0.008155	-0.2849	0.0758	0.0774	3.218	-3.035	69.01
8XY	0.02243	0.1565	0.01358	-0.2902	0.0280	0.0773	-3.178	-3.043	69.01
8Y	0.01108	0.1562	-0.01912	-0.2909	0.0632	0.0708	-3.189	3.356	68.98
9X	0.01355	0.136	0.008179	-0.2137	0.0384	0.0835	4.184	-4.034	62.01
9XY	0.01745	0.1229	0.01461	-0.2313	0.0522	0.0706	-4.153	-4.047	62.01
9Y	0.006061	0.1226	-0.01896	-0.2325	0.0118	0.0630	-4.164	4.293	61.98
10X	0.01031	0.1104	0.00801	-0.1788	0.0389	0.0794	5.29	-5.17	54.01
10XY	0.01187	0.0922	0.01539	-0.1814	0.0389	0.0705	-5.268	-5.188	54.02
10Y	0.003669	0.09211	-0.01886	-0.1802	0.0351	0.0658	-5.276	5.372	53.98

12X	0.004334	0.07135	0.007428	-0.1503	0.0332	0.0687	7.234	-7.159	40.01
12XY	0.006325	0.05303	0.01417	-0.1178	0.0209	0.0727	-7.224	-7.177	40.01
12Y	-0.01307	0.05284	-0.01459	-0.1239	0.0396	0.0705	-7.243	7.283	39.99
15X	0.0004096	0.02735	0.005286	-0.0996	0.0275	0.0314	10	-9.973	20.01
15XY	0.002449	0.01635	0.008994	-0.0655	0.0017	0.0412	-9.998	-9.984	20.01
15Y	-0.009206	0.01602	-0.008704	-0.0576	-0.0227	0.0352	-10.01	10.02	19.99
18X	0	0	0	0.0000	0.0000	0.0000	12.75	-12.75	0
18XY	0	0	0	0.0000	0.0000	0.0000	-12.75	-12.75	0
18Y	0	0	0	0.0000	0.0000	0.0000	-12.75	12.75	0
19X	0.02793	0.4242	-0.1467	-0.5956	0.0575	0.0787	0.02793	14.17	100.9
20X	0.02918	0.3732	-0.1052	-0.6080	0.0570	0.0729	0.02918	10.12	95.89
21X	0.01232	0.2634	-0.1332	-0.5427	0.0554	0.0659	0.01232	14.51	83.87
22X	0.007952	0.1885	-0.07885	-0.4637	0.0376	0.0689	0.007952	10.44	73.92
i0.50E20S	-0.004017	0.02205	-0.0003698	-0.1014	-0.0121	0.0170	-0.004017	0.02205	20
i0.50E40S	-0.003977	0.06246	-0.0007325	-0.1265	0.0171	0.0305	-0.003977	0.06246	40
i0.50E74S	0.02062	0.1891	-0.001448	-0.3752	0.0544	0.0460	0.02062	0.1891	74
i0.50E84S	0.03019	0.2644	-0.001853	-0.4719	0.0567	0.0495	0.03019	0.2644	84
i0.50E96S	0.04225	0.3724	-0.00247	-0.5718	0.0585	0.0522	0.04225	0.3724	96
i0.50E101S	0.04729	0.4268	-0.002814	-0.7143	0.0583	0.0529	0.04729	0.4268	101

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
18P	-12.95	0.0	-13.38	0.0	0.0	-93.15	0.0	0.0	95.00	0.0	0.50	0.0	0.2	0.0	0.0	0.01	0.0	0.0
23P	0.42	0.0	-1.70	0.0	0.0	-10.65	0.0	0.0	10.79	0.0	23.19	0.0	5.8	0.0	0.0	-1.74	0.0	0.0
18X	12.63	0.0	-17.12	0.0	0.0	64.27	0.0	0.0	67.70	0.0	0.69	0.0	0.0	0.0	0.0	-0.01	0.0	0.0
18XY	-14.77	0.0	-15.02	0.0	0.0	76.44	0.0	0.0	79.29	0.0	0.29	0.0	-0.1	0.0	0.0	-0.09	0.0	0.0
18Y	9.99	0.0	-10.71	0.0	0.0	-73.35	0.0	0.0	74.80	0.0	0.32	0.0	0.3	0.0	0.0	-0.07	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	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0441	0.4282	-0.0330
2P	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0386	0.3770	-0.0323
3P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0355	0.3390	-0.0313
4P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0309	0.3026	-0.0299
5P	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0271	0.2675	-0.0283
6P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0227	0.2276	-0.0256
7P	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0175	0.1920	-0.0224
8P	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0158	0.1661	-0.0228
9P	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0112	0.1367	-0.0226
10P	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0040	0.1097	-0.0226
12P	0.0000	1.1796	-0.9002	0.0000	-1.1796	0.9002	-0.0125	0.0700	-0.0216
15P	0.0000	0.7419	-0.5961	0.0000	-0.7419	0.5961	-0.0080	0.0253	-0.0131
18P	0.0000	0.7419	-0.5961	12.9461	12.6398	-92.5586	0.0000	0.0000	0.0000
19P	0.0260	0.9419	-0.5567	-0.0260	-0.9419	0.5567	0.0669	0.4253	0.1282
20P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0567	0.3749	0.0885
21P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0514	0.2656	0.1120
22P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0349	0.1896	0.0648
23P	0.0000	0.7419	-0.5961	-0.4218	0.9625	-10.0493	0.0000	0.0000	0.0000
24P	0.0000	1.2959	-0.5117	-0.0000	-1.2959	0.5117	0.0553	0.5491	-0.0038
25P	0.0000	4.8029	-3.7497	-0.0000	-4.8029	3.7497	0.0704	0.8497	-0.0069

1X	0.0000	0.6669	-0.2327	0.0000	-0.6669	0.2327	0.0504	0.4283	0.0143
1XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0513	0.4212	0.0193
1Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0434	0.4212	-0.0280
2X	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0461	0.3774	0.0142
2XY	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0455	0.3704	0.0192
2Y	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0390	0.3701	-0.0273
3X	0.0000	0.9249	-0.2557	-0.0000	-0.9249	0.2557	0.0410	0.3393	0.0137
3XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0424	0.3324	0.0186
3Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0340	0.3320	-0.0263
4X	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0375	0.3024	0.0128
4XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0379	0.2955	0.0177
4Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0306	0.2958	-0.0250
5X	0.0000	1.0119	-0.2637	0.0000	-1.0119	0.2637	0.0335	0.2679	0.0118
5XY	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0339	0.2611	0.0166
5Y	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0265	0.2608	-0.0235
6X	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0279	0.2273	0.0100
6XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0295	0.2209	0.0146
6Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0211	0.2210	-0.0213
7X	0.0000	1.6215	-0.5838	0.0000	-1.6215	0.5838	0.0239	0.1923	0.0077
7XY	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0238	0.1856	0.0121
7Y	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0175	0.1855	-0.0186
8X	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0179	0.1654	0.0082
8XY	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0224	0.1565	0.0136
8Y	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0111	0.1562	-0.0191
9X	0.0000	1.2987	-0.3831	-0.0000	-1.2987	0.3831	0.0135	0.1360	0.0082
9XY	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0174	0.1229	0.0146
9Y	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0061	0.1226	-0.0190
10X	0.0000	1.3847	-0.3911	0.0000	-1.3847	0.3911	0.0103	0.1104	0.0080
10XY	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0119	0.0922	0.0154
10Y	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0037	0.0921	-0.0189
12X	0.0000	2.6426	-1.0352	0.0000	-2.6426	1.0352	0.0043	0.0713	0.0074
12XY	0.0000	1.1796	-0.9002	0.0000	-1.1796	0.9002	0.0063	0.0530	0.0142
12Y	0.0000	1.1796	-0.9002	-0.0000	-1.1796	0.9002	-0.0131	0.0528	-0.0146
15X	0.0000	3.3239	-0.8341	0.0000	-3.3239	0.8341	0.0004	0.0274	0.0053
15XY	0.0000	0.7419	-0.5961	0.0000	-0.7419	0.5961	0.0024	0.0163	0.0090
15Y	0.0000	0.7419	-0.5961	-0.0000	-0.7419	0.5961	-0.0092	0.0160	-0.0087
18X	0.0000	0.7419	-0.5961	-12.6289	16.3753	64.8691	0.0000	0.0000	0.0000
18XY	0.0000	0.7419	-0.5961	14.7663	14.2746	77.0348	0.0000	0.0000	0.0000
18Y	0.0000	0.7419	-0.5961	-9.9947	9.9656	-72.7522	0.0000	0.0000	0.0000
19X	0.0090	0.9339	-0.4867	-0.0090	-0.9339	0.4867	0.0279	0.4242	-0.1467
20X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0292	0.3732	-0.1052
21X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0123	0.2634	-0.1332
22X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0080	0.1885	-0.0789
i0.50E20S	0.0000	0.7419	-0.9521	0.0000	-0.7419	0.9521	-0.0040	0.0220	-0.0004
i0.50E40S	0.0000	1.1796	-1.2212	0.0000	-1.1796	1.2212	-0.0040	0.0625	-0.0007
i0.50E74S	0.0000	0.6745	-0.7578	0.0000	-0.6745	0.7578	0.0206	0.1891	-0.0014
i0.50E84S	0.0000	0.2369	-0.3237	-0.0000	-0.2369	0.3237	0.0302	0.2644	-0.0019
i0.50E96S	0.0000	0.2369	-0.2937	0.0000	-0.2369	0.2937	0.0422	0.3724	-0.0025
i0.50E101S	0.0000	0.2369	-0.3587	-0.0000	-0.2369	0.3587	0.0473	0.4268	-0.0028

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)	Original-Supported RLX	Original-Supported RLY	Original-Supported RLZ	Original-Supported L/R	Original-Supported KL/R	Original-Supported Curve No.	Alternate-Unsupported L/R Cap. (kips)	Alternate-Unsupported RLOUT	Alternate-Unsupported L/R	Alternate-Unsupported KL/R	Alternate-Unsupported Curve No.
g16P	g16Y	Long only	-0.43	-0.73	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6

g16Y	g16P	Long only	-0.73	-0.43	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g18Y	g18P	Long only	-0.78	0.04	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22P	g22Y	Long only	-1.97	-3.16	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22Y	g22P	Long only	-3.16	-1.97	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g24P	g24Y	Short only	-2.87	-5.36	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g24Y	g24P	Short only	-5.36	-2.87	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26P	g26Y	Short only	-5.68	-8.43	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26Y	g26P	Short only	-8.43	-5.68	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g27P	g27X	Short only	-1.18	-0.09	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g27X	g27P	Short only	-0.09	-1.18	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28P	g28Y	Short only	-2.83	-1.73	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28Y	g28P	Short only	-1.73	-2.83	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30XY	g30X	Short only	-2.51	0.03	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g32P	g32Y	Short only	-1.52	-0.99	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g32Y	g32P	Short only	-0.99	-1.52	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.094	50.00	50.00	2.19
Clamp2	1.053	50.00	50.00	2.11
Clamp3	2.583	50.00	50.00	5.17
Clamp4	2.583	50.00	50.00	5.17
Clamp5	2.583	50.00	50.00	5.17
Clamp6	2.583	50.00	50.00	5.17
Clamp7	2.583	50.00	50.00	5.17
Clamp8	2.583	50.00	50.00	5.17
Clamp9	0.960	50.00	50.00	1.92
Clamp10	1.046	50.00	50.00	2.09
Clamp11	1.723	50.00	50.00	3.45
Clamp12	1.354	50.00	50.00	2.71
Clamp13	1.439	50.00	50.00	2.88
Clamp14	2.838	50.00	50.00	5.68
Clamp15	3.427	50.00	50.00	6.85
Clamp17	0.430	50.00	50.00	0.86
Clamp18	0.377	50.00	50.00	0.75
Clamp19	0.401	50.00	50.00	0.80
Clamp20	1.015	50.00	50.00	2.03
Clamp21	1.698	50.00	50.00	3.40
Clamp22	1.207	50.00	50.00	2.41
Clamp23	0.706	50.00	50.00	1.41
Clamp24	0.305	50.00	50.00	0.61
Clamp25	0.305	50.00	50.00	0.61
Clamp26	0.305	50.00	50.00	0.61
Clamp27	1.393	50.00	50.00	2.79
Clamp28	6.093	50.00	50.00	12.19

*** 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	Usage Control	Max Comp.	Comp. Member	Comp. Force	Comp. Load Case	L/R Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R
				(ksi)	%		%		(kips)		(kips)	(kips)	(kips)				
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	65.89	Tens	61.72	g8X	-55.236	NESC Ext	89.489	166.500	210.937	1.000	1.000	1.000	60.36
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	78.32	Comp	78.32	g10X	-71.598	NESC Ext	91.422	166.500	210.937	1.000	1.000	1.000	71.33
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	75.60	Comp	75.60	g14X	-94.096	NESC Ext	124.467	199.800	303.750	0.333	0.333	0.333	68.42
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	56.35	Comp	56.35	g15P	-9.852	NESC Ext	17.484	33.300	25.312	0.500	0.750	0.500	106.07
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	26.60	Comp	26.60	g21P	-6.460	NESC Ext	24.281	33.300	33.750	0.500	0.750	0.500	97.34
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.77	Cross	34.77	g26Y	-8.433	NESC Ext	24.256	49.950	50.625	1.000	0.500	0.500	110.34
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	10.05	Cross	10.05	g28P	-2.831	NESC Ext	28.168	33.300	42.187	1.000	0.560	0.560	120.07
M1	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
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	32.23	Comp	32.23	g60X	-5.043	NESC Ext	15.646	33.300	33.750	1.000	0.500	0.500	164.79
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	25.77	Comp	25.77	g41P	-6.760	NESC Ext	26.226	33.300	33.750	1.000	1.000	1.000	113.64
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	15.45	g42P	-4.806	NESC Hea	31.104	49.950	50.625	1.000	0.500	0.500	98.95
M5	L4x3x1/4	SAU	4X3X0.25	33.0	23.29	Comp	23.29	g62X	-6.703	NESC Ext	28.782	33.300	33.750	1.000	0.500	0.500	135.56
M6	L4x4x1/4	SAE	4X4X0.25	33.0	28.31	Comp	28.31	g63P	-5.824	NESC Ext	20.575	33.300	33.750	1.000	0.500	0.500	192.00
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.59	Comp	24.59	g45P	-1.760	NESC Hea	7.160	16.650	12.656	1.000	1.000	1.000	179.95
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.91	Tens	0.00	g50Y	0.000		3.334	33.300	33.750	1.000	1.000	1.000	358.34
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	94.01	Tens	57.62	g33P	-2.495	NESC Hea	4.330	33.300	33.750	0.580	0.790	0.580	309.85
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	83.05	Tens	61.16	g57X	-7.181	NESC Ext	11.742	16.650	12.656	1.000	1.000	1.000	140.52
M10	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	85.54	Tens	80.39	g70Y	-8.479	NESC Ext	20.689	16.800	10.547	1.000	1.000	1.000	85.71

Length	Curve No.	No. Of Bolts	Member Comp.	No. Comp.	(ft)
5.000	1	10			60.36
7.133	1	10			71.33
20.375	1	12			68.42
7.071	2	2			109.55
6.403	2	2			103.01
7.071	3	3			115.17
7.614	6	2			120.04
0.000	0	0			0.00
10.560	6	2			147.54
5.000	3	2			116.82
7.669	3	3			109.48
14.460	6	2			129.57
20.000	6	2			164.28
6.403	4	1			179.95
12.661	5	2			301.66
18.876	5	2			264.71
5.000	4	1			140.52
3.536	3	1	A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??		102.85

M11	L5x5x3/8	SAE	5X5X0.375	33.0	27.29	Comp	27.29	g65XY	-4.585	NESC Ext	35.163	16.800	21.094	1.000	1.000	1.000	171.42	171.42	14.142	4	1
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	22.05	Comp	22.05	g66Y	-3.101	NESC Ext	15.475	16.800	14.062	1.000	1.000	1.000	176.80	176.80	10.225	4	1
PM	Powermount	Pwmnt	Pipe 18" Std.	50.0	2.80	Comp	2.80	g71P	-25.400	NESC Hea	907.332	0.000	0.000	1.000	1.000	1.000	38.46	38.46	20.000	1	0
M13	L4x3x1/4	SAU	4X3X0.25	33.0	15.61	Comp	15.61	g47P	-5.310	NESC Hea	34.023	66.600	67.500	1.000	0.500	0.500	112.62	116.31	12.013	3	4
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	33.0	30.31	Tens	0.00	g58Y	0.000		14.788	33.300	33.750	1.000	1.000	1.000	60.00	60.00	5.000	1	2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	65.89	Tens	65.89	g8Y	46.203	NESC Ext	70.122	166.500	210.937	183.823	5.000	10	3.310	0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	78.32	Comp	70.59	g10Y	63.946	NESC Ext	90.582	166.500	210.937	183.823	7.133	10	3.310	0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	75.60	Comp	65.32	g14Y	70.568	NESC Ext	108.039	199.800	303.750	281.250	20.375	12	3.310	0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	56.35	Comp	50.08	g15XY	9.608	NESC Ext	19.184	33.300	25.312	21.094	7.071	2	1.000	0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	26.60	Comp	25.73	g21XY	6.428	NESC Ext	24.985	33.300	33.750	26.766	6.403	2	1.000	0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.77	Cross	27.31	g23X	7.878	NESC Ext	28.846	49.950	50.625	42.187	7.071	3	1.000	0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	10.05	Cross	10.02	g28X	3.335	NESC Ext	35.241	33.300	42.187	35.156	7.614	2	1.000	0.875
M1	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
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	32.23	Comp	4.90	g60P	1.078	NESC Ext	28.846	33.300	33.750	21.984	10.560	2	1.000	0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	25.77	Comp	19.60	g41X	5.763	NESC Ext	32.410	33.300	33.750	29.412	5.000	2	1.000	0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	6.80	g40Y	3.233	NESC Hea	47.520	0.000	0.000	0.000	5.000	0	0.000	0
M5	L4x3x1/4	SAU	4X3X0.25	33.0	23.29	Comp	8.35	g62P	2.093	NESC Ext	36.271	33.300	33.750	25.078	14.460	2	1.000	0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	28.31	Comp	11.77	g64P	3.310	NESC Ext	44.624	33.300	33.750	28.125	20.000	2	2.000	0.875
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.59	Comp	21.38	g46P	3.856	NESC Hea	19.184	33.300	25.312	18.035	9.155	2	1.000	0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.91	Tens	20.91	g50XY	4.597	NESC Hea	24.985	33.300	33.750	21.984	12.661	2	1.000	0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	94.01	Tens	94.01	g37X	11.149	NESC Ext	24.985	16.650	16.875	11.859	30.416	1	1.000	0.875
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	83.05	Tens	83.05	g57P	7.387	NESC Ext	19.184	16.650	12.656	8.895	5.000	1	1.000	0.875
M10	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	85.54	Tens	85.54	g70XY	9.022	NESC Ext	22.961	16.800	10.547	11.719	3.536	1	1.000	0.875

0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??

M11	L5x5x3/8	SAE	5X5X0.375	33.0	27.29	Comp	0.00	g65Y	0.000	99.560	16.800	21.094	23.437	14.142	1 1.000 0.6875
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	22.05	Comp	0.00	g66Y	0.000	45.088	16.800	14.062	15.625	10.225	1 1.000 0.6875
PM	Powermount Pwmnt		Pipe 18" Std.	50.0	2.80	Comp	0.00	g78P	0.000	969.998	0.000	0.000	0.000	15.000	0 0.000 0
M13	L4x3x1/4	SAU	4X3X0.25	33.0	15.61	Comp	1.23	g47XY	0.539NESC Ext	43.696	66.600	67.500	56.250	12.013	4 1.000 0.875
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	33.0	30.31	Tens	30.31	g51P	2.813NESC Hea	9.281	33.300	33.750	28.125	5.000	2 1.000 0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	57.62	g33P	Angle
NESC Extreme	94.01	g37X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.64	NESC Heavy	0.0
Clamp2	Clamp	3.44	NESC Heavy	0.0
Clamp3	Clamp	6.81	NESC Heavy	0.0
Clamp4	Clamp	6.73	NESC Heavy	0.0
Clamp5	Clamp	6.91	NESC Heavy	0.0
Clamp6	Clamp	6.85	NESC Heavy	0.0
Clamp7	Clamp	6.78	NESC Heavy	0.0
Clamp8	Clamp	6.71	NESC Heavy	0.0
Clamp9	Clamp	1.92	NESC Extreme	0.0
Clamp10	Clamp	2.09	NESC Extreme	0.0
Clamp11	Clamp	3.45	NESC Extreme	0.0
Clamp12	Clamp	2.71	NESC Extreme	0.0
Clamp13	Clamp	2.88	NESC Extreme	0.0
Clamp14	Clamp	5.68	NESC Extreme	0.0
Clamp15	Clamp	6.85	NESC Extreme	0.0
Clamp17	Clamp	2.05	NESC Heavy	0.0
Clamp18	Clamp	2.34	NESC Heavy	0.0
Clamp19	Clamp	3.11	NESC Heavy	0.0
Clamp20	Clamp	5.96	NESC Heavy	0.0
Clamp21	Clamp	7.72	NESC Heavy	0.0
Clamp22	Clamp	7.18	NESC Heavy	0.0
Clamp23	Clamp	1.41	NESC Extreme	0.0
Clamp24	Clamp	0.61	NESC Extreme	0.0
Clamp25	Clamp	0.61	NESC Extreme	0.0
Clamp26	Clamp	0.61	NESC Extreme	0.0
Clamp27	Clamp	4.25	NESC Heavy	0.0
Clamp28	Clamp	17.09	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	Clamp1	Clamp	19P	0.000	1.185	1.385	1.822
NESC Heavy	Clamp2	Clamp	19X	0.000	1.135	1.294	1.721
NESC Heavy	Clamp3	Clamp	20P	0.000	1.861	2.852	3.405
NESC Heavy	Clamp4	Clamp	20X	0.000	1.785	2.852	3.364
NESC Heavy	Clamp5	Clamp	21P	0.000	1.845	2.921	3.455
NESC Heavy	Clamp6	Clamp	21X	0.000	1.785	2.921	3.423
NESC Heavy	Clamp7	Clamp	22P	0.000	1.844	2.843	3.389
NESC Heavy	Clamp8	Clamp	22X	0.000	1.785	2.843	3.357
NESC Heavy	Clamp9	Clamp	3X	0.000	0.308	0.413	0.515
NESC Heavy	Clamp10	Clamp	5X	0.000	0.357	0.569	0.672
NESC Heavy	Clamp11	Clamp	7X	0.000	0.422	0.647	0.772
NESC Heavy	Clamp12	Clamp	9X	0.000	0.457	0.641	0.788
NESC Heavy	Clamp13	Clamp	10X	0.000	0.604	0.873	1.062
NESC Heavy	Clamp14	Clamp	12X	0.000	0.962	1.426	1.720
NESC Heavy	Clamp15	Clamp	15X	0.000	1.441	2.236	2.660
NESC Heavy	Clamp17	Clamp	i0.50E10lS	0.000	0.198	1.007	1.026
NESC Heavy	Clamp18	Clamp	i0.50E96S	0.000	0.297	1.131	1.169
NESC Heavy	Clamp19	Clamp	i0.50E84S	0.000	0.544	1.454	1.553
NESC Heavy	Clamp20	Clamp	i0.50E74S	0.000	1.063	2.784	2.981
NESC Heavy	Clamp21	Clamp	i0.50E40S	0.000	1.326	3.627	3.861
NESC Heavy	Clamp22	Clamp	i0.50E20S	0.000	1.020	3.441	3.589
NESC Heavy	Clamp23	Clamp	1X	0.000	0.219	0.353	0.416
NESC Heavy	Clamp24	Clamp	1XY	0.000	0.088	0.181	0.201
NESC Heavy	Clamp25	Clamp	2X	0.000	0.119	0.215	0.246
NESC Heavy	Clamp26	Clamp	2XY	0.000	0.119	0.215	0.246
NESC Heavy	Clamp27	Clamp	24P	0.000	0.835	1.952	2.123
NESC Heavy	Clamp28	Clamp	25P	0.000	1.571	8.398	8.543
NESC Extreme	Clamp1	Clamp	19P	0.026	0.942	0.557	1.094
NESC Extreme	Clamp2	Clamp	19X	0.009	0.934	0.487	1.053
NESC Extreme	Clamp3	Clamp	20P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp4	Clamp	20X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp5	Clamp	21P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp6	Clamp	21X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp7	Clamp	22P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp8	Clamp	22X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp9	Clamp	3X	0.000	0.925	0.256	0.960
NESC Extreme	Clamp10	Clamp	5X	0.000	1.012	0.264	1.046
NESC Extreme	Clamp11	Clamp	7X	0.000	1.622	0.584	1.723
NESC Extreme	Clamp12	Clamp	9X	0.000	1.299	0.383	1.354
NESC Extreme	Clamp13	Clamp	10X	0.000	1.385	0.391	1.439
NESC Extreme	Clamp14	Clamp	12X	0.000	2.643	1.035	2.838
NESC Extreme	Clamp15	Clamp	15X	0.000	3.324	0.834	3.427
NESC Extreme	Clamp17	Clamp	i0.50E10lS	0.000	0.237	0.359	0.430
NESC Extreme	Clamp18	Clamp	i0.50E96S	0.000	0.237	0.294	0.377
NESC Extreme	Clamp19	Clamp	i0.50E84S	0.000	0.237	0.324	0.401
NESC Extreme	Clamp20	Clamp	i0.50E74S	0.000	0.675	0.758	1.015
NESC Extreme	Clamp21	Clamp	i0.50E40S	0.000	1.180	1.221	1.698
NESC Extreme	Clamp22	Clamp	i0.50E20S	0.000	0.742	0.952	1.207
NESC Extreme	Clamp23	Clamp	1X	0.000	0.667	0.233	0.706
NESC Extreme	Clamp24	Clamp	1XY	0.000	0.237	0.193	0.305
NESC Extreme	Clamp25	Clamp	2X	0.000	0.237	0.193	0.305

NESC Extreme	Clamp26	Clamp	2XY	0.000	0.237	0.193	0.305
NESC Extreme	Clamp27	Clamp	24P	0.000	1.296	0.512	1.393
NESC Extreme	Clamp28	Clamp	25P	0.000	4.803	3.750	6.093

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	17.096	0.000	32.623	1431.527	20.835	15.809
NESC Extreme	27.222	4.667	12.712	2247.877	400.508	52.322

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 23724.7
Total: 23724.7

*** End of Report

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

Subject:	Anchor Bolt Analysis for CL&P Tower # 1321
Location:	Startford, CT
Rev. 1: 1/23/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $Uplift := 76.44 \cdot kips$ (User Input)

Shear = $Shear := 21.27 \cdot kips$ (User Input)

Compression = $Compression := 93.15 \cdot kips$ (User Input)

Anchor Bolt Data:

Use ASTM A36 (Assumed Conservative Value - Actual Grade Unknown)

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

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

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

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

Threads per Inch = $n := 7$ (User Input)

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

Anchor Bolt Area:

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.969 \cdot in^2$ (AISC 13th Ed. pg. 7-83)

Check Anchor Bolt Area:

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

Required Area = $A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 3.4 \cdot in^2$

$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y} \right] = -0.397 \cdot in^2$

Provided Area = $A_{sprovided} := A_n \cdot N = 3.9 \cdot in^2$

$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right)$

Condition2 = "OK"

$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right)$

Condition3 = "OK"

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

Subject:	Foundation Analysis CL&P Tower # 1321
Location:	Stratford, CT
Rev. 1: 1/23/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13317.000

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 21.27·1.1·kips = 23.4·kips	(User Input)
Compression =	Comp := 93.15·1.1·kips = 102.5·kips	(User Input)
Uplift =	Uplift := 76.44·1.1·kips = 84.1·kips	(User Input)

Tower Properties:

Tower Height =	$H_t := 101 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 5.67 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 5 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 8 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2.0 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 33.5 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 3.5 \cdot ft$	(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 =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 128 \cdot ft^3$

Volume of the Concrete Mat = $V_{mat} := \frac{\left(Mat_w^2 \cdot Mat_t\right)}{4} = 982 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := P_{w2}^2 = 25\,ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[P_{w2} - \frac{\left(P_{w2} - P_{w1}\right)}{P_H} \cdot \left(P_H - Mat_t\right)\right]^2 = 14.84\,ft^2$

Volume of the Concrete Pier = $V_{pier} := \frac{\left(P_H - Mat_t\right)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right) = 42.75 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{mat} + V_{pier} = 1153 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 172.9 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{Conc}}{Uplift} = 2.06$

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

Uplift_Check = "OK"

Cross Sectional Area of Mat = $A_{mat} := \frac{Mat_w^2}{4} = 281\,ft^2$

Section Modulus of Mat = $S_{mat} := \frac{\left(\frac{Mat_w}{2}\right)^3}{6} = 783 \cdot ft^3$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{mat}} + \frac{Shear \cdot \left(Mat_t\right)}{S_{mat}} = 1.09 \cdot ksf$

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

Bearing_Check = "OK"

Network Modernization RFDS v3.0

Site ID	CT11426A	Latitude	41.23785
		Longitude	-73.12244
Site Name	Stratford/MP/James Farm	Site Type	Structure (Non-Building)
Address	670 Chapel St, Stratford, CT 06614	Site Class	Utility Lattice Tower
Market	Connecticut	Landlord	CL&P

Configuration
4B

Approvals	
Market RF	
Market Development	

RFDS Revision		Date	10/15/2013
RFDS Final			
Work Order #		NOC#	(888) 218-6664

Site Information

Existing Configuration					Proposed Configuration			
1	2	3	4	Cabinet #	1	2	3	4
GSM				Technology	GSM/UMTS/LTE			
S8000				Cabinet type	6102			
				CBU				
				DUW30	2			
				DUL20	1			
				DUG20	1			
				DUS41				
				RBS6601				
6				dTRU/TRX				
				RU22 B4				
				RUS01 B2	6			
				RUS01 B4	6			

- [ ] Relocate cabinet
- [ ] Add cabinet
- [x] Swap cabinet
- [ ] Remove cabinet
- [ ] Make cabinet dark

Scope of Work

Replace existing S8000 GSM cabinet with 6102 cabinet. Add 2 DUW30, DUL20, DUG20, 6 RUS01 B2 and 6 RUS01 B4 radios to 6102 cabinet. Relocate LMU and 7705 in 6102.

ALPHA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [ ] Add TMA
- [ ] Swap TMA
- [x] Remove TMA
- [ ] Add RRU
- [ ] Swap existing RRU
- [ ] Remove RRU
- [ ] Consolidate coax cables
- [x] Add coax cables
- [ ] Add fiber cables
- [ ] Add hybrid combiner
- [ ] Add filter combiner

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

BETA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [ ] Add TMA
- [ ] Swap TMA
- [x] Remove TMA
- [ ] Add RRU
- [ ] Swap existing RRU
- [ ] Remove RRU
- [ ] Consolidate coax cables
- [x] Add coax cables
- [ ] Add fiber cables
- [ ] Add hybrid combiner
- [ ] Add filter combiner

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

GAMMA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [ ] Add TMA
- [ ] Swap TMA
- [x] Remove TMA
- [ ] Add RRU
- [ ] Swap existing RRU
- [ ] Remove RRU
- [ ] Consolidate coax cables
- [x] Add coax cables
- [ ] Add fiber cables
- [ ] Add hybrid combiner
- [ ] Add filter combiner

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

DELTA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [ ] Swap antenna
- [ ] Remove antenna
- [ ] Add TMA
- [ ] Swap TMA
- [ ] Remove TMA
- [ ] Add RRU
- [ ] Swap existing RRU
- [ ] Remove RRU
- [ ] Consolidate coax cables
- [ ] Add coax cables
- [ ] Add fiber cables
- [ ] Add hybrid combiner
- [ ] Add filter combiner

Network Modernization RFDS v3.0

Site ID	**CT11426A**	**Latitude**	41.23785
		Longitude	-73.12244
Site Name	Stratford/MP/James Farm	**Site Type**	Structure (Non-Building)
Address	670 Chapel St, Stratford, CT 06614	**Site Class**	Utility Lattice Tower
Market	Connecticut	**Landlord**	CL&P

Configuration

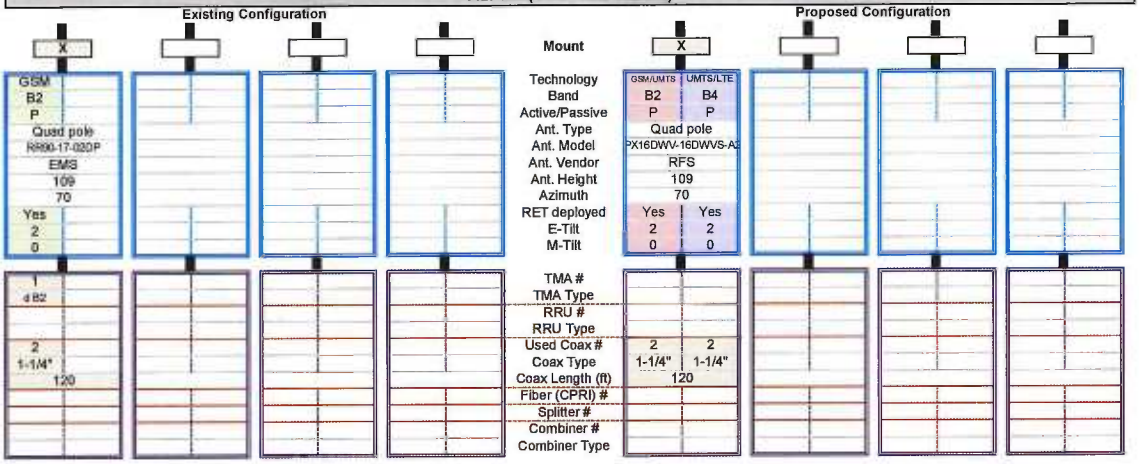
4B

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	

Date 10/15/2013

ALPHA (view from behind)

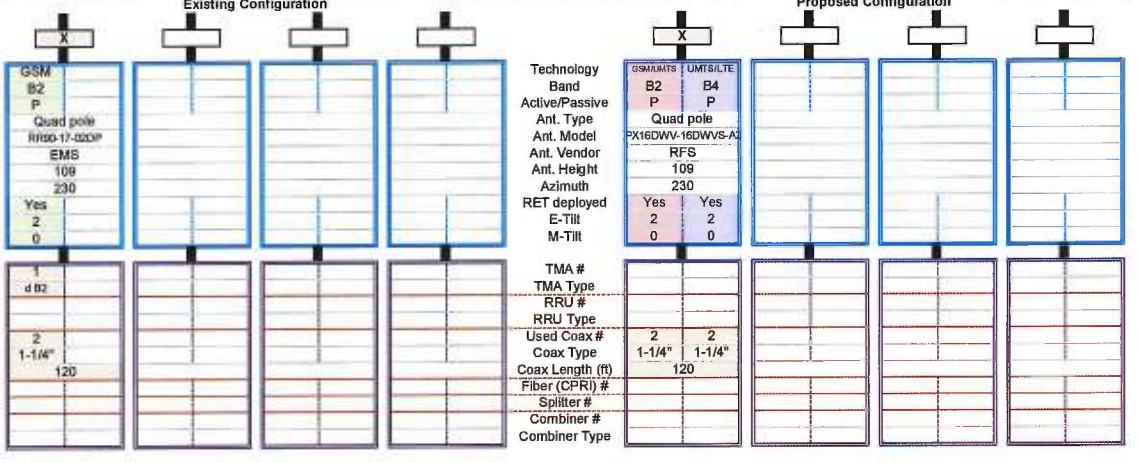


	Add new mount		Add RRU
	Relocate antenna		Swap existing RRU
	Add antenna		Remove RRU
X	Swap antenna		Consolidate coax cables
	Remove antenna	X	Add coax cables
	Add TMA		Add fiber cables
	Swap TMA		Add hybrid combiner
X	Remove TMA		Add filter combiner

Scope of work

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

BETA (view from behind)



	Add new mount		Add RRU
	Relocate antenna		Swap existing RRU
	Add antenna		Remove RRU
X	Swap antenna		Consolidate coax cables
	Remove antenna	X	Add coax cables
	Add TMA		Add fiber cables
	Swap TMA		Add hybrid combiner
X	Remove TMA		Add filter combiner

Scope of work

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

Network Modernization RFDS v3.0

Site ID	CT11426A	Latitude	41.23785
		Longitude	-73.12244
Site Name	Stratford/MP/James Farm	Site Type	Structure (Non-Building)
Address	670 Chapel St, Stratford, CT 06614	Site Class	Utility Lattice Tower
Market	Connecticut	Landlord	CL&P

Configuration

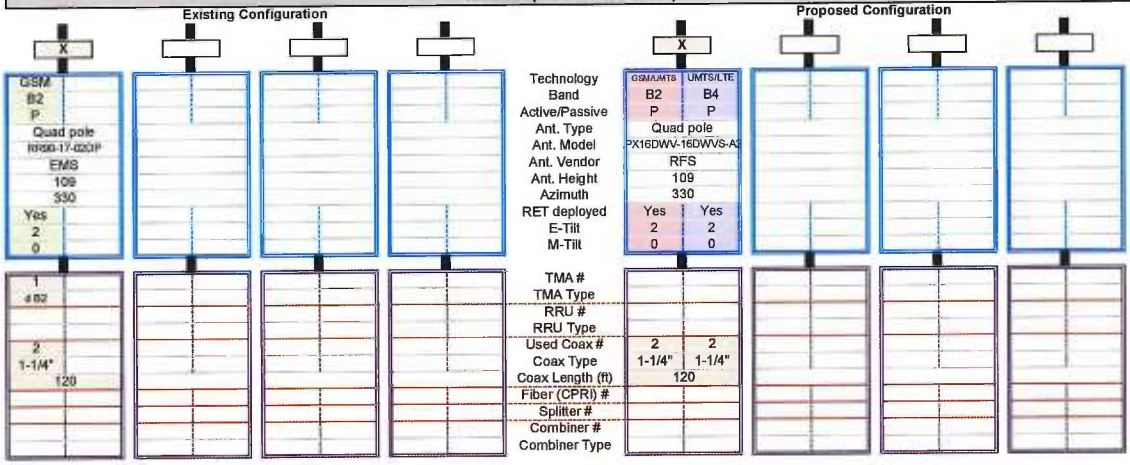
4B

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	

Date: 10/15/2013

GAMMA (view from behind)



	Add new mount		Add RRU
	Relocate antenna		Swap existing RRU
	Add antenna		Remove RRU
X	Swap antenna		Consolidate coax cables
	Remove antenna	X	Add coax cables
	Add TMA		Add fiber cables
	Swap TMA		Add hybrid combiner
X	Remove TMA		Add filter combiner

Scope of work

Swap existing quad pole antenna at position 1. Remove/disconnect obsolete PCS TMAs. Keep existing coax lines at position 1/left for PCS GSM/UMTS. Add 2 coax lines at position 1/right for AWS UMTS/LTE. Connect PCS GSM/UMTS and AWS LTE/UMTS in cabinet radio units to passive antenna at position 1 via coax lines.

Product Data Sheet APX16DWV-16DWVS-E-A20

Optimizer® Side-by-Side Dual Polarized Antenna, 1710-2200, 65deg, 18.4dBi, 1.4m, VET, 0-10deg RET

Product Description

A combination of two X-Polarized antennas in a single radome, this pair of variable tilt antennas provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features a wide downtilt range. This antenna is optimized for performance across the entire frequency band (1710-2200 MHz). The antenna comes pre-connected with two antenna control units (ACU).

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 <-20dB).**
- **Gain tracking – difference between AWS UL (1710-1755 MHz) and DL (2110-2155 MHz) <1dB.**
- **Two X-Polarised panels in a single radome.**
- **Azimuth horizontal beamwidth difference <4deg between AWS UL (1710-1755 MHz) and DL (2110-2155 MHz).**
- **Low profile for low visual impact.**
- **Dual polarization; Broadband design.**
- **Includes (2) AISG 2.0 Compatible ACU-A20-N antenna control units.**

Technical Specifications

Electrical Specifications

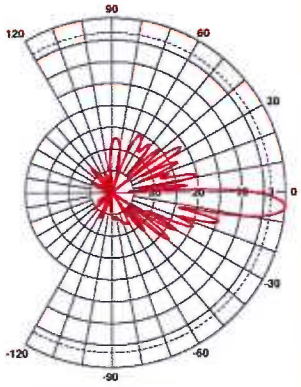
Frequency Range, MHz	1710-2200
Horizontal Beamwidth, deg	65
Vertical Beamwidth, deg	5.9 to 7.7
Electrical Downtilt, deg	0-10
Gain, dBi (dBd)	18.4 (16.3)
1st Upper Sidelobe Suppression, dB	> 18 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Front-To-Back Ratio, dB	>26 (typically 28)
Polarization	Dual pol +/-45°
VSWR	< 1.5:1
Isolation between Ports, dB	> 30
3rd Order IMP @ 2 x 43 dBm, dBc	> 150 (155 Typical)
Impedance, Ohms	50
Maximum Power Input, W	300
Lightning Protection	Direct Ground
Connector Type	(4) 7-16 Long Neck Female

Mechanical Specifications

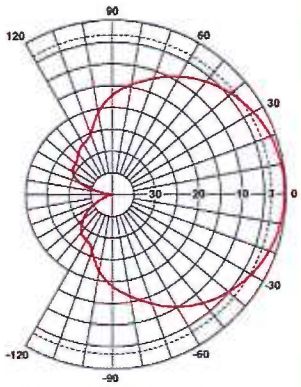
Dimensions - HxWxD, mm (in)	1420 x 331 x 80 (55.9 x 13 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	18.5 (40.7)
Survival Wind Speed, km/h (mph)	200 (125)
Rated Wind Speed, km/h (mph)	160 (100)
Max Wind Loading Area, m² (ft²)	0.47 (5.03)
Front Thrust @ Rated Wind, N (lbf)	756 (170)
Maximum Thrust @ Rated Wind, N (lbf)	756 (170)
Wind Load - Side @ Rated Wind, N (lbf)	231 (52)
Wind Load - Rear @ Rated Wind, N (lbf)	408 (92)
Radome Material	Fiberglass
Radome Color	Light Grey RAL7035
Mounting Hardware Material	Diecasted Aluminum
Shipping Weight, kg (lb)	24.5 (53.9)
Packing Dimensions, HxWxD, mm (in)	1520 x 408 x 198 (59.8 x 16 x 7.8)

Ordering Information

Mounting Hardware	APM40-2 + APM40-E2



Vertical Pattern



Horizontal Pattern

EXHIBIT C

Northeast
Utilities System

107 Selden Street, Berlin, CT 06037

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

March 18, 2014

David Karpinski, General Manager
Omnipoint Communications, Inc./T-Mobile
35 Griffin Road, South
Bloomfield, CT 06002

Re: Site Permitting Authorization

Dear Mr. Karpinski,:

Authorization is hereby given to Omnipoint Communications, Inc./T-Mobile, its employees and its duly authorized agents and independent contractors (hereinafter collectively referred to as "Omnipoint/T-Mobile"), to apply for any and all local municipal, state and federal licenses, permits and approvals, including but not limited to Connecticut Siting Council, building permits, zoning variances, zoning special exceptions, site plan and subdivision approvals, driveway, wetlands and terrain alteration permits, which are or may be necessary or required for Omnipoint/T-Mobile to construct, operate and maintain a wireless communications system (PCS System), and/or antenna site on the following property owned by The Connecticut Light & Power Company (CL&P):

670 Chapel St.
Stratford, CT
Pole 1321

The foregoing authorization is given subject to the following conditions:

1. This authorization shall be nonexclusive. Nothing herein shall prevent or restrict CL&P from authorizing any other person or entity to apply for any similar licenses, permits or approvals to construct, operate and maintain any other communication system or facility of any type on the property at any time.

2. This authorization shall not obligate CL&P to pay for or reimburse any costs or expenses or to provide any assistance of any kind in connection with any applications, or bind or obligate CL&P to agree or be responsible for any on-site or off-site improvements, development restrictions, impact fees or assessments, capital improvement charges, bonds or other security, or any other fee, assessment, charge or expense imposed or required as a condition of any license, permit or approval. Omnipoint/T-Mobile shall be solely and fully responsible for all fees, charges costs and expenses of any kind in connection with any applications. CL&P agrees to reasonably cooperate with Omnipoint/T-Mobile in signing such applications or other similar documents as may be required in order for Omnipoint/T-Mobile to apply for any license, permit or approval.

3. This authorization shall not be deemed or construed to grant or transfer to Omnipoint/T-Mobile any interest in the property, whatsoever, and shall not in any respect obligate or require CL&P to sell, lease or license the Property to Omnipoint/T-Mobile or otherwise allow Omnipoint/T-Mobile to use or occupy the property for any purpose, regardless of whether any licenses, permits and approvals applied for by Omnipoint/T-Mobile for the property are granted. Omnipoint/T-Mobile understands and acknowledges that any and all applications filed by Omnipoint/T-Mobile for the property at Omnipoint/T-Mobile sole risk and without any enforceable expectation that the property will be made available for Omnipoint/T-Mobile' use.

4. Omnipoint/T-Mobile shall be required to supply to CL&P, free of charge and contemporaneous with Omnipoint/T-Mobile filing of same, a complete copy of any and all applications, plans, reports and other public filings made by Omnipoint/T-Mobile with any local, municipal, state or federal governmental or regulatory officer, agency board, bureau, commission or other person or body for any licenses, permits or approvals for the property, and to keep CL&P fully informed on a regular basis of the status of Omnipoint/T-Mobile' applications.

5. This authorization shall automatically expire six (6) months after the date of this letter, unless extended in writing by mutual agreement of CL&P and Omnipoint/T-Mobile.

Very truly yours,

Carlos Caridad, Manager
T & D ROW & Survey Engineering

AGREED TO ON BEHALF OF
OMNIPOINT COMMUNICATIONS, INC./T-MOBILE

By: _____
Duly Authorized

Date: 3-25-2014

670 Chapel St.
Stratford, CT
Pole 1321
CT11426A

EXHIBIT D

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11426A

Stratford / MP / James Farm
670 Chapel Street
Stratford, CT 06614

March 12, 2014

EBI Project Number: 62141454

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

EBI Consulting
environmental | engineering | due diligence

March 12, 2014

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CT11426A - Stratford / MP / James Farm**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 670 Chapel Street, Stratford, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS band is 1000 μW/cm2. 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 T-Mobile Wireless antenna facility located at 670 Chapel Street, Stratford, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

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

1) 2 GSM channels (1940.000 MHz—to 1950.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the RFS APX16DWV-16DWVS-E-A20 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 16.3 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **109 feet** above ground level (AGL)
8) 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	CT11426A - Stratford / MP / James Farm
Site Addresss	670 Chapel Street, Stratford, CT 06614
Site Type	Transmission Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	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	APX16DWV-16DWVS-E-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	109	103	7/8"	1.2	0	21.535316	0.729765	0.07298%
1B	RFS	APX16DWV-16DWVS-E-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	109	103	7/8"	1.2	0	57.42751	1.946039	0.19460%
														Sector total Power Density Value:			0.268%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	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	APX16DWV-16DWVS-E-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	109	103	7/8"	1.2	0	21.535316	0.729765	0.07298%
1B	RFS	APX16DWV-16DWVS-E-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	109	103	1-5/8"	1.2	0	57.42751	1.946039	0.19460%
														Sector total Power Density Value:			0.268%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	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	APX16DWV-16DWVS-E-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	109	103	7/8"	1.2	0	21.535316	0.729765	0.07298%
1B	RFS	APX16DWV-16DWVS-E-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	109	103	1-5/8"	1.2	0	57.42751	1.946039	0.19460%
														Sector total Power Density Value:			0.268%

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.803%
AT&T	22.320%
Total Site MPE %	23.123%

EBI Consulting
environmental | engineering | due diligence

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 T-Mobile facility are **0.803% (0.268% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously.

The anticipated composite MPE value for this site assuming all carriers present is **23.123%** of the allowable FCC established general public limit. 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 within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803