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 8, 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 CT11036C
8 Old Bridge Road, Old Lyme, 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 8 Old Bridge Road, Old Lyme, Connecticut (latitude 41.32031701 / longitude -72.3440565). T-Mobile intends to replace three antennas and related equipment at this existing telecommunications facility in Old Lyme ("Old Lyme 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 First Selectwoman Bonnie Reemsnyder. The Town of Old Lyme is also the property owner.

The existing Old Lyme Facility consists of a 190 foot tall transmission line lattice structure. The facility currently supports the equipment of T-Mobile on a mast at a centerline of 196 feet.

T-Mobile plans to replace three antennas and remove three TMAs (tower mounted amplifiers) at an elevation of 196 feet. (See the plans revised to March 13, 2014 attached hereto as Exhibit A). T-Mobile will also replace an equipment cabinet on the existing concrete pad, install six GMAs, install new coax cable, reuse the existing coax cable and replace the existing pipe mast. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis revised to March 13, 2014 and attached hereto as Exhibit B. CL&P has reviewed and approved T-Mobile's proposed

modifications, as evidenced by the letter dated April 3, 2014, attached hereto as Exhibit C.

The planned modifications to the Old Lyme 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 196 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

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 2 and 4 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 19, 2014 T-Mobile's operations would add 0.236% 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 0.079% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit D.

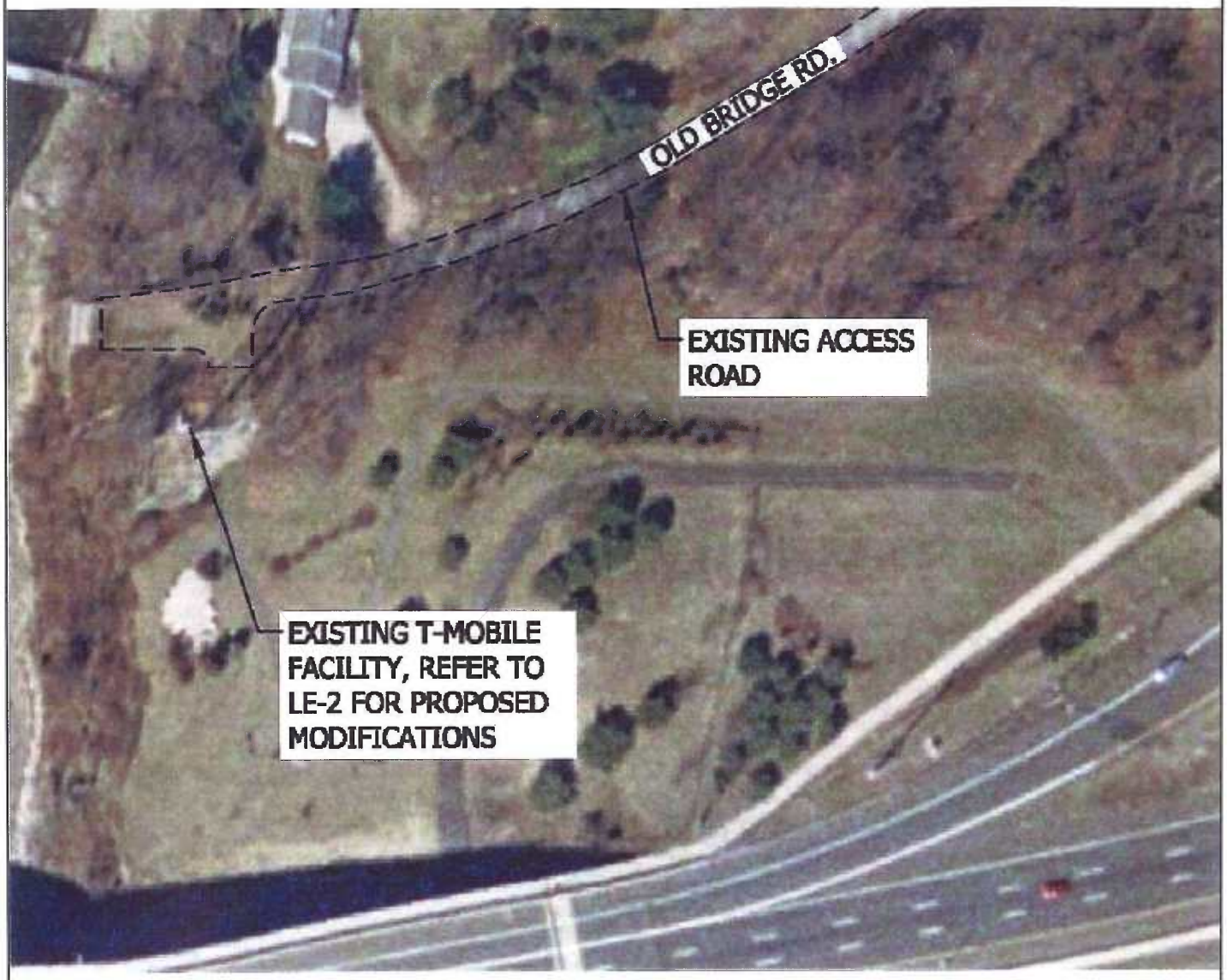
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Old Lyme Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Old Lyme, First Selectwoman Bonnie Reemsnyder
Town of Old Lyme
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.

KEY MAP
N.T.S.

1
LE-1

CONFIGURATION
4B

SUBMITTALS	
LE REV A	02.03.14
LE REV 0	03.13.14

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

LEASE EXHIBIT

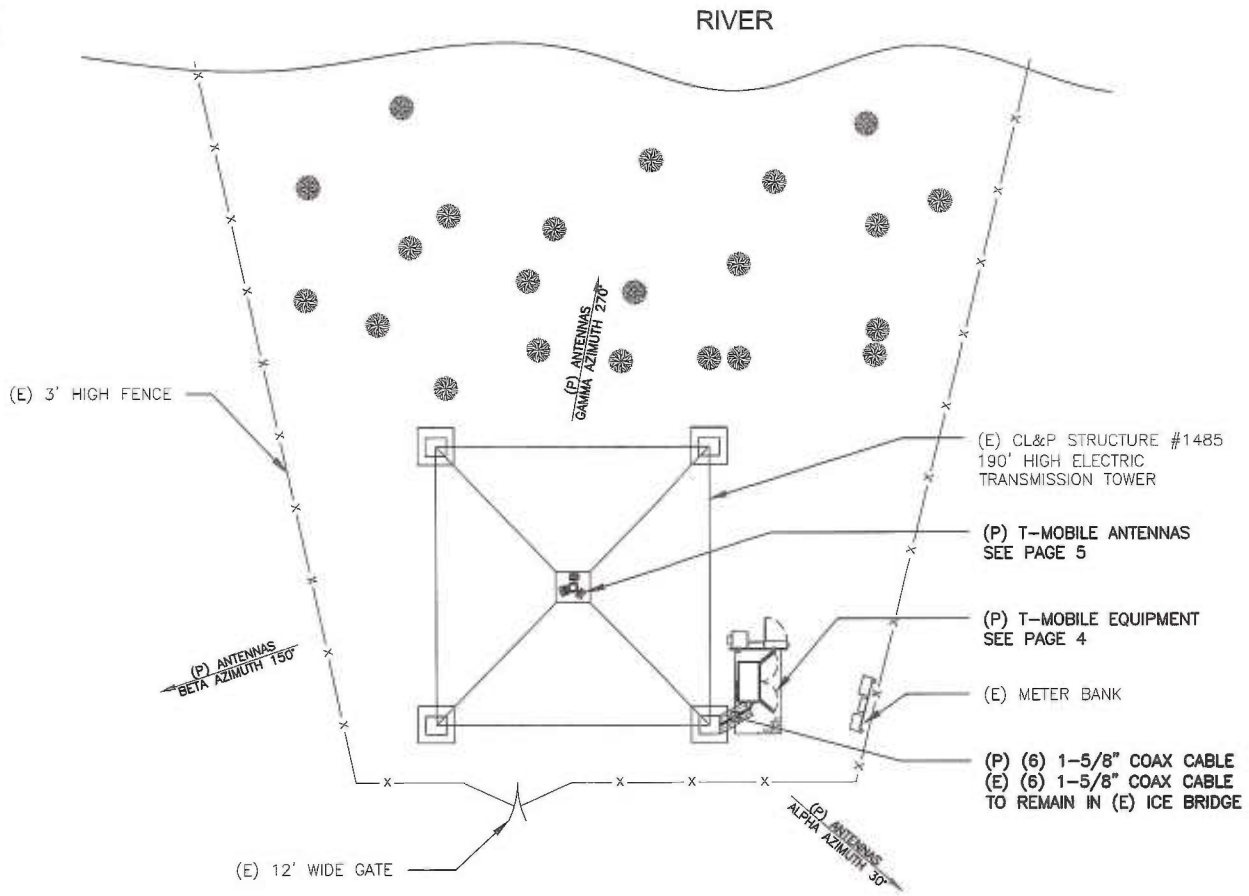
SITE NUMBER:
CT11036C
SITE NAME:
CT036/OLD LYME/ I-95/X70
SITE ADDRESS:
CL&P STRUCTURE # 1485
8 OLD BRIDGE ROAD
OLD LYME, CT 06371

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



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SITE PLAN
N.T.S.

1 LE-2

1 LE-3

CONFIGURATION
4B

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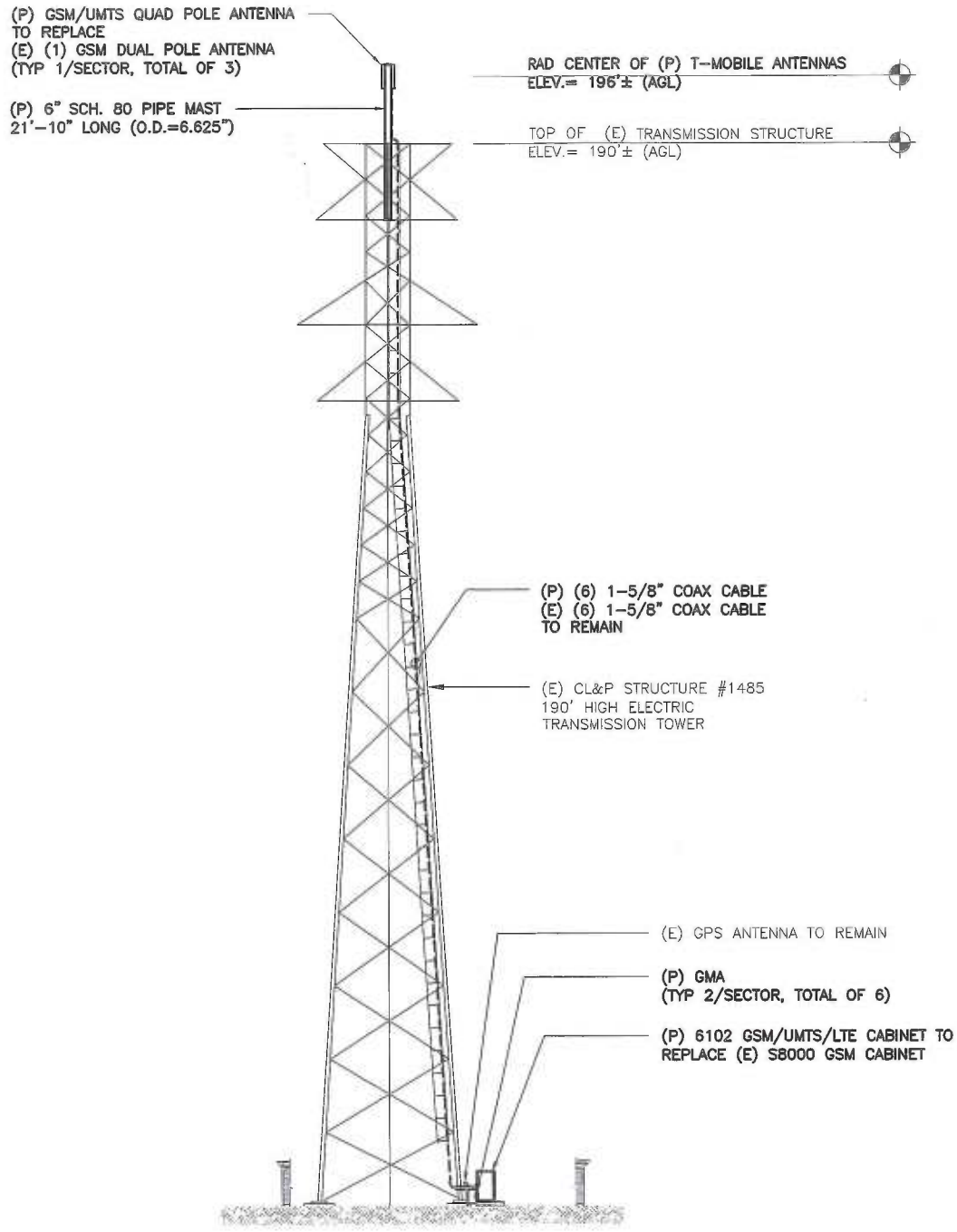

ELEVATION

N.T.S.

1
LE-3

CONFIGURATION

4B

SUBMITTALS	
LE REV A	02.03.14
LE REV 0	03.13.14

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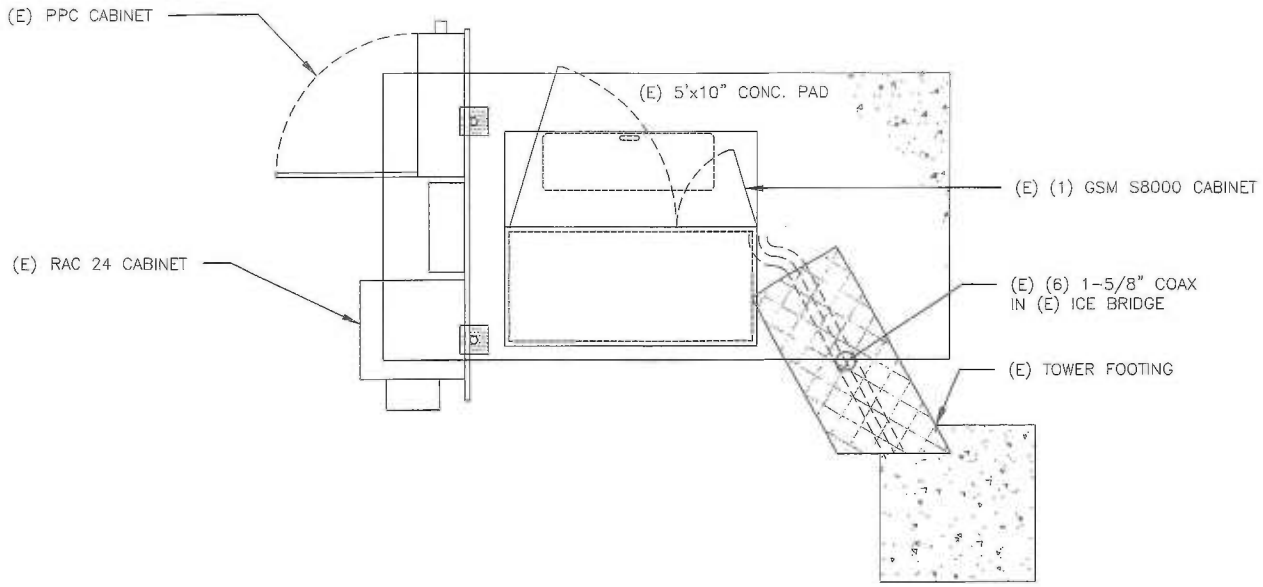
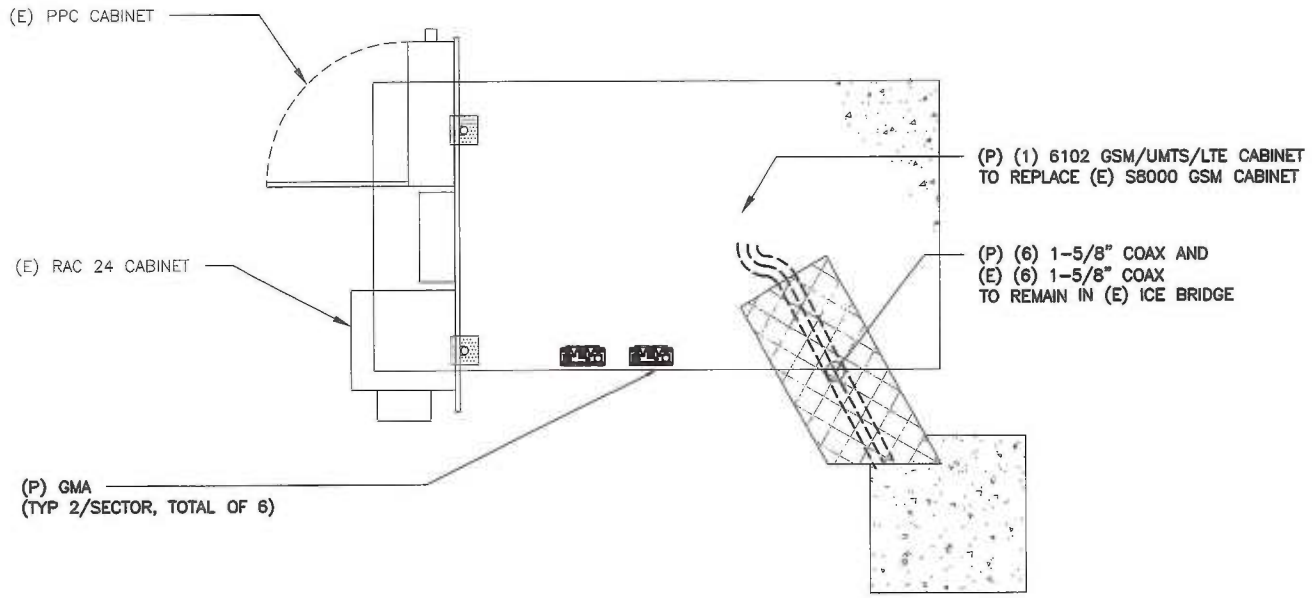


EXISTING EQUIPMENT PLAN



PROPOSED EQUIPMENT PLAN

EQUIPMENT LAYOUT
N.T.S.

1
LE-4

CONFIGURATION
4B

SUBMITTALS	
LE REV A	02.03.14
LE REV 0	03.13.14

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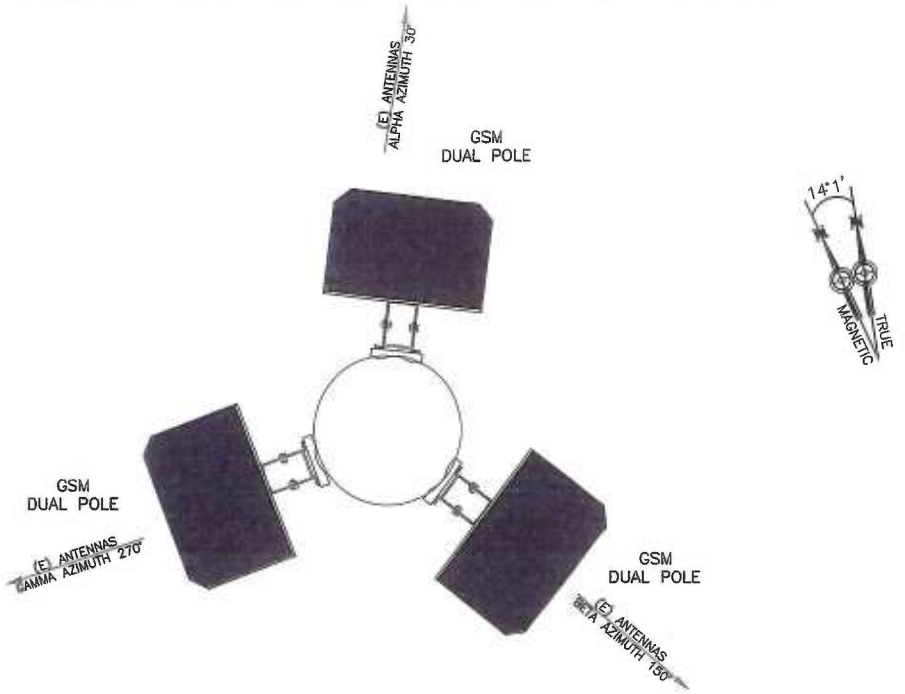
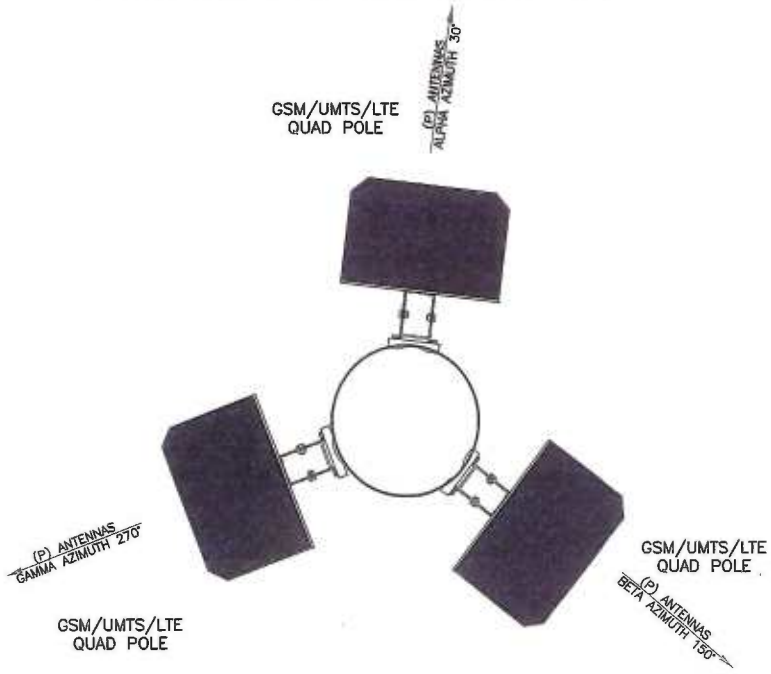


EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

CONFIGURATION
4B

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EXHIBIT B

CENTEK engineering

Centered on Solutions℠

Structural Analysis of PCS Structure and CL&P Tower

T-Mobile Site Ref: CT11036C

CL&P Structure No. Dist East River x-ing
190' Electric Transmission Tower

8 Old Bridge Road
Old Lyme, CT

CENTEK Project No. 14025.003

~~Date: January 30, 2014~~
Rev 1: March 13, 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 PCS mast and 190' CL&P tower located at 8 Old Bridge Road in Old Lyme, CT for the proposed T-Mobile antenna upgrade.

The loads consist of the following:

- T-MOBILE (Existing to be Removed):
  Antennas: Three (3) EMS RR65-17-02DP panel antennas and three (3) TMA's mounted on a PCS mast with a RAD center elevation of 196-ft above grade.
  Mast: One (1) 4" Sch. 40 pipe mast (O.D. = 4.5").
- T-MOBILE (Existing to remain):
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the outside of the tower.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas mounted on a site pro triple sector chain mount p/n CHM3 to the existing PCS mast with a RAD center elevation of 196-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables mounted to a leg of the tower as indicated in section 4 of this report.
  Mast: One (1) 6" SCH. 80 pipe mast x 21-ft 10-in long (O.D. = 6.625")

Primary assumptions used in the analysis

- Allowable steel stresses are defined by AISC-ASD 9th edition for design of the PCS Mast 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 pipe mast unless specified otherwise.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- All proposed pipe mast members will be as specified in the construction documents to be prepared by CENTEK engineering, Inc.
- Pipe mast and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

Analysis

Structural analysis of the existing *PCS Mast Structure* was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc.

The existing mast consisting of a 4-in SCH. 40 pipe (O.D. = 4.5") connected at four points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast structure in order to obtain reactions needed for analyzing the CL&P tower structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA/EIA loading and for NESC/NU loading are listed in report Sections 6 and 8, respectively.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the CL&P tower structure.

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 forces calculated in RISA-3D using NESC guidelines were then applied to the CL&P pole using PLS-Pole. Maximum usage for the pole was calculated considering the additional forces from the mast and associated appurtenances.

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 proposed antenna mast was analyzed under two conditions:

- UTILITY TOWER ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the 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.....	120 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)

]

- PCS MAST ANALYSIS

PCS mast, 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

- MAST ASSEMBLY

The existing pipe mast was determined to be structurally **inadequate.** Replacement of the existing antenna mast with a **6 SCH. 80 Pipe x 21-ft 10-in long (O.D. = 6.625")**, conforming to ASTM A53, Grade B, F_y = 35 ksi specifications will be required.

Member	Stress Ratio (% of capacity)	Result
6" Sch. 80 Mast	46.4%	**PASS**
L 6x6x3/8 Brace	2.0 %	**PASS**
Mast Connection to CL&P Tower	11.7% [1]	**PASS**

Note 1 – 1/3 increase in allowable stress not used for connection to tower per OTRM 059.

- UTILITY TOWER

This analysis finds that the subject utility structure is adequate to support the existing PCS 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 9 of this report. The analysis results are summarized as follows:

A maximum usage of **98.18%** 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 58P	98.18%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of two (2) 3.5-ft square tapering to 6-ft square x 12.5-ft long reinforced concrete piers with two (2) 10-ft square x 2-ft thick reinforced concrete pads (uplift piers) and two (2) 19-ft square x 7.5-ft thick reinforced concrete mats (compression piers) . The base of the tower is connected to the foundation by five (5) 2-1/4" ø anchor bolts per leg. Foundation information was obtained from NUSCO drawings # 01503-60002 and 01503-42001.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	18.4 kips	38.8 kips	105.0 kips
NESC Extreme Wind	57.4 kips	253.6 kips	267.7 kips
NESC Heavy Broken Wire	19.8 kips	117.3 kips	174.6 kips

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

ANCHOR BOLTS:

The anchor bolt assembly **was found** to be within allowable limits.

Design Limit	Original Design (1)	Proposed Loading	Result
Uplift	325 kips	279.0 kips	**PASS**
Compression	370 kips	294.5 kips	**PASS**

Note 1: Original design reactions taken from NUSCO drawing 01503-50003A

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Reinforced Conc. Pad and Pier	Uplift	1.0 FS (1)	1.64 FS (1)	**PASS**

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

Conclusions and Recommendations

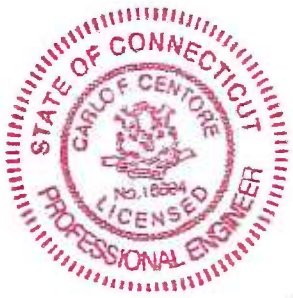
This analysis shows that the subject utility tower **with the replacement of the existing pipe mast as detailed in section 4 of this report is adequate** to support the proposed T-Mobile equipment upgrade.

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

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-222 (Rev. F) with two exceptions:

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

   The combined wind and ice condition shall consider ½" radial ice in combination with the wind load (0.75 Wi) as specified in TIA section 2.3.16.

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 :
Description:

Spec. Number
Computed by
Checked by

Page of
Sheet of
Date 3/1/11
Date

INPUT DATA

TOWER ID: dist west river crossing

Structure Height (ft) : 190

Wind Zone : SE Coastal CT (red)

Wind Speed : 120 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 =	*HEN*	*HEN*	
Number of Conductors per phase: 1	477.000 30/7 ACSR	477.000 30/7 ACSR	1 Number of Conductors per phase
DIAMETER =	0.883 in	0.883 in	
WEIGHT =	0.747 lb/ft	0.747 lb/ft	

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	8,000	12,000	8,000	12,000
EXTREME WIND =	8,214	12,156	10,953	16,512
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 =	7,187	10,859	7,647	15,088

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	0	AHEAD:	0	**0**
WIND SPAN (ft) =	BACK:	240	AHEAD:	1,030	**1,270**
WEIGHT SPAN (ft) =	BACK:	241	AHEAD:	1,030	**1,271**

Northeast Utilities System

Job :		Page	of
Description:	Spec. Number	Sheet	of
	Computed by	Date	3/1/11
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: dist west river crossing

Wind Span =	1,270	ft	
Weight Span =	1,271	ft	
Total Angle =	0	degrees	

Broken Wire Span =	AHEAD SPAN
Type of Insulator Attachment =	STRAIN

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,466 lb	0 lb	1,548 lb	277 lb	13,200 lb	294 lb
Conductor =	1,993 lb	0 lb	3,064 lb	377 lb	19,800 lb	581 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	1,630 lb	2,739 lb	333 lb
Conductor =	3,738 lb	4,356 lb	949 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	333 lb
Conductor =	#VALUE!	#VALUE!	949 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	2,522 lb
Conductor =	#VALUE!	#VALUE!	3,926 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,032 lb
Conductor =	#VALUE!	#VALUE!	2,042 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	0 lb	460 lb	333 lb
Conductor =	0 lb	4,229 lb	949 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	0 lb	460 lb	333 lb
Conductor =	0 lb	4,229 lb	949 lb

Northeast
Utilities System

Job :	Spec. Number	Page	of
Description:	Computed by	Sheet	of
	Checked by	Date	3/1/11
		Date	

NOTE: All loads include required overload factors (OLF's).

LC 1		HORIZONTAL	LONGITUDINAL	VERTICAL
NESC Heavy	shield - back	277	13200	293.5631561
	shield - ahead	1188.791667	-13200	1254.647514
	SHIELD - SUM	**1465.791667**	**0**	**1548.21067**
	conductor - back	376.6	19800	580.8989823
	conductor - ahead	1616.241667	-19800	2482.680298
	CONDUCTOR - SUM	**1992.841667**	**0**	**3063.57928**
LC 2		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Extreme Wind	shield - back	308.0055071	8214	63.0938
	shield - ahead	1321.856968	-10953	269.654
	SHIELD - SUM	**1629.862475**	**-2739**	**332.7478**
	conductor - back	706.4126306	12156	180.027
	conductor - ahead	3031.68754	-16512	769.41
	CONDUCTOR - SUM	**3738.10017**	**-4356**	**949.437**
LC 3		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Long. Wind	shield - back	#VALUE!	#VALUE!	63.0938
	shield - ahead	#VALUE!	#VALUE!	269.654
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**332.7478**
	conductor - back	#VALUE!	#VALUE!	180.027
	conductor - ahead	#VALUE!	#VALUE!	769.41
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**949.437**
LC 4		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
RULE 250D	shield - back	#VALUE!	#VALUE!	478.1711661
	shield - ahead	#VALUE!	#VALUE!	2043.636104
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**2521.80727**
	conductor - back	#VALUE!	#VALUE!	744.352401
	conductor - ahead	#VALUE!	#VALUE!	3181.25715
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**3925.609551**
LC 5		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
NESC w/o OLF's	shield - back	#VALUE!	#VALUE!	195.7087708
	shield - ahead	#VALUE!	#VALUE!	836.4316759
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**1032.140447**
	conductor - back	#VALUE!	#VALUE!	387.2659882
	conductor - ahead	#VALUE!	#VALUE!	1655.120199
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**2042.386187**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Raking	shield - back	0	7187	63.0938
	shield - ahead	0	-7647	269.654
	SHIELD - SUM	**0**	**-460**	**332.7478**
	conductor - back	0	10859	180.027
	conductor - ahead	0	-15088	769.41
	CONDUCTOR - SUM	**0**	**-4229**	**949.437**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
60 DEG F NO WIND	shield - back	0	7187	63.0938
	shield - ahead	0	-7647	269.654
	SHIELD - SUM	**0**	**-460**	**332.7478**
	conductor - back	0	10859	180.027
	conductor - ahead	0	-15088	769.41
	CONDUCTOR - SUM	**0**	**-4229**	**949.437**

Connecticut Light & Power

PCS MAST DESIGN

CL&P STRUCT. NO.
CT RIVER XING EAST SIDE
8 OLD BRIDGE ROAD
OLD LYME, CT 06371

VICINITY MAP — NORTH

PROJECT SUMMARY

SITE ADDRESS:	8 OLD BRIDGE ROAD OLD LYME, CT 06371
PROJECT COORDINATES:	LAT: 41°-19'-13.00"N LON: 72°-20'-39.00"W ELEV:±50' AMSL
CL&P STRUCT NO:	CT RIVER XING EAST SIDE
CL&P CONTACT:	ROBERT GRAY 860.665.3175
T-MOBILE SITE REF.:	CT11036C
T-MOBILE CONTACT:	MARK RICHARD 860.692.7143
ANTENNA CL HEIGHT:	196'-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	PCS MAST DETAILS	0

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

ISSUED FOR CONSTRUCTION
ISSUED FOR TX REVIEW

CENTEK engineering

T-MOBILE
CT11036C
CL&P STRUCTURE
DIST EAST RIVER X-ING
8 OLD BRIDGE ROAD
OLD LYME, CT 06371

DATE: 1/28/14
SCALE: AS SHOWN
JOB NO. 14026.003

TITLE SHEET

SHEET NO.
T-1
Sheet No. 1 of 6

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) =120 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 3/13/14.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE TOWER DESIGN DRAWINGS PREPARED BY R.D. COOMBS & CO.; DATED NOVEMBER 28, 1938.

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:	CFD

ISSUED FOR CONSTRUCTION
DESIGN NOT SIGNED

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions
(203) 488-0580
www.CentekEng.com

T-MOBILE
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OLD BROOKFIELD
OLD LYME CT 06371

DATE:	1/29/14
SCALE:	AS SHOWN
JOB NO.	14025.003

DESIGN BASIS AND GENERAL NOTES

SHEET NO.
N-1
Sheet No. 2 of 8

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
CHK'D BY: CFC

CENTEK

T-MOBILE
CT11036C
CL&P STRUCTURE
DIST EAST RIVER X-ING
1 OLD BRIDGE ROAD
OLD LYME, CT 06371

DATE: 1/30/14
SCALE: AS SHOWN
JOB NO. 14025.003

STRUCTURAL STEEL NOTES

SHEET NO.
N-2
Sheet No. 3 of 8

MODIFICATION INSPECTION REPORT REQUIREMENTS

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

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

GENERAL

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

MODIFICATION INSPECTOR (MI)

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

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:
   - CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   - WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS-BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:
   - PRE-CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   - DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   - POST-CONSTRUCTION: FINAL CONDITION OF THE SITE

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

ISSUED FOR CONSTRUCTION
REVISED PER TM REVIEW
DESCRIPTION

PROFESSIONAL ENGINEER SEAL

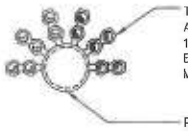
CNBK

T-MOBILE
CT11036C
CL&P STRUCTURE
DIST EAST RIVER X-ING
0 OLD BROOK ROAD
OLD LYME, CT 06371

DATE: 1/30/14
SCALE: AS SHOWN
JOB NO. 14025.003

MODIFICATION INSPECTION REQUIREMENTS

SHEET NO.
MI-1
Sheet No. 4 of 5

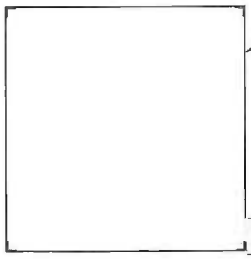


T-MOBILE EXISTING SIX (6) AND PROPOSED SIX (6) 1-5/8" DIA. COAX CABLES BANDED TO PROPOSED MAST @ 4' O.C.

PROPOSED 6" SCH. 80 X 21'-10" LONG PIPE MAST (O.D. = 6.63"). REFER TO SHEET S-2 FOR DETAILS

2 / S-1 COAX CABLE PLAN

SCALE: NOT TO SCALE



EXISTING 190' TALL CL&P STEEL TRANSMISSION STRUCTURE NO. DIST EAST RIVER X-ING

APPROX. NORTH

T-MOBILE EXISTING SIX (6) AND PROPOSED SIX (6) 1-5/8" DIA. COAX CABLES MOUNTED ON EXIST. COAX SUPPORT BRACKET

3 / S-1 COAX CABLE PLAN

SCALE: NOT TO SCALE

CONNECTICUT RIVER

PROPOSED 6" SCH. 80 X 21'-10" LONG PIPE MAST (O.D. = 6.63"). REFER TO SHEET S-2 FOR DETAILS

NOTE:
ANTENNAS NOT SHOWN FOR CLARITY.

EXIST CL&P TRANSMISSION TOWER/CLIMBING LADDER

KEY PLAN

SCALE: NOT TO SCALE

APPROX. NORTH

℄ T-MOBILE ANTENNAS EL. ±196'-0" AGL

℄ TOP CONNECTION EL. ±189'-0" ATB

℄ BOTTOM CONNECTION EL. ±177'-0" ATB

LEGEND:
1. A.G.L.= ABOVE GROUND LEVEL
2. A.T.B.= ABOVE TOWER BASE

T-MOBILE (PROPOSED): THREE (3) RFS APX16DWV-16DWVS-E-A20 PANEL ANTENNAS FLUSH MOUNTED.
T-MOBILE (EXISTING TO REMOVE): THREE (3) EMS RR65-17-02DP PANEL ANTENNAS AND THREE (3) TMA's MOUNTED ON ONE (1) PCS MAST.

PROPOSED 6" SCH. 80 X 21'-10" LONG PIPE MAST (O.D. = 6.63"). REFER TO SHEET S-2 FOR DETAILS

EXISTING 190' TALL CL&P STEEL TRANSMISSION STRUCTURE NO. DIST EAST RIVER X-ING

T-MOBILE EXISTING SIX (6) AND PROPOSED SIX (6) 1-5/8" DIA. COAX CABLES MOUNTED ON EXIST. COAX SUPPORT BRACKET

EXIST. GRADE

1 / S-1 TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

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

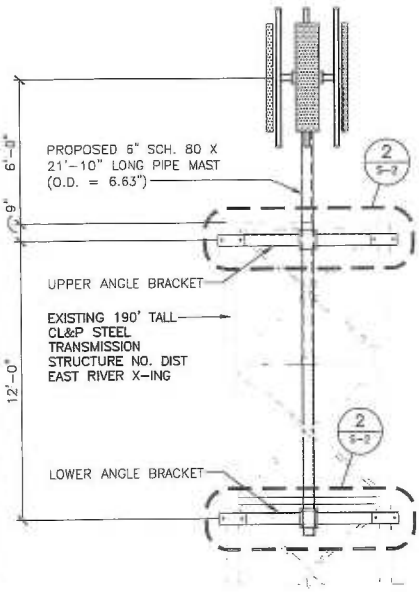
ISSUED FOR CONSTRUCTION
ISSUED FOR REVIEW

T-MOBILE
CT11036C
CL&P STRUCTURE
DIST EAST RIVER X-ING
1 OLD SAYBROOK ROAD
OLD LYME, CT 06371

DATE: 1/30/14
SCALE: AS SHOWN
JOB NO. 14025.003

TOWER ELEVATION AND FEEDLINE PLAN

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

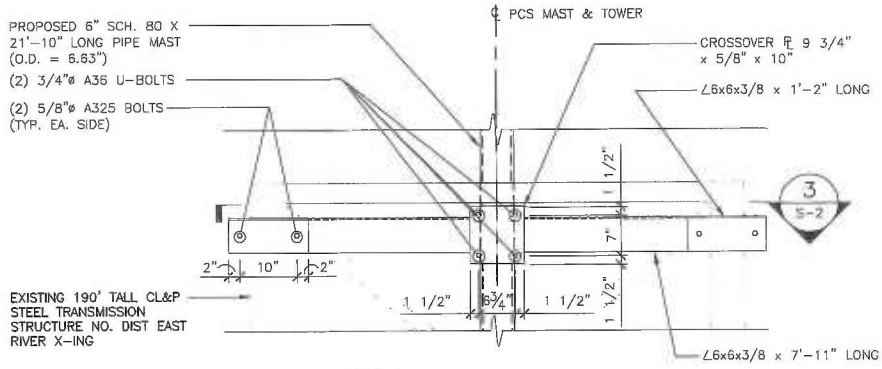


1 / S-2 **MAST CONNECTION ELEVATION**

SCALE: 1/4" = 1'-0"

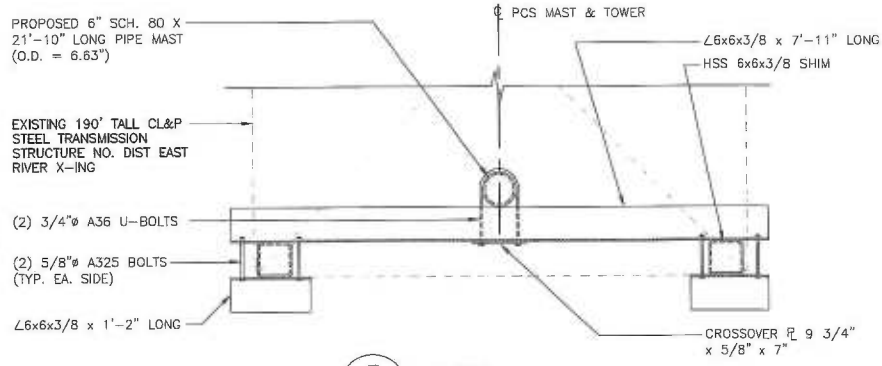
NOTES:

1. ALL BOLTS TO BE PRE-TENSIONED IN ACCORDANCE WITH ASD STANDARDS.
2. USE OF LOCK WASHERS IS NOT PERMITTED PER AISC.
3. REFER TO NOTES ON DRAWING N-1 FOR ADDITIONAL REQUIREMENTS.



2 / S-2 **SECTION**

SCALE: 3/4" = 1'-0"



3 / S-2 **PLAN**

SCALE: 3/4" = 1'-0"

DESIGNED BY: TJL
DRAWN BY: TJS
CHK'D BY: EPC

ISSUED FOR CONSTRUCTION
ISSUED FOR REVIEW

PROFESSIONAL ENGINEER SEAL

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T-MOBILE
CT11036C
CL&P STRUCTURE
DIST EAST RIVER X-ING
1 ROAD BRIDGE ROAD
EAST HAVEN, CT 06512

DATE: 1/30/14
SCALE: AS SHOWN
JOB NO. 14025.003

PCS MAST DETAILS

SHEET NO.
S-2
Sheet No. 5 of 6

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Subject:	Load Analysis of T-Mobile Equipment on CL&P Tower CT River Xing East Side
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

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

Mast	$z_{mast} := 188$	ft	(User Input)
Antenna	$z_{ant} := 196$	ft	(User Input)
TMA	$z_{TMA} := 196$	ft	(User Input)
Mount	$z_{mnt} := 196$	ft	(User Input)
Coax Cable	$z_{coax} := 188$	ft	(User Input)

Exposure Coefficients, kz

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

Mast $$Kz_{mast} := \left(\frac{z_{mast}}{33}\right)^{\frac{2}{7}} = 1.644$$

Antenna $$Kz_{ant} := \left(\frac{z_{ant}}{33}\right)^{\frac{2}{7}} = 1.664$$

TMA $$Kz_{TMA} := \left(\frac{z_{TMA}}{33}\right)^{\frac{2}{7}} = 1.664$$

Mount $$Kz_{mnt} := \left(\frac{z_{mnt}}{33}\right)^{\frac{2}{7}} = 1.664$$

Coax Cable $$Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.644$$

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

Mast $qz_{mast} := 0.00256 \cdot Kz_{mast} \cdot V^2 = 30.407$

Antenna $qz_{ant} := 0.00256 \cdot Kz_{ant} \cdot V^2 = 30.771$

TMA $qz_{TMA} := 0.00256 \cdot Kz_{TMA} \cdot V^2 = 30.771$

Mount $qz_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V^2 = 30.771$

Coax Cable $qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 30.407$

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

Mast $qzICE_{mast} := 0.00256 \cdot Kz_{mast} \cdot V_i^2 = 23.046$

Antenna $qzICE_{ant} := 0.00256 \cdot Kz_{ant} \cdot V_i^2 = 23.322$

TMA $qzICE_{TMA} := 0.00256 \cdot Kz_{TMA} \cdot V_i^2 = 23.322$

Mount $qzICE_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V_i^2 = 23.322$

Coax Cable $qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 23.046$

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)

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

Mast Data: (Pipe 6" SCH. 80) (User Input)

Mast Shape = Round (User Input)

Mast Diameter = $D_{mast} := 6.63$ in (User Input)

Mast Length = $L_{mast} := 21.83$ ft (User Input)

Mast Thickness = $t_{mast} := 0.432$ in (User Input)

Mast Aspect Ratio = $Ar_{mast} := \frac{12 L_{mast}}{D_{mast}} = 39.5$

Mast Force Coefficient = $Ca_{mast} = 1.2$ (per TIA/EIA-222-F Table 3)

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

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.553$

Total Mast Wind Force = $qz_{mast} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 34$ plf **BLC 5,7**

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

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 0.636$

Total Mast Wind Force w/ Ice = $qzICE_{mast} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 30$ plf **BLC 4,6**

Gravity Loads (without ice)

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

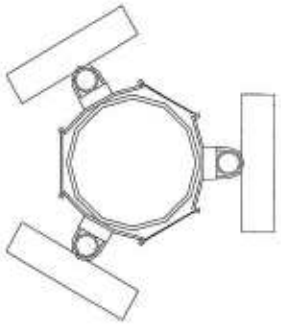
Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 11.2$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 4$ plf **BLC 3**

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

Antenna Data:



Antenna Model =	RFS APX16DWV-16DWVS-E-A20			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)	
Antenna Width =	$W_{ant} := 13$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 45$	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 =	$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1102$	lbs	**BLC 5,7**

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

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{ant} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 916$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 135$	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**

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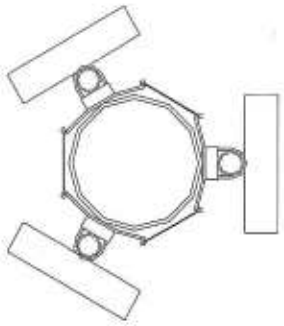
Subject:	Load Analysis of T-Mobile Equipment on CL&P Tower CT River Xing East Side
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

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

Mount Data:



Mount Type:	Tri-Sector Chain Mount w/ 3 Pipes			
Mount Shape =	Round		(User Input)	
Pipe Mount Length =	$L_{mnt} := 72$	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 =	$W_{tsc.mnt} := 100$	lbs	(User Input)	
Mount Aspect Ratio =	$Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 30$			
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 =	$F_{mnt} := qz_{mnt} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 0$	lbs	**BLC 5,6**

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 =	$Fi_{mnt} := qzICE_{mnt} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 0$	lbs	**BLC 4,7**

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

Weight Each Pipe Mount =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 22$	lbs	
Weight of All Mounts =	$WT_{mnt} \cdot N_{mnt} + W_{tsc.mnt} = 166$	lbs	**BLC 2**

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

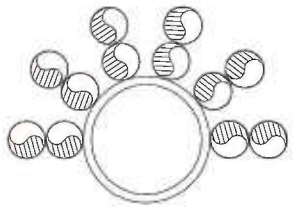
Volume of Each Pipe =	$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 319$	cu in	
Volume of Ice on Each Pipe =	$V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 334$	cu in	
Weight of Ice each mount (incl, hardware) =	$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 11$	lbs	
Weight of Ice on All Mounts =	$W_{ICEmnt} \cdot N_{mnt} + 5 = 37$	lbs	**BLC 3**

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

Coax Cable Data:

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)



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

Coax Cable Length = $L_{coax} := 16$ ft (User Input)

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

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

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

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 97$

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

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

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.7$ ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 41$ plf **BLC 5,7**

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

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

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 35$ plf **BLC 4,6**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

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

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

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 T-Mobile Equipment on CL&P Tower CT River Xing East Side
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

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

Member Data: L 6x6x3/8

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 6$ in (User Input)

Width = $W_{mem} := 6$ in (User Input)

Length = $L_{mem} := 96$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 16.0$

Member Force Coefficient = $Ca_{mem} = 1.7$ (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 = $A_{mem} := \frac{H_{mem}}{12} = 0.5$ plf

Total Member Wind Force = $F_{mem} := qz_{mast} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 44$ lbs **BLC 5, 7**

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

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot Ir\right)}{12} = 0.6$ plf

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{ant} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 39$ lbs **BLC 4, 6**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot = $Ai_{mem} := \left(W_{mem} + 2 \cdot Ir\right) \cdot \left(H_{mem} + 2 \cdot Ir\right) - W_{mem} \cdot H_{mem} = 13$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 5$ lbs **BLC 3**

CENTEK engineering, INC.	Subject:	Analysis of TIA/EIA Wind and Ice Loads for Design of PCS Structure Only Tabulated Load Cases		
Consulting Engineers				
63-2 North Branford Road				
Branford, CT 06405	Location:	Old Lyme, CT		
Ph. 203-488-0580 / Fax. 203-488-8587	Date: 1/30/14	Prepared by: T.J.L.	Checked by: C.F.C.	Job No. 14025.003

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

Footnotes:
(1) PCS Structure includes: Mast 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 Design of PCS Structure Only**
Load Combinations Table

Location: **Old Lyme, CT**
Date: 1/30/14 Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

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

Footnotes:
(1) BLC = Basic Load Case
(2) PCS Structure includes: Mast 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	None
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
Seismic Detailing Code	ASCE 7-05

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 sway	z sway	Function
1	M1	Mast	21.83												Lateral
2	M2	Brace	7												Lateral
3	M3	Brace	7												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE_6.0X	Beam	Pipe	A53 Gr. B	Typical	7.83	38.3	38.3	76.6
2	Brace	L6x6x6	Beam	Tube	A36 Gr.36	Typical	4.38	15.4	15.4	.218

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N4			Mast	Beam	Pipe	A53 Gr. B	Typical
2	M2	N8	N7		270	Brace	Beam	Tube	A36 Gr.36	Typical
3	M3	N6	N5		270	Brace	Beam	Tube	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	.33	0	0	
3	N3	0	12.33	0	0	
4	N4	0	21.83	0	0	
5	N5	3.5	.33	0	0	
6	N6	-3.5	.33	0	0	
7	N7	3.5	12.33	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
8	N8	-3.5	12.33	0	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	N8	Reaction	Reaction	Reaction				
2	N7	Reaction	Reaction	Reaction				
3	N5	Reaction	Reaction	Reaction				
4	N6	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.135	19.33
2	M1	Y	-.166	19.33

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	19.33
2	M1	Y	-.037	19.33

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.916	19.33

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.102	19.33

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	-.916	19.33

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	-1.102	19.33

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	-.012	-.012	0	19.33

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	-.004	-.004	0	0
2	M1	Y	-.018	-.018	0	19.33
3	M2	Y	-.005	-.005	0	0
4	M3	Y	-.005	-.005	0	0

Member Distributed Loads (BLC 4 : x-dir 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	.03	.03	0	0
2	M1	X	.035	.035	0	19.33

Member Distributed Loads (BLC 5 : x-dir 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	.034	.034	0	0
2	M1	X	.041	.041	0	19.33

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.03	-.03	0	0
2	M1	Z	-.035	-.035	0	19.33
3	M2	Z	-.039	-.039	0	0
4	M3	Z	-.039	-.039	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.034	-.034	0	0
2	M1	Z	-.041	-.041	0	19.33
3	M2	Z	-.044	-.044	0	0
4	M3	Z	-.044	-.044	0	0

Basic Load Cases

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

Load Combinations

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	x-dir TIA/EIA Wind + Ice on PC...	Yes			1	1	2	1	3	1	4	1								
2	x-dir TIA/EIA Wind on PCS Str...	Yes			1	1	2	1	5	1										
3	z-dir TIA/EIA Wind + Ice on PC...	Yes			1	1	2	1	3	1	6	1								
4	z-dir TIA/EIA Wind on PCS Str...	Yes			1	1	2	1	7	1										
5	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	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	0	1	0	1	0	1	0	1	0	1
3		2	max	.509	1	0	3	0	1	.416	2	0	1	.29	2
4			min	-.639	4	-.388	2	-.789	4	0	3	-3.062	4	0	3
5		3	max	.178	1	0	3	0	1	.416	2	0	1	3.527	2
6			min	-.85	4	-.798	2	-1.198	4	0	3	-8.483	4	0	3
7		4	max	.693	1	1.409	2	1.409	4	0	1	0	1	3.945	2
8			min	.482	2	0	3	0	1	0	1	-3.945	4	0	3
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	0	3	.059	2	.907	3	0	1	0	1	0	1
12			min	-1.308	2	-1.662	4	-.457	2	0	1	0	1	0	1
13		2	max	0	3	.059	2	.872	3	0	1	-.168	1	3.012	4
14			min	-1.308	2	-1.585	4	-.483	2	0	1	-1.005	4	-.655	2
15		3	max	0	3	1.277	3	1.507	4	0	1	2.648	1	5.897	4
16			min	-1.308	2	-.773	4	-1.084	1	0	1	-1.947	4	2.855	2
17		4	max	1.308	2	1.585	4	-.797	4	0	1	1.345	1	3.012	4
18			min	0	3	.05	1	-1.119	1	0	1	-1.005	4	1.444	2
19		5	max	1.308	2	1.662	4	-.824	4	0	1	0	1	0	1
20			min	0	3	.05	1	-1.154	1	0	1	0	1	0	1
21	M3	1	max	0	3	.036	4	.574	1	0	1	0	1	0	1
22			min	-.015	1	-.059	2	-.162	4	0	1	0	1	0	1
23		2	max	0	3	.113	4	.539	1	0	1	.627	1	.749	1
24			min	-.015	1	-.059	2	-.188	4	0	1	-.125	4	-.308	4
25		3	max	0	3	.214	4	.504	1	0	1	1.211	1	1.456	1
26			min	-.015	1	-.059	2	-.189	4	0	1	-.187	4	-.744	4
27		4	max	.015	1	-.05	1	.188	4	0	1	.542	1	.419	1
28			min	0	3	-.113	4	-.371	1	0	1	-.125	4	-.308	4
29		5	max	.015	1	-.017	3	.162	4	0	1	0	1	0	1
30			min	0	3	-.059	2	-.405	1	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	0	1	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1
3		2	max	.065	1	0	3	0	1	0	3	.301	2	0	1	3.18	4
4			min	-.082	4	-.099	2	-.201	4	-.301	2	0	3	-3.18	4	0	1
5		3	max	.023	1	0	3	0	1	0	3	3.663	2	0	1	8.811	4
6			min	-.109	4	-.204	2	-.306	4	-3.663	2	0	3	-8.811	4	0	1
7		4	max	.089	1	.36	2	.36	4	0	3	4.097	2	0	1	4.097	4
8			min	.062	2	0	3	0	1	-4.097	2	0	3	-4.097	4	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	0	3	.032	2	.484	3	0	1	0	1	0	1	0	1
12			min	-.299	2	-.886	4	-.244	2	0	1	0	1	0	1	0	1
13		2	max	0	3	.032	2	.465	3	1.313	2	6.039	4	-.68	1	4.454	4
14			min	-.299	2	-.845	4	-.258	2	-6.041	4	-1.313	2	-4.055	4	.747	1
15		3	max	0	3	.681	3	.804	4	-5.726	2	11.822	4	10.685	1	8.629	4
16			min	-.299	2	-.412	4	-.578	1	-11.827	4	5.724	2	-7.856	4	-11.736	1
17		4	max	.299	2	.845	4	-.425	4	-2.896	2	6.039	4	5.429	1	4.454	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
18			min	0	3	.026	1	-.597	1	-6.041	4	2.894	2	-4.055	4	-5.963	1
19		5	max	.299	2	.886	4	-.439	4	0	1	0	1	0	1	0	1
20			min	0	3	.026	1	-.615	1	0	1	0	1	0	1	0	1
21	M3	1	max	0	3	.019	4	.306	1	0	1	0	1	0	1	0	1
22			min	-.003	1	-.032	2	-.086	4	0	1	0	1	0	1	0	1
23		2	max	0	3	.06	4	.287	1	.618	4	1.502	1	2.53	1	.553	4
24			min	-.003	1	-.032	2	-.1	4	-1.503	1	-.618	4	-.504	4	-2.779	1
25		3	max	0	3	.114	4	.269	1	1.492	4	2.918	1	4.887	1	.828	4
26			min	-.003	1	-.032	2	-.101	4	-2.919	1	-1.492	4	-.754	4	-5.367	1
27		4	max	.003	1	-.026	1	.1	4	.618	4	.839	1	2.186	1	.553	4
28			min	0	3	-.06	4	-.198	1	-.839	1	-.618	4	-.504	4	-2.401	1
29		5	max	.003	1	-.009	3	.086	4	0	1	0	1	0	1	0	1
30			min	0	3	-.032	2	-.216	1	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	N8	max	0	4	.907	3	1.662	4	0	1	0	1	0	1
2		min	-1.308	2	-.457	2	-.059	2	0	1	0	1	0	1
3	N7	max	0	4	1.154	1	1.662	4	0	1	0	1	0	1
4		min	-1.308	2	.824	4	.05	1	0	1	0	1	0	1
5	N5	max	0	3	.405	1	-.017	3	0	1	0	1	0	1
6		min	-.015	1	-.162	4	-.059	2	0	1	0	1	0	1
7	N6	max	0	3	.574	1	.059	2	0	1	0	1	0	1
8		min	-.015	1	-.162	4	-.036	4	0	1	0	1	0	1
9	Totals:	max	0	4	1.965	1	3.253	4						
10		min	-2.637	2	1.323	4	0	2						

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	.011	4	.024	1	1.257e-3	4	1.273e-6	2	1.428e-4	2
2		min	0	3	-.041	1	-.006	4	7.975e-7	2	-1.213e-6	1	0	3
3	N2	max	0	1	.011	4	.024	1	1.257e-3	4	1.273e-6	2	1.428e-4	2
4		min	0	3	-.041	1	-.001	4	7.975e-7	2	-1.213e-6	1	0	3
5	N3	max	0	2	.012	4	.024	1	1.171e-6	1	0	4	0	4
6		min	0	4	-.041	1	-.1	4	-5.322e-3	4	-8.399e-4	2	-1.58e-3	2
7	N4	max	.567	2	.011	4	.024	1	1.171e-6	1	0	4	0	4
8		min	0	4	-.041	1	-1.092	4	-9.756e-3	4	-8.399e-4	2	-6.015e-3	2
9	N5	max	0	1	0	4	0	2	1.257e-3	4	8.519e-4	1	1.38e-3	1
10		min	0	3	0	1	0	3	7.975e-7	2	-6.184e-5	4	-3.912e-4	4
11	N6	max	0	1	0	4	0	4	1.257e-3	4	6.184e-5	4	3.912e-4	4
12		min	0	3	0	1	0	2	7.975e-7	2	-8.578e-4	1	-1.484e-3	1
13	N7	max	0	2	0	4	0	1	1.171e-6	1	1.217e-3	1	2.057e-3	1
14		min	0	4	0	1	0	4	-5.322e-3	4	-3.464e-3	4	-4.772e-4	4
15	N8	max	0	2	0	2	0	2	1.171e-6	1	3.464e-3	4	4.772e-4	4
16		min	0	4	0	3	0	4	-5.322e-3	4	-5.053e-4	1	-8.273e-4	1

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	PIPE_6....	.464	12.279	4	.032	12.279		2	10.44	21	23.1	23.1	...	.85	.6	H2-1
2	M2	L6x6x6	.020	3.573	2	.062	7	y	4	15.2..	21.6	- Co..					H1-1
3	M3	L6x6x6	.000	3.573	1	.021	0	z	1	15.2..	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	N8	-1.109	-.168	-.05	0	0	0
2	1	N7	-1.109	1.154	.05	0	0	0
3	1	N5	-.015	.405	-.05	0	0	0
4	1	N6	-.015	.574	.05	0	0	0
5	1	Totals:	-2.247	1.965	0			
6	1	COG (ft):	X: 0	Y: 11.768	Z: 0			

Joint Reactions

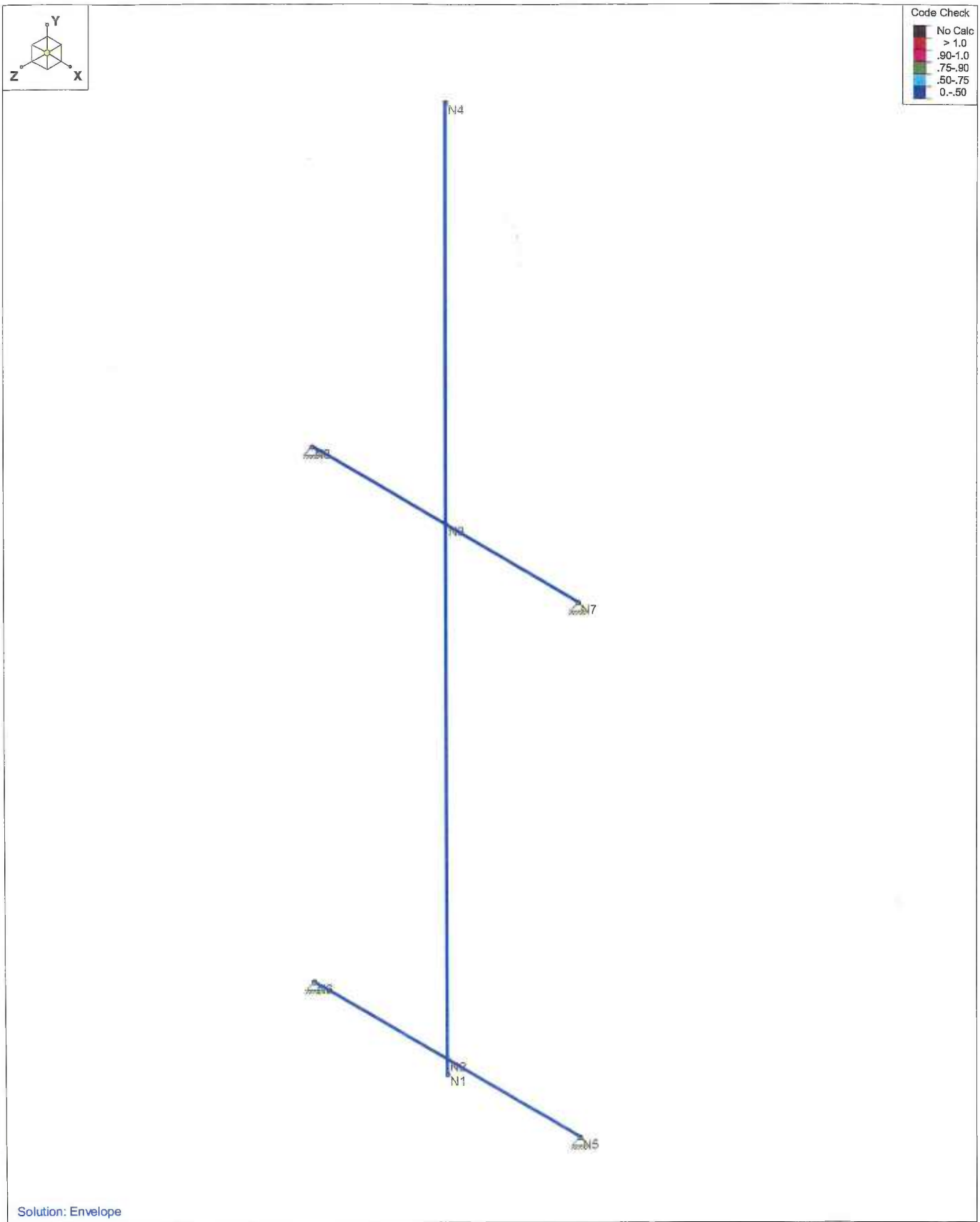
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N8	-1.308	-.457	-.059	0	0	0
2	2	N7	-1.308	1.121	.059	0	0	0
3	2	N5	-.01	.227	-.059	0	0	0
4	2	N6	-.01	.432	.059	0	0	0
5	2	Totals:	-2.637	1.323	0			
6	2	COG (ft):	X: 0	Y: 11.887	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N8	0	.907	1.414	0	0	0
2	3	N7	0	.907	1.414	0	0	0
3	3	N5	0	.075	-.017	0	0	0
4	3	N6	0	.075	-.017	0	0	0
5	3	Totals:	0	1.965	2.793			
6	3	COG (ft):	X: 0	Y: 11.768	Z: 0			

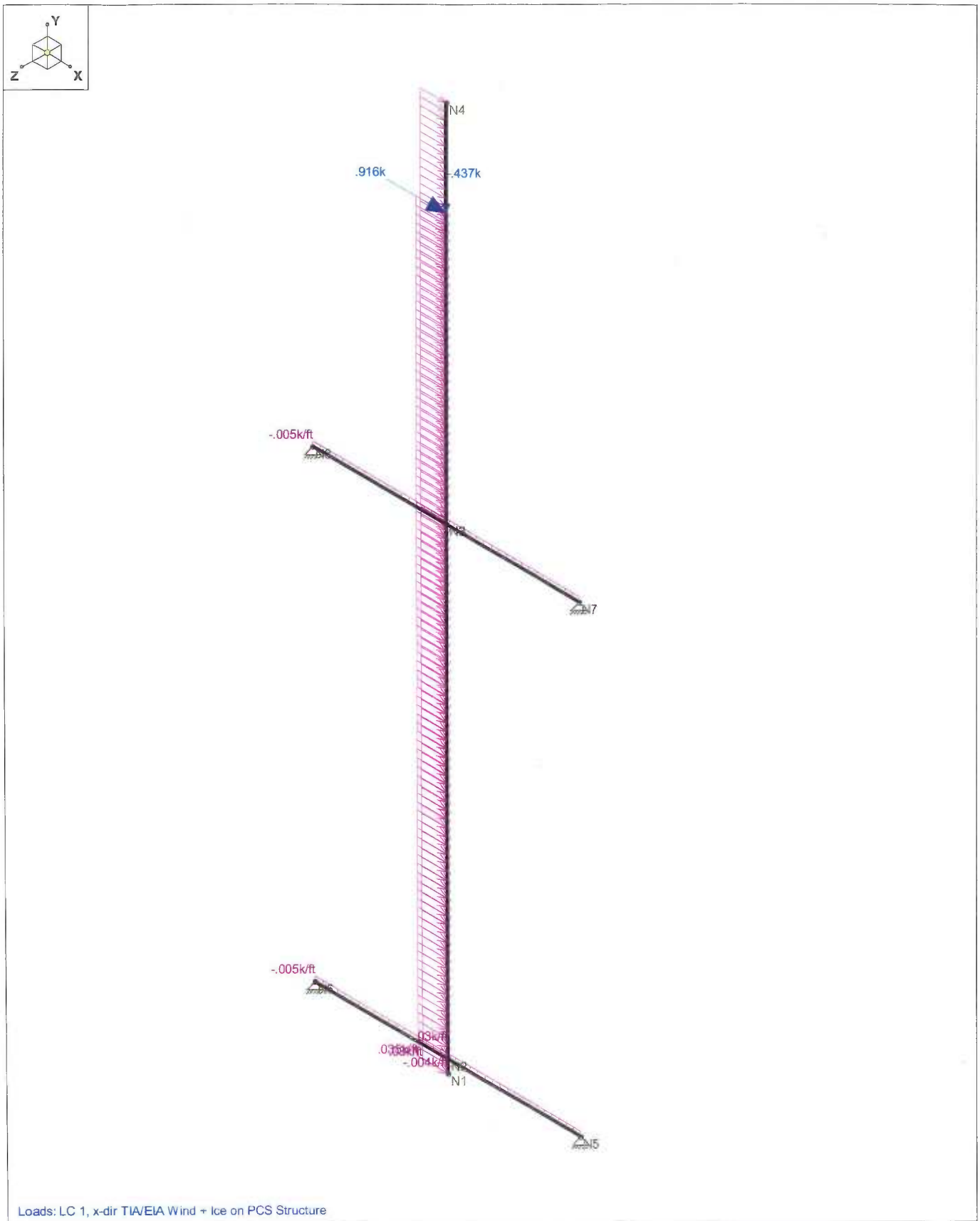
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N8	0	.824	1.662	0	0	0
2	4	N7	0	.824	1.662	0	0	0
3	4	N5	0	-.162	-.036	0	0	0
4	4	N6	0	-.162	-.036	0	0	0
5	4	Totals:	0	1.323	3.253			
6	4	COG (ft):	X: 0	Y: 11.887	Z: 0			



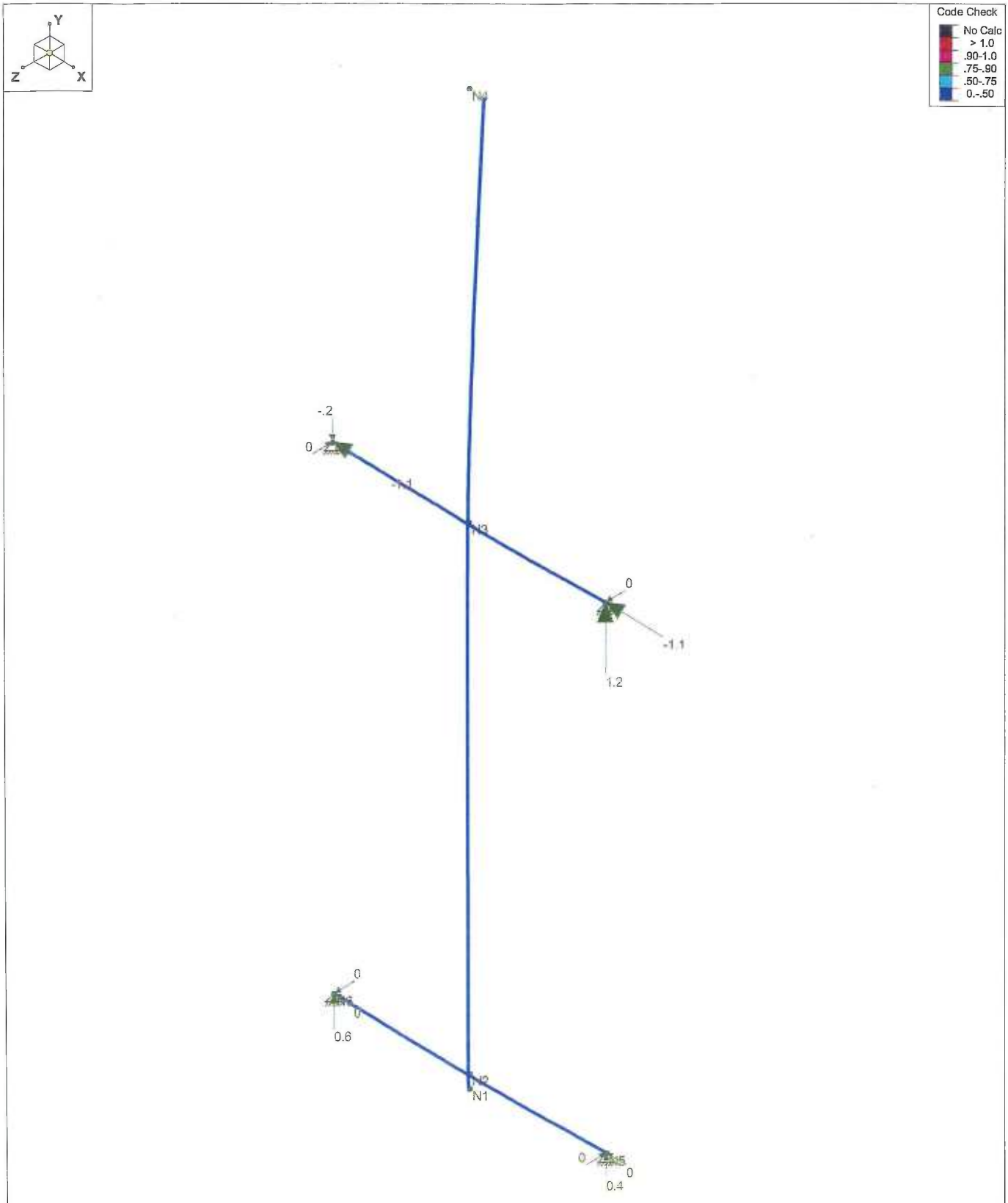
Solution: Envelope

CENTEK Engineering, INC.		SK - 1
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:06 PM
14025.003 / T-Mobile CT11...	Unity Check	EIA-TIA.r3d



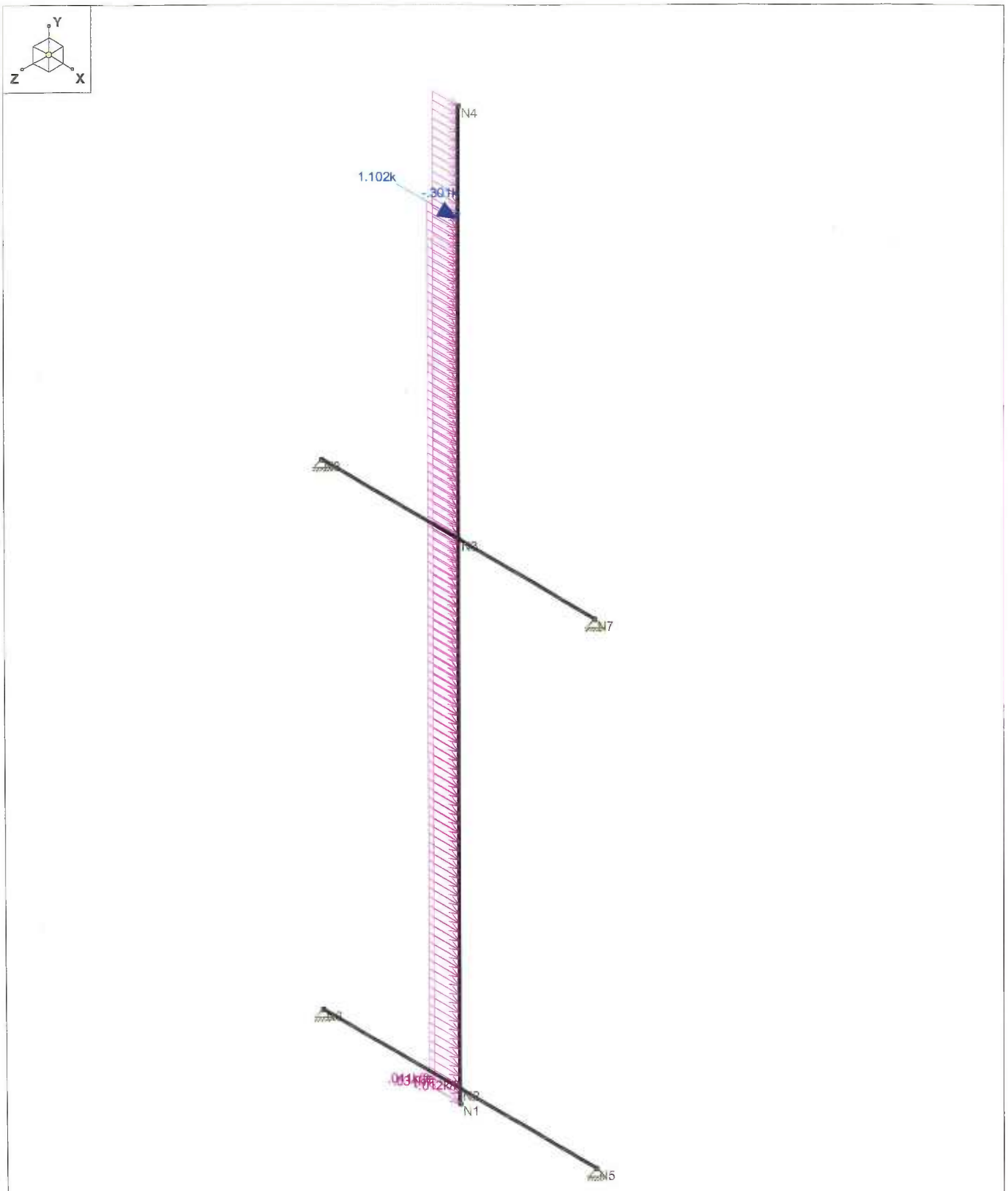
Loads: LC 1, x-dir TIA/EIA Wind + Ice on PCS Structure

CENTEK Engineering, INC.		SK - 2
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:06 PM
14025.003 / T-Mobile CT11...	LC #1 Loads	EIA-TIA.r3d



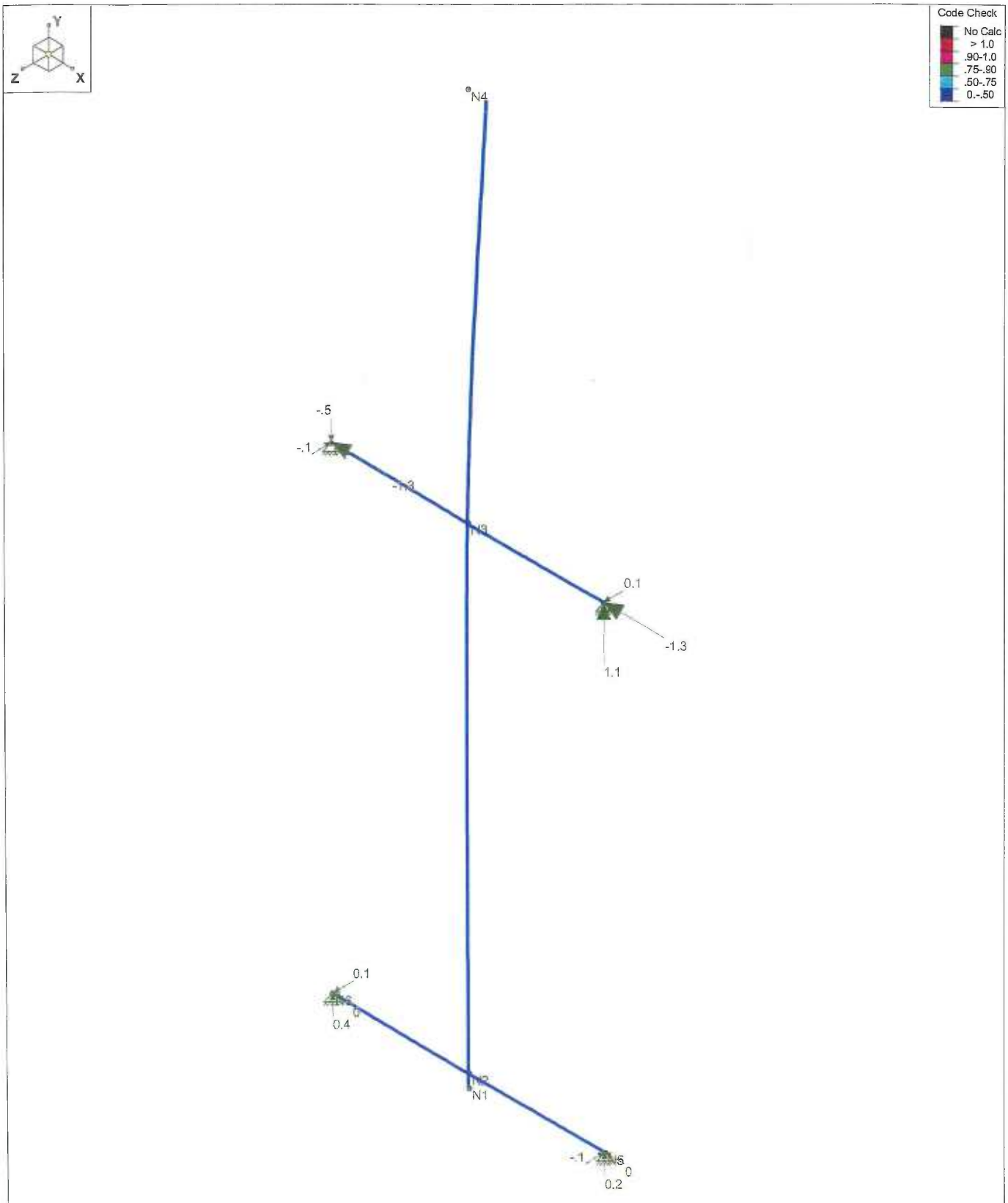
Results for LC 1, x-dir TIA/EIA Wind + Ice on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, INC.		SK - 7
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:09 PM
14025.003 / T-Mobile CT11...	LC #1 Reactions and Deflected Shape	EIA-TIA.r3d



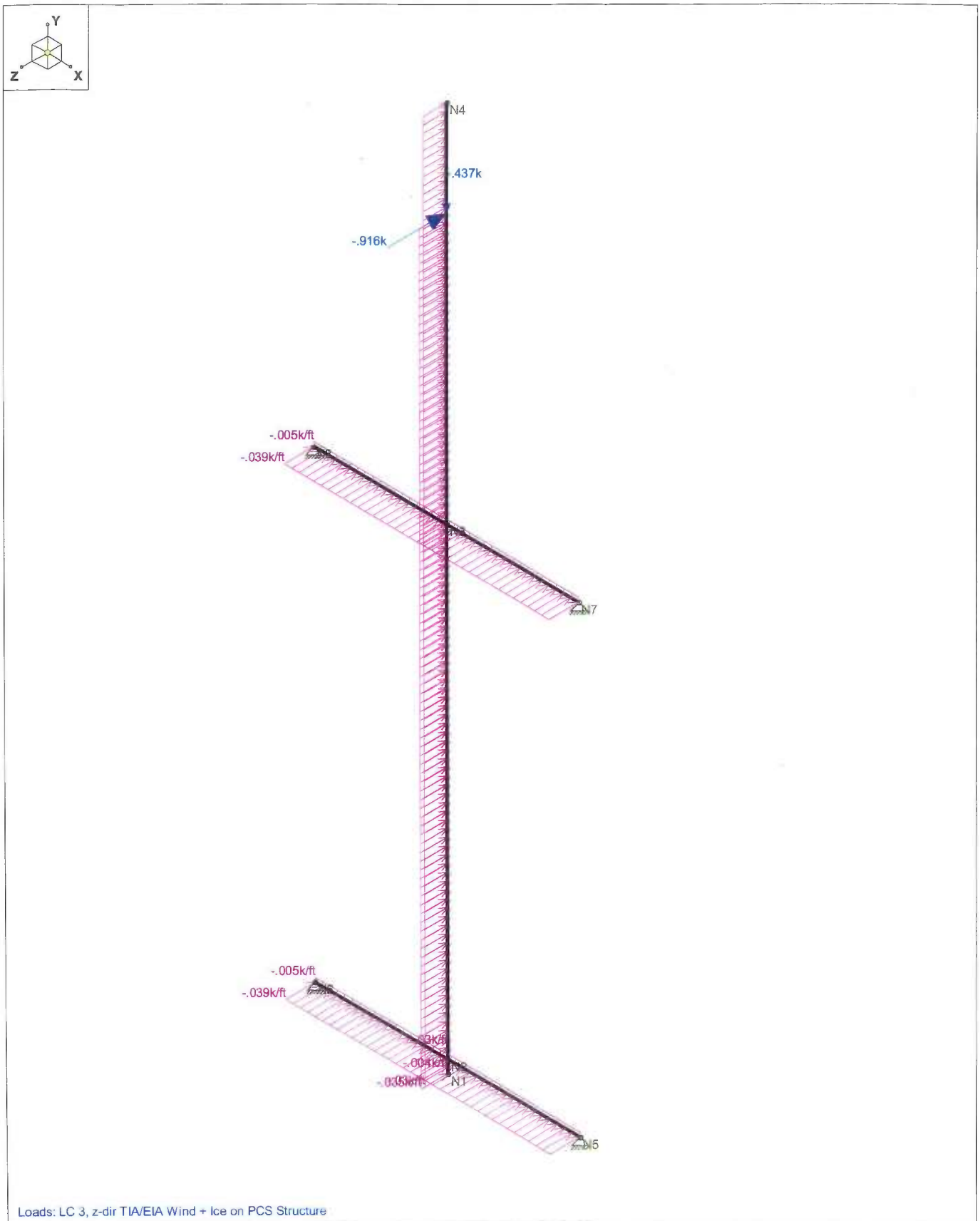
Loads: LC 2, x-dir TIA/EIA Wind on PCS Structure

CENTEK Engineering, INC.		SK - 3
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:07 PM
14025.003 / T-Mobile CT11...	LC #2 Loads	EIA-TIA.r3d



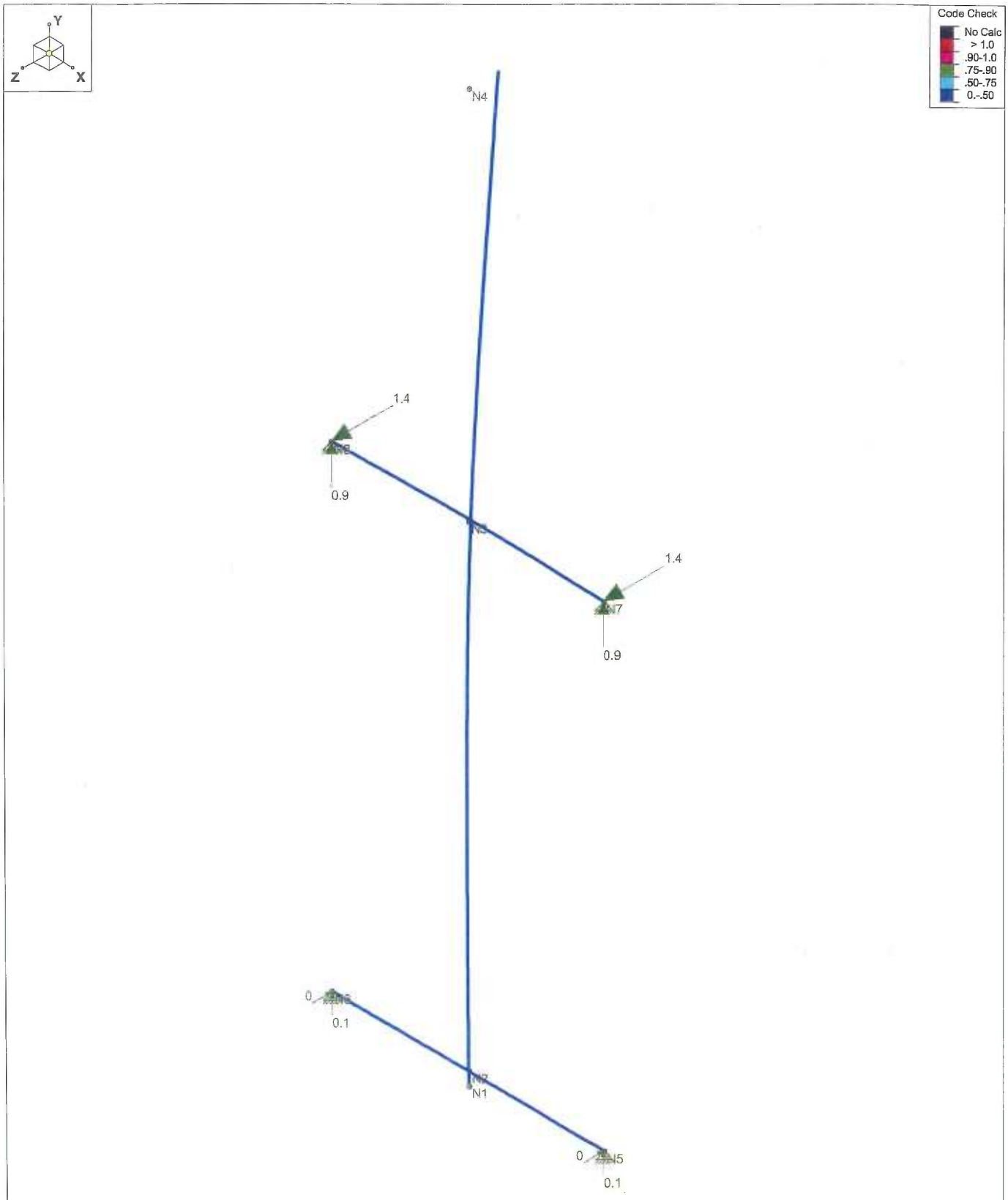
Results for LC 2, x-dir TIA/EIA Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, INC.		SK - 8
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:09 PM
14025.003 / T-Mobile CT11...	LC #2 Reactions and Deflected Shape	EIA-TIA.r3d



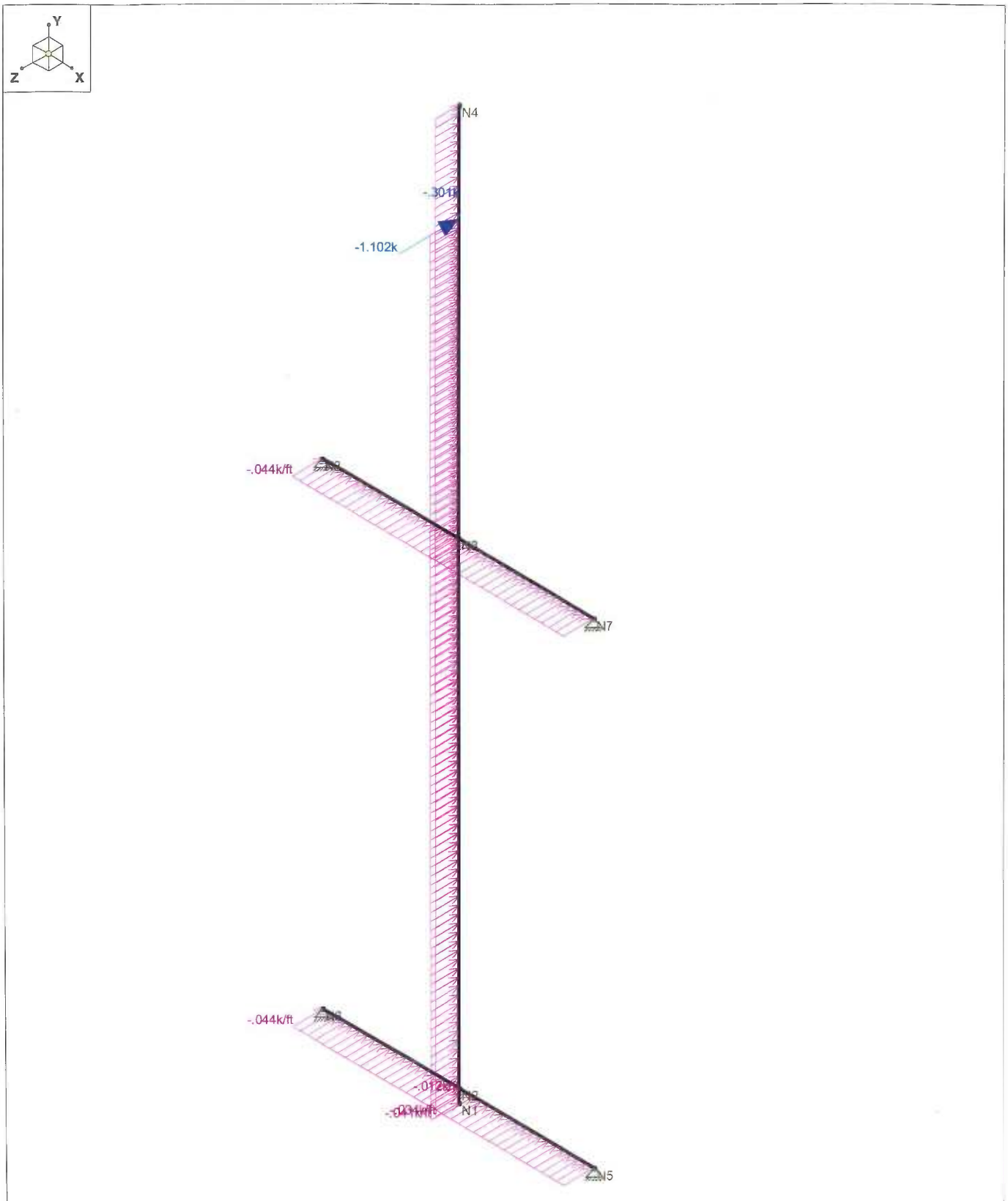
Loads: LC 3, z-dir TIA/EIA Wind + Ice on PCS Structure

CENTEK Engineering, INC.		SK - 4
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:07 PM
14025.003 / T-Mobile CT11...	LC #3 Loads	EIA-TIA.r3d



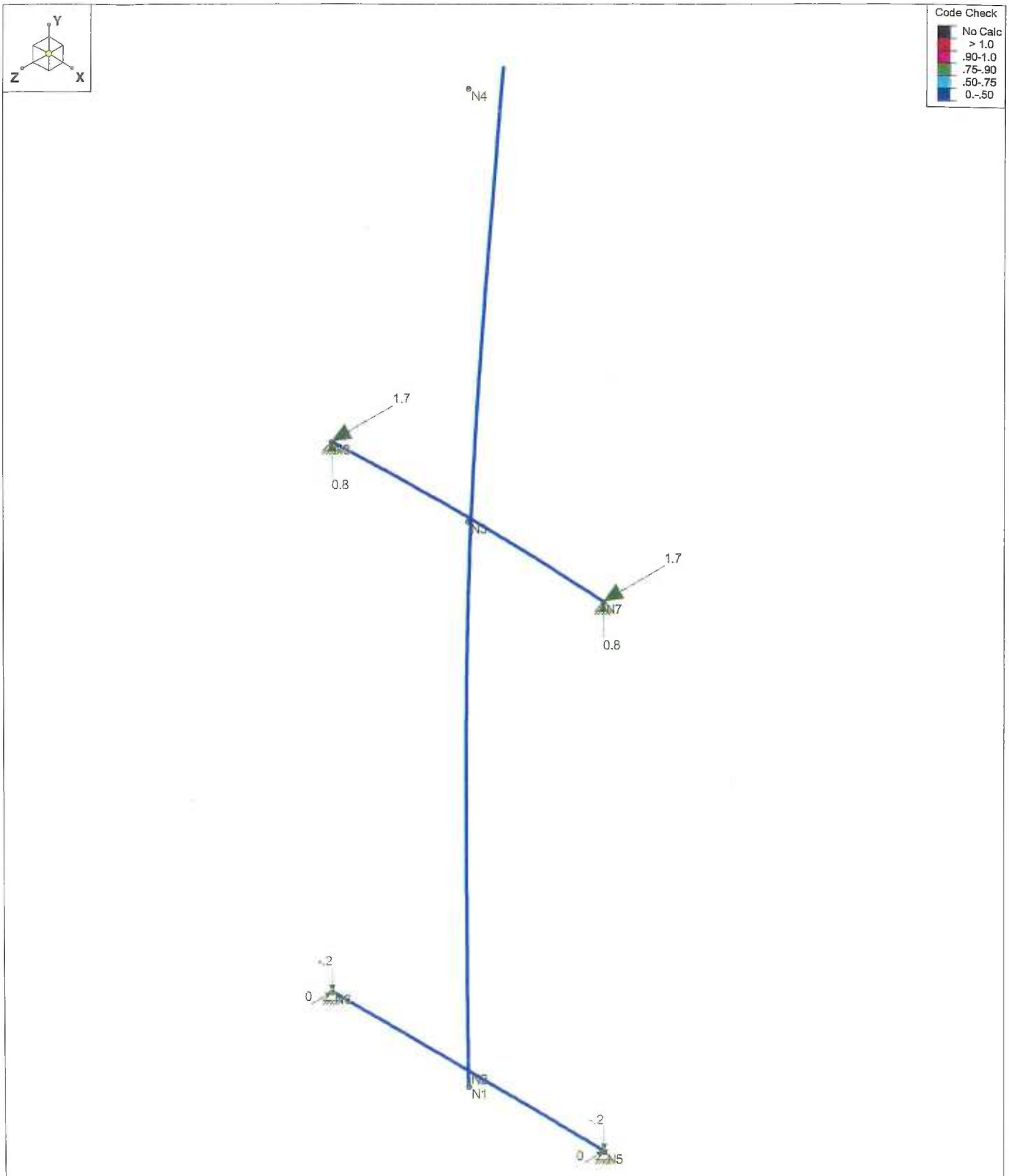
Results for LC 3, z-dir TIA/EIA Wind + Ice on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, INC.		SK - 9
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:10 PM
14025.003 / T-Mobile CT11..	LC #3 Reactions and Deflected Shape	EIA-TIA.r3d



Loads: LC 4, z-dir TIA/EIA Wind on PCS Structure

CENTEK Engineering, INC.		SK - 5
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:07 PM
14025.003 / T-Mobile CT11...	LC #4 Loads	EIA-TIA.r3d



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

CENTEK Engineering, INC.		SK - 10
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 1:10 PM
14025.003 / T-Mobile CT11...	LC #4 Reactions and Deflected Shape	EIA-TIA.r3d

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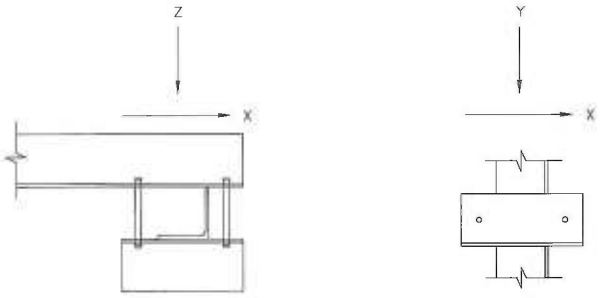
Subject:	Connection of Mast to CL&P Tower # Dist east river x-ing
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Mast Connection to CL&P Tower:



Reactions:

Moment = Moment := 0·kips

Vertical = Vertical := 1.12·kips (Input From Risa-3D LC #2)

Horizontal x-dir = $Horizontal_x := 1.31 \cdot kips$ (Input From Risa-3D LC #2)

Horizontal z-dir = $Horizontal_z := 1.66 \cdot kips$ (Input From Risa-3D LC #4)

Bolt Data:

Bolt Type = ASTM A325 (User Input)

Bolt Diameter = D := 0.625·in (User Input)

Number of Bolts = $N_b := 2$ (User Input)

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

Allowable Shear Strength = $F_v := 7.36 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{\sqrt{Horizontal_x^2 + Vertical^2}}{N_b} = 0.9 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 11.71 \cdot \%$

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

Bolt_Shear = "OK"

Tension Force = $f_t := \frac{Horizontal_z}{N_b} = 0.8 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 6.01 \cdot \%$

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

Bolt_Tension = "OK"

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Subject:	Load Analysis of T-Mobile Equipment on CL&P Tower CT River Xing East Side
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L Checked by: C.F.C. Job No. 14025.003

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Wind Speed =	V := 120	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 := 198.5	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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.462$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.284$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.747$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.813$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 43.8$ psf (NESC 2007 Section 250.C.2)

Shape Factors NUS Design Criteria Issued April 12, 2007

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.45$	(User Input)

Overload Factors NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

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Subject:	Load Analysis of T-Mobile Equipment on CL&P Tower CT River Xing East Side
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L Checked by: C.F.C. Job No. 14025.003

Development of Wind & Ice Load on PCS Mast

PCS Mast Data: (Pipe 6" SCH. 80)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 6.63$	in	(User Input)
Mast Length =	$L_{mast} := 21.83$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.432$	in	(User Input)

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.553$

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_R \cdot A_{mast} = 31$ plf **BLC 5,7**

Wind Load (NESE Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 0.636$

Total Mast Wind Force w/ Ice = $p \cdot Cd_R \cdot AICE_{mast} = 3$ plf **BLC 4,6**

Gravity Loads (without ice)

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

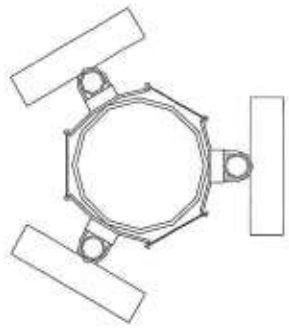
Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 11.2$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 4$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:



Antenna Model =	RFS APX 16DWV-16DWVS-E-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 45$	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 =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1326$	lbs	**BLC 5,7**

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 =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 106$	lbs	**BLC 4,6**

Gravity Load (without ice)

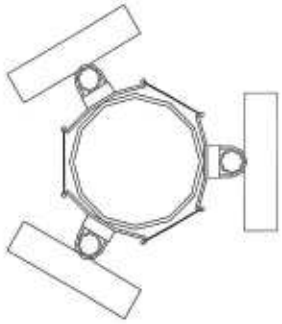
Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 135$	lbs	**BLC 2**

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 =	$W_{ICEant} \cdot N_{ant} = 99$	lbs	**BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data:



Mount Type:	Tri-Sector Chain Mount w/ 3 Pipes		
Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 72$	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 =	$W_{tsc.mnt} := 100$	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 =	$F_{mnt} := qz \cdot Cd_F \cdot A_{mnt} \cdot m = 0$	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 =	$Fi_{mnt} := p \cdot Cd_F \cdot A_{ICEmnt} = 0$	lbs	**BLC 4**

Gravity Loads (without ice)

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

Weight Each Pipe Mount =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 22$	lbs	
Weight of All Mounts =	$WT_{mnt} \cdot N_{mnt} + W_{tsc.mnt} = 166$	lbs	**BLC 2**

Gravity Load (ice only)

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

Volume of Each Pipe =	$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 319$	cu in	
Volume of Ice on Each Pipe =	$V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 334$	cu in	
Weight of Ice each mount (incl, hardware) =	$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot ld = 11$	lbs	
Weight of Ice on All Mounts =	$W_{ICEmnt} \cdot N_{mnt} + 5 = 37$	lbs	**BLC 3**

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Subject: Load Analysis of T-Mobile Equipment on CL&P Tower CT River Xing East Side

Location: Old Lyme, CT

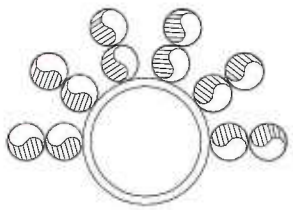
Rev. 0: 1/30/14

Prepared by: T.J.L Checked by: C.F.C.
Job No. 14025.003

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 16$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 12$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 4$		(User Input)



Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.7$ ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 52$ plf **BLC 5,7**

Wind Load (NESC Heavy)

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

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 4$ plf **BLC 4,6**

Gravity Loads (without ice)

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

Gravity Load (ice only)

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

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

Development of Wind & Ice Load on Brace Member

Member Data: L 6x6x3/8

Shape =	Flat		(User Input)
Width =	$W_{mem} := 6$	in	(User Input)
Length =	$L_{mem} := 8$	ft	(User Input)
Height =	$H_{mem} := 6$	in	(User Input)

Wind Load (NESC Extreme)

Member Projected Surface Area = $A_{mem} := \frac{W_{mem}}{12} = 0.5$

Total Member Wind Force = $qz \cdot Cd_F \cdot A_{mem} = 35$ plf **BLC 5,7**

Wind Load (NESE Heavy)

Member Projected Surface Area w/ Ice = $AICE_{mem} := \frac{(W_{mem} + 2 \cdot Ir)}{12} = 0.583$

Total Member Wind Force w/ Ice = $p \cdot Cd_F \cdot AICE_{mem} = 4$ plf **BLC 4,6**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mem} := (W_{mem} + 2 \cdot Ir) \cdot (H_{mem} + 2 \cdot Ir) - W_{mem} \cdot H_{mem} = 13$ sq in

Weight of Ice on Member = $W_{ICEmem} := Id \cdot \frac{Ai_{mem}}{144} = 5$ 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: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining PCS Structure Reactions Applied to CL&P Tower Tabulated Load Cases**

Location: **Old Lyme, CT**

Date:1/30/14 Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Load Case	Description
1	Self Weight (PCS Mast)
2	Weight of Appurtenances
3	Weight of Ice Only on PCS Structure (1)
4	x-direction NESC Heavy Wind on PCS Structure(1)
5	x-direction NESC Extreme Wind on PCS Structure(1)
6	z-direction NESC Heavy Wind on PCS Structure(1)
7	z-direction NESC Extreme Wind on PCS Structure(1)

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

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Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining PCS Structure Reactions Applied to CL&P Tower**
Load Combinations Table
Location: **Old Lyme, CT**
Date: 1/30/14 Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	x-direction NESC Heavy Wind on PCS Structure		1		1	1.5	2	1.5	3	1.5	4	2.5		
2	x-direction NESC Extreme Wind on PCS Structure		1		1	1	2	1	5	1				
3	z-direction NESC Heavy Wind on PCS Structure		1		1	1.5	2	1.5	3	1.5	6	2.5		
4	z-direction NESC Extreme Wind on PCS Structure		1		1	1	2	1	7	1				

Footnotes:
(1) BLC = Basic Load Case
(2) PCS Structure includes: Mast 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	Mast	21.83											Lateral
2	M2	Brace	7											Lateral
3	M3	Brace	7											Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE_6.0X	Beam	Pipe	A53 Gr. B	Typical	7.83	38.3	38.3	76.6
2	Brace	L6x6x6	Beam	Tube	A36 Gr.36	Typical	4.38	15.4	15.4	.218

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N4			Mast	Beam	Pipe	A53 Gr. B	Typical
2	M2	N8	N7		270	Brace	Beam	Tube	A36 Gr.36	Typical
3	M3	N6	N5		270	Brace	Beam	Tube	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	.33	0	0	
3	N3	0	12.33	0	0	
4	N4	0	21.83	0	0	
5	N5	3.5	.33	0	0	
6	N6	-3.5	.33	0	0	
7	N7	3.5	12.33	0	0	
8	N8	-3.5	12.33	0	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	N8	Reaction	Reaction	Reaction				
2	N7	Reaction	Reaction	Reaction				
3	N5	Reaction	Reaction	Reaction				
4	N6	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.135	19.33
2	M1	Y	-.166	19.33

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	19.33
2	M1	Y	-.037	19.33

Member Point Loads (BLC 4 : x-dir NESC Heavy Wind on PCS Str)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.106	19.33

Member Point Loads (BLC 5 : x-dir NESC Extreme Wind on PCS S)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.326	19.33

Member Point Loads (BLC 6 : z-dir NESC Heavy Wind on PCS Str)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	-.106	19.33

Member Point Loads (BLC 7 : z-dir NESC Extreme Wind on PCS S)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	-1.326	19.33

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	-.012	-.012	0	19.33

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	-.004	-.004	0	0
2	M1	Y	-.018	-.018	0	19.33
3	M2	Y	-.005	-.005	0	0
4	M3	Y	-.005	-.005	0	0

Member Distributed Loads (BLC 4 : x-dir NESC Heavy Wind on PCS Str)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.003	.003	0	0
2	M1	X	.004	.004	0	19.33

Member Distributed Loads (BLC 5 : x-dir NESC Extreme Wind on PCS S)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.031	.031	0	0
2	M1	X	.052	.052	0	19.33

Member Distributed Loads (BLC 6 : z-dir NESC Heavy Wind on PCS Str)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	0
2	M1	Z	-.004	-.004	0	19.33
3	M2	Z	-.004	-.004	0	0
4	M3	Z	-.004	-.004	0	0

Member Distributed Loads (BLC 7 : z-dir NESC Extreme Wind on PCS S)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.031	-.031	0	0
2	M1	Z	-.052	-.052	0	19.33
3	M2	Z	-.035	-.035	0	0
4	M3	Z	-.035	-.035	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (PCS Mast)	None		-1						
2	Weight of Appurtenances	None					2	1		
3	Weight of Ice Only on PCS Struct	None					2	4		
4	x-dir NESC Heavy Wind on PCS...	None					1	2		
5	x-dir NESC Extreme Wind on P...	None					1	2		
6	z-dir NESC Heavy Wind on PCS...	None					1	4		
7	z-dir NESC Extreme Wind on P...	None					1	4		

Load Combinations

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	x-dir NESC Heavy Wind on PC...	Yes			1	1.5	2	1.5	3	1.5	4	2.5								
2	x-dir NESC Extreme Wind on P...	Yes			1	1	2	1	5	1										
3	z-dir NESC Heavy Wind on PC...	Yes			1	1.5	2	1.5	3	1.5	6	2.5								
4	z-dir NESC Extreme Wind on P...	Yes			1	1	2	1	7	1										
5	Self Weight				1	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	N8	max	0	4	.904	4	1.862	4	0	1	0	1	0	1
2		min	-1.506	2	-.594	2	-.07	2	0	1	0	1	0	1
3	N7	max	0	4	1.257	2	1.862	4	0	1	0	1	0	1
4		min	-1.506	2	.856	3	.014	1	0	1	0	1	0	1
5	N5	max	.002	2	.709	1	-.011	3	0	1	0	1	0	1
6		min	-.001	1	-.242	4	-.113	4	0	1	0	1	0	1
7	N6	max	.002	2	.759	1	.07	2	0	1	0	1	0	1
8		min	-.001	1	-.242	4	-.113	4	0	1	0	1	0	1
9	Totals:	max	0	4	2.947	1	3.498	4						
10		min	-3.008	2	1.323	4	0	2						

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N8	-.31	.551	-.014	0	0	0
2	1	N7	-.31	.927	.014	0	0	0
3	1	N5	-.001	.709	-.014	0	0	0
4	1	N6	-.001	.759	.014	0	0	0
5	1	Totals:	-.622	2.947	0			
6	1	COG (ft):	X: 0	Y: 11.768	Z: 0			

Joint Reactions

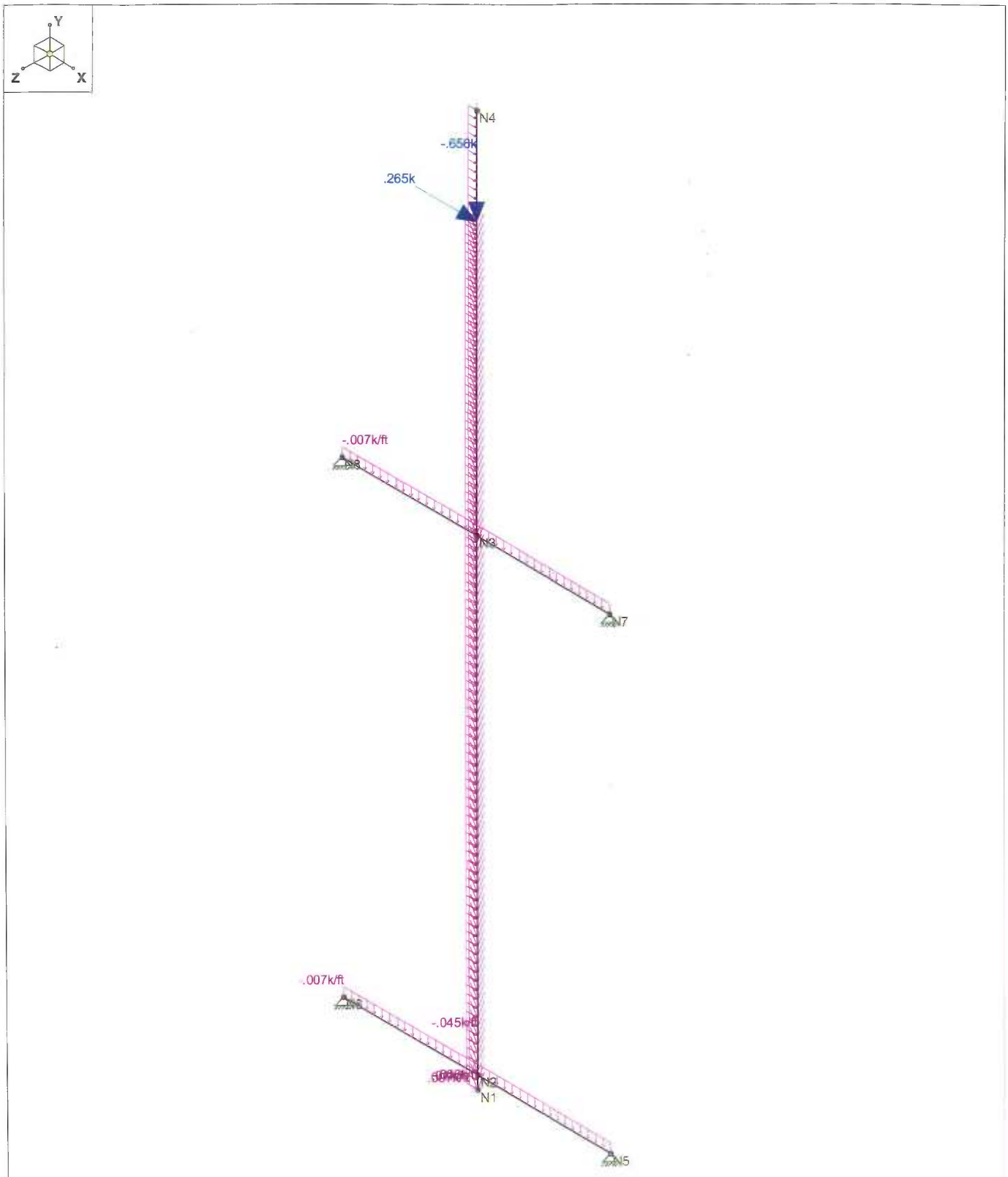
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N8	-1.506	-.594	-.07	0	0	0
2	2	N7	-1.506	1.257	.07	0	0	0
3	2	N5	.002	.204	-.07	0	0	0
4	2	N6	.002	.455	.07	0	0	0
5	2	Totals:	-3.008	1.323	0			
6	2	COG (ft):	X: 0	Y: 11.887	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N8	0	.856	.392	0	0	0
2	3	N7	0	.856	.392	0	0	0
3	3	N5	0	.617	-.011	0	0	0
4	3	N6	0	.617	-.011	0	0	0
5	3	Totals:	0	2.947	.762			
6	3	COG (ft):	X: 0	Y: 11.768	Z: 0			

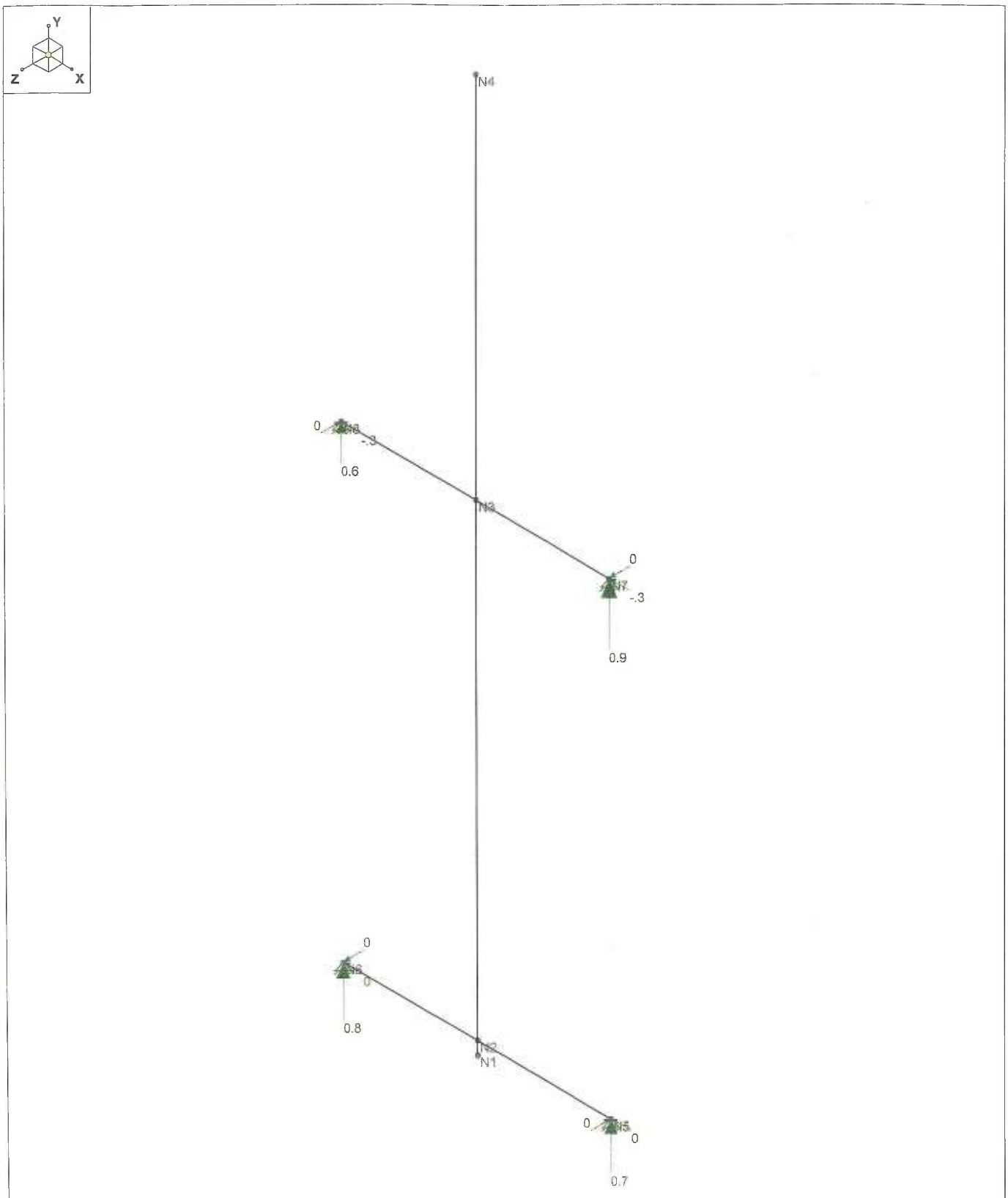
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N8	0	.904	1.862	0	0	0
2	4	N7	0	.904	1.862	0	0	0
3	4	N5	0	-.242	-.113	0	0	0
4	4	N6	0	-.242	-.113	0	0	0
5	4	Totals:	0	1.323	3.498			
6	4	COG (ft):	X: 0	Y: 11.887	Z: 0			



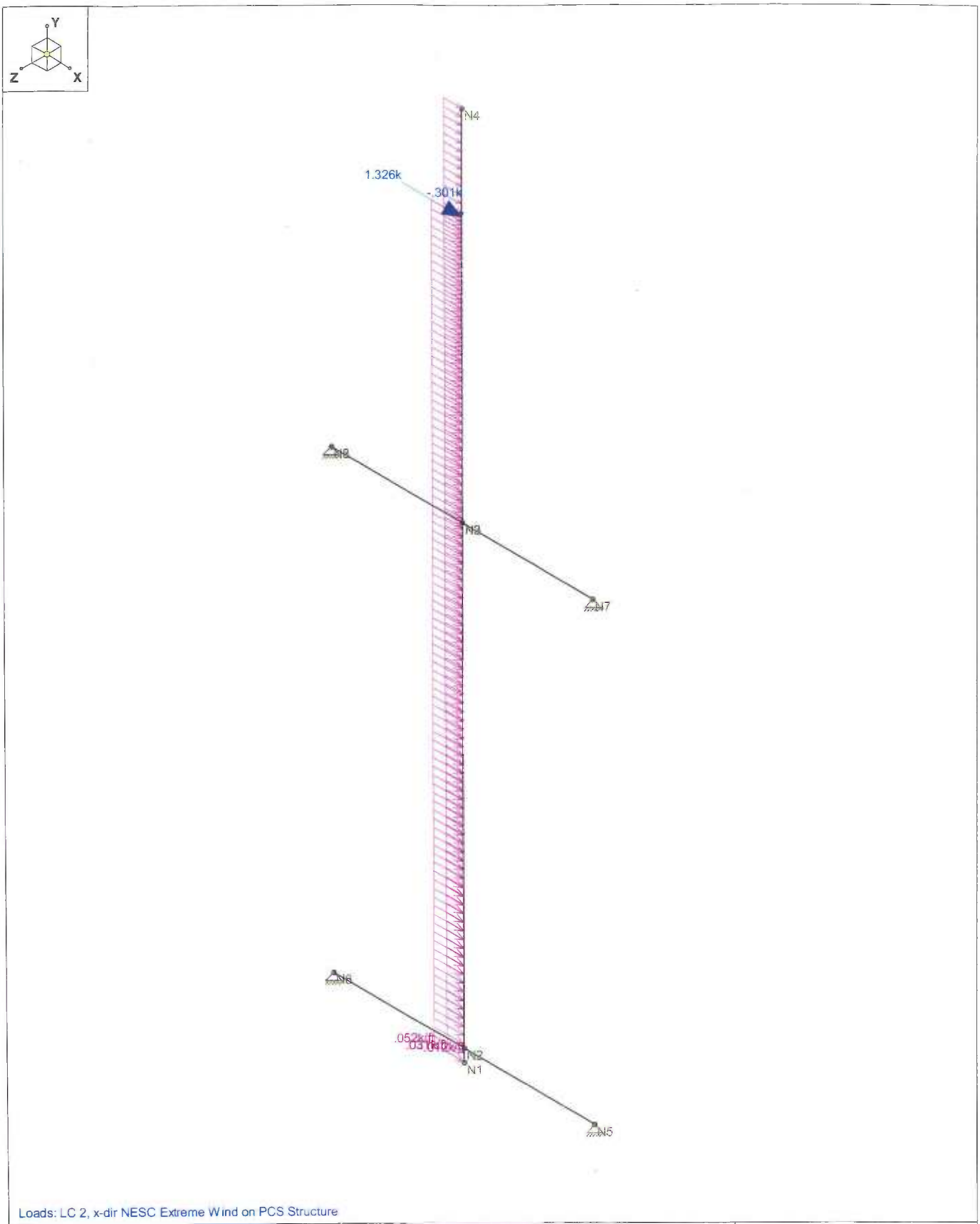
Loads: LC 1, x-dir NESC Heavy Wind on PCS Structure

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:56 PM
14025.003 / T-Mobile CT11...	LC #1 Loads	NESC.r3d



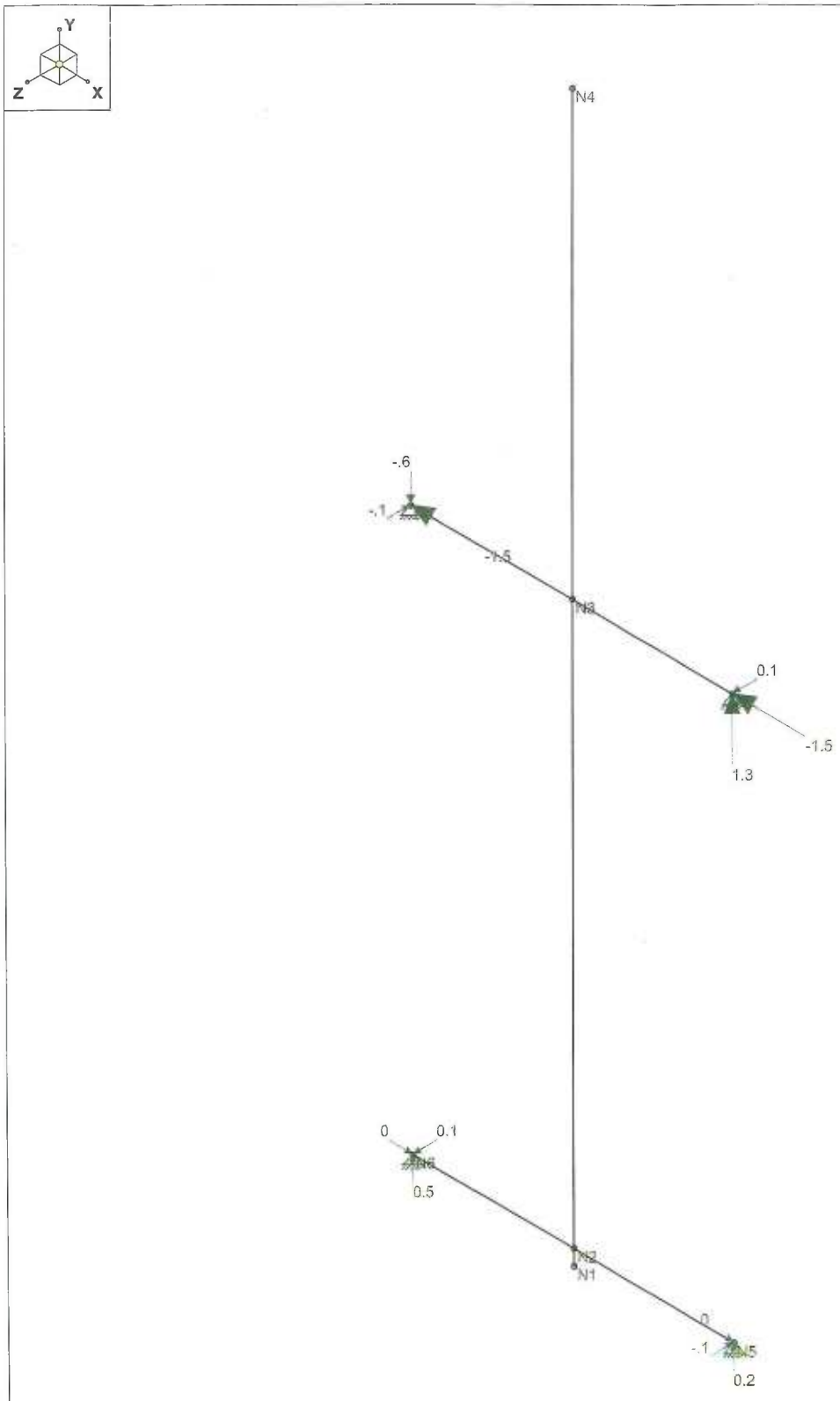
Results for LC 1, x-dir NESC Heavy Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:57 PM
14025.003 / T-Mobile CT11...	LC #1 Reactions	NESC.r3d



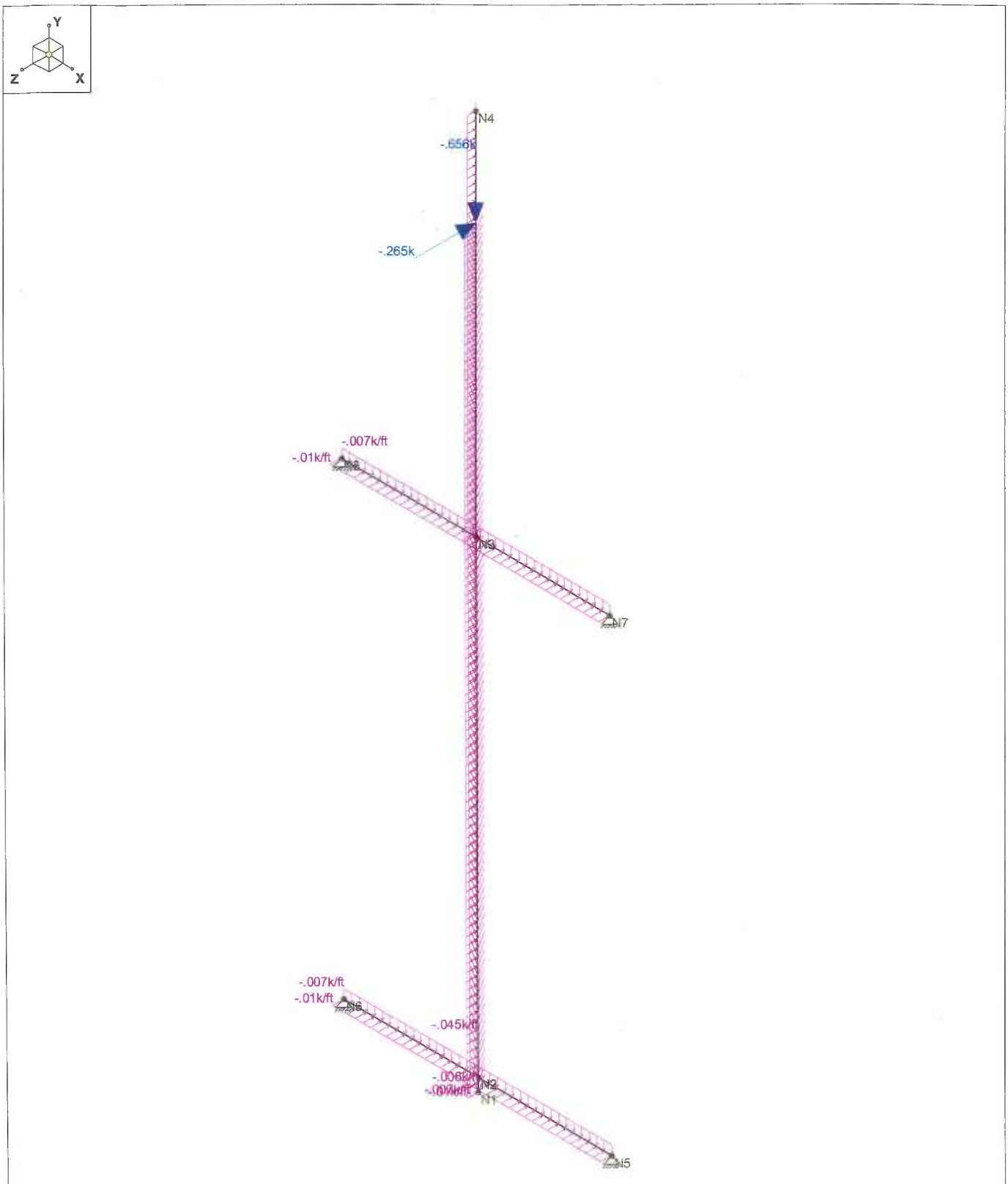
Loads: LC 2, x-dir NESC Extreme Wind on PCS Structure

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:56 PM
14025.003 / T-Mobile CT11...	LC #2 Loads	NESC.r3d



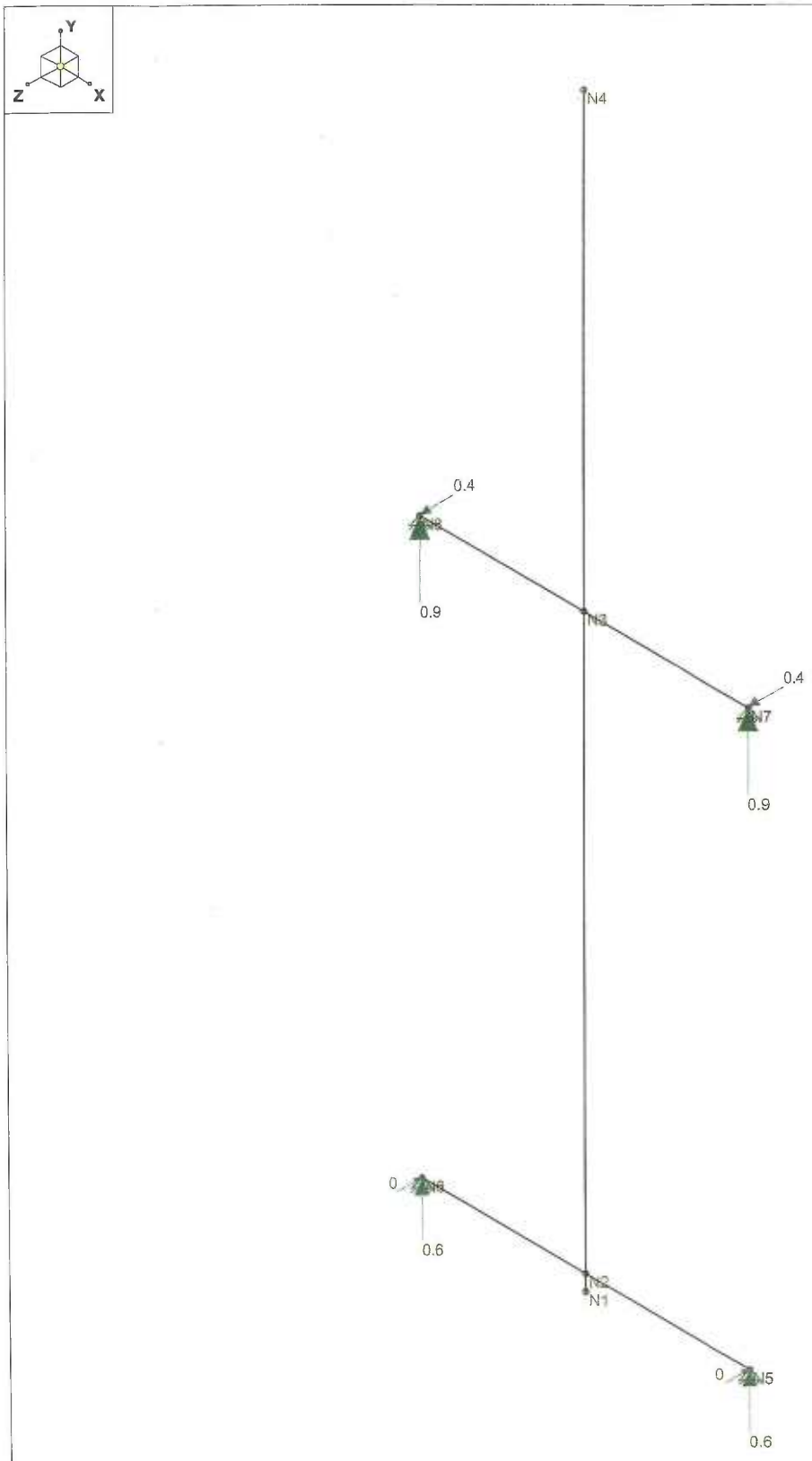
Results for LC 2, x-dir NESC Extreme Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:57 PM
14025.003 / T-Mobile CT11...	LC #2 Reactions	NESC.r3d



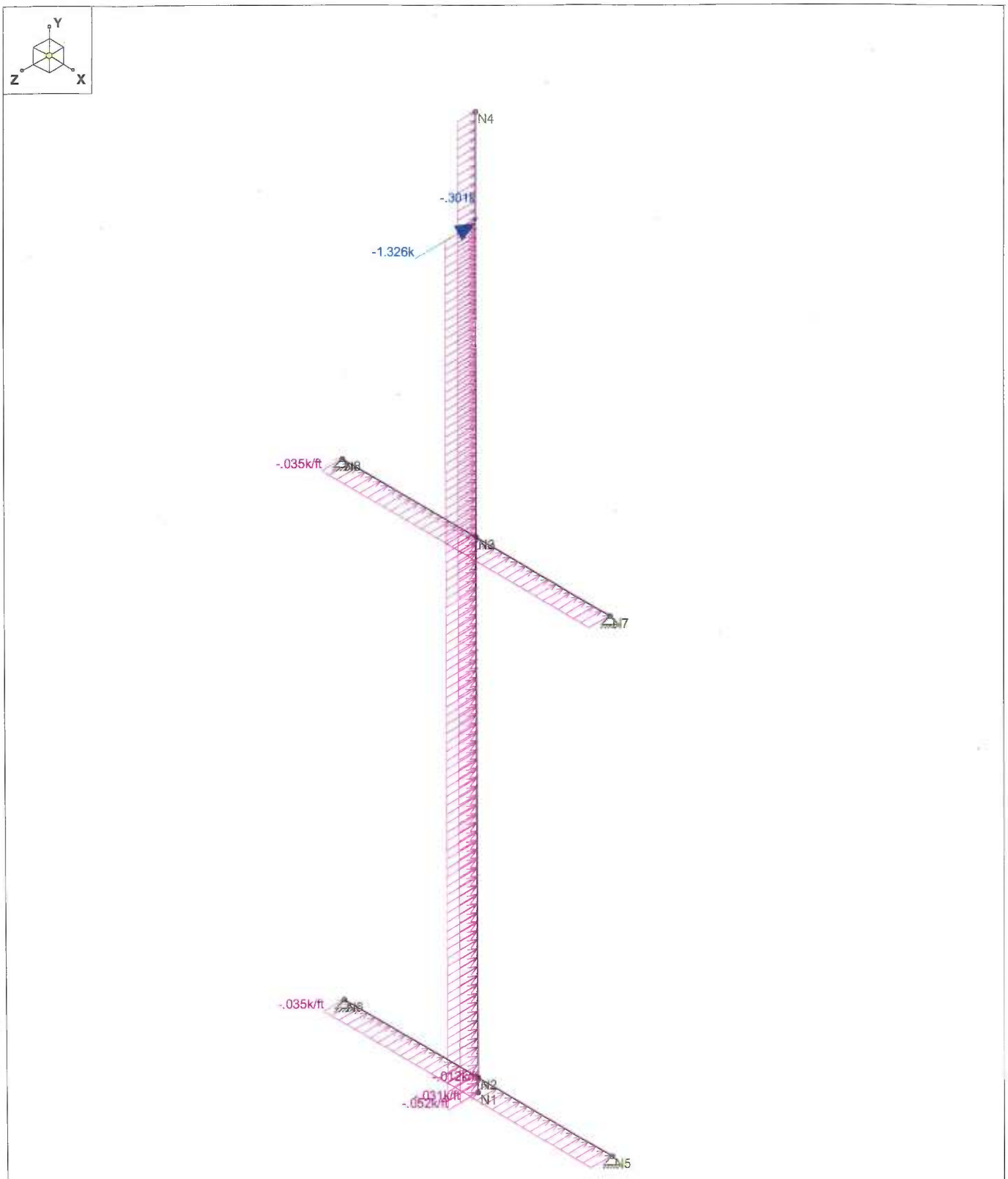
Loads: LC 3, z-dir NESC Heavy Wind on PCS Structure

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:56 PM
14025.003 / T-Mobile CT11...	LC #13Loads	NESC.r3d



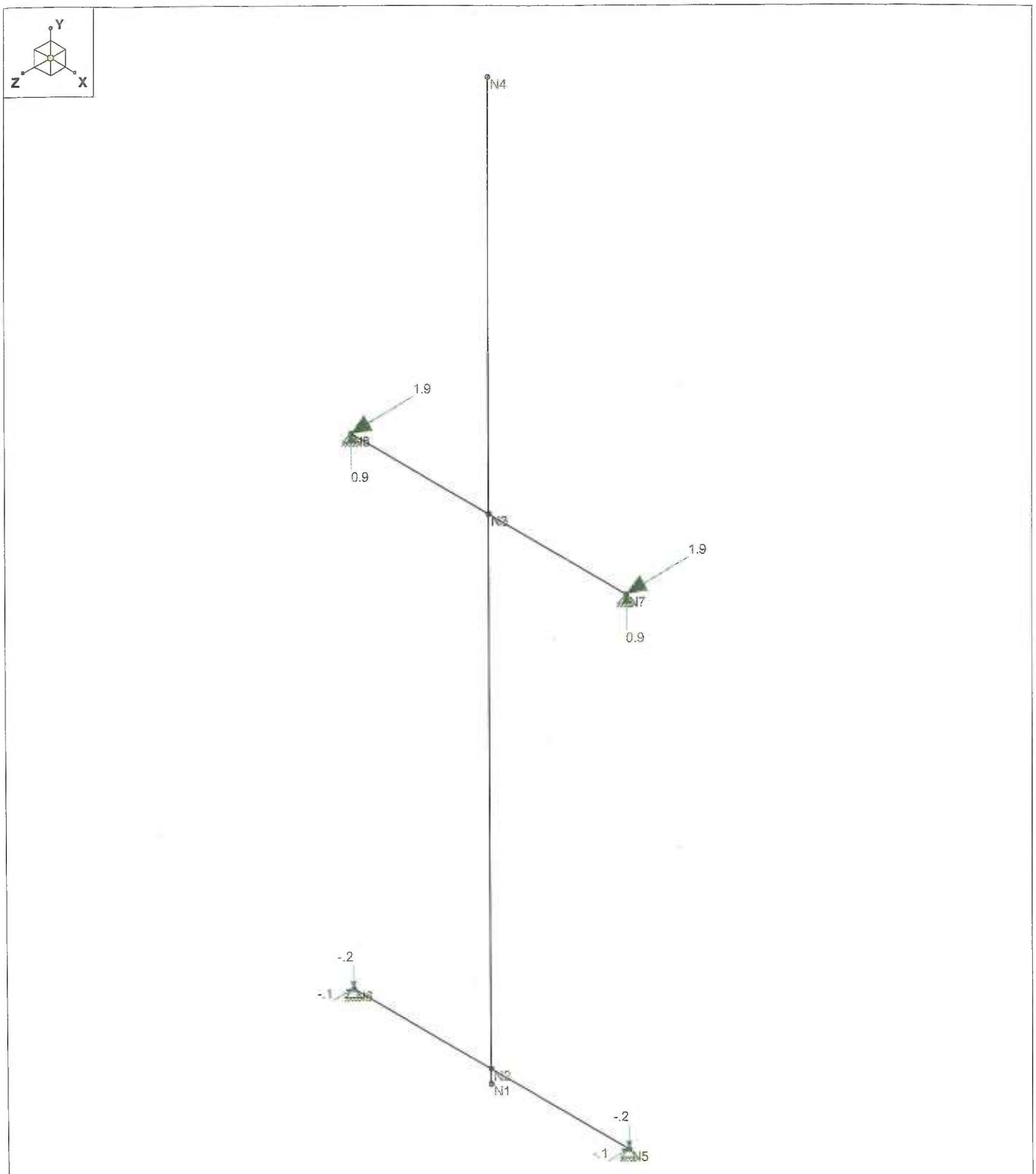
Results for LC 3, z-dir NESC Heavy Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:59 PM
14025.003 / T-Mobile CT11...	LC #3 Reactions	NESC.r3d



Loads: LC 4, z-dir NESC Extreme Wind on PCS Structure

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:56 PM
14025.003 / T-Mobile CT11...	LC #4 Loads	NESC.r3d



Results for LC 4, z-dir NESC Extreme Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	CL&P - River Xing East	Jan 30, 2014 at 12:59 PM
14025.003 / T-Mobile CT11...	LC #4 Reactions	NESC.r3d

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

Subject:	T-Mobile Coax Cable on CL&P Tower # Dist east river x-ing
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L Checked by: C.F.C. Job No. 14025.003

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span =

@ 178' AGL coax cables are attached to T-Mobile mast

$$Coax_{Span} := \begin{pmatrix} 9 \\ 14.6 \\ 12.6 \\ 15 \\ 16 \\ 16.35 \\ 16.6 \\ 16.25 \\ 19.75 \\ 19.25 \\ 22.5 \end{pmatrix} \cdot ft$$ *(User Input)*

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

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

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

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

Extreme Wind Pressure = $qz := 43.8 \cdot psf$ *(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 = $Cd_{coax} := 1.45$ *(User Input)*

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

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

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

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

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

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

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

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

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$Heavy_{Vert}$ =

	0
0	414
1	671
2	579
3	690
4	736
5	752
6	763
7	747
8	908
9	885
10	1035

lb

$Heavy_{Trans}$ =

	0
0	140
1	227
2	196
3	233
4	249
5	254
6	258
7	253
8	307
9	300
10	350

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 =

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

$Extreme_{Vert}$ =

	0
0	112
1	182
2	157
3	187
4	200
5	204
6	207
7	203
8	246
9	240
10	281

lb

$Extreme_{Trans}$ =

	0
0	566
1	918
2	792
3	943
4	1006
5	1028
6	1044
7	1022
8	1242
9	1210
10	1415

lb

CENTEK engineering
Centered on Solutions
63-2 North Branford Road
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Subject:	Climbing Ladder on CL&P Tower # Dist east river x-ing
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L Checked by: C.F.C. Job No. 14025.003

Climbing Ladder on CL&P Tower

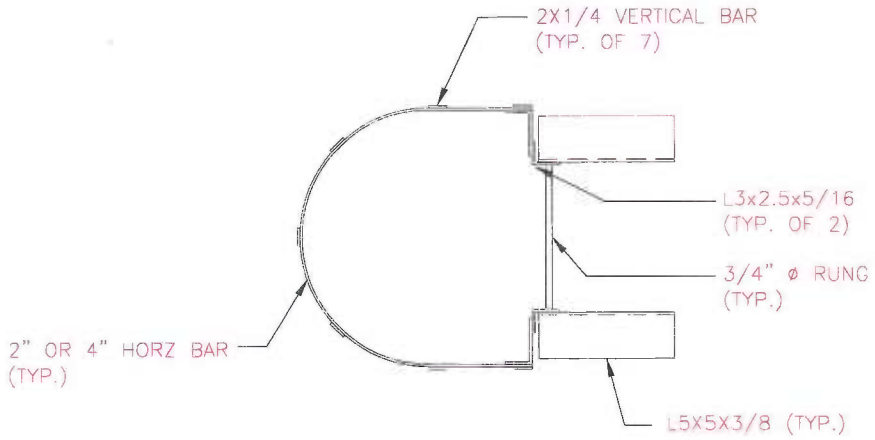
Climbing Ladder Span =
(Between Attachment Points)

$$CL_{Span} := \begin{pmatrix} 12 \\ 12 \\ 12 \\ 15 \\ 16 \\ 19 \\ 16.75 \\ 16.75 \\ 16 \\ 23.5 \\ 16 \end{pmatrix} \cdot ft$$ *(User Input)*

Extreme Wind Pressure =	$qz := 38 \cdot psf$	*(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)*
Steel Density =	$D_S := 490 \cdot pcf$	*(User Input)*
Shape Factor =	$Cd := 1.6$	*(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)*

Climbing Ladder Components:

- Two (2) 3"x2.5"x5/16" Angles Running the Full Span.
- Seven (7) 2"x1/4" Vertical Bars Running the Full Span.
- # of 3/4" Φ x 1.5' Rungs.
- # of 2"x1/4"x5'-7 3/8" Horizontal Bars per Span.
- # of 4"x1/4"x5'-7 3/8" Horizontal Bars per Span.
- # of 5"x5"x3/8"x1.25' Clip Angles per Span.



Area of Angles and 2' Vert Bars per Ft = $A_V := 1.67 \cdot in^2 \cdot 2 + 2 \cdot in \cdot 0.25 \cdot in \cdot 7 = 0.048\,ft^2$ *(User Input)*

Volume of Rung = $V_{Rung} := \frac{\pi}{4} \cdot (0.75 \cdot in)^2 \cdot 1.5 \cdot ft = 4.602 \times 10^{-3} \cdot ft^3$ *(User Input)*

Volume of 2" Horz Bar = $V_{2HB} := 2 \cdot in \cdot 0.25 \cdot in \cdot 5.62 \cdot ft = 0.02 \cdot ft^3$ *(User Input)*

Volume of 4" Horz Bar = $V_{4HB} := 4 \cdot in \cdot 0.25 \cdot in \cdot 5.62 \cdot ft = 0.039 \cdot ft^3$ *(User Input)*

Volume of Clip Angle = $V_{CA} := 3.61 \cdot in^2 \cdot 1.25 \cdot ft = 0.031 \cdot ft^3$ *(User Input)*

Number of 2" Horz Bars per Span = *(User Input)*

$$N_{2HB} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 3 \\ 3 \\ 2 \\ 3 \\ 3 \\ 3 \\ 5 \\ 3 \end{pmatrix}$$

Number of 4" Horz Bars per Span = *(User Input)*

$$N_{4HB} := \begin{pmatrix} 2 \\ 2 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 0 \end{pmatrix}$$

Number of Clip Angles per Span = *(User Input)*

$$N_{CA} := \begin{pmatrix} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \end{pmatrix}$$

Number of Rungs per Span = *(User Input)*

$$N_{Rung} := \begin{pmatrix} 11 \\ 12 \\ 13 \\ 15 \\ 16 \\ 19 \\ 16 \\ 16 \\ 16 \\ 23 \\ 16 \end{pmatrix}$$

Weight of Climbing Ladder w/o Ice = $W := \left(A_V \cdot CL_{Span} + V_{Rung} \cdot N_{Rung} + V_{2HB} \cdot N_{2HB} + V_{4HB} \cdot N_{4HB} + V_{CA} \cdot N_{CA}\right) \cdot D_s =$ lb

	0
0	383
1	385
2	387
3	481
4	487
5	554
6	524
7	504
8	487
9	696
10	468

Area of Ice on 3x2.5x5/16 Angle = $Aice_{ang} := [4 \cdot in \cdot 1.3125 \cdot in + (3.5 \cdot in - 1.3125 \cdot in) \cdot 1.3125 \cdot in] - 1.67 \cdot in^2 = 0.045 ft^2$ *(User Input)*

Area of Ice on 2x1/4 Vert Bar = $Aice_{VB} := 3 \cdot in \cdot 1.25 \cdot in - 2 \cdot in \cdot 0.25 \cdot in = 0.023 ft^2$ *(User Input)*

Area of Ice on Angles and 2" Vert Bars per Ft = $Aice_V := Aice_{ang} \cdot 2 + Aice_{VB} \cdot 7 = 0.248 ft^2$ *(User Input)*

Volume of Ice on Rung = $Vice_{Rung} := \frac{\pi}{4} \cdot \left[(1.75 \cdot in)^2 - (0.75 \cdot in)^2\right] \cdot 1.5 \cdot ft = 0.02 \cdot ft^3$ *(User Input)*

Volume of Ice on 2' Horz Bar = $Vice_{2HB} := (3 \cdot in \cdot 1.25 \cdot in - 2 \cdot in \cdot 0.25 \cdot in) 5.62 \cdot ft = 0.127 \cdot ft^3$ *(User Input)*

Volume of Ice on 4' Horz Bar = $Vice_{4HB} := (5 \cdot in \cdot 1.25 \cdot in - 4 \cdot in \cdot 0.25 \cdot in) 5.62 \cdot ft = 0.205 \cdot ft^3$ *(User Input)*

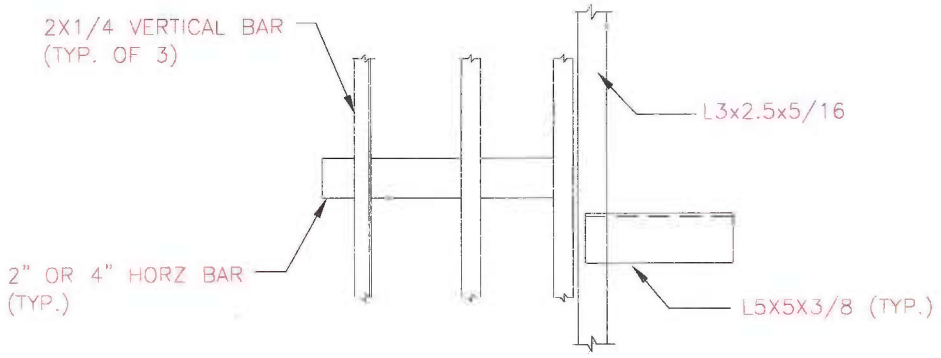
Volume of Ice on Clip Angle = $Vice_{CA} := \left[6 \cdot in \cdot 1.375 \cdot in + (6 \cdot in - 1.375 \cdot in) \cdot 1.375 \cdot in - 3.61 \cdot in^2\right] \cdot 1.25 \cdot ft = 0.095 \cdot ft^3$ *(User Input)*

Weight of Climbing Ladder with Ice = $W_{ice} := \left(Aice_V \cdot CL_{Span} + Vice_{Rung} \cdot N_{Rung} + Vice_{2HB} \cdot N_{2HB} + Vice_{4HB} \cdot N_{4HB} + Vice_{CA} \cdot N_{CA}\right) \cdot Id + W =$ lb

	0
0	602
1	606
2	609
3	761
4	771
5	876
6	829
7	798
8	771
9	1106
10	740

Climbing Ladder Components Exposed to Wind:

- One (1) 3" Wide Angle and Three (3) 2" Wide Vertical Bars Running the Full Span.
- # of 2" Wide x 2.125' Long Horizontal Bars per Span.
- # of 4" Wide x 2.125' Long Horizontal Bars per Span.
- # of 5" Wide x 1.25' Long Clip Angles per Span.



Exposed Area of Angle and 2" Vert Bars per Ft = $AEx_V := 3 \cdot in + 2 \cdot in \cdot 3 = 0.75\,ft$ *(User Input)*

Exposed Area of 2" Horz Bar = $AEx_{2HB} := 2 \cdot in \cdot 2.125 \cdot ft = 0.354\,ft^2$ *(User Input)*

Exposed Area of 4" Horz Bar = $AEx_{4HB} := 4 \cdot in \cdot 2.125 \cdot ft = 0.708\,ft^2$ *(User Input)*

Exposed Area of Clip Angle = $AEx_{CA} := 5 \cdot in \cdot 1.25 \cdot ft = 0.521\,ft^2$ *(User Input)*

Number of Exposed 2" Horz Bars per Span = *(User Input)*

$$NEx_{2HB} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 3 \\ 3 \\ 2 \\ 3 \\ 3 \\ 3 \\ 5 \\ 3 \end{pmatrix}$$

Number of Exposed 4" Horz Bars per Span = *(User Input)*

$$NEx_{4HB} := \begin{pmatrix} 2 \\ 2 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 0 \end{pmatrix}$$

Number of Exposed Clip Angles per Span = *(User Input)*

$$NEx_{CA} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{pmatrix}$$

Wind Area without Ice = $A := AEx_V \cdot CL_{Span} + AEx_{2HB} \cdot N_{2HB} + AEx_{4HB} \cdot N_{4HB} + AEx_{CA} \cdot N_{CA} =$

	0
0	11.8
1	11.8
2	11.8
3	14.8
4	14.8
5	16.7
6	16.1
7	15.4
8	14.8
9	21.1
10	14.1

ft^2

Exposed Area w/ Ice of Angle and 2" Vert Bars per Ft = $AExice_V := 4 \cdot in + 3 \cdot in \cdot 3 = 1.083\,ft$ *(User Input)*

Exposed Area w/ Ice of 2" Horz Bar = $AExice_{2HB} := 3 \cdot in \cdot 2.21 \cdot ft = 0.552\,ft^2$ *(User Input)*

Exposed Area w/ Ice of 4" Horz Bar = $AExice_{4HB} := 5 \cdot in \cdot 2.21 \cdot ft = 0.921\,ft^2$ *(User Input)*

Exposed Area w/ Ice of Clip Angle = $AExice_{CA} := 6 \cdot in \cdot 1.33 \cdot ft = 0.665\,ft^2$ *(User Input)*

Wind Area with Ice = $A_{ice} := AExice_V \cdot CL_{Span} + AExice_{2HB} \cdot N_{2HB} + AExice_{4HB} \cdot N_{4HB} + AExice_{CA} \cdot N_{CA} =$

	0
0	16.7
1	16.7
2	16.7
3	21.1
4	21.2
5	23.9
6	23
7	22.1
8	21.2
9	30.5
10	20.3

ft^2

Heavy Vertical Load =

$Heavy_{Vert} := \overrightarrow{(W_{ice} \cdot OF_{HV})}$

Heavy Transverse Load =

$Heavy_{Trans} := \overrightarrow{(p \cdot A_{ice} \cdot Cd \cdot OF_{HW})}$

$Heavy_{Vert} =$ lb

	0
0	904
1	909
2	914
3	1141
4	1156
5	1313
6	1244
7	1198
8	1156
9	1659
10	1110

$Heavy_{Trans} =$ lb

	0
0	268
1	268
2	268
3	337
4	340
5	383
6	368
7	353
8	340
9	488
10	325

Extreme Vertical Load =

$Extreme_{Vert} := \overrightarrow{(W \cdot OF_{EV})}$

Extreme Transverse Load =

$Extreme_{Trans} := \overrightarrow{(qz \cdot A \cdot Cd \cdot OF_{EW})}$

$Extreme_{Vert} =$ lb

	0
0	383
1	385
2	387
3	481
4	487
5	554
6	524
7	504
8	487
9	696
10	468

$Extreme_{Trans} =$ lb

	0
0	718
1	718
2	718
3	898
4	901
5	1016
6	978
7	935
8	901
9	1286
10	858

Heavy Transverse Loads (Apply @ Indicated Points)

$$1px := \frac{(Heavy_{Trans_0})}{4} = 67\,lb$$

$$4px := \frac{(Heavy_{Trans_0} + Heavy_{Trans_1})}{4} = 134\,lb$$

$$7px := \frac{(Heavy_{Trans_1} + Heavy_{Trans_2})}{4} = 134\,lb$$

$$10px := \frac{(Heavy_{Trans_2} + Heavy_{Trans_3})}{4} = 151\,lb$$

$$13px := \frac{(Heavy_{Trans_3} + Heavy_{Trans_4})}{4} = 169\,lb$$

$$15px := \frac{(Heavy_{Trans_4} + Heavy_{Trans_5})}{4} = 181\,lb$$

$$18px := \frac{(Heavy_{Trans_5} + Heavy_{Trans_6})}{4} = 188\,lb$$

$$19px := \frac{(Heavy_{Trans_6} + Heavy_{Trans_7})}{4} = 180\,lb$$

$$20px := \frac{(Heavy_{Trans_7} + Heavy_{Trans_8})}{4} = 173\,lb$$

$$21px := \frac{(Heavy_{Trans_8} + Heavy_{Trans_9})}{4} = 207\,lb$$

$$22px := \frac{(Heavy_{Trans_9} + Heavy_{Trans_{10}})}{4} = 203\,lb$$

$$25px := \frac{(Heavy_{Trans_{10}})}{4} = 81\,lb$$

Heavy Vertical Loads (Apply @ Indicated Points)

$$1px := \frac{(Heavy_{Vert_0})}{4} = 226\,lb$$

$$4px := \frac{(Heavy_{Vert_0} + Heavy_{Vert_1})}{4} = 453\,lb$$

$$7px := \frac{(Heavy_{Vert_1} + Heavy_{Vert_2})}{4} = 456\,lb$$

$$10px := \frac{(Heavy_{Vert_2} + Heavy_{Vert_3})}{4} = 514\,lb$$

$$13px := \frac{(Heavy_{Vert_3} + Heavy_{Vert_4})}{4} = 574\,lb$$

$$15px := \frac{(Heavy_{Vert_4} + Heavy_{Vert_5})}{4} = 617\,lb$$

$$18px := \frac{(Heavy_{Vert_5} + Heavy_{Vert_6})}{4} = 639\,lb$$

$$19px := \frac{(Heavy_{Vert_6} + Heavy_{Vert_7})}{4} = 610\,lb$$

$$20px := \frac{(Heavy_{Vert_7} + Heavy_{Vert_8})}{4} = 588\,lb$$

$$21px := \frac{(Heavy_{Vert_8} + Heavy_{Vert_9})}{4} = 704\,lb$$

$$22px := \frac{(Heavy_{Vert_9} + Heavy_{Vert_{10}})}{4} = 692\,lb$$

$$25px := \frac{(Heavy_{Vert_{10}})}{4} = 278\,lb$$

Extreme Transverse Loads (Apply @ Indicated Points)

$$1px := \frac{(ExtremeTrans_0)}{4} = 180\,lb$$

$$4px := \frac{(ExtremeTrans_0 + ExtremeTrans_1)}{4} = 359\,lb$$

$$7px := \frac{(ExtremeTrans_1 + ExtremeTrans_2)}{4} = 359\,lb$$

$$10px := \frac{(ExtremeTrans_2 + ExtremeTrans_3)}{4} = 404\,lb$$

$$13px := \frac{(ExtremeTrans_3 + ExtremeTrans_4)}{4} = 450\,lb$$

$$15px := \frac{(ExtremeTrans_4 + ExtremeTrans_5)}{4} = 479\,lb$$

$$18px := \frac{(ExtremeTrans_5 + ExtremeTrans_6)}{4} = 498\,lb$$

$$19px := \frac{(ExtremeTrans_6 + ExtremeTrans_7)}{4} = 478\,lb$$

$$20px := \frac{(ExtremeTrans_7 + ExtremeTrans_8)}{4} = 459\,lb$$

$$21px := \frac{(ExtremeTrans_8 + ExtremeTrans_9)}{4} = 547\,lb$$

$$22px := \frac{(ExtremeTrans_9 + ExtremeTrans_{10})}{4} = 536\,lb$$

$$25px := \frac{(ExtremeTrans_{10})}{4} = 214\,lb$$

Extreme Vertical Loads (Apply @ Indicated Points)

$$1px := \frac{(ExtremeVert_0)}{4} = 96\,lb$$

$$4px := \frac{(ExtremeVert_0 + ExtremeVert_1)}{4} = 192\,lb$$

$$7px := \frac{(ExtremeVert_1 + ExtremeVert_2)}{4} = 193\,lb$$

$$10px := \frac{(ExtremeVert_2 + ExtremeVert_3)}{4} = 217\,lb$$

$$13px := \frac{(ExtremeVert_3 + ExtremeVert_4)}{4} = 242\,lb$$

$$15px := \frac{(ExtremeVert_4 + ExtremeVert_5)}{4} = 260\,lb$$

$$18px := \frac{(ExtremeVert_5 + ExtremeVert_6)}{4} = 269\,lb$$

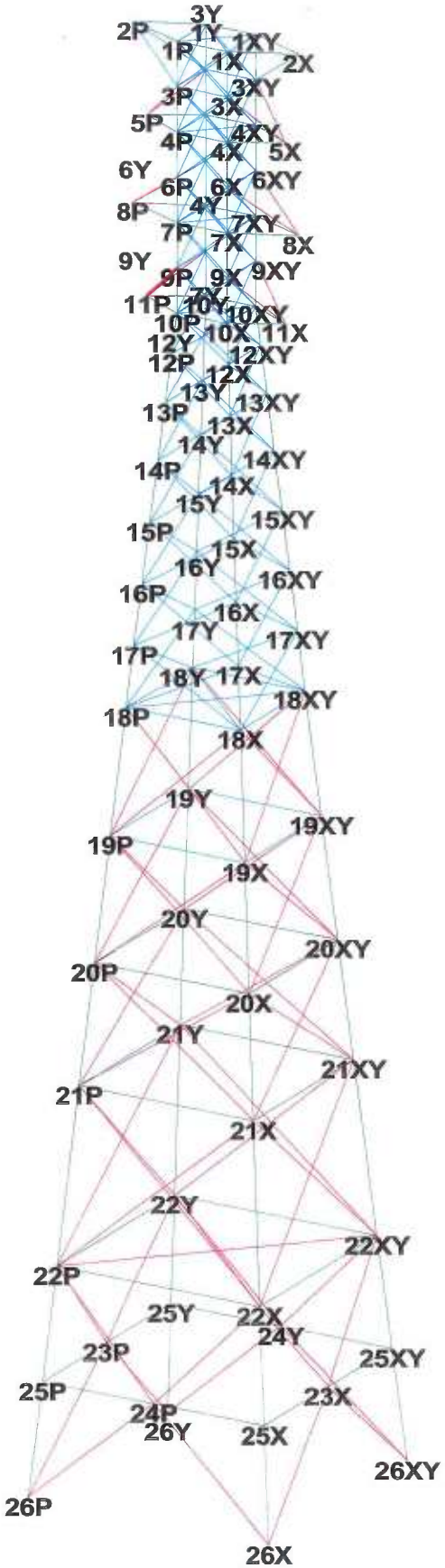
$$19px := \frac{(ExtremeVert_6 + ExtremeVert_7)}{4} = 257\,lb$$

$$20px := \frac{(ExtremeVert_7 + ExtremeVert_8)}{4} = 248\,lb$$

$$21px := \frac{(ExtremeVert_8 + ExtremeVert_9)}{4} = 296\,lb$$

$$22px := \frac{(ExtremeVert_9 + ExtremeVert_{10})}{4} = 291\,lb$$

$$25px := \frac{(ExtremeVert_{10})}{4} = 117\,lb$$


3Y
2P
1Y
1XY
1P
1X
2X
3XY
3P
3X
5P
4XY
4P
4X
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6Y
6P
6X
6XY
8P
4Y
7XY
7P
7X
8X
9Y
9P
9X
9XY
11P
10Y
10XY
10P
10X
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12XY
12P
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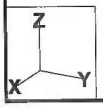
26Y
25X
26XY
26P
26X


Z
X
Y

Project Name : 14025.003 - Old Lyme, CT
Project Notes: CL&P Structure - dist east river x-ing / T-Mobile CT11036C
Project File : J:\Jobs\1402500.WI\003 - CT11036C\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p # dist east river x-ing.tow
Date run : 6:20:46 PM Thursday, March 13, 2014
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21Y" will not be checked for block 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 244.13 exceeds maximum of 200.00 for member "64P" ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78X" ??
The model has 70 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\1402500.wi\003 - ct11036c\backup documentation\calcs\rev (1)\pls tower\cl&p # dist east river x-ing.lca

*** Analysis Results:

Maximum element usage is 98.18% for Angle "58P" in load case "NESC Extreme"
Maximum insulator usage is 39.64% for Clamp "3" in load case "NESX Heavy Broken Wire"

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	26P	4.08	-5.51	34.79	6.85	0.67	0.08	0.67	0.97	0.00
NESC Heavy	26X	-11.82	-14.10	-105.00	18.40	0.73	0.38	0.82	-0.06	0.00
NESC Heavy	26XY	12.46	-12.28	-97.69	17.49	0.42	0.13	0.44	0.06	0.00
NESC Heavy	26Y	-4.72	-5.14	38.78	6.98	0.37	-0.14	0.39	-1.01	0.00
NESC Extreme	26P	28.82	-49.62	253.63	57.38	10.06	0.16	10.06	2.25	0.00
NESC Extreme	26X	-10.82	-14.01	-137.58	17.70	10.77	4.53	11.69	2.87	0.00
NESC Extreme	26XY	24.24	-25.29	-267.67	35.03	7.96	4.51	9.15	-2.33	0.00
NESC Extreme	26Y	-10.63	-21.99	80.49	24.42	7.72	-0.27	7.72	-2.48	0.00
NESX Heavy Broken Wire	26P	14.52	-13.46	117.30	19.80	-0.11	0.71	0.72	1.33	0.00
NESX Heavy Broken Wire	26X	-1.54	-1.03	-12.64	1.85	0.17	-4.10	4.11	-0.10	0.00
NESX Heavy Broken Wire	26XY	12.24	-15.54	-174.60	19.78	1.15	-4.17	4.33	0.02	0.00
NESX Heavy Broken Wire	26Y	7.77	-4.20	-55.45	8.84	1.14	0.51	1.25	-0.71	0.00

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

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	26P	25P	21P	-35.369	2.541	2.558	-0.952	2.375	4.08	-5.51	34.79
NESC Heavy	26X	25X	21X	106.473	5.185	5.223	2.369	4.655	-11.82	-14.10	-105.00
NESC Heavy	26XY	25XY	21XY	99.120	5.021	5.061	-3.663	3.492	12.46	-12.28	-97.69
NESC Heavy	26Y	25Y	21Y	-39.347	2.040	2.056	1.230	1.648	-4.72	-5.14	38.78
NESC Extreme	26P	25P	21P	-258.603	27.298	27.454	-5.998	26.791	28.82	-49.62	253.63
NESC Extreme	26X	25X	21X	138.698	2.253	2.253	-1.560	1.625	-10.82	-14.01	-137.58
NESC Extreme	26XY	25XY	21XY	269.947	1.204	1.210	-0.147	1.201	24.24	-25.29	-267.67
NESC Extreme	26Y	25Y	21Y	-82.754	15.044	15.131	3.382	14.748	-10.63	-21.99	80.49
NESX Heavy Broken Wire	26P	25P	21P	-118.861	4.877	4.915	-3.968	2.901	14.52	-13.46	117.30
NESX Heavy Broken Wire	26X	25X	21X	12.765	0.414	0.415	0.401	-0.107	-1.54	-1.03	-12.64
NESX Heavy Broken Wire	26XY	25XY	21XY	175.682	3.464	3.479	3.475	-0.178	12.24	-15.54	-174.60
NESX Heavy Broken Wire	26Y	25Y	21Y	55.326	9.589	9.606	-2.783	9.194	7.77	-4.20	-55.45

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC Heavy	4834.535	197.608	4838.572
NESC Extreme	12938.880	-5306.516	13984.767
NESX Heavy Broken Wire	4359.012	-5857.502	7301.460

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	190.000	154.000	36	136	7.25	7.25	261.000	24.00	20.00	438.000
2	154.000	69.500	40	122	7.25	22.48	1256.368	7.25	22.48	1256.368
3	69.500	0.000	24	66	22.48	35.00	1997.500	22.48	35.00	1997.500

*** 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 Comp.	Max Usage In Comp.	Comp. Control Member	Comp. Force	Comp. Control Load Case	L/R Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R
KL/R Comp.	Length No.	Curve No.	Of Bolts													
Member Comp. (ft)				(ksi)	%	%		(kips)		(kips)	(kips)	(kips)				

Leg1	6x6x3/8	SAE	6X6X0.375	33.0	20.41	Comp	20.41	5XY	-26.263	NESX	Hea	128.698	163.200	303.750	1.000	1.000	1.000	60.50	60.50	6.000	1	12
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	35.90	Tens	33.47	8XY	-80.533	NESX	Hea	240.633	301.600	629.999	1.000	1.000	1.000	45.28	45.28	6.000	1	16
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	44.63	Tens	43.93	11XY	-137.354	NESC	Ext	312.686	414.700	1191.092	1.000	1.000	1.000	58.19	58.19	7.661	1	22
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	49.75	Tens	49.68	13XY	-167.278	NESC	Ext	336.697	490.100	1535.623	1.000	1.000	1.000	61.25	61.25	8.065	1	26
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	52.99	Tens	52.33	15XY	-189.149	NESC	Ext	361.445	527.800	1791.560	1.000	1.000	1.000	61.64	61.64	8.065	1	28
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	54.84	Comp	54.84	16XY	-210.872	NESC	Ext	384.502	565.500	2067.184	0.500	0.500	0.500	64.34	64.34	16.835	1	30
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	57.16	Comp	57.16	18XY	-236.732	NESC	Ext	414.146	603.200	2362.496	0.500	0.500	0.500	61.76	61.76	16.129	1	32
Leg8	8x8x1	SAE	8X8X1	33.0	60.96	Tens	60.18	21XY	-268.827	NESC	Ext	446.741	640.900	2677.496	0.500	0.500	0.500	58.16	58.16	15.121	1	34
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	61.18	Comp	61.18	24Y	-9.801	NESX	Hea	16.019	27.200	33.750	0.500	0.750	0.500	143.07	137.62	9.411	5	2
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.38	Comp	92.38	27X	-24.880	NESX	Hea	26.934	40.800	50.625	0.500	0.750	0.500	112.48	114.36	9.411	2	3
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	60.96	Comp	60.96	31X	-25.092	NESX	Hea	41.160	54.400	84.375	0.750	0.500	0.500	95.87	101.90	9.411	2	4
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	54.98	Comp	54.98	34Y	-18.090	NESX	Hea	32.903	54.400	84.375	0.767	0.535	0.535	114.00	115.50	9.322	2	4
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	60.39	Comp	60.39	46Y	-10.048	NESX	Hea	16.638	40.800	50.625	0.763	0.527	0.527	177.45	163.82	17.706	5	3
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	82.22	Comp	82.22	48P	-4.645	NESC	Hea	5.650	54.400	84.375	0.764	0.529	0.529	319.36	271.95	24.601	5	4
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	94.96	Comp	94.96	53P	-2.586	NESC	Hea	2.724	40.800	63.281	0.517	0.759	0.517	449.38	371.03	28.814	5	3
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.01	Comp	38.01	82P	-6.591	NESC	Ext	17.340	40.800	50.625	0.500	1.000	0.500	181.65	167.02	16.500	5	3
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	86.48	Comp	86.48	84P	-16.777	NESC	Ext	18.928	40.800	50.625	0.500	1.000	0.500	187.24	171.28	19.504	5	3
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	64.92	Comp	64.92	88P	-20.640	NESC	Ext	31.791	81.600	101.250	0.500	1.000	0.500	191.40	174.44	25.360	5	3
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	34.87	Comp	34.87	90P	-21.700	NESC	Ext	62.237	81.600	101.250	0.500	0.500	0.500	142.08	133.58	29.600	6	3
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.81	Comp	54.81	73Y	-22.364	NESX	Hea	65.312	40.800	63.281	1.000	0.500	0.500	57.44	88.72	7.334	3	3
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.85	Comp	88.85	94P	-9.408	NESX	Hea	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	91.89	Comp	91.89	97XY	-5.137	NESX	Hea	5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	4.81	Comp	4.81	79X	-2.023	NESC	Ext	42.081	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.65	Comp	21.65	61P	-3.024	NESX	Hea	13.968	27.200	33.750	0.500	0.750	0.500	155.87	147.38	10.253	5	2
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	47.08	Comp	47.08	78P	-2.629	NESC	Ext	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	44.66	Comp	44.66	64X	-1.935	NESC	Ext	4.332	27.200	25.312	0.500	0.750	0.500	282.84	244.13	23.335	5	2
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	59.62	Comp	59.62	65X	-1.160	NESC	Ext	1.946	27.200	33.750	0.500	0.750	0.500	511.54	418.39	41.861	5	2
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	98.18	Tens	96.19	58X	-6.726	NESC	Hea	6.992	54.400	84.375	0.500	0.500	0.500	283.29	244.47	23.088	5	4
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.00				

0.00 0.000 0 0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension 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	6x6x3/8	SAE	6X6X0.375	33.0	20.41	Comp	17.21	5P	18.966	NESX Hea	110.204	163.200	303.750	281.250	6.000	12	3.110 0.875
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	35.90	Tens	35.90	8P	70.025	NESC Ext	195.030	301.600	629.999	699.999	6.000	16	3.680 1
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	44.63	Tens	44.63	11P	118.078	NESC Ext	264.598	414.700	1191.092	1134.373	7.661	22	3.610 1
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	49.75	Tens	49.75	13P	143.368	NESC Ext	288.172	490.100	1535.623	1462.498	8.065	26	3.610 1
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	52.99	Tens	52.99	15P	164.066	NESC Ext	309.643	527.800	1791.560	1706.247	8.065	28	3.590 1
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	54.84	Comp	50.03	16P	166.553	NESC Ext	332.928	565.500	2067.184	1968.747	16.835	30	3.590 1
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	57.16	Comp	56.28	18P	199.351	NESC Ext	354.234	603.200	2362.496	2249.997	16.129	32	3.590 1
Leg8	8x8x1	SAE	8X8X1	33.0	60.96	Tens	60.96	21P	228.725	NESC Ext	375.209	640.900	2677.496	2549.996	15.121	34	3.630 1
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	61.18	Comp	34.35	25XY	8.583	NESX Hea	24.985	27.200	33.750	29.297	9.411	2	1.000 0.875
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.38	Comp	76.10	27XY	24.663	NESX Hea	32.410	40.800	50.625	45.328	9.411	3	1.000 0.875
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	60.96	Comp	56.49	31XY	25.275	NESX Hea	44.745	54.400	84.375	66.504	9.411	4	1.000 0.875
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	54.98	Comp	46.45	35XY	16.421	NESX Hea	35.352	54.400	84.375	62.637	9.322	4	1.000 0.875
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	60.39	Comp	36.65	38XY	13.238	NESX Hea	36.123	54.400	67.500	53.203	12.619	4	1.000 0.875
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	82.22	Comp	65.87	48X	23.212	NESC Ext	35.241	54.400	84.375	62.637	24.601	4	1.000 0.875
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	94.96	Comp	91.54	54X	28.183	NESC Ext	30.786	54.400	84.375	62.637	36.220	4	1.000 0.875
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.01	Comp	4.10	83P	1.673	NESC Hea	43.696	40.800	50.625	46.875	16.500	3	1.000 0.875
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	86.48	Comp	6.91	85P	2.820	NESC Hea	51.121	40.800	50.625	46.875	19.504	3	1.000 0.875
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	64.92	Comp	3.32	87P	2.713	NESC Hea	87.392	81.600	101.250	93.750	22.480	3	2.000 0.875
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	34.87	Comp	2.64	91P	2.152	NESC Hea	102.242	81.600	101.250	93.750	29.600	3	2.000 0.875
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.81	Comp	52.40	73P	21.380	NESX Hea	67.911	40.800	63.281	44.613	7.334	3	1.000 0.875
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.85	Comp	31.72	94Y	8.629	NESX Hea	36.271	27.200	33.750	31.250	10.922	2	1.000 0.875
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	91.89	Comp	40.42	97X	10.098	NESX Hea	24.985	27.200	33.750	28.641	9.475	2	1.000 0.875

Br1	5x3x5/16	SAU	5X3X0.3125	33.0	4.81	Comp	4.80	79P	2.516NESC Ext	63.159	54.400	84.375	52.441	7.250	4	1.000	0.875	
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.65	Comp	11.61	61X	2.900NESX Hea	24.985	27.200	33.750	31.250	10.253	2	1.000	0.875	
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	47.08	Comp	27.88	78X	2.688NESC Ext	19.184	13.600	12.656	9.640	7.250	1	1.000	0.875	
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	44.66	Comp	2.60	64X	0.537NESC Hea	21.917	27.200	25.312	20.707	23.335	2	1.000	0.875	
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	59.62	Comp	3.74	65P	1.018NESX Hea	28.846	27.200	33.750	27.609	41.861	2	1.000	0.875	
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	98.18	Tens	98.18	58P	34.600NESC Ext	35.241	54.400	84.375	62.637	23.088	4	1.000	0.875	
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0	

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	96.19	58X	Angle
NESC Extreme	98.18	58P	Angle
NESX Heavy Broken Wire	92.38	27X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	26.43	NESX Heavy Broken Wire	0.0
2	Clamp	6.85	NESC Extreme	0.0
3	Clamp	39.64	NESX Heavy Broken Wire	0.0
4	Clamp	12.17	NESC Extreme	0.0
5	Clamp	12.17	NESC Extreme	0.0
6	Clamp	12.17	NESC Extreme	0.0
7	Clamp	12.17	NESC Extreme	0.0
8	Clamp	12.17	NESC Extreme	0.0
9	Clamp	0.83	NESC Extreme	0.0
10	Clamp	0.91	NESC Heavy	0.0
11	Clamp	1.03	NESC Heavy	0.0
12	Clamp	1.73	NESC Extreme	0.0
13	Clamp	1.73	NESC Extreme	0.0
14	Clamp	1.73	NESC Extreme	0.0
15	Clamp	2.88	NESC Heavy	0.0
16	Clamp	3.67	NESC Heavy	0.0
17	Clamp	4.51	NESC Extreme	0.0
18	Clamp	5.42	NESC Heavy	0.0
19	Clamp	5.92	NESC Heavy	0.0
20	Clamp	3.26	NESC Heavy	0.0
21	Clamp	1.73	NESC Extreme	0.0
22	Clamp	1.73	NESC Extreme	0.0
23	Clamp	4.21	NESC Heavy	0.0

24	Clamp	4.94	NESC Heavy	0.0
25	Clamp	5.52	NESC Extreme	0.0
26	Clamp	6.89	NESC Heavy	0.0
27	Clamp	7.37	NESC Heavy	0.0
28	Clamp	3.84	NESC Heavy	0.0
29	Clamp	1.73	NESC Extreme	0.0
30	Clamp	4.10	NESC Extreme	0.0
31	Clamp	0.83	NESC Extreme	0.0
32	Clamp	0.83	NESC Extreme	0.0
33	Clamp	1.73	NESC Extreme	0.0
34	Clamp	0.83	NESC Extreme	0.0
35	Clamp	0.83	NESC Extreme	0.0
37	Clamp	5.15	NESC Extreme	0.0
38	Clamp	3.32	NESC Heavy	0.0
39	Clamp	4.02	NESC Heavy	0.0
40	Clamp	2.17	NESC Heavy	0.0
41	Clamp	2.06	NESC Heavy	0.0
42	Clamp	3.47	NESC Extreme	0.0
43	Clamp	3.47	NESC Extreme	0.0
44	Clamp	2.74	NESC Extreme	0.0
45	Clamp	2.74	NESC Extreme	0.0
46	Clamp	2.82	NESC Heavy	0.0
47	Clamp	2.81	NESC Extreme	0.0
48	Clamp	5.55	NESC Heavy	0.0
49	Clamp	6.26	NESC Heavy	0.0
50	Clamp	7.38	NESC Extreme	0.0
51	Clamp	8.49	NESC Heavy	0.0
52	Clamp	8.94	NESC Heavy	0.0
53	Clamp	5.87	NESC Extreme	0.0
54	Clamp	2.66	NESC Extreme	0.0
55	Clamp	3.24	NESC Extreme	0.0
56	Clamp	3.54	NESC Extreme	0.0
57	Clamp	3.67	NESC Extreme	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	55876.9
Total:	55876.9

*** End of Report

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*****************************************************************************
*                                                                           *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2011 *
*                                                                           *
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Project Name : 14025.003 - Old Lyme, CT
Project Notes: CL&P Structure - dist east river x-ing / T-Mobile CT11036C
Project File : J:\Jobs\1402500.WI\003 - CT11036C\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p # dist east river x-ing.tow
Date run     : 6:20:46 PM Thursday, March 13, 2014
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
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and spacing distances will be checked. ??
Member "6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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and spacing distances will be checked. ??
Member "12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21Y" will not be checked for block 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 244.13 exceeds maximum of 200.00 for member "64P" ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78X" ??
The model has 70 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	3.625	-3.625	190	Free	Free	Free	Free	Free	Free
2P	X-Symmetry	0	-12	190	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3.625	-3.625	184	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3.625	-3.625	178	Free	Free	Free	Free	Free	Free
5P	X-Symmetry	0	-10	178	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3.625	-3.625	172	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3.625	-3.625	166	Free	Free	Free	Free	Free	Free
8P	X-Symmetry	0	-12	166	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3.625	-3.625	160	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	3.625	-3.625	154	Free	Free	Free	Free	Free	Free
11P	X-Symmetry	0	-10	154	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	4.098	-4.098	148.8	Free	Free	Free	Free	Free	Free
13P	XY-Symmetry	4.684	-4.684	142.3	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	5.367	-5.367	134.7	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	6.088	-6.088	126.7	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	6.808	-6.808	118.7	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	7.529	-7.529	110.7	Free	Free	Free	Free	Free	Free
18P	XY-Symmetry	8.25	-8.25	102.7	Free	Free	Free	Free	Free	Free
19P	XY-Symmetry	9.752	-9.752	86	Free	Free	Free	Free	Free	Free
20P	XY-Symmetry	11.24	-11.24	69.5	Free	Free	Free	Free	Free	Free
21P	XY-Symmetry	12.68	-12.68	53.5	Free	Free	Free	Free	Free	Free
22P	XY-Symmetry	14.8	-14.8	30	Free	Free	Free	Free	Free	Free
23P	X-Symmetry	0	-16.15	15	Free	Free	Free	Free	Free	Free
24P	Y-Symmetry	16.15	0	15	Free	Free	Free	Free	Free	Free
25P	XY-Symmetry	16.15	-16.15	15	Free	Free	Free	Free	Free	Free
26P	XY-Symmetry	17.5	-17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
1X	X-GenXY	3.625	3.625	190	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-3.625	3.625	190	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-3.625	-3.625	190	Free	Free	Free	Free	Free	Free
2X	X-Gen	0	12	190	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3.625	3.625	184	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3.625	3.625	184	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3.625	-3.625	184	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3.625	3.625	178	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3.625	3.625	178	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3.625	-3.625	178	Free	Free	Free	Free	Free	Free
5X	X-Gen	0	10	178	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3.625	3.625	172	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3.625	3.625	172	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3.625	-3.625	172	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3.625	3.625	166	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3.625	3.625	166	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3.625	-3.625	166	Free	Free	Free	Free	Free	Free
8X	X-Gen	0	12	166	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3.625	3.625	160	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3.625	3.625	160	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3.625	-3.625	160	Free	Free	Free	Free	Free	Free
10X	X-GenXY	3.625	3.625	154	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-3.625	3.625	154	Free	Free	Free	Free	Free	Free

10Y	Y-GenXY	-3.625	-3.625	154	Free	Free	Free	Free	Free	Free
11X	X-Gen	0	10	154	Free	Free	Free	Free	Free	Free
12X	X-GenXY	4.098	4.098	148.8	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-4.098	4.098	148.8	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-4.098	-4.098	148.8	Free	Free	Free	Free	Free	Free
13X	X-GenXY	4.684	4.684	142.3	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	-4.684	4.684	142.3	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	-4.684	-4.684	142.3	Free	Free	Free	Free	Free	Free
14X	X-GenXY	5.367	5.367	134.7	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	-5.367	5.367	134.7	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	-5.367	-5.367	134.7	Free	Free	Free	Free	Free	Free
15X	X-GenXY	6.088	6.088	126.7	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-6.088	6.088	126.7	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-6.088	-6.088	126.7	Free	Free	Free	Free	Free	Free
16X	X-GenXY	6.808	6.808	118.7	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	-6.808	6.808	118.7	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	-6.808	-6.808	118.7	Free	Free	Free	Free	Free	Free
17X	X-GenXY	7.529	7.529	110.7	Free	Free	Free	Free	Free	Free
17XY	XY-GenXY	-7.529	7.529	110.7	Free	Free	Free	Free	Free	Free
17Y	Y-GenXY	-7.529	-7.529	110.7	Free	Free	Free	Free	Free	Free
18X	X-GenXY	8.25	8.25	102.7	Free	Free	Free	Free	Free	Free
18XY	XY-GenXY	-8.25	8.25	102.7	Free	Free	Free	Free	Free	Free
18Y	Y-GenXY	-8.25	-8.25	102.7	Free	Free	Free	Free	Free	Free
19X	X-GenXY	9.752	9.752	86	Free	Free	Free	Free	Free	Free
19XY	XY-GenXY	-9.752	9.752	86	Free	Free	Free	Free	Free	Free
19Y	Y-GenXY	-9.752	-9.752	86	Free	Free	Free	Free	Free	Free
20X	X-GenXY	11.24	11.24	69.5	Free	Free	Free	Free	Free	Free
20XY	XY-GenXY	-11.24	11.24	69.5	Free	Free	Free	Free	Free	Free
20Y	Y-GenXY	-11.24	-11.24	69.5	Free	Free	Free	Free	Free	Free
21X	X-GenXY	12.68	12.68	53.5	Free	Free	Free	Free	Free	Free
21XY	XY-GenXY	-12.68	12.68	53.5	Free	Free	Free	Free	Free	Free
21Y	Y-GenXY	-12.68	-12.68	53.5	Free	Free	Free	Free	Free	Free
22X	X-GenXY	14.8	14.8	30	Free	Free	Free	Free	Free	Free
22XY	XY-GenXY	-14.8	14.8	30	Free	Free	Free	Free	Free	Free
22Y	Y-GenXY	-14.8	-14.8	30	Free	Free	Free	Free	Free	Free
23X	X-Gen	0	16.15	15	Free	Free	Free	Free	Free	Free
24Y	Y-Gen	-16.15	0	15	Free	Free	Free	Free	Free	Free
25X	X-GenXY	16.15	16.15	15	Free	Free	Free	Free	Free	Free
25XY	XY-GenXY	-16.15	16.15	15	Free	Free	Free	Free	Free	Free
25Y	Y-GenXY	-16.15	-16.15	15	Free	Free	Free	Free	Free	Free
26X	X-GenXY	17.5	17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
26XY	XY-GenXY	-17.5	17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
26Y	Y-GenXY	-17.5	-17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

The model contains 92 primary and 0 secondary joints for a total of 92 joints.

Steel Material Properties:

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

Bolt Properties:

Bolt Label	Bolt Diameter	Hole Diameter	Ultimate Shear	Default End	Default Bolt	Shear Capacity	Shear Capacity

	(in)	(in)	Capacity (kips)	Distance (in)	Spacing (in)	Hyp. 1 (kips)	Hyp. 2 (kips)
3/4 A394	0.75	0.875	13.6	1.35	1.8	0	0
7/8 A394	0.875	1	18.85	1.575	2.1	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394	836
7/8 A394	1400

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	8X8X1	8	8	1	51	15	6.38	2.44	2.44	1.56	1	8	4	0	1.0000	0
SAE	8X8X0.875	8	8	0.875	45	13.23	7.43	2.45	2.45	1.57	1	8	4	0	1.0000	0
SAE	8X8X0.75	8	8	0.75	38.9	11.44	8.83	2.47	2.47	1.58	1	8	4	0	1.0000	0
SAE	8X8X0.5	8	8	0.5	26.4	7.75	13.75	2.5	2.5	1.59	1	8	4	0	1.0000	0
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	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	3X3X0.3125	3	3	0.3125	6.1	1.78	7.6	0.922	0.922	0.589	1	3	1.5	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	5X3.5X0.3125	5	3.5	0.3125	8.7	2.56	13.4	1.61	1.03	0.766	1	5	1.75	0	1.0000	0
SAU	5X3X0.3125	5	3	0.3125	8.2	2.4	13.4	1.61	0.853	0.658	1	5	1.5	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3X2.5X0.3125	3	2.5	0.3125	5.6	1.62	7.4	0.937	0.744	0.525	1	3	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	2.5X2X0.3125	2.5	2	0.3125	4.5	1.31	6	0.776	0.584	0.422	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
DAE	4X4X0.25	4	4	0.25	13.2	3.88	13.5	1.25	1.79	1.25	2	4	2	0	1.0000	0
DAE	3.5X3.5X0.25	3.5	3.5	0.25	11.6	3.38	11.5	1.09	1.59	1.09	2	3.5	1.75	0	1.0000	0
SAE	8X8X0.6875	8	8	0.6875	36	10.5	12	2.48	2.48	1.58	1	8	0	0	1.0000	0
SAE	8X8X0.8125	8	8	0.8125	42	12.3	8.1	2.46	2.46	1.57	1	8	0	0	1.0000	0
SAE	8X8X0.9375	8	8	0.9375	48	14.1	6.9	2.44	2.44	1.567	1	8	0	0	1.0000	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	6x6x3/8	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
Leg2	8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
Leg3	8x8x11/16	SAE	8X8X0.6875	A7	Beam	Leg	None	0.000
Leg4	8x8x3/4	SAE	8X8X0.75	A7	Beam	Leg	None	0.000
Leg5	8x8x13/16	SAE	8X8X0.8125	A7	Beam	Leg	None	0.000

Leg6	8x8x7/8	SAE	8X8X0.875	A7	Beam	Leg	None	0.000
Leg7	8x8x/15/16	SAE	8X8X0.9375	A7	Beam	Leg	None	0.000
Leg8	8x8x1	SAE	8X8X1	A7	Beam	Leg	None	0.000
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR3	3x3x5/16	SAE	3X3X0.3125	A7	Truss	Crossing Diagonal	None	0.000
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	A7	Truss	Crossing Diagonal	None	0.000
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	A7	T-Only	Other	None	0.000
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
HBR2	4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None	0.000
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
HBR4	LL4x4x1/4	DAE	4X4X0.25	A7	Beam	Other	None	0.000
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
ArmBR1	3x3x1/4	SAE	3X3X0.25	A7	Truss	Other	None	0.000
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
Br1	5x3x5/16	SAU	5X3X0.3125	A7	Truss	Other	None	0.000
Br2	2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Other	None	0.000
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	T-Only	Other	None	0.000
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	A7	Truss	Crossing Diagonal	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	6X6X0.375	A7	72.00	144.00	1072.80
SAE	8X8X0.5	A7	72.00	192.00	1900.80
SAE	8X8X0.6875	A7	77.83	207.54	2801.75
SAE	8X8X0.75	A7	64.52	172.05	2509.71
SAE	8X8X0.8125	A7	64.52	172.05	2709.75
SAE	8X8X0.875	A7	67.34	179.57	3030.22
SAE	8X8X0.9375	A7	131.05	349.47	6290.44
SAE	8X8X1	A7	215.73	575.28	11002.23
SAU	2.5X2X0.25	A7	352.09	264.06	1274.55
SAU	3X2.5X0.25	A7	150.57	138.02	677.58
SAE	3X3X0.3125	A7	150.57	150.57	918.49
SAU	3X2.5X0.3125	A7	162.11	148.60	907.83
SAU	3.5X3X0.25	A7	607.54	658.17	3280.72
SAE	2.5X2.5X0.3125	A7	550.44	458.70	2752.20
SAU	2.5X2X0.3125	A7	734.21	550.66	3303.93
SAE	2.5X2.5X0.1875	A7	46.67	38.89	143.27
SAE	2.5X2.5X0.25	A7	83.72	69.77	343.26
SAU	5X3.5X0.3125	A7	189.68	268.71	1650.18
SAU	5X3X0.3125	A7	58.00	77.33	475.60
SAU	2.5X2X0.1875	A7	58.00	43.50	159.50
SAE	3.5X3.5X0.25	A7	66.00	77.00	382.80
SAE	4X4X0.25	A7	78.02	104.02	514.91
DAE	3.5X3.5X0.25	A7	320.56	373.99	3718.50
DAE	4X4X0.25	A7	118.40	157.87	1562.88
SAE	3X3X0.25	A7	43.69	43.69	214.06

Sections:
The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model.
They do not apply to equipment or to manually input dead load and drag areas.

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	10P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	20P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
3	26P	1.100	3.200	3.200	1.050	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
3P	Leg1		XY-Symmetry	1P	3P	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
3X	Leg1		X-GenXY	1X	3X	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
3XY	Leg1		XY-GenXY	1XY	3XY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
3Y	Leg1		Y-GenXY	1Y	3Y	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
4P	Leg1		XY-Symmetry	3P	4P	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
4X	Leg1		X-GenXY	3X	4X	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
4XY	Leg1		XY-GenXY	3XY	4XY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
4Y	Leg1		Y-GenXY	3Y	4Y	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
5P	Leg1		XY-Symmetry	4P	6P	1	4	1	1	1	3/4 A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5X	Leg1		X-GenXY	4X	6X	1	4	1	1	1	3/4 A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5XY	Leg1		XY-GenXY	4XY	6XY	1	4	1	1	1	3/4 A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5Y	Leg1		Y-GenXY	4Y	6Y	1	4	1	1	1	3/4 A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
6P	Leg2		XY-Symmetry	6P	7P	1	4	1	1	1	3/4 A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6X	Leg2		X-GenXY	6X	7X	1	4	1	1	1	3/4 A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6XY	Leg2		XY-GenXY	6XY	7XY	1	4	1	1	1	3/4 A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6Y	Leg2		Y-GenXY	6Y	7Y	1	4	1	1	1	3/4 A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
7P	Leg2		XY-Symmetry	7P	9P	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0

0	0	0																		
	7X	Leg2	X-GenXY	7X	9X	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	7XY	Leg2	XY-GenXY	7XY	9XY	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	7Y	Leg2	Y-GenXY	7Y	9Y	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	8P	Leg2	XY-Symmetry	9P	10P	1	4	1	1	1	7/8 A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																		
	8X	Leg2	X-GenXY	9X	10X	1	4	1	1	1	7/8 A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																		
	8XY	Leg2	XY-GenXY	9XY	10XY	1	4	1	1	1	7/8 A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																		
	8Y	Leg2	Y-GenXY	9Y	10Y	1	4	1	1	1	7/8 A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																		
	9P	Leg3	XY-Symmetry	10P	12P	1	4	1	1	1	7/8 A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																		
	9X	Leg3	X-GenXY	10X	12X	1	4	1	1	1	7/8 A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																		
	9XY	Leg3	XY-GenXY	10XY	12XY	1	4	1	1	1	7/8 A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																		
	9Y	Leg3	Y-GenXY	10Y	12Y	1	4	1	1	1	7/8 A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																		
	10P	Leg3	XY-Symmetry	12P	13P	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	10X	Leg3	X-GenXY	12X	13X	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	10XY	Leg3	XY-GenXY	12XY	13XY	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	10Y	Leg3	Y-GenXY	12Y	13Y	1	4	1	1	1		0	0	1		0	0	0	0	
0	0	0																		
	11P	Leg3	XY-Symmetry	13P	14P	1	4	1	1	1	7/8 A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		
	11X	Leg3	X-GenXY	13X	14X	1	4	1	1	1	7/8 A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		
	11XY	Leg3	XY-GenXY	13XY	14XY	1	4	1	1	1	7/8 A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		
	11Y	Leg3	Y-GenXY	13Y	14Y	1	4	1	1	1	7/8 A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		
	12P	Leg4	XY-Symmetry	15P	14P	1	4	1	1	1	7/8 A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	12X	Leg4	X-GenXY	15X	14X	1	4	1	1	1	7/8 A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	12XY	Leg4	XY-GenXY	15XY	14XY	1	4	1	1	1	7/8 A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	12Y	Leg4	Y-GenXY	15Y	14Y	1	4	1	1	1	7/8 A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	13P	Leg4	XY-Symmetry	16P	15P	1	4	1	1	1	7/8 A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	13X	Leg4	X-GenXY	16X	15X	1	4	1	1	1	7/8 A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	13XY	Leg4	XY-GenXY	16XY	15XY	1	4	1	1	1	7/8 A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	13Y	Leg4	Y-GenXY	16Y	15Y	1	4	1	1	1	7/8 A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																		
	14P	Leg5	XY-Symmetry	17P	16P	1	4	1	1	1	7/8 A394	26	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		
	14X	Leg5	X-GenXY	17X	16X	1	4	1	1	1	7/8 A394	26	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																		

14XY	Leg5	XY-GenXY	17XY	16XY	1	4	1	1	1	7/8	A394	26	3.61	1	Both	2.25	5.125	1.5	3	0 0 0
14Y	Leg5	Y-GenXY	17Y	16Y	1	4	1	1	1	7/8	A394	26	3.61	1	Both	2.25	5.125	1.5	3	0 0 0
15P	Leg5	XY-Symmetry	18P	17P	1	4	1	1	1	7/8	A394	28	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
15X	Leg5	X-GenXY	18X	17X	1	4	1	1	1	7/8	A394	28	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
15XY	Leg5	XY-GenXY	18XY	17XY	1	4	1	1	1	7/8	A394	28	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
15Y	Leg5	Y-GenXY	18Y	17Y	1	4	1	1	1	7/8	A394	28	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
16P	Leg6	XY-Symmetry	19P	18P	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	1.5	4.25	1.5	3	0 0 0
16X	Leg6	X-GenXY	19X	18X	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	1.5	4.25	1.5	3	0 0 0
16XY	Leg6	XY-GenXY	19XY	18XY	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	1.5	4.25	1.5	3	0 0 0
16Y	Leg6	Y-GenXY	19Y	18Y	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	1.5	4.25	1.5	3	0 0 0
17P	Leg7	XY-Symmetry	20P	19P	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
17X	Leg7	X-GenXY	20X	19X	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
17XY	Leg7	XY-GenXY	20XY	19XY	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
17Y	Leg7	Y-GenXY	20Y	19Y	1	4	0.5	0.5	0.5	7/8	A394	30	3.59	1	Both	2.375	5.125	1.5	3	0 0 0
18P	Leg7	XY-Symmetry	21P	20P	1	4	0.5	0.5	0.5	7/8	A394	32	3.59	1	Both	1.4375	4.1875	1.5	3	0 0 0
18X	Leg7	X-GenXY	21X	20X	1	4	0.5	0.5	0.5	7/8	A394	32	3.59	1	Both	1.4375	4.1875	1.5	3	0 0 0
18XY	Leg7	XY-GenXY	21XY	20XY	1	4	0.5	0.5	0.5	7/8	A394	32	3.59	1	Both	1.4375	4.1875	1.5	3	0 0 0
18Y	Leg7	Y-GenXY	21Y	20Y	1	4	0.5	0.5	0.5	7/8	A394	32	3.59	1	Both	1.4375	4.1875	1.5	3	0 0 0
19P	Leg8	XY-Symmetry	22P	21P	1	4	0.333	0.333	0.333	7/8	A394	34	3.57	1	Both	2.5	5.125	1.5	3	0 0 0
19X	Leg8	X-GenXY	22X	21X	1	4	0.333	0.333	0.333	7/8	A394	34	3.57	1	Both	2.5	5.125	1.5	3	0 0 0
19XY	Leg8	XY-GenXY	22XY	21XY	1	4	0.333	0.333	0.333	7/8	A394	34	3.57	1	Both	2.5	5.125	1.5	3	0 0 0
19Y	Leg8	Y-GenXY	22Y	21Y	1	4	0.333	0.333	0.333	7/8	A394	34	3.57	1	Both	2.5	5.125	1.5	3	0 0 0
20P	Leg8	XY-Symmetry	25P	22P	1	4	0.5	0.5	0.5	7/8	A394	34	3.57	1	Both	1.5	4.125	1.5	3	0 0 0
20X	Leg8	X-GenXY	25X	22X	1	4	0.5	0.5	0.5	7/8	A394	34	3.57	1	Both	1.5	4.125	1.5	3	0 0 0
20XY	Leg8	XY-GenXY	25XY	22XY	1	4	0.5	0.5	0.5	7/8	A394	34	3.57	1	Both	1.5	4.125	1.5	3	0 0 0
20Y	Leg8	Y-GenXY	25Y	22Y	1	4	0.5	0.5	0.5	7/8	A394	34	3.57	1	Both	1.5	4.125	1.5	3	0 0 0
21P	Leg8	XY-Symmetry	26P	25P	1	4	0.5	0.5	0.5	7/8	A394	34	3.63	1	Both	2	5	1.5	3	0 0 0
21X	Leg8	X-GenXY	26X	25X	1	4	0.5	0.5	0.5	7/8	A394	34	3.63	1	Both	2	5	1.5	3	0 0 0
21XY	Leg8	XY-GenXY	26XY	25XY	1	4	0.5	0.5	0.5	7/8	A394	34	3.63	1	Both	2	5	1.5	3	0 0 0
21Y	Leg8	Y-GenXY	26Y	25Y	1	4	0.5	0.5	0.5	7/8	A394	34	3.63	1	Both	2	5	1.5	3	0 0 0

0	0	0																	
	22P	XBR1	XY-Symmetry	1P	3X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	22X	XBR1	X-GenXY	1X	3P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	22XY	XBR1	XY-GenXY	1XY	3Y	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	22Y	XBR1	Y-GenXY	1Y	3XY	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	23P	XBR1	XY-Symmetry	1X	3XY	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	23X	XBR1	X-GenXY	1P	3Y	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	23XY	XBR1	XY-GenXY	1Y	3P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	23Y	XBR1	Y-GenXY	1XY	3X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	24P	XBR1	XY-Symmetry	3P	4X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	24X	XBR1	X-GenXY	3X	4P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	24XY	XBR1	XY-GenXY	3XY	4Y	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	24Y	XBR1	Y-GenXY	3Y	4XY	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	25P	XBR1	XY-Symmetry	3X	4XY	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	25X	XBR1	X-GenXY	3P	4Y	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	25XY	XBR1	XY-GenXY	3Y	4P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	25Y	XBR1	Y-GenXY	3XY	4X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	1.125	0	1.25	2.6875
0	0	0																	
	26P	XBR2	XY-Symmetry	4P	6X	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	26X	XBR2	X-GenXY	4X	6P	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	26XY	XBR2	XY-GenXY	4XY	6Y	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	26Y	XBR2	Y-GenXY	4Y	6XY	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	27P	XBR2	XY-Symmetry	4X	6XY	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	27X	XBR2	X-GenXY	4P	6Y	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	27XY	XBR2	XY-GenXY	4Y	6P	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	27Y	XBR2	Y-GenXY	4XY	6X	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	28P	XBR2	XY-Symmetry	6P	7X	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	28X	XBR2	X-GenXY	6X	7P	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	28XY	XBR2	XY-GenXY	6XY	7Y	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	28Y	XBR2	Y-GenXY	6Y	7XY	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	
	29P	XBR2	XY-Symmetry	6X	7XY	2	5	0.5	0.75	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.25	2.5
0	0	0																	

29X	XBR2	X-GenXY	6P	7Y	2	5	0.5	0.75	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.25	2.5	0
29XY	XBR2	XY-GenXY	6Y	7P	2	5	0.5	0.75	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.25	2.5	0
29Y	XBR2	Y-GenXY	6XY	7X	2	5	0.5	0.75	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.25	2.5	0
30P	XBR3	XY-Symmetry	7P	9X	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
30X	XBR3	X-GenXY	7X	9P	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
30XY	XBR3	XY-GenXY	7XY	9Y	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
30Y	XBR3	Y-GenXY	7Y	9XY	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
31P	XBR3	XY-Symmetry	7X	9XY	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
31X	XBR3	X-GenXY	7P	9Y	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
31XY	XBR3	XY-GenXY	7Y	9P	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
31Y	XBR3	Y-GenXY	7XY	9X	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
32P	XBR3	XY-Symmetry	9P	10X	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
32X	XBR3	X-GenXY	9X	10P	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
32XY	XBR3	XY-GenXY	9XY	10Y	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
32Y	XBR3	Y-GenXY	9Y	10XY	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
33P	XBR3	XY-Symmetry	9X	10XY	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
33X	XBR3	X-GenXY	9P	10Y	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
33XY	XBR3	XY-GenXY	9Y	10P	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
33Y	XBR3	Y-GenXY	9XY	10X	2	5	0.75	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.25	2.25	0
34P	XBR4	XY-Symmetry	10P	12X	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
34X	XBR4	X-GenXY	10X	12P	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
34XY	XBR4	XY-GenXY	10XY	12Y	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
34Y	XBR4	Y-GenXY	10Y	12XY	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
35P	XBR4	XY-Symmetry	10X	12XY	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
35X	XBR4	X-GenXY	10P	12Y	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
35XY	XBR4	XY-GenXY	10Y	12P	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
35Y	XBR4	Y-GenXY	10XY	12X	2	5	0.767	0.535	0.535	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
36P	XBR4	XY-Symmetry	12P	13X	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
36X	XBR4	X-GenXY	12X	13P	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0
36XY	XBR4	XY-GenXY	12XY	13Y	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25	0

0	0	0																	
	36Y	XBR4	Y-GenXY	12Y	13XY	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25
0	0	0																	
	37P	XBR4	XY-Symmetry	12X	13XY	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25
0	0	0																	
	37X	XBR4	X-GenXY	12P	13Y	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25
0	0	0																	
	37XY	XBR4	XY-GenXY	12Y	13P	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25
0	0	0																	
	37Y	XBR4	Y-GenXY	12XY	13X	2	5	0.768	0.536	0.536	3/4	A394	4	1	1	Short only	1.125	0	1.25	2.25
0	0	0																	
	38P	XBR5	XY-Symmetry	13P	14X	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	38X	XBR5	X-GenXY	13X	14P	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	38XY	XBR5	XY-GenXY	13XY	14Y	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	38Y	XBR5	Y-GenXY	13Y	14XY	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	39P	XBR5	XY-Symmetry	13X	14XY	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	39X	XBR5	X-GenXY	13P	14Y	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	39XY	XBR5	XY-GenXY	13Y	14P	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	39Y	XBR5	Y-GenXY	13XY	14X	2	5	0.771	0.542	0.542	3/4	A394	4	1	1	Short only	1.5	0	1.25	2.25
0	0	0																	
	40P	XBR5	XY-Symmetry	14P	15X	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	40X	XBR5	X-GenXY	14X	15P	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	40XY	XBR5	XY-GenXY	14XY	15Y	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	40Y	XBR5	Y-GenXY	14Y	15XY	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	41P	XBR5	XY-Symmetry	14X	15XY	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	41X	XBR5	X-GenXY	14P	15Y	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	41XY	XBR5	XY-GenXY	14Y	15P	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	41Y	XBR5	Y-GenXY	14XY	15X	2	5	0.766	0.533	0.533	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	42P	XBR5	XY-Symmetry	15P	16X	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	42X	XBR5	X-GenXY	15X	16P	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	42XY	XBR5	XY-GenXY	15XY	16Y	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	42Y	XBR5	Y-GenXY	15Y	16XY	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	43P	XBR5	XY-Symmetry	15X	16XY	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	43X	XBR5	X-GenXY	15P	16Y	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	43XY	XBR5	XY-GenXY	15Y	16P	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	
	43Y	XBR5	Y-GenXY	15XY	16X	2	5	0.763	0.526	0.526	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5
0	0	0																	

44P	XBR5	XY-Symmetry	16P	17X	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
44X	XBR5	X-GenXY	16X	17P	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
44XY	XBR5	XY-GenXY	16XY	17Y	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
44Y	XBR5	Y-GenXY	16Y	17XY	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
45P	XBR5	XY-Symmetry	16X	17XY	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
45X	XBR5	X-GenXY	16P	17Y	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
45XY	XBR5	XY-GenXY	16Y	17P	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
45Y	XBR5	Y-GenXY	16XY	17X	2	5	0.763	0.525	0.525	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
46P	XBR5	XY-Symmetry	17P	18X	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
46X	XBR5	X-GenXY	17X	18P	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
46XY	XBR5	XY-GenXY	17XY	18Y	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
46Y	XBR5	Y-GenXY	17Y	18XY	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
47P	XBR5	XY-Symmetry	17X	18XY	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
47X	XBR5	X-GenXY	17P	18Y	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
47XY	XBR5	XY-GenXY	17Y	18P	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
47Y	XBR5	Y-GenXY	17XY	18X	2	5	0.763	0.527	0.527	3/4	A394	3	1	1	Short only	1.5	0	1.25	2.5	0	0	0	0
48P	XBR6	XY-Symmetry	18P	19X	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
48X	XBR6	X-GenXY	18X	19P	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
48XY	XBR6	XY-GenXY	18XY	19Y	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
48Y	XBR6	Y-GenXY	18Y	19XY	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
49P	XBR6	XY-Symmetry	18X	19XY	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
49X	XBR6	X-GenXY	18P	19Y	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
49XY	XBR6	XY-GenXY	18Y	19P	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
49Y	XBR6	Y-GenXY	18XY	19X	2	5	0.764	0.529	0.529	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
50P	XBR7	XY-Symmetry	19P	20X	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
50X	XBR7	X-GenXY	19X	20P	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
50XY	XBR7	XY-GenXY	19XY	20Y	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
50Y	XBR7	Y-GenXY	19Y	20XY	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
51P	XBR7	XY-Symmetry	19X	20XY	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25	0	0	0	0
51X	XBR7	X-GenXY	19P	20Y	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25				

0	0	0																		
	51XY	XBR7	XY-GenXY	19Y	20P	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	51Y	XBR7	Y-GenXY	19XY	20X	2	5	0.522	0.761	0.522	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	52P	XBR7	XY-Symmetry	20P	21X	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	52X	XBR7	X-GenXY	20X	21P	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	52XY	XBR7	XY-GenXY	20XY	21Y	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	52Y	XBR7	Y-GenXY	20Y	21XY	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	53P	XBR7	XY-Symmetry	20X	21XY	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	53X	XBR7	X-GenXY	20P	21Y	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	53XY	XBR7	XY-GenXY	20Y	21P	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	53Y	XBR7	Y-GenXY	20XY	21X	2	5	0.517	0.759	0.517	3/4	A394	3	1	1	Long only	1.125	0	1.25	2.5
0	0	0																		
	54P	XBR7	XY-Symmetry	21P	22X	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	54X	XBR7	X-GenXY	21X	22P	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	54XY	XBR7	XY-GenXY	21XY	22Y	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	54Y	XBR7	Y-GenXY	21Y	22XY	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	55P	XBR7	XY-Symmetry	21X	22XY	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	55X	XBR7	X-GenXY	21P	22Y	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	55XY	XBR7	XY-GenXY	21Y	22P	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	55Y	XBR7	Y-GenXY	21XY	22X	2	5	0.466	0.767	0.466	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	56P	XBR8	XY-Symmetry	22P	24P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	56X	XBR8	X-GenXY	22X	24P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	56XY	XBR8	XY-GenXY	22XY	24Y	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	56Y	XBR8	Y-GenXY	22Y	24Y	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	57P	XBR8	XY-Symmetry	22X	23X	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	57X	XBR8	X-GenXY	22P	23P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	57XY	XBR8	XY-GenXY	22Y	23P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	57Y	XBR8	Y-GenXY	22XY	23X	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	58P	XBR8	XY-Symmetry	24P	26P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	58X	XBR8	X-GenXY	24P	26X	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		
	58XY	XBR8	XY-GenXY	24Y	26XY	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																		

58Y	XBR8	Y-GenXY	24Y	26Y	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																	
59P	XBR8	XY-Symmetry	23X	26X	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																	
59X	XBR8	X-GenXY	23P	26P	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																	
59XY	XBR8	XY-GenXY	23P	26Y	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																	
59Y	XBR8	Y-GenXY	23X	26XY	2	5	0.5	0.5	0.5	3/4	A394	4	1	1	Long only	1.125	0	1.25	2.25
0	0	0																	
60P	Br2	X-Symmetry	1X	1Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
60X	Br2	X-Gen	1P	1XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
61P	Br2	X-Symmetry	4X	4Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
61X	Br2	X-Gen	4P	4XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
62P	Br2	X-Symmetry	7X	7Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
62X	Br2	X-Gen	7P	7XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
63P	Br2	X-Symmetry	10X	10Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
63X	Br2	X-Gen	10P	10XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	3.125
0	0	0																	
64P	Br4	X-Symmetry	18P	18XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5
0	0	0																	
64X	Br4	X-Gen	18X	18Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5
0	0	0																	
65P	Br5	X-Symmetry	22P	22XY	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5
0	0	0																	
65X	Br5	X-Gen	22X	22Y	3	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5
0	0	0																	
66P	Arm	Y-Symmetry	1Y	1XY	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0
0	0	0																	
66Y	Arm	Y-Gen	1P	1X	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0
0	0	0																	
67P	Br1	X-Symmetry	1P	1Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
0	0	0																	
67X	Br1	X-Gen	1X	1XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
0	0	0																	
68P	Arm	XY-Symmetry	1P	2P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
0	0	0																	
68X	Arm	X-GenXY	1X	2X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
0	0	0																	
68XY	Arm	XY-GenXY	1XY	2X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
0	0	0																	
68Y	Arm	Y-GenXY	1Y	2P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
0	0	0																	
69P	Br3	Y-Symmetry	3P	3X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
0	0	0																	
69Y	Br3	Y-Gen	3Y	3XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
0	0	0																	
70P	Br3	X-Symmetry	3Y	3P	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
0	0	0																	
70X	Br3	X-Gen	3XY	3X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
0	0	0																	
71P	Br1	X-Symmetry	4P	4Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0

71X	Brl	X-Gen	4X	4XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
72P	Arm	Y-Symmetry	4P	4X	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0
72Y	Arm	Y-Gen	4Y	4XY	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0
73P	Arm	XY-Symmetry	4P	5P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
73X	Arm	X-GenXY	4X	5X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
73XY	Arm	XY-GenXY	4XY	5X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
73Y	Arm	Y-GenXY	4Y	5P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
74P	Br3	X-Symmetry	6Y	6P	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
74X	Br3	X-Gen	6XY	6X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
75P	Brl	X-Symmetry	7P	7Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
75X	Brl	X-Gen	7X	7XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
76P	Arm	XY-Symmetry	7P	8P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
76X	Arm	X-GenXY	7X	8X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
76XY	Arm	XY-GenXY	7XY	8X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
76Y	Arm	Y-GenXY	7Y	8P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
77P	Arm	Y-Symmetry	7Y	7XY	3	6	1	1	1			0	0	1		0	0	0	0
77Y	Arm	Y-Gen	7P	7X	3	6	1	1	1			0	0	1		0	0	0	0
78P	Br3	X-Symmetry	9Y	9P	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
78X	Br3	X-Gen	9XY	9X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0
79P	Brl	X-Symmetry	10P	10Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
79X	Brl	X-Gen	10X	10XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0
80P	Arm	XY-Symmetry	10P	11P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
80X	Arm	X-GenXY	10X	11X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
80XY	Arm	XY-GenXY	10XY	11X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
80Y	Arm	Y-GenXY	10Y	11P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0
81P	Arm	Y-Symmetry	10X	10P	3	6	1	1	1			0	0	1		0	0	0	0
81Y	Arm	Y-Gen	10XY	10Y	3	6	1	1	1			0	0	1		0	0	0	0
82P	HBR1	Y-Symmetry	18P	18X	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7
82Y	HBR1	Y-Gen	18Y	18XY	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7

83P	HBR1	X-Symmetry	18X	18XY	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
83X	HBR1	X-Gen	18P	18Y	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
84P	HBR2	Y-Symmetry	19P	19X	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
84Y	HBR2	Y-Gen	19Y	19XY	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
85P	HBR2	X-Symmetry	19X	19XY	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
85X	HBR2	X-Gen	19P	19Y	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	0
86P	HBR3	Y-Symmetry	20P	20X	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
86Y	HBR3	Y-Gen	20Y	20XY	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
87P	HBR3	X-Symmetry	20X	20XY	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
87X	HBR3	X-Gen	20P	20Y	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
88P	HBR3	Y-Symmetry	21P	21X	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
88Y	HBR3	Y-Gen	21Y	21XY	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
89P	HBR3	X-Symmetry	21X	21XY	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
89X	HBR3	X-Gen	21P	21Y	3	5	0.5	1	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
90P	HBR4	Y-Symmetry	22P	22X	3	6	0.5	0.5	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
90Y	HBR4	Y-Gen	22Y	22XY	3	6	0.5	0.5	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
91P	HBR4	X-Symmetry	22X	22XY	3	6	0.5	0.5	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
91X	HBR4	X-Gen	22P	22Y	3	6	0.5	0.5	0.5	3/4	A394	3	2	2	Long only	2	0	1.25	7	0
92P	HBR3	XY-Symmetry	25P	24P	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
92X	HBR3	X-GenXY	25X	24P	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
92XY	HBR3	XY-GenXY	25XY	24Y	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
92Y	HBR3	Y-GenXY	25Y	24Y	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
93P	HBR3	XY-Symmetry	25X	23X	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
93X	HBR3	X-GenXY	25P	23P	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
93XY	HBR3	XY-GenXY	25Y	23P	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
93Y	HBR3	Y-GenXY	25XY	23X	3	6	1	1	1	3/4	A394	2	2	2	Long only	2	0	1.25	2.5	0
94P	ArmBR1	XY-Symmetry	2P	3Y	2	5	1	1	1	3/4	A394	2	1	1	Long only	1.625	0	1.25	2.5	0
94X	ArmBR1	X-GenXY	2X	3XY	2	5	1	1	1	3/4	A394	2	1	1	Long only	1.625	0	1.25	2.5	0
94XY	ArmBR1	XY-GenXY	2X	3X	2	5	1	1	1	3/4	A394	2	1	1	Long only	1.625	0	1.25	2.5	0
94Y	ArmBR1	Y-GenXY	2P	3P	2	5	1	1	1	3/4	A394	2	1	1	Long only	1.625	0	1.25	2.5	0

0	0	0																		
	95P	ArmBR2	XY-Symmetry	3Y	5P	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	95X	ArmBR2	X-GenXY	3XY	5X	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	95XY	ArmBR2	XY-GenXY	3X	5X	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	95Y	ArmBR2	Y-GenXY	3P	5P	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	96P	ArmBR2	XY-Symmetry	8P	6Y	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	96X	ArmBR2	X-GenXY	8X	6XY	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	96XY	ArmBR2	XY-GenXY	8X	6X	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	96Y	ArmBR2	Y-GenXY	8P	6P	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.125	0	1.25	2.5	
0	0	0																		
	97P	ArmBR2	XY-Symmetry	9P	11P	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	2.5	
0	0	0																		
	97X	ArmBR2	X-GenXY	9X	11X	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	2.5	
0	0	0																		
	97XY	ArmBR2	XY-GenXY	9XY	11X	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	2.5	
0	0	0																		
	97Y	ArmBR2	Y-GenXY	9Y	11P	2	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	2.5	
0	0	0																		

Member Capacities and Overrides:

Member Label	Group Label	Design Comp.	Comp. Control Criterion	Design Tension Capacity (kips)	Tension Control Criterion	L/r Length (ft)	L/r Comp. (kips)	Connection Shear (kips)	Connection Bearing (kips)	Net Section Tension Capacity (kips)	Rupture Tension Capacity (kips)	RTE End Dist. Capacity (kips)	RTE Edge Dist. Capacity (kips)	Override Comp. Capacity (kips)	Override Unsup. (kips)	Override Warnings or Errors
3P	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
3X	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
3XY	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
3Y	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
4P	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
4X	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
4XY	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic
4Y	Leg1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000 Automatic

5P	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
5X	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
5XY	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
5Y	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000
0.000	Automatic	Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
6P	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
6X	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
6XY	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
6Y	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
7P	Leg2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
7X	Leg2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
7XY	Leg2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
7Y	Leg2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															
8P	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
8X	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
8XY	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
8Y	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000
0.000	Automatic	Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
9P	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000
0.000	Automatic	Member "9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
9X	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000
0.000	Automatic	Member "9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
9XY	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000
0.000	Automatic	Member "9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
9Y	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000
0.000	Automatic	Member "9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
10P	Leg3	321.763	L/r	346.499	Net Sect	50	6.55	321.763	0.000	0.000	346.499	0.000	0.000	0.000	0.000	0.000
0.000	Automatic															

10X	Leg3	321.763	L/r	346.499	Net Sect	50	6.55	321.763	0.000	0.000	346.499	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
10XY	Leg3	321.763	L/r	346.499	Net Sect	50	6.55	321.763	0.000	0.000	346.499	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
10Y	Leg3	321.763	L/r	346.499	Net Sect	50	6.55	321.763	0.000	0.000	346.499	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
11P	Leg3	312.686	L/r	264.598	Net Sect	58	7.66	312.686	414.700	1191.092	264.598	1134.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
11X	Leg3	312.686	L/r	264.598	Net Sect	58	7.66	312.686	414.700	1191.092	264.598	1134.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
11XY	Leg3	312.686	L/r	264.598	Net Sect	58	7.66	312.686	414.700	1191.092	264.598	1134.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
11Y	Leg3	312.686	L/r	264.598	Net Sect	58	7.66	312.686	414.700	1191.092	264.598	1134.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
12P	Leg4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	1237.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
12X	Leg4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	1237.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
12XY	Leg4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	1237.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
12Y	Leg4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	1237.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
13P	Leg4	336.697	L/r	288.172	Net Sect	61	8.06	336.697	490.100	1535.623	288.172	1462.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
13X	Leg4	336.697	L/r	288.172	Net Sect	61	8.06	336.697	490.100	1535.623	288.172	1462.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
13XY	Leg4	336.697	L/r	288.172	Net Sect	61	8.06	336.697	490.100	1535.623	288.172	1462.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
13Y	Leg4	336.697	L/r	288.172	Net Sect	61	8.06	336.697	490.100	1535.623	288.172	1462.498	0.000	0.000	0.000	0.000	0.000
Automatic	Member "13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
14P	Leg5	361.445	L/r	309.106	Net Sect	62	8.06	361.445	490.100	1663.591	309.106	1584.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
14X	Leg5	361.445	L/r	309.106	Net Sect	62	8.06	361.445	490.100	1663.591	309.106	1584.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
14XY	Leg5	361.445	L/r	309.106	Net Sect	62	8.06	361.445	490.100	1663.591	309.106	1584.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
14Y	Leg5	361.445	L/r	309.106	Net Sect	62	8.06	361.445	490.100	1663.591	309.106	1584.373	0.000	0.000	0.000	0.000	0.000
Automatic	Member "14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
15P	Leg5	361.445	L/r	309.643	Net Sect	62	8.06	361.445	527.800	1791.560	309.643	1706.247	0.000	0.000	0.000	0.000	0.000
Automatic	Member "15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
15X	Leg5	361.445	L/r	309.643	Net Sect	62	8.06	361.445	527.800	1791.560	309.643	1706.247	0.000	0.000	0.000	0.000	

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0.000          Automatic  Member "15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   15XY   Leg5  361.445       L/r  309.643  Net Sect   62   8.06  361.445    527.800   1791.560  309.643 1706.247    0.000    0.000    0.000    0.000
0.000          Automatic Member "15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    15Y   Leg5  361.445       L/r  309.643  Net Sect   62   8.06  361.445    527.800   1791.560  309.643 1706.247    0.000    0.000    0.000    0.000
0.000          Automatic  Member "15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    16P   Leg6  384.502       L/r  332.928  Net Sect   64  16.83  384.502    565.500   2067.184  332.928 1968.747    0.000    0.000    0.000    0.000
0.000          Automatic  Member "16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    16X   Leg6  384.502       L/r  332.928  Net Sect   64  16.83  384.502    565.500   2067.184  332.928 1968.747    0.000    0.000    0.000    0.000
0.000          Automatic  Member "16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   16XY   Leg6  384.502       L/r  332.928  Net Sect   64  16.83  384.502    565.500   2067.184  332.928 1968.747    0.000    0.000    0.000    0.000
0.000          Automatic Member "16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    16Y   Leg6  384.502       L/r  332.928  Net Sect   64  16.83  384.502    565.500   2067.184  332.928 1968.747    0.000    0.000    0.000    0.000
0.000          Automatic  Member "16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    17P   Leg7  410.896       L/r  354.234  Net Sect   64  16.63  410.896    565.500   2214.840  354.234 2109.372    0.000    0.000    0.000    0.000
0.000          Automatic  Member "17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    17X   Leg7  410.896       L/r  354.234  Net Sect   64  16.63  410.896    565.500   2214.840  354.234 2109.372    0.000    0.000    0.000    0.000
0.000          Automatic  Member "17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   17XY   Leg7  410.896       L/r  354.234  Net Sect   64  16.63  410.896    565.500   2214.840  354.234 2109.372    0.000    0.000    0.000    0.000
0.000          Automatic Member "17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    17Y   Leg7  410.896       L/r  354.234  Net Sect   64  16.63  410.896    565.500   2214.840  354.234 2109.372    0.000    0.000    0.000    0.000
0.000          Automatic  Member "17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    18P   Leg7  414.146       L/r  354.234  Net Sect   62  16.13  414.146    603.200   2362.496  354.234 2249.997    0.000    0.000    0.000    0.000
0.000          Automatic  Member "18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    18X   Leg7  414.146       L/r  354.234  Net Sect   62  16.13  414.146    603.200   2362.496  354.234 2249.997    0.000    0.000    0.000    0.000
0.000          Automatic  Member "18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   18XY   Leg7  414.146       L/r  354.234  Net Sect   62  16.13  414.146    603.200   2362.496  354.234 2249.997    0.000    0.000    0.000    0.000
0.000          Automatic Member "18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    18Y   Leg7  414.146       L/r  354.234  Net Sect   62  16.13  414.146    603.200   2362.496  354.234 2249.997    0.000    0.000    0.000    0.000
0.000          Automatic  Member "18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    19P   Leg8  442.457       L/r  377.189  Net Sect   61  23.69  442.457    640.900   2677.496  377.189 2549.996    0.000    0.000    0.000    0.000
0.000          Automatic  Member "19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    19X   Leg8  442.457       L/r  377.189  Net Sect   61  23.69  442.457    640.900   2677.496  377.189 2549.996    0.000    0.000    0.000    0.000
0.000          Automatic  Member "19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   19XY   Leg8  442.457       L/r  377.189  Net Sect   61  23.69  442.457    640.900   2677.496  377.189 2549.996    0.000    0.000    0.000    0.000
0.000          Automatic Member "19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    19Y   Leg8  442.457       L/r  377.189  Net Sect   61  23.69  442.457    640.900   2677.496  377.189 2549.996    0.000    0.000    0.000    0.000
0.000          Automatic  Member "19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    20P   Leg8  446.741       L/r  377.189  Net Sect   58  15.12  446.741    640.900   2677.496  377.189 2549.996    0.000    0.000    0.000    0.000
0.000          Automatic  Member "20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
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zero); however, end, edge and spacing distances will be checked. ??
20X Leg8 446.741 L/r 377.189 Net Sect 58 15.12 446.741 640.900 2677.496 377.189 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
20XY Leg8 446.741 L/r 377.189 Net Sect 58 15.12 446.741 640.900 2677.496 377.189 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
20Y Leg8 446.741 L/r 377.189 Net Sect 58 15.12 446.741 640.900 2677.496 377.189 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
21P Leg8 446.741 L/r 375.209 Net Sect 58 15.12 446.741 640.900 2677.496 375.209 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
21X Leg8 446.741 L/r 375.209 Net Sect 58 15.12 446.741 640.900 2677.496 375.209 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
21XY Leg8 446.741 L/r 375.209 Net Sect 58 15.12 446.741 640.900 2677.496 375.209 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
21Y Leg8 446.741 L/r 375.209 Net Sect 58 15.12 446.741 640.900 2677.496 375.209 2549.996 0.000 0.000 0.000 0.000
0.000 Automatic Member "21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
22P XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
22X XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
22XY XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
22Y XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
23P XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
23X XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
23XY XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
23Y XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
24P XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
24X XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
24XY XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
24Y XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
25P XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
25X XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
25XY XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
25Y XBR1 16.019 L/r 24.985 Net Sect 143 9.41 16.019 27.200 33.750 24.985 29.297 0.000 0.000 0.000 0.000
0.000 Automatic
26P XBR2 26.934 L/r 32.410 Net Sect 112 9.41 26.934 40.800 50.625 32.410 45.328 0.000 0.000 0.000 0.000
0.000 Automatic
26X XBR2 26.934 L/r 32.410 Net Sect 112 9.41 26.934 40.800 50.625 32.410 45.328 0.000 0.000 0.000 0.000
0.000 Automatic
26XY XBR2 26.934 L/r 32.410 Net Sect 112 9.41 26.934 40.800 50.625 32.410 45.328 0.000 0.000 0.000 0.000

0.000		Automatic														
26Y	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
27P	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
27X	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
27XY	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
27Y	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
28P	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
28X	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
28XY	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
28Y	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
29P	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
29X	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
29XY	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
29Y	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
30P	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
30X	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
30XY	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
30Y	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
31P	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
31X	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
31XY	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
31Y	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
32P	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
32X	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
32XY	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
32Y	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
33P	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
33X	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
33XY	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														
33Y	XBR3	41.160	L/r	44.745	Net Sect	96	9.41	41.160	54.400	84.375	44.745	66.504	0.000	0.000	0.000	0.000
0.000		Automatic														

34P	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
34X	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
34XY	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
34Y	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
35P	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
35X	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
35XY	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
35Y	XBR4	32.903	L/r	35.352	Net Sect	114	9.32	32.903	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
36P	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
36X	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
36XY	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
36Y	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
37P	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
37X	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
37XY	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
37Y	XBR4	27.119	L/r	35.352	Net Sect	134	10.94	27.119	54.400	84.375	35.352	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
38P	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
38X	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
38XY	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
38Y	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
39P	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
39X	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
39XY	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
39Y	XBR5	27.276	L/r	36.123	Net Sect	130	12.62	27.276	54.400	67.500	36.123	53.203	0.000	0.000	0.000	0.000
0.000		Automatic														
40P	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
40X	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
40XY	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
40Y	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
41P	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
41X	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000

0.000		Automatic														
41XY	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
41Y	XBR5	23.907	L/r	36.123	Net Sect	142	13.99	23.907	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
42P	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
42X	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
42XY	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
42Y	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
43P	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
43X	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
43XY	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
43Y	XBR5	21.411	L/r	36.123	Net Sect	152	15.19	21.411	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
44P	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
44X	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
44XY	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
44Y	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
45P	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
45X	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
45XY	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
45Y	XBR5	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
46P	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
46X	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
46XY	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
46Y	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
47P	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
47X	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
47XY	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
47Y	XBR5	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	45.328	0.000	0.000	0.000	0.000
0.000		Automatic														
48P	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
48X	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
48XY	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														

48Y	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
49P	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
49X	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
49XY	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
49Y	XBR6	5.650	L/r	35.241	Net Sect	319	24.60	5.650	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
50P	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
50X	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
50XY	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
50Y	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
51P	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
51X	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
51XY	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
51Y	XBR7	3.110	L/r	30.786	Net Sect	418	26.74	3.110	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
52P	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
52X	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
52XY	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
52Y	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
53P	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
53X	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
53XY	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
53Y	XBR7	2.724	L/r	30.786	Net Sect	449	28.81	2.724	40.800	63.281	30.786	52.793	0.000	0.000	0.000	0.000
0.000		Automatic														
54P	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
54X	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
54XY	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
54Y	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
55P	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
55X	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
55XY	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
55Y	XBR7	1.745	L/r	30.786	Net Sect	571	36.22	1.745	54.400	84.375	30.786	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
56P	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000

0.000		Automatic														
56X	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
56XY	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
56Y	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
57P	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
57X	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
57XY	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
57Y	XBR8	8.180	L/r	35.241	Net Sect	259	21.12	8.180	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
58P	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
58X	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
58XY	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
58Y	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
59P	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
59X	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
59XY	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
59Y	XBR8	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	62.637	0.000	0.000	0.000	0.000
0.000		Automatic														
60P	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
60X	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
61P	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
61X	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
62P	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
62X	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
63P	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
63X	Br2	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
64P	**Br4**	**4.332**	**L/r**	**20.707**	**Rupture**	**283**	**23.33**	**4.332**	**27.200**	**25.312**	**21.917**	**20.707**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 244.13 exceeds maximum of 200.00 for member "64P" ??																
64X	**Br4**	**4.332**	**L/r**	**20.707**	**Rupture**	**283**	**23.33**	**4.332**	**27.200**	**25.312**	**21.917**	**20.707**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 244.13 exceeds maximum of 200.00 for member "64X" ??																
65P	Br5	1.946	L/r	27.200	Shear	512	41.86	1.946	27.200	33.750	28.846	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
65X	Br5	1.946	L/r	27.200	Shear	512	41.86	1.946	27.200	33.750	28.846	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
66P	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														

66Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
67P	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
67X	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
68P	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68X	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68XY	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68Y	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
69P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??																
69Y	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??																
70P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??																
70X	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??																
71P	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
71X	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
72P	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
72Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
73P	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73X	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73XY	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73Y	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
74P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??																
74X	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??																
75P	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
75X	Brl	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
76P	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76X	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76XY	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76Y	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000

0.000		Automatic														
77P	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
77Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
78P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "78P" ??																
78X	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "78X" ??																
79P	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
79X	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
80P	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
80X	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
80XY	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
80Y	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
81P	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
81Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
82P	HBR1	17.340	L/r	40.800	Shear	182	16.50	17.340	40.800	50.625	43.696	46.875	0.000	0.000	0.000	0.000
0.000		Automatic														
82Y	HBR1	17.340	L/r	40.800	Shear	182	16.50	17.340	40.800	50.625	43.696	46.875	0.000	0.000	0.000	0.000
0.000		Automatic														
83P	HBR1	17.340	L/r	40.800	Shear	182	16.50	17.340	40.800	50.625	43.696	46.875	0.000	0.000	0.000	0.000
0.000		Automatic														
83X	HBR1	17.340	L/r	40.800	Shear	182	16.50	17.340	40.800	50.625	43.696	46.875	0.000	0.000	0.000	0.000
0.000		Automatic														
84P	HBR2	18.928	L/r	40.800	Shear	187	19.50	18.928	40.800	50.625	51.121	46.875	0.000	0.000	19.400	0.000
0.000		Automatic														
84Y	HBR2	18.928	L/r	40.800	Shear	187	19.50	18.928	40.800	50.625	51.121	46.875	0.000	0.000	19.400	0.000
0.000		Automatic														
85P	HBR2	18.928	L/r	40.800	Shear	187	19.50	18.928	40.800	50.625	51.121	46.875	0.000	0.000	19.400	0.000
0.000		Automatic														
85X	HBR2	18.928	L/r	40.800	Shear	187	19.50	18.928	40.800	50.625	51.121	46.875	0.000	0.000	19.400	0.000
0.000		Automatic														
86P	HBR3	38.811	L/r	81.600	Shear	170	22.48	38.811	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
86Y	HBR3	38.811	L/r	81.600	Shear	170	22.48	38.811	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
87P	HBR3	38.811	L/r	81.600	Shear	170	22.48	38.811	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
87X	HBR3	38.811	L/r	81.600	Shear	170	22.48	38.811	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
88P	HBR3	31.791	L/r	81.600	Shear	191	25.36	31.791	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
88Y	HBR3	31.791	L/r	81.600	Shear	191	25.36	31.791	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
89P	HBR3	31.791	L/r	81.600	Shear	191	25.36	31.791	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
89X	HBR3	31.791	L/r	81.600	Shear	191	25.36	31.791	81.600	101.250	87.392	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														

90P	HBR4	62.237	L/r	81.600	Shear	142	29.60	62.237	81.600	101.250	102.242	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
90Y	HBR4	62.237	L/r	81.600	Shear	142	29.60	62.237	81.600	101.250	102.242	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
91P	HBR4	62.237	L/r	81.600	Shear	142	29.60	62.237	81.600	101.250	102.242	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
91X	HBR4	62.237	L/r	81.600	Shear	142	29.60	62.237	81.600	101.250	102.242	93.750	0.000	0.000	0.000	0.000
0.000		Automatic														
92P	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
92X	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
92XY	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
92Y	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
93P	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
93X	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
93XY	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
93Y	HBR3	39.985	L/r	54.400	Shear	178	16.15	39.985	54.400	67.500	87.392	62.500	0.000	0.000	0.000	0.000
0.000		Automatic														
94P	ArmBR1	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
94X	ArmBR1	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
94XY	ArmBR1	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
94Y	ArmBR1	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	31.250	0.000	0.000	0.000	0.000
0.000		Automatic														
95P	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
95X	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
95XY	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
95Y	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
96P	ArmBR2	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
96X	ArmBR2	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
96XY	ArmBR2	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
96Y	ArmBR2	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	27.609	0.000	0.000	0.000	0.000
0.000		Automatic														
97P	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	28.641	0.000	0.000	0.000	0.000
0.000		Automatic														
97X	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	28.641	0.000	0.000	0.000	0.000
0.000		Automatic														
97XY	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	28.641	0.000	0.000	0.000	0.000
0.000		Automatic														
97Y	ArmBR2	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	28.641	0.000	0.000	0.000	0.000
0.000		Automatic														

The model contains 324 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	0.198	7.116	6.126
2P	0.133	6.065	3.263
3P	0.221	9.166	8.572
4P	0.278	10.125	9.552
5P	0.0981	4.480	2.971
6P	0.238	8.426	8.838
7P	0.378	11.863	10.874
8P	0.119	5.636	2.971
9P	0.3	8.765	9.338
10P	0.395	11.077	10.504
11P	0.0981	4.480	2.971
12P	0.326	7.914	7.914
13P	0.385	9.851	9.851
14P	0.438	11.380	11.380
15P	0.471	11.948	11.948
16P	0.497	12.305	12.305
17P	0.523	12.672	12.672
18P	0.898	20.447	20.447
19P	1.15	23.174	23.174
20P	1.3	23.334	23.334
21P	1.58	27.814	27.814
22P	1.73	30.890	30.890
23P	0.408	6.275	13.902
24P	0.408	13.902	6.275
25P	0.959	12.396	12.396
26P	0.501	8.990	8.990
1X	0.198	7.116	6.126
1XY	0.198	7.116	6.126
1Y	0.198	7.116	6.126
2X	0.133	6.065	3.263
3X	0.221	9.166	8.572
3XY	0.221	9.166	8.572
3Y	0.221	9.166	8.572
4X	0.278	10.125	9.552
4XY	0.278	10.125	9.552
4Y	0.278	10.125	9.552
5X	0.0981	4.480	2.971
6X	0.238	8.426	8.838
6XY	0.238	8.426	8.838
6Y	0.238	8.426	8.838
7X	0.378	11.863	10.874
7XY	0.378	11.863	10.874
7Y	0.378	11.863	10.874
8X	0.119	5.636	2.971
9X	0.3	8.765	9.338
9XY	0.3	8.765	9.338
9Y	0.3	8.765	9.338
10X	0.395	11.077	10.504
10XY	0.395	11.077	10.504
10Y	0.395	11.077	10.504
11X	0.0981	4.480	2.971
12X	0.326	7.914	7.914
12XY	0.326	7.914	7.914

12Y	0.326	7.914	7.914
13X	0.385	9.851	9.851
13XY	0.385	9.851	9.851
13Y	0.385	9.851	9.851
14X	0.438	11.380	11.380
14XY	0.438	11.380	11.380
14Y	0.438	11.380	11.380
15X	0.471	11.948	11.948
15XY	0.471	11.948	11.948
15Y	0.471	11.948	11.948
16X	0.497	12.305	12.305
16XY	0.497	12.305	12.305
16Y	0.497	12.305	12.305
17X	0.523	12.672	12.672
17XY	0.523	12.672	12.672
17Y	0.523	12.672	12.672
18X	0.898	20.447	20.447
18XY	0.898	20.447	20.447
18Y	0.898	20.447	20.447
19X	1.15	23.174	23.174
19XY	1.15	23.174	23.174
19Y	1.15	23.174	23.174
20X	1.3	23.334	23.334
20XY	1.3	23.334	23.334
20Y	1.3	23.334	23.334
21X	1.58	27.814	27.814
21XY	1.58	27.814	27.814
21Y	1.58	27.814	27.814
22X	1.73	30.890	30.890
22XY	1.73	30.890	30.890
22Y	1.73	30.890	30.890
23X	0.408	6.275	13.902
24Y	0.408	13.902	6.275
25X	0.959	12.396	12.396
25XY	0.959	12.396	12.396
25Y	0.959	12.396	12.396
26X	0.501	8.990	8.990
26XY	0.501	8.990	8.990
26Y	0.501	8.990	8.990
Total	53.6	1200.287	1172.385

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)
1	8.344	293.244	265.342	123.580	97.546
2	22.464	506.226	506.226	206.719	206.719
3	22.790	400.817	400.817	165.166	165.166
Total	53.598	1200.287	1172.385	495.465	469.431

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	8.344	8.344	1321.887	1321.887

2	22.464	22.464	2364.673	2364.673
3	22.790	25.069	1928.934	2121.827
Total	53.598	55.877	5615.495	5808.388

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	190.000
1	3P	184.000
1	1X	190.000
1	3X	184.000
1	1XY	190.000
1	3XY	184.000
1	1Y	190.000
1	3Y	184.000
1	4P	178.000
1	4X	178.000
1	4XY	178.000
1	4Y	178.000
1	6P	172.000
1	6X	172.000
1	6XY	172.000
1	6Y	172.000
1	7P	166.000
1	7X	166.000
1	7XY	166.000
1	7Y	166.000
1	9P	160.000
1	9X	160.000
1	9XY	160.000
1	9Y	160.000
1	10P	154.000
1	10X	154.000
1	10XY	154.000
1	10Y	154.000
1	2P	190.000
1	2X	190.000
1	5P	178.000
1	5X	178.000
1	8P	166.000
1	8X	166.000
1	11P	154.000
1	11X	154.000
2	10P	154.000
2	12P	148.800
2	10X	154.000
2	12X	148.800
2	10XY	154.000
2	12XY	148.800
2	10Y	154.000
2	12Y	148.800
2	13P	142.300
2	13X	142.300
2	13XY	142.300
2	13Y	142.300
2	14P	134.700

2	14X	134.700
2	14XY	134.700
2	14Y	134.700
2	15P	126.700
2	15X	126.700
2	15XY	126.700
2	15Y	126.700
2	16P	118.700
2	16X	118.700
2	16XY	118.700
2	16Y	118.700
2	17P	110.700
2	17X	110.700
2	17XY	110.700
2	17Y	110.700
2	18P	102.700
2	18X	102.700
2	18XY	102.700
2	18Y	102.700
2	19P	86.000
2	19X	86.000
2	19XY	86.000
2	19Y	86.000
2	20P	69.500
2	20X	69.500
2	20XY	69.500
2	20Y	69.500
3	21P	53.500
3	20P	69.500
3	21X	53.500
3	20X	69.500
3	21XY	53.500
3	20XY	69.500
3	21Y	53.500
3	20Y	69.500
3	22P	30.000
3	22X	30.000
3	22XY	30.000
3	22Y	30.000
3	25P	15.000
3	25X	15.000
3	25XY	15.000
3	25Y	15.000
3	26P	0.000
3	26X	0.000
3	26XY	0.000
3	26Y	0.000
3	24P	15.000
3	24Y	15.000
3	23X	15.000
3	23P	15.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	190.000	154.000	36	136	7.25	7.25	261.000	24.00	20.00	438.000

2	154.000	69.500	40	122	7.25	22.48	1256.368	7.25	22.48	1256.368
3	69.500	0.000	24	66	22.48	35.00	1997.500	22.48	35.00	1997.500

*** Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	2P	C-EX1	No Limit
2	2X	C-EX1	No Limit
3	5P	C-EX1	No Limit
4	5X	C-EX1	No Limit
5	8P	C-EX1	No Limit
6	8X	C-EX1	No Limit
7	11P	C-EX1	No Limit
8	11X	C-EX1	No Limit
9	1Y	C-EX1	No Limit
10	4Y	C-EX1	No Limit
11	9Y	C-EX1	No Limit
12	12Y	C-EX1	No Limit
13	14Y	C-EX1	No Limit
14	16Y	C-EX1	No Limit
15	18Y	C-EX1	No Limit
16	19Y	C-EX1	No Limit
17	20Y	C-EX1	No Limit
18	21Y	C-EX1	No Limit
19	22Y	C-EX1	No Limit
20	25Y	C-EX1	No Limit
21	14P	C-EX1	No Limit
22	16P	C-EX1	No Limit
23	18P	C-EX1	No Limit
24	19P	C-EX1	No Limit
25	20P	C-EX1	No Limit
26	21P	C-EX1	No Limit
27	22P	C-EX1	No Limit
28	25P	C-EX1	No Limit
29	14XY	C-EX1	No Limit
30	1P	C-EX1	No Limit
31	3P	C-EX1	No Limit
32	3Y	C-EX1	No Limit
33	17P	C-EX1	No Limit
34	1XY	C-EX1	No Limit
35	3XY	C-EX1	No Limit
37	1X	C-EX1	No Limit
38	4P	C-EX1	No Limit
39	4X	C-EX1	No Limit
40	7P	C-EX1	No Limit

41	7X	C-EX1	No Limit
42	10P	C-EX1	No Limit
43	10X	C-EX1	No Limit
44	13P	C-EX1	No Limit
45	13X	C-EX1	No Limit
46	15P	C-EX1	No Limit
47	15X	C-EX1	No Limit
48	18X	C-EX1	No Limit
49	19X	C-EX1	No Limit
50	20X	C-EX1	No Limit
51	21X	C-EX1	No Limit
52	22X	C-EX1	No Limit
53	25X	C-EX1	No Limit
54	9X	C-EX1	No Limit
55	12X	C-EX1	No Limit
56	14X	C-EX1	No Limit
57	16X	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1402500.wi\003 - ct11036c\backup documentation\calcs\rev (1)\pls tower\cl&p # dist east river x-ing.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)	190.00	(ft)
Structure height	190.00	(ft)
Structure height above ground	190.00	(ft)
Tower Shape	Rectangular	

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Tubular and Towers	SF for Poles Arms and Cables	SF for Guys	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	1.0000	47 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	1.0000	47 loads	NESC 2007	36.8	0	0.000	0.000	0.0	
NESX Heavy Broken Wire	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	1.0000	47 loads	Wind on Face	4	0	0.000	56.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	1548	1466	0	Shield Wire
2X	1548	1466	0	Shield Wire
5P	3064	1993	0	Conductor
5X	3064	1993	0	Conductor
8P	3064	1993	0	Conductor
8X	3064	1993	0	Conductor
11P	3064	1993	0	Conductor
11X	3064	1993	0	Conductor
1P	551	310	14	T-Mobile Top Connection
1X	927	310	-14	T-Mobile Top Connection
4P	759	-1	-14	T-Mobile Bottom Connection
4X	709	-1	14	T-Mobile Bottom Connection
4X	414	140	0	T-Mobile Coax Cables
9X	671	227	0	T-Mobile Coax Cables
12X	579	196	0	T-Mobile Coax Cables
14X	690	233	0	T-Mobile Coax Cables
16X	736	249	0	T-Mobile Coax Cables
18X	752	254	0	T-Mobile Coax Cables
19X	763	258	0	T-Mobile Coax Cables

20X	747	253	0	T-Mobile Coax Cables
21X	908	307	0	T-Mobile Coax Cables
22X	885	300	0	T-Mobile Coax Cables
25X	1035	350	0	T-Mobile Coax Cables
1P	226	67	0	Climbing Ladder
1X	226	67	0	Climbing Ladder
4P	453	134	0	Climbing Ladder
4X	453	134	0	Climbing Ladder
7P	456	134	0	Climbing Ladder
7X	456	134	0	Climbing Ladder
10P	514	151	0	Climbing Ladder
10X	514	151	0	Climbing Ladder
13P	574	169	0	Climbing Ladder
13X	574	169	0	Climbing Ladder
15P	617	181	0	Climbing Ladder
15X	617	181	0	Climbing Ladder
18P	639	188	0	Climbing Ladder
18X	639	188	0	Climbing Ladder
19P	610	180	0	Climbing Ladder
19X	610	180	0	Climbing Ladder
20P	588	173	0	Climbing Ladder
20X	588	173	0	Climbing Ladder
21P	704	207	0	Climbing Ladder
21X	704	207	0	Climbing Ladder
22P	692	203	0	Climbing Ladder
22X	692	203	0	Climbing Ladder
25P	278	81	0	Climbing Ladder
25X	278	81	0	Climbing Ladder

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	10.00	10.00	3.200	3121.5	0.00	3.200	0.0	0	12515
2	154.00	69.50	111.75	10.00	10.00	3.200	6615.0	0.00	3.200	0.0	0	33697
3	69.50	0.00	34.75	10.00	10.00	3.200	5285.3	0.00	3.200	0.0	0	37603

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	333	1630	-2739	Shield Wire
2X	333	1630	-2739	Shield Wire
5P	949	3738	-4356	Conductor
5X	949	3738	-4356	Conductor
8P	949	3738	-4356	Conductor
8X	949	3738	-4356	Conductor
11P	949	3738	-4356	Conductor
11X	949	3738	-4356	Conductor
1P	-594	1506	7	T-Mobile Top Connection
1X	1257	1506	-7	T-Mobile Top Connection
4P	455	-2	-7	T-Mobile Bottom Connection
4X	204	-2	7	T-Mobile Bottom Connection

4X	112	566	0	T-Mobile Coax Cables
9X	182	918	0	T-Mobile Coax Cables
12X	157	792	0	T-Mobile Coax Cables
14X	187	943	0	T-Mobile Coax Cables
16X	200	1006	0	T-Mobile Coax Cables
18X	204	1028	0	T-Mobile Coax Cables
19X	207	1044	0	T-Mobile Coax Cables
20X	203	1022	0	T-Mobile Coax Cables
21X	246	1242	0	T-Mobile Coax Cables
22X	240	1210	0	T-Mobile Coax Cables
25X	281	1415	0	T-Mobile Coax Cables
1P	96	180	0	Climbing Ladder
1X	96	180	0	Climbing Ladder
4P	192	359	0	Climbing Ladder
4X	192	359	0	Climbing Ladder
7P	193	359	0	Climbing Ladder
7X	193	359	0	Climbing Ladder
10P	217	404	0	Climbing Ladder
10X	217	404	0	Climbing Ladder
13P	242	450	0	Climbing Ladder
13X	242	450	0	Climbing Ladder
15P	260	479	0	Climbing Ladder
15X	260	479	0	Climbing Ladder
18P	269	498	0	Climbing Ladder
18X	269	498	0	Climbing Ladder
19P	257	478	0	Climbing Ladder
19X	257	478	0	Climbing Ladder
20P	248	459	0	Climbing Ladder
20X	248	459	0	Climbing Ladder
21P	296	547	0	Climbing Ladder
21X	296	547	0	Climbing Ladder
22P	291	536	0	Climbing Ladder
22X	291	536	0	Climbing Ladder
25P	117	214	0	Climbing Ladder
25X	117	214	0	Climbing Ladder

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 Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	39.97	39.97	97.55	261.00	0.374	3.200	12476.9	0.00	123.58	438.00	0.282	3.200	0.0	0	8344
2	154.00	69.50	111.75	39.97	39.97	206.72	1256.37	0.165	3.200	26441.0	0.00	206.72	1256.37	0.165	3.200	0.0	0	22464
3	69.50	0.00	34.75	39.97	39.97	173.42	1997.50	0.087	3.200	22182.4	0.00	165.17	1997.50	0.083	3.200	0.0	0	25069

Point Loads for Load Case "NESX Heavy Broken Wire":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	294	277	-13200	Shield Wire
2X	1548	1466	0	Shield Wire
5P	581	377	-19800	Conductor
5X	3064	1993	0	Conductor
8P	3064	1993	0	Conductor

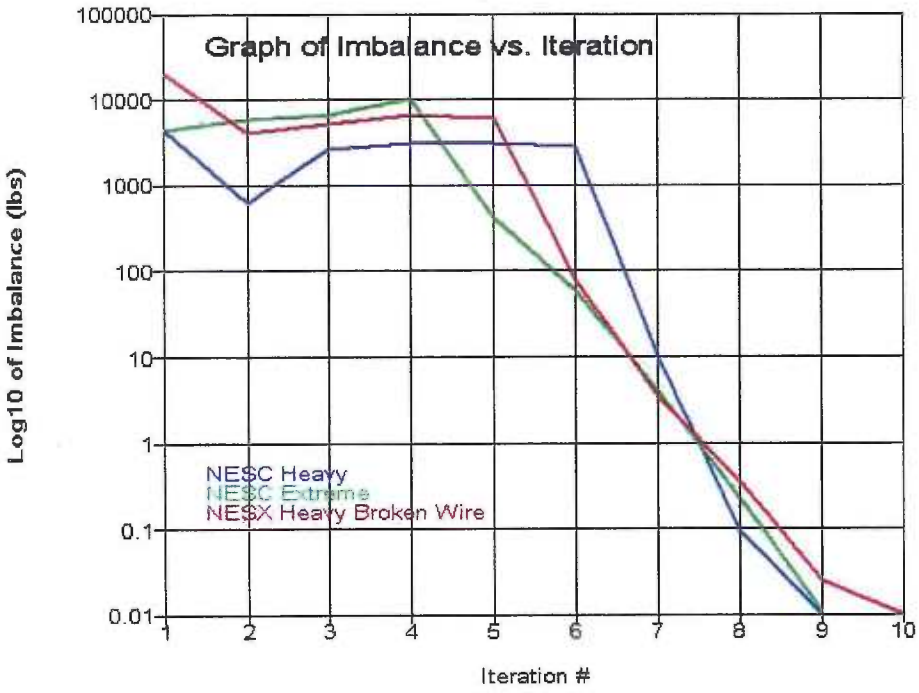
8X	3064	1993	0	Conductor
11P	3064	1993	0	Conductor
11X	3064	1993	0	Conductor
1P	551	310	14	T-Mobile Top Connection
1X	927	310	-14	T-Mobile Top Connection
4P	759	-1	-14	T-Mobile Bottom Connection
4X	709	-1	14	T-Mobile Bottom Connection
4X	414	140	0	T-Mobile Coax Cables
9X	671	227	0	T-Mobile Coax Cables
12X	579	196	0	T-Mobile Coax Cables
14X	690	233	0	T-Mobile Coax Cables
16X	736	249	0	T-Mobile Coax Cables
18X	752	254	0	T-Mobile Coax Cables
19X	763	258	0	T-Mobile Coax Cables
20X	747	253	0	T-Mobile Coax Cables
21X	908	307	0	T-Mobile Coax Cables
22X	885	300	0	T-Mobile Coax Cables
25X	1035	350	0	T-Mobile Coax Cables
1P	226	67	0	Climbing Ladder
1X	226	67	0	Climbing Ladder
4P	453	134	0	Climbing Ladder
4X	453	134	0	Climbing Ladder
7P	456	134	0	Climbing Ladder
7X	456	134	0	Climbing Ladder
10P	514	151	0	Climbing Ladder
10X	514	151	0	Climbing Ladder
13P	574	169	0	Climbing Ladder
13X	574	169	0	Climbing Ladder
15P	617	181	0	Climbing Ladder
15X	617	181	0	Climbing Ladder
18P	639	188	0	Climbing Ladder
18X	639	188	0	Climbing Ladder
19P	610	180	0	Climbing Ladder
19X	610	180	0	Climbing Ladder
20P	588	173	0	Climbing Ladder
20X	588	173	0	Climbing Ladder
21P	704	207	0	Climbing Ladder
21X	704	207	0	Climbing Ladder
22P	692	203	0	Climbing Ladder
22X	692	203	0	Climbing Ladder
25P	278	81	0	Climbing Ladder
25X	278	81	0	Climbing Ladder

Section Load Case Information (Standard) for "NESX Heavy Broken Wire":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	10.00	10.00	3.200	3121.5	0.00	3.200	0.0	0	12515
2	154.00	69.50	111.75	10.00	10.00	3.200	6615.0	0.00	3.200	0.0	0	33697
3	69.50	0.00	34.75	10.00	10.00	3.200	5285.3	0.00	3.200	0.0	0	37603

*** Analysis Results:

Maximum element usage is 98.18% for Angle "58P" in load case "NESC Extreme"
Maximum insulator usage is 39.64% for Clamp "3" in load case "NESX Heavy Broken Wire"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)	LC 3 (kips)
Leg1	3P	1.74	2.506	-0.271	-0.271	2.506	0.759
Leg1	3X	2.24	0.000	-2.887	-2.232	-2.887	-0.997
Leg1	3XY	1.91	0.000	-2.463	-1.150	-2.434	-2.463
Leg1	3Y	0.73	1.044	-0.363	0.474	1.044	-0.363

Leg1	4P	7.93	11.405	-1.130	-1.130	7.236	11.405
Leg1	4X	4.81	0.000	-6.191	-6.191	-4.787	-3.240
Leg1	4XY	7.56	0.000	-9.733	-5.312	-9.733	-9.252
Leg1	4Y	6.38	1.783	-8.205	-0.155	1.783	-8.205
Leg1	5P	17.21	18.966	-0.778	-0.778	16.791	18.966
Leg1	5X	9.10	5.054	-11.717	-11.717	-7.926	5.054
Leg1	5XY	20.41	0.000	-26.263	-9.237	-20.421	-26.263
Leg1	5Y	11.25	2.860	-14.474	1.324	2.860	-14.474
Leg2	6P	20.41	33.302	0.000	1.110	30.557	33.302
Leg2	6X	10.87	14.986	-17.740	-17.740	-12.306	14.986
Leg2	6XY	27.98	0.000	-45.657	-15.276	-35.677	-45.657
Leg2	6Y	16.77	5.412	-27.361	3.314	5.412	-27.361
Leg2	7P	19.37	49.545	0.000	5.330	49.545	47.815
Leg2	7X	10.23	26.164	-23.479	-23.479	-16.080	26.164
Leg2	7XY	27.13	0.000	-65.281	-20.540	-54.953	-65.281
Leg2	7Y	14.78	8.241	-35.561	8.049	8.241	-35.561
Leg2	8P	35.90	70.025	0.000	9.118	70.025	66.203
Leg2	8X	14.47	28.214	-31.428	-31.428	-21.033	28.214
Leg2	8XY	33.47	0.000	-80.533	-28.058	-76.863	-80.533
Leg2	8Y	20.23	11.886	-48.683	11.886	11.701	-48.683
Leg3	9P	34.13	90.307	0.000	13.869	90.307	79.340
Leg3	9X	12.58	32.219	-37.954	-37.954	-26.151	32.219
Leg3	9XY	33.32	0.000	-100.498	-34.471	-100.498	-95.316
Leg3	9Y	17.76	17.382	-53.553	17.382	16.839	-53.553
Leg3	10P	30.39	105.314	0.000	17.078	105.314	85.739
Leg3	10X	13.36	32.449	-42.988	-42.988	-28.678	32.449
Leg3	10XY	37.43	0.000	-120.451	-39.962	-120.451	-104.832
Leg3	10Y	16.93	21.531	-54.475	20.797	21.531	-54.475
Leg3	11P	44.63	118.078	0.000	19.570	118.078	89.659
Leg3	11X	15.06	31.683	-47.092	-47.092	-32.455	31.683
Leg3	11XY	43.93	0.000	-137.354	-44.384	-137.354	-111.602
Leg3	11Y	17.19	26.888	-53.745	23.868	26.888	-53.745
Leg4	12P	45.66	131.587	0.000	22.491	131.587	94.299
Leg4	12X	15.35	30.427	-51.681	-51.681	-37.585	30.427
Leg4	12XY	45.73	0.000	-153.987	-48.943	-153.987	-118.840
Leg4	12Y	15.99	32.162	-53.838	26.585	32.162	-53.838
Leg4	13P	49.75	143.368	0.000	24.367	143.368	97.509
Leg4	13X	16.56	28.911	-55.741	-55.741	-42.743	28.911
Leg4	13XY	49.68	0.000	-167.278	-52.857	-167.278	-124.147
Leg4	13Y	15.81	37.240	-53.237	28.691	37.240	-53.237
Leg5	14P	49.75	153.771	0.000	26.465	153.771	100.504
Leg5	14X	16.56	26.645	-59.855	-59.855	-49.501	26.645
Leg5	14XY	49.79	0.000	-179.955	-56.456	-179.955	-130.064
Leg5	14Y	14.96	41.368	-54.057	30.354	41.368	-54.057
Leg5	15P	52.99	164.066	0.000	28.279	164.066	103.509
Leg5	15X	17.38	25.471	-62.832	-62.832	-53.907	25.471
Leg5	15XY	52.33	0.000	-189.149	-59.689	-189.149	-133.133
Leg5	15Y	14.92	46.200	-52.614	31.689	46.200	-52.614
Leg6	16P	50.03	166.553	0.000	29.591	166.553	99.032
Leg6	16X	19.28	16.611	-74.146	-66.012	-74.146	16.611
Leg6	16XY	54.84	0.000	-210.872	-62.526	-210.872	-149.926
Leg6	16Y	16.88	43.672	-64.919	33.503	43.672	-64.919
Leg7	17P	52.23	185.033	0.000	28.636	185.033	104.160
Leg7	17X	20.59	13.307	-84.599	-75.967	-84.599	13.307
Leg7	17XY	54.47	0.000	-223.805	-71.862	-223.805	-155.225
Leg7	17Y	15.01	52.534	-61.691	33.779	52.534	-61.691
Leg7	18P	56.28	199.351	0.000	29.946	199.351	107.518
Leg7	18X	23.42	8.579	-97.006	-82.426	-97.006	8.579
Leg7	18XY	57.16	0.000	-236.732	-77.690	-236.732	-160.321

Leg7	18Y	16.47	58.326	-59.666	35.378	58.326	-59.666
Leg8	19P	56.31	212.404	0.000	30.083	212.404	108.957
Leg8	19X	25.87	1.014	-114.464	-92.696	-114.464	1.014
Leg8	19XY	56.83	0.000	-251.436	-86.499	-251.436	-168.788
Leg8	19Y	16.73	63.116	-61.132	35.626	63.116	-61.132
Leg8	20P	60.92	229.797	0.000	35.087	229.797	114.937
Leg8	20X	30.70	0.000	-137.152	-95.362	-137.152	-8.970
Leg8	20XY	59.90	0.000	-267.590	-89.218	-267.590	-176.450
Leg8	20Y	18.09	68.232	-59.173	39.223	68.232	-59.173
Leg8	21P	60.96	228.725	0.000	33.208	228.725	113.041
Leg8	21X	31.05	0.000	-138.716	-98.285	-138.716	-11.972
Leg8	21XY	60.18	0.000	-268.827	-90.825	-268.827	-177.996
Leg8	21Y	17.93	67.262	-60.777	37.619	67.262	-60.777
XBR1	22P	16.18	2.803	-2.593	-1.171	-2.593	2.803
XBR1	22X	14.37	3.589	-0.580	1.516	3.589	-0.580
XBR1	22XY	14.93	3.731	0.000	1.465	2.176	3.731
XBR1	22Y	34.29	0.000	-5.493	-0.991	-2.846	-5.493
XBR1	23P	9.95	0.000	-1.594	-0.326	-1.594	-0.098
XBR1	23X	35.54	0.000	-5.693	-0.067	-0.838	-5.693
XBR1	23XY	22.44	5.607	-0.199	-0.199	0.901	5.607
XBR1	23Y	4.87	1.216	-0.383	-0.166	1.216	-0.383
XBR1	24P	22.04	5.506	-2.998	-1.950	-2.998	5.506
XBR1	24X	17.14	4.281	-2.457	1.101	4.281	-2.457
XBR1	24XY	22.37	5.589	0.000	1.008	2.039	5.589
XBR1	24Y	61.18	0.000	-9.801	-1.759	-3.813	-9.801
XBR1	25P	16.92	0.000	-2.710	-0.427	-2.710	-1.262
XBR1	25X	51.89	0.098	-8.313	0.098	-1.327	-8.313
XBR1	25XY	34.35	8.583	-0.055	-0.055	2.035	8.583
XBR1	25Y	6.70	1.673	-0.302	-0.302	1.673	0.453
XBR2	26P	51.02	16.536	-6.651	-2.136	-6.651	16.536
XBR2	26X	46.64	8.601	-12.561	4.285	8.601	-12.561
XBR2	26XY	59.27	19.208	0.000	3.988	5.722	19.208
XBR2	26Y	67.41	0.000	-18.156	-1.613	-5.972	-18.156
XBR2	27P	23.27	2.537	-6.267	-1.079	-6.267	2.537
XBR2	27X	92.38	0.084	-24.880	0.084	-3.270	-24.880
XBR2	27XY	76.10	24.663	-0.248	-0.248	4.697	24.663
XBR2	27Y	16.52	4.022	-4.449	-0.754	4.022	-4.449
XBR2	28P	39.13	12.682	-6.727	-2.178	-6.727	12.682
XBR2	28X	40.56	8.821	-10.925	4.405	8.821	-10.925
XBR2	28XY	53.41	17.310	0.000	4.170	6.402	17.310
XBR2	28Y	55.14	0.000	-14.851	-1.926	-6.863	-14.851
XBR2	29P	23.39	1.775	-6.300	-0.795	-6.300	1.775
XBR2	29X	87.75	0.144	-23.635	0.144	-3.897	-23.635
XBR2	29XY	73.04	23.671	-0.157	-0.157	5.131	23.671
XBR2	29Y	13.96	4.524	-3.067	-0.575	4.524	-3.067
XBR3	30P	29.81	13.341	-10.612	-4.277	-10.612	13.341
XBR3	30X	28.84	12.305	-11.872	5.625	12.305	-11.872
XBR3	30XY	46.50	20.805	0.000	5.185	9.572	20.805
XBR3	30Y	47.28	0.000	-19.459	-3.832	-9.721	-19.459
XBR3	31P	22.94	2.591	-9.440	-1.091	-9.440	2.591
XBR3	31X	60.96	0.350	-25.092	0.350	-5.682	-25.092
XBR3	31XY	56.49	25.275	-0.125	-0.125	7.557	25.275
XBR3	31Y	15.51	6.939	-4.209	-0.644	6.939	-4.209
XBR3	32P	25.08	9.193	-10.324	-4.483	-10.324	9.193
XBR3	32X	30.82	13.791	-4.350	5.755	13.791	-4.350
XBR3	32XY	30.60	13.690	0.000	5.428	9.317	13.690
XBR3	32Y	38.10	0.000	-15.682	-4.017	-11.359	-15.682
XBR3	33P	28.42	0.000	-11.696	-2.237	-11.696	-1.520
XBR3	33X	51.91	0.808	-21.365	0.808	-4.447	-21.365

Leg7	18Y	16.47	58.326	-59.666	35.378	58.326	-59.666
Leg8	19P	56.31	212.404	0.000	30.083	212.404	108.957
Leg8	19X	25.87	1.014	-114.464	-92.696	-114.464	1.014
Leg8	19XY	56.83	0.000	-251.436	-86.499	-251.436	-168.788
Leg8	19Y	16.73	63.116	-61.132	35.626	63.116	-61.132
Leg8	20P	60.92	229.797	0.000	35.087	229.797	114.937
Leg8	20X	30.70	0.000	-137.152	-95.362	-137.152	-8.970
Leg8	20XY	59.90	0.000	-267.590	-89.218	-267.590	-176.450
Leg8	20Y	18.09	68.232	-59.173	39.223	68.232	-59.173
Leg8	21P	60.96	228.725	0.000	33.208	228.725	113.041
Leg8	21X	31.05	0.000	-138.716	-98.285	-138.716	-11.972
Leg8	21XY	60.18	0.000	-268.827	-90.825	-268.827	-177.996
Leg8	21Y	17.93	67.262	-60.777	37.619	67.262	-60.777
XBR1	22P	16.18	2.803	-2.593	-1.171	-2.593	2.803
XBR1	22X	14.37	3.589	-0.580	1.516	3.589	-0.580
XBR1	22XY	14.93	3.731	0.000	1.465	2.176	3.731
XBR1	22Y	34.29	0.000	-5.493	-0.991	-2.846	-5.493
XBR1	23P	9.95	0.000	-1.594	-0.326	-1.594	-0.098
XBR1	23X	35.54	0.000	-5.693	-0.067	-0.838	-5.693
XBR1	23XY	22.44	5.607	-0.199	-0.199	0.901	5.607
XBR1	23Y	4.87	1.216	-0.383	-0.166	1.216	-0.383
XBR1	24P	22.04	5.506	-2.998	-1.950	-2.998	5.506
XBR1	24X	17.14	4.281	-2.457	1.101	4.281	-2.457
XBR1	24XY	22.37	5.589	0.000	1.008	2.039	5.589
XBR1	24Y	61.18	0.000	-9.801	-1.759	-3.813	-9.801
XBR1	25P	16.92	0.000	-2.710	-0.427	-2.710	-1.262
XBR1	25X	51.89	0.098	-8.313	0.098	-1.327	-8.313
XBR1	25XY	34.35	8.583	-0.055	-0.055	2.035	8.583
XBR1	25Y	6.70	1.673	-0.302	-0.302	1.673	0.453
XBR2	26P	51.02	16.536	-6.651	-2.136	-6.651	16.536
XBR2	26X	46.64	8.601	-12.561	4.285	8.601	-12.561
XBR2	26XY	59.27	19.208	0.000	3.988	5.722	19.208
XBR2	26Y	67.41	0.000	-18.156	-1.613	-5.972	-18.156
XBR2	27P	23.27	2.537	-6.267	-1.079	-6.267	2.537
XBR2	27X	92.38	0.084	-24.880	0.084	-3.270	-24.880
XBR2	27XY	76.10	24.663	-0.248	-0.248	4.697	24.663
XBR2	27Y	16.52	4.022	-4.449	-0.754	4.022	-4.449
XBR2	28P	39.13	12.682	-6.727	-2.178	-6.727	12.682
XBR2	28X	40.56	8.821	-10.925	4.405	8.821	-10.925
XBR2	28XY	53.41	17.310	0.000	4.170	6.402	17.310
XBR2	28Y	55.14	0.000	-14.851	-1.926	-6.863	-14.851
XBR2	29P	23.39	1.775	-6.300	-0.795	-6.300	1.775
XBR2	29X	87.75	0.144	-23.635	0.144	-3.897	-23.635
XBR2	29XY	73.04	23.671	-0.157	-0.157	5.131	23.671
XBR2	29Y	13.96	4.524	-3.067	-0.575	4.524	-3.067
XBR3	30P	29.81	13.341	-10.612	-4.277	-10.612	13.341
XBR3	30X	28.84	12.305	-11.872	5.625	12.305	-11.872
XBR3	30XY	46.50	20.805	0.000	5.185	9.572	20.805
XBR3	30Y	47.28	0.000	-19.459	-3.832	-9.721	-19.459
XBR3	31P	22.94	2.591	-9.440	-1.091	-9.440	2.591
XBR3	31X	60.96	0.350	-25.092	0.350	-5.682	-25.092
XBR3	31XY	56.49	25.275	-0.125	-0.125	7.557	25.275
XBR3	31Y	15.51	6.939	-4.209	-0.644	6.939	-4.209
XBR3	32P	25.08	9.193	-10.324	-4.483	-10.324	9.193
XBR3	32X	30.82	13.791	-4.350	5.755	13.791	-4.350
XBR3	32XY	30.60	13.690	0.000	5.428	9.317	13.690
XBR3	32Y	38.10	0.000	-15.682	-4.017	-11.359	-15.682
XBR3	33P	28.42	0.000	-11.696	-2.237	-11.696	-1.520
XBR3	33X	51.91	0.808	-21.365	0.808	-4.447	-21.365

XBR3	33XY	49.74	22.254	0.000	0.360	9.753	22.254
XBR3	33Y	11.55	5.170	-2.233	-1.925	5.170	-2.233
XBR4	34P	32.47	11.479	-7.163	-3.933	-7.163	11.479
XBR4	34X	30.33	9.286	-9.980	2.867	9.286	-9.980
XBR4	34XY	41.03	14.507	0.000	2.611	6.752	14.507
XBR4	34Y	54.98	0.000	-18.090	-3.685	-9.244	-18.090
XBR4	35P	26.33	9.309	-8.400	-1.105	-8.400	9.309
XBR4	35X	47.47	0.698	-15.619	0.698	-2.613	-15.619
XBR4	35XY	46.45	16.421	0.000	0.218	4.640	16.421
XBR4	35Y	31.08	6.213	-10.227	0.083	6.213	-10.227
XBR4	36P	33.43	9.514	-9.065	-3.280	-9.065	9.514
XBR4	36X	38.63	8.310	-10.476	3.320	8.310	-10.476
XBR4	36XY	45.02	15.917	0.000	3.009	8.512	15.917
XBR4	36Y	54.88	0.000	-14.881	-2.962	-7.656	-14.881
XBR4	37P	26.89	9.505	-6.237	-0.403	-6.237	9.505
XBR4	37X	54.83	0.000	-14.870	-0.024	-3.764	-14.870
XBR4	37XY	40.71	14.390	-0.465	-0.465	2.726	14.390
XBR4	37Y	34.08	7.170	-9.242	0.781	7.170	-9.242
XBR5	38P	32.09	8.382	-8.752	-3.391	-8.752	8.382
XBR5	38X	30.44	9.237	-8.303	3.121	9.237	-8.303
XBR5	38XY	36.65	13.238	0.000	2.638	7.645	13.238
XBR5	38Y	51.35	0.000	-14.007	-2.940	-8.153	-14.007
XBR5	39P	22.71	7.921	-6.193	-0.706	-6.193	7.921
XBR5	39X	47.44	0.198	-12.939	0.198	-2.752	-12.939
XBR5	39XY	35.69	12.892	-0.136	-0.136	3.077	12.892
XBR5	39Y	30.43	5.609	-8.300	0.390	5.609	-8.300
XBR5	40P	36.87	6.664	-8.815	-3.155	-8.815	6.664
XBR5	40X	29.58	9.124	-7.071	2.932	9.124	-7.071
XBR5	40XY	32.94	11.897	0.000	2.406	7.594	11.897
XBR5	40Y	48.91	0.000	-11.693	-2.669	-7.318	-11.693
XBR5	41P	20.33	6.991	-4.861	-0.507	-4.861	6.991
XBR5	41X	46.14	0.072	-11.032	0.072	-2.642	-11.032
XBR5	41XY	30.48	11.010	-0.208	-0.208	2.344	11.010
XBR5	41Y	28.88	5.154	-6.904	0.503	5.154	-6.904
XBR5	42P	42.95	5.425	-9.197	-3.124	-9.197	5.425
XBR5	42X	25.94	8.791	-5.555	2.827	8.791	-5.555
XBR5	42XY	26.88	9.711	0.000	2.216	6.735	9.711
XBR5	42Y	50.70	0.000	-10.856	-2.479	-7.527	-10.856
XBR5	43P	21.61	5.636	-4.626	-0.563	-4.626	5.636
XBR5	43X	45.44	0.044	-9.730	0.044	-2.107	-9.730
XBR5	43XY	25.61	9.250	-0.140	-0.140	2.238	9.250
XBR5	43Y	29.03	3.964	-6.216	0.366	3.964	-6.216
XBR5	44P	43.86	4.307	-8.297	-2.961	-8.297	4.307
XBR5	44X	27.13	9.799	-4.735	2.797	9.799	-4.735
XBR5	44XY	27.04	9.767	0.000	2.080	7.457	9.767
XBR5	44Y	44.12	0.000	-8.348	-2.370	-6.217	-8.348
XBR5	45P	16.90	5.472	-3.197	-0.448	-3.197	5.472
XBR5	45X	41.91	0.048	-7.928	0.048	-2.110	-7.928
XBR5	45XY	23.73	8.571	-0.108	-0.108	1.716	8.571
XBR5	45Y	25.31	4.137	-4.789	0.433	4.137	-4.789
XBR5	46P	60.31	3.895	-10.034	-2.833	-10.034	3.895
XBR5	46X	22.64	8.147	-3.768	2.571	8.147	-3.768
XBR5	46XY	20.00	7.224	0.000	2.020	6.059	7.224
XBR5	46Y	60.39	0.000	-10.048	-2.245	-8.159	-10.048
XBR5	47P	25.76	4.109	-4.286	-0.500	-4.286	4.109
XBR5	47X	49.06	0.028	-8.163	0.028	-1.488	-8.163
XBR5	47XY	19.21	6.938	-0.123	-0.123	1.945	6.938
XBR5	47Y	32.64	2.707	-5.430	0.297	2.707	-5.430
XBR6	48P	82.22	5.751	-4.645	-4.645	0.000	5.751

XBR6	48X	65.87	23.212	-1.423	2.105	23.212	-1.423
XBR6	48XY	52.89	18.640	0.000	1.916	15.890	18.640
XBR6	48Y	71.36	0.000	-4.032	-4.032	0.000	0.000
XBR6	49P	56.11	9.295	-3.170	-3.170	0.000	9.295
XBR6	49X	5.38	1.895	0.000	1.413	1.895	0.000
XBR6	49XY	43.81	15.439	0.000	0.748	5.970	15.439
XBR6	49Y	27.87	6.742	-1.575	-1.575	6.742	0.000
XBR7	50P	10.99	3.384	0.000	0.000	0.000	3.384
XBR7	50X	73.29	22.564	-0.923	6.582	22.564	-0.923
XBR7	50XY	51.79	15.943	0.000	5.325	14.363	15.943
XBR7	50Y	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	51P	78.92	7.561	-2.454	-2.454	0.000	7.561
XBR7	51X	3.45	1.062	0.000	0.909	1.062	0.000
XBR7	51XY	40.57	12.489	0.000	0.437	4.388	12.489
XBR7	51Y	33.67	5.520	-1.047	-1.047	5.520	0.000
XBR7	52P	6.97	2.145	0.000	0.000	0.000	2.145
XBR7	52X	79.82	24.573	-0.065	6.901	24.573	-0.065
XBR7	52XY	50.44	15.529	0.000	5.235	15.529	13.832
XBR7	52Y	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	53P	94.96	6.209	-2.586	-2.586	0.000	6.209
XBR7	53X	3.37	1.036	0.000	0.759	1.036	0.000
XBR7	53XY	33.98	10.460	0.000	0.431	3.916	10.460
XBR7	53Y	43.85	4.624	-1.194	-1.194	4.624	0.000
XBR7	54P	5.22	1.606	0.000	0.000	0.000	1.606
XBR7	54X	91.54	28.183	0.000	8.173	28.183	1.231
XBR7	54XY	54.02	16.630	0.000	5.833	16.630	14.246
XBR7	54Y	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	55P	18.36	5.654	0.000	0.000	0.000	5.654
XBR7	55X	7.80	2.401	0.000	0.987	2.401	0.000
XBR7	55XY	32.66	10.056	0.000	0.751	5.285	10.056
XBR7	55Y	13.46	4.145	0.000	1.384	4.145	0.000
XBR8	56P	71.62	1.018	-5.859	-5.859	-0.530	1.018
XBR8	56X	95.12	33.521	0.000	3.283	33.521	3.360
XBR8	56XY	50.97	17.964	0.000	2.380	17.964	12.701
XBR8	56Y	53.53	0.162	-4.379	-4.379	0.162	0.000
XBR8	57P	55.66	5.837	-4.553	-4.553	-0.252	5.837
XBR8	57X	49.65	4.828	-4.061	2.012	4.828	-4.061
XBR8	57XY	24.17	8.516	0.000	1.553	8.516	6.285
XBR8	57Y	31.93	3.179	-2.612	-2.612	3.179	-0.931
XBR8	58P	98.18	34.600	0.000	2.875	34.600	3.715
XBR8	58X	96.19	0.038	-6.726	-6.726	0.000	0.038
XBR8	58XY	72.90	0.000	-5.097	-5.097	0.000	0.000
XBR8	58Y	51.97	18.313	0.000	1.877	18.313	12.801
XBR8	59P	50.69	1.590	-3.544	-3.544	1.590	0.000
XBR8	59X	23.91	8.427	0.000	1.251	8.427	5.512
XBR8	59XY	58.43	4.634	-4.085	1.645	4.634	-4.085
XBR8	59Y	76.12	4.373	-5.322	-5.322	0.000	4.373
Br2	60P	7.51	0.499	-1.050	0.206	0.499	-1.050
Br2	60X	4.91	1.226	-0.431	-0.016	-0.431	1.226
Br2	61P	21.65	0.180	-3.024	-0.021	0.180	-3.024
Br2	61X	11.61	2.900	-0.190	-0.166	-0.190	2.900
Br2	62P	2.96	0.159	-0.414	-0.184	0.159	-0.414
Br2	62X	2.51	0.000	-0.350	-0.339	-0.350	-0.154
Br2	63P	8.06	1.289	-1.126	-0.016	1.289	-1.126
Br2	63X	11.18	0.584	-1.562	-0.526	-1.562	0.584
Br4	64P	43.20	0.000	-1.871	-0.126	-1.636	-1.871
Br4	64X	44.66	0.537	-1.935	0.537	-1.935	-1.499
Br5	65P	24.60	1.018	-0.479	-0.479	0.000	1.018
Br5	65X	59.62	0.000	-1.160	-0.122	-1.160	0.000

Arm	66P	6.26	0.890	-3.211	0.890	-1.394	-3.211
Arm	66Y	5.89	4.976	0.000	0.965	1.998	4.976
Br1	67P	0.41	0.213	-0.151	-0.151	0.213	-0.124
Br1	67X	1.74	0.000	-0.731	-0.726	-0.468	-0.731
Arm	68P	22.76	9.284	0.000	0.548	1.853	9.284
Arm	68X	9.05	3.693	0.000	2.057	3.381	3.693
Arm	68XY	5.33	2.174	-0.400	2.174	-0.400	0.532
Arm	68Y	21.66	0.377	-8.837	0.377	-3.183	-8.837
Br3	69P	13.70	1.320	0.000	0.457	0.700	1.320
Br3	69Y	15.93	0.415	-0.890	0.415	-0.244	-0.890
Br3	70P	7.94	0.000	-0.443	-0.318	-0.443	-0.117
Br3	70X	3.61	0.348	0.000	0.042	0.348	0.069
Br1	71P	3.03	1.588	0.000	1.588	0.612	0.189
Br1	71X	2.73	1.433	0.000	1.433	0.489	1.430
Arm	72P	5.87	4.962	-1.954	-1.954	2.027	4.962
Arm	72Y	14.22	0.000	-7.289	-2.170	-3.251	-7.289
Arm	73P	52.40	21.380	-3.189	-3.189	0.825	21.380
Arm	73X	14.93	6.090	-3.602	-0.705	6.090	-3.602
Arm	73XY	6.73	2.063	-2.748	-0.850	-2.748	2.063
Arm	73Y	54.81	0.000	-22.364	-3.077	-6.921	-22.364
Br3	74P	21.84	0.000	-1.220	-0.776	-1.220	-0.810
Br3	74X	11.46	1.105	0.000	0.272	1.105	0.241
Br1	75P	2.55	1.335	-0.204	1.323	-0.204	1.335
Br1	75X	3.75	1.969	0.000	1.969	1.422	1.874
Arm	76P	8.86	1.328	-3.614	-3.614	1.328	-1.108
Arm	76X	15.64	6.383	-3.790	-1.225	6.383	-3.790
Arm	76XY	8.87	1.019	-3.620	-1.452	-3.620	1.019
Arm	76Y	18.46	0.000	-7.532	-3.539	-7.532	-6.161
Arm	77P	8.11	0.000	-4.159	-3.077	-4.159	-2.543
Arm	77Y	7.06	1.936	-3.622	-2.961	1.936	-3.622
Br3	78P	47.08	0.000	-2.629	-1.232	-2.629	-1.158
Br3	78X	27.88	2.688	0.000	1.156	2.688	0.935
Br1	79P	4.80	2.516	0.000	1.847	2.516	1.763
Br1	79X	4.81	0.000	-2.023	-0.262	-2.023	-0.167
Arm	80P	7.78	1.917	-3.175	-3.175	0.368	1.917
Arm	80X	16.23	5.688	-6.622	-0.624	5.688	-6.622
Arm	80XY	12.43	5.073	-2.303	-0.922	-2.303	5.073
Arm	80Y	20.15	0.000	-8.223	-3.129	-6.524	-8.223
Arm	81P	4.30	2.723	-2.204	-2.204	2.723	-0.081
Arm	81Y	8.91	0.000	-4.568	-2.104	-4.568	-4.239
HBR1	82P	38.01	0.597	-6.591	0.597	-6.591	-1.023
HBR1	82Y	29.28	0.393	-5.078	0.393	-3.946	-5.078
HBR1	83P	11.93	1.673	-2.069	1.673	-0.617	-2.069
HBR1	83X	25.71	0.000	-4.458	-1.121	-2.228	-4.458
HBR2	84P	86.48	0.000	-16.777	-2.329	-16.777	-2.887
HBR2	84Y	69.46	0.000	-13.475	-1.990	-11.492	-13.475
HBR2	85P	33.92	2.820	-6.580	2.820	-4.726	-6.580
HBR2	85X	54.70	0.000	-10.611	-1.460	-4.938	-10.611
HBR3	86P	48.34	0.000	-18.759	-5.906	-18.759	-2.314
HBR3	86Y	31.97	0.000	-12.407	-4.756	-12.251	-12.407
HBR3	87P	14.84	2.713	-5.758	2.713	-4.202	-5.758
HBR3	87X	24.31	0.000	-9.433	-1.236	-4.396	-9.433
HBR3	88P	64.92	0.000	-20.640	-6.599	-20.640	-2.535
HBR3	88Y	40.97	0.000	-13.026	-5.047	-13.026	-11.858
HBR3	89P	16.00	0.594	-5.085	0.594	-3.646	-5.085
HBR3	89X	26.65	0.000	-8.473	-1.436	-5.181	-8.473
HBR4	90P	34.87	0.000	-21.700	-2.284	-21.700	-3.622
HBR4	90Y	20.20	0.000	-12.570	-1.729	-12.570	-10.796
HBR4	91P	7.24	2.152	-4.504	2.152	-2.285	-4.504

HBR4	91X	12.12	0.000	-7.545	-2.060	-7.545	-5.069
HBR3	92P	2.47	0.000	-0.986	-0.824	-0.109	-0.986
HBR3	92X	2.48	1.348	0.000	0.047	1.348	0.159
HBR3	92XY	0.54	0.211	-0.216	-0.216	0.211	-0.159
HBR3	92Y	2.38	0.000	-0.951	-0.766	-0.278	-0.951
HBR3	93P	2.56	0.550	-1.024	-0.194	0.550	-1.024
HBR3	93X	0.86	0.000	-0.345	-0.204	-0.345	-0.244
HBR3	93XY	0.56	0.000	-0.222	-0.182	-0.057	-0.222
HBR3	93Y	1.62	0.402	-0.649	-0.207	-0.649	0.402
ArmBR1	94P	88.85	0.000	-9.408	-1.477	-1.607	-9.408
ArmBR1	94X	22.13	0.255	-2.343	-1.642	-2.343	0.255
ArmBR1	94XY	32.07	1.366	-3.396	-1.507	1.366	-3.396
ArmBR1	94Y	31.72	8.629	-1.684	-1.684	0.609	8.629
ArmBR2	95P	11.80	2.949	0.000	2.421	0.212	2.949
ArmBR2	95X	23.14	2.588	-1.294	2.588	0.923	-1.294
ArmBR2	95XY	25.03	6.254	0.000	2.395	0.854	6.254
ArmBR2	95Y	35.10	2.564	-1.962	2.564	1.571	-1.962
ArmBR2	96P	23.89	5.968	-0.209	2.870	-0.209	5.968
ArmBR2	96X	12.19	3.045	0.000	3.045	0.469	0.000
ArmBR2	96XY	23.70	5.920	0.000	2.767	1.574	5.920
ArmBR2	96Y	11.84	2.958	0.000	2.958	2.287	0.000
ArmBR2	97P	71.76	2.543	-4.012	2.543	2.162	-4.012
ArmBR2	97X	40.42	10.098	0.000	2.284	1.359	10.098
ArmBR2	97XY	91.89	2.677	-5.137	2.677	0.359	-5.137
ArmBR2	97Y	36.21	9.046	-0.304	2.483	-0.304	9.046

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 9

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	0.01266	0.2358	-0.001955	-0.1328	0.0117	0.0314	3.638	-3.389	190
2P	0.0174	0.2336	0.01753	-0.1265	0.0107	0.0326	0.0174	-11.77	190
3P	0.01147	0.2217	-0.001926	-0.1326	0.0101	0.0299	3.636	-3.403	184
4P	0.01048	0.2078	-0.001856	-0.1365	0.0108	0.0284	3.635	-3.417	178
5P	0.01393	0.2063	0.01175	-0.1076	0.0098	0.0320	0.01393	-9.794	178
6P	0.009201	0.193	-0.001801	-0.1267	0.0084	0.0251	3.634	-3.432	172
7P	0.008379	0.1801	-0.001817	-0.1274	0.0103	0.0241	3.633	-3.445	166
8P	0.01271	0.1787	0.0141	-0.0945	0.0087	0.0307	0.01271	-11.82	166
9P	0.007156	0.1661	-0.001943	-0.1260	0.0087	0.0214	3.632	-3.459	160
10P	0.006542	0.1542	-0.002174	-0.1105	0.0084	0.0188	3.632	-3.471	154
11P	0.009664	0.1528	0.009526	-0.0964	0.0076	0.0298	0.009664	-9.847	154
12P	0.00575	0.1442	-0.001567	-0.1081	0.0099	0.0174	4.104	-3.954	148.8
13P	0.005163	0.1328	-0.0009582	-0.0973	0.0062	0.0169	4.689	-4.551	142.3
14P	0.004532	0.1205	-0.0003902	-0.0894	0.0064	0.0154	5.372	-5.247	134.7
15P	0.003972	0.1088	6.54e-005	-0.0809	0.0052	0.0142	6.092	-5.979	126.7
16P	0.00353	0.0981	0.0004014	-0.0732	0.0046	0.0129	6.812	-6.71	118.7
17P	0.003128	0.08853	0.0006293	-0.0665	0.0042	0.0116	7.532	-7.44	110.7
18P	0.002741	0.0798	0.0007415	-0.0576	0.0044	0.0104	8.253	-8.17	102.7
19P	0.001792	0.06484	0.0007003	-0.0550	0.0038	0.0069	9.754	-9.687	86
20P	0.001207	0.04755	0.001041	-0.0588	0.0025	0.0031	11.24	-11.19	69.5
21P	0.0006705	0.03175	0.001232	-0.0549	0.0015	-0.0060	12.68	-12.65	53.5
22P	0.0001508	0.01071	0.001441	-0.0334	-0.0017	-0.0292	14.8	-14.79	30
23P	0.0001419	0.06157	-0.004453	-0.0140	0.0000	0.0015	0.0001419	-16.09	15
24P	-0.001907	0.003454	-0.001788	-0.0018	-0.0035	0.0144	16.15	0.003454	15
25P	3.231e-006	0.00359	0.0008405	-0.0165	-0.0042	-0.0585	16.15	-16.15	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	0.008559	0.2358	-0.01835	-0.1327	0.0098	0.0321	3.634	3.861	190
1XY	0.008636	0.2317	-0.01694	-0.1324	0.0116	0.0318	-3.616	3.857	190
1Y	0.01268	0.2316	-0.000573	-0.1324	0.0104	0.0323	-3.612	-3.393	190
2X	0.003849	0.234	-0.03829	-0.1449	0.0111	0.0327	0.003849	12.23	190
3X	0.007504	0.2218	-0.01822	-0.1365	0.0101	0.0324	3.633	3.847	184
3XY	0.007492	0.2177	-0.01687	-0.1359	0.0108	0.0306	-3.618	3.843	184
3Y	0.01157	0.2176	-0.000579	-0.1320	0.0118	0.0328	-3.613	-3.407	184
4X	0.006505	0.2076	-0.01791	-0.1289	0.0088	0.0326	3.632	3.833	178
4XY	0.006356	0.2036	-0.0166	-0.1285	0.0111	0.0293	-3.619	3.829	178
4Y	0.01032	0.2038	-0.0005557	-0.1355	0.0104	0.0333	-3.615	-3.421	178
5X	0.002884	0.2055	-0.03389	-0.1578	0.0105	0.0322	0.002884	10.21	178
6X	0.005497	0.1943	-0.01734	-0.1395	0.0093	0.0324	3.63	3.819	172
6XY	0.005414	0.1904	-0.01615	-0.1382	0.0088	0.0267	-3.62	3.815	172
6Y	0.009442	0.1891	-0.0006005	-0.1262	0.0116	0.0337	-3.616	-3.436	172
7X	0.004643	0.1798	-0.01685	-0.1289	0.0067	0.0324	3.63	3.805	166
7XY	0.004439	0.176	-0.01573	-0.1286	0.0102	0.0258	-3.621	3.801	166
7Y	0.008242	0.1763	-0.000675	-0.1266	0.0087	0.0338	-3.617	-3.449	166
8X	0.000101	0.1776	-0.03912	-0.1681	0.0089	0.0309	0.000101	12.18	166
9X	0.00388	0.1671	-0.01621	-0.1237	0.0099	0.0325	3.629	3.792	160
9XY	0.003524	0.1633	-0.01516	-0.1226	0.0061	0.0239	-3.621	3.788	160
9Y	0.007538	0.1625	-0.000874	-0.1252	0.0094	0.0347	-3.617	-3.463	160
10X	0.002903	0.1539	-0.01536	-0.1161	0.0038	0.0326	3.628	3.779	154
10XY	0.002931	0.1503	-0.0144	-0.1160	0.0093	0.0219	-3.622	3.775	154
10Y	0.00635	0.1505	-0.001179	-0.1100	0.0083	0.0355	-3.619	-3.474	154

11X	-0.000318	0.152	-0.03079	-0.1534	0.0076	0.0298	-0.000318	10.15	154	
12X	0.002507	0.1444	-0.01559	-0.1038	0.0012	0.0322	4.101	4.242	148.8	
12XY	0.001836	0.1403	-0.0146	-0.1038	0.0097	0.0205	-4.096	4.238	148.8	
12Y	0.006124	0.1401	-0.0005064	-0.1077	0.0058	0.0353	-4.092	-3.958	148.8	
13X	0.001697	0.133	-0.01575	-0.0997	0.0042	0.0311	4.686	4.817	142.3	
13XY	0.0009213	0.1284	-0.01471	-0.0992	0.0061	0.0193	-4.683	4.812	142.3	
13Y	0.005542	0.1283	0.0001769	-0.0967	0.0081	0.0337	-4.678	-4.556	142.3	
14X	0.0008089	0.1207	-0.01573	-0.0900	0.0030	0.0300	5.368	5.488	134.7	
14XY	-6.284e-005	0.1156	-0.01464	-0.0890	0.0064	0.0179	-5.367	5.483	134.7	
14Y	0.004972	0.1155	0.0007801	-0.0884	0.0064	0.0327	-5.362	-5.251	134.7	
15X	-0.0001266	0.1089	-0.0156	-0.0819	0.0035	0.0288	6.088	6.197	126.7	
15XY	-0.000971	0.1035	-0.01444	-0.0806	0.0052	0.0166	-6.089	6.191	126.7	
15Y	0.004427	0.1033	0.001283	-0.0794	0.0063	0.0315	-6.084	-5.985	126.7	
16X	-0.001051	0.09835	-0.01526	-0.0741	0.0027	0.0276	6.807	6.906	118.7	
16XY	-0.00177	0.09248	-0.01406	-0.0725	0.0054	0.0154	-6.81	6.9	118.7	
16Y	0.003919	0.09237	0.00162	-0.0712	0.0057	0.0304	-6.804	-6.716	118.7	
17X	-0.001834	0.08861	-0.01484	-0.0676	0.0027	0.0264	7.527	7.618	110.7	
17XY	-0.002587	0.08256	-0.01358	-0.0653	0.0048	0.0142	-7.532	7.612	110.7	
17Y	0.003488	0.08248	0.001865	-0.0647	0.0050	0.0295	-7.526	-7.447	110.7	
18X	-0.002681	0.08	-0.01426	-0.0587	0.0021	0.0253	8.247	8.33	102.7	
18XY	-0.003243	0.07365	-0.01296	-0.0580	0.0044	0.0130	-8.253	8.324	102.7	
18Y	0.00312	0.07353	0.001988	-0.0561	0.0047	0.0284	-8.247	-8.176	102.7	
19X	-0.003587	0.06402	-0.01285	-0.0592	-0.0005	0.0216	9.748	9.816	85.99	
19XY	-0.004563	0.05711	-0.01156	-0.0561	0.0030	0.0118	-9.757	9.809	85.99	
19Y	0.002299	0.0578	0.002001	-0.0525	0.0050	0.0273	-9.75	-9.694	86	
20X	-0.004628	0.0462	-0.01143	-0.0613	0.0030	0.0185	11.24	11.29	69.49	
20XY	-0.005249	0.04	-0.01008	-0.0548	0.0032	0.0109	-11.25	11.28	69.49	
20Y	0.001491	0.04109	0.002204	-0.0527	0.0043	0.0267	-11.24	-11.2	69.5	
21X	-0.005466	0.03004	-0.00967	-0.0556	-0.0073	0.0148	12.67	12.71	53.49	
21XY	-0.005619	0.02536	-0.008273	-0.0467	-0.0043	0.0062	-12.69	12.71	53.49	
21Y	0.001043	0.02667	0.002143	-0.0458	0.0031	0.0289	-12.68	-12.65	53.5	
22X	-0.0007151	0.01011	-0.005942	-0.0340	-0.0074	0.0104	14.8	14.81	29.99	
22XY	-0.001281	0.008455	-0.005434	-0.0294	-0.0056	-0.0024	-14.8	14.81	29.99	
22Y	0.0006927	0.00891	0.001827	-0.0276	0.0045	0.0386	-14.8	-14.79	30	
23X	-0.0006395	-0.004771	-0.004152	-0.0174	0.0015	0.0017	-0.0006395	16.15	15	
24Y	0.001308	0.002509	-0.001469	-0.0036	0.0031	-0.0122	-16.15	0.002509	15	
25X	-0.0006737	0.003461	-0.003194	-0.0194	-0.0029	0.0080	16.15	16.15	15	
25XY	-0.0006037	0.002473	-0.002906	-0.0155	-0.0001	-0.0043	-16.15	16.15	15	
25Y	0.0002803	0.002635	0.001056	-0.0122	0.0064	0.0627	-16.15	-16.15	15	
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0	
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0	
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0	

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 %	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 %
26P	4.08	0.0	-5.51	0.0	0.0	34.79	0.0	0.0	35.46	0.0	0.67	0.0	0.1	0.0	0.0	0.97	0.0	0.0
26X	-11.82	0.0	-14.10	0.0	0.0	-105.00	0.0	0.0	106.60	0.0	0.73	0.0	0.4	0.0	0.0	-0.06	0.0	0.0
26XY	12.46	0.0	-12.28	0.0	0.0	-97.69	0.0	0.0	99.25	0.0	0.42	0.0	0.1	0.0	0.0	0.06	0.0	0.0
26Y	-4.72	0.0	-5.14	0.0	0.0	38.78	0.0	0.0	39.40	0.0	0.37	0.0	-0.1	0.0	0.0	-1.01	0.0	0.0

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

Joint Label	X External Load	Y External Load	Z External Load	X Member Force	Y Member Force	Z Member Force	X Disp.	Y Disp.	Z Disp.

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0140	0.4805	-1.0744	-0.0140	-0.4805	1.0744	0.0127	0.2358	-0.0020
2P	0.0000	1.5704	-1.7474	-0.0000	-1.5704	1.7474	0.0174	0.2336	0.0175
3P	0.0000	0.2343	-0.3321	0.0000	-0.2343	0.3321	0.0115	0.2217	-0.0019
4P	-0.0140	0.3222	-1.6283	0.0140	-0.3222	1.6283	0.0105	0.2078	-0.0019
5P	0.0000	2.0881	-3.2112	-0.0000	-2.0881	3.2112	0.0139	0.2063	0.0117
6P	0.0000	0.2348	-0.3575	0.0000	-0.2348	0.3575	0.0092	0.1930	-0.0018
7P	0.0000	0.3615	-1.0225	-0.0000	-0.3614	1.0225	0.0084	0.1801	-0.0018
8P	0.0000	2.0881	-3.2424	-0.0000	-2.0881	3.2424	0.0127	0.1787	0.0141
9P	0.0000	0.2508	-0.4505	0.0000	-0.2508	0.4505	0.0072	0.1661	-0.0019
10P	0.0000	0.3697	-1.1064	-0.0000	-0.3697	1.1064	0.0065	0.1542	-0.0022
11P	0.0000	2.0881	-3.2112	-0.0000	-2.0881	3.2112	0.0097	0.1528	0.0095
12P	0.0000	0.2063	-0.4887	0.0000	-0.2063	0.4887	0.0057	0.1442	-0.0016
13P	0.0000	0.4225	-1.1519	0.0000	-0.4225	1.1519	0.0052	0.1328	-0.0010
14P	0.0000	0.2911	-0.6577	0.0000	-0.2911	0.6577	0.0045	0.1205	-0.0004
15P	0.0000	0.4884	-1.3240	0.0000	-0.4884	1.3240	0.0040	0.1088	0.0001
16P	0.0000	0.3188	-0.7455	0.0000	-0.3188	0.7455	0.0035	0.0981	0.0004
17P	0.0000	0.3305	-0.7846	0.0000	-0.3305	0.7846	0.0031	0.0885	0.0006
18P	0.0000	0.6939	-1.9864	-0.0000	-0.6939	1.9864	0.0027	0.0798	0.0007
19P	0.0000	0.8104	-2.3351	-0.0000	-0.8104	2.3351	0.0018	0.0648	0.0007
20P	0.0000	0.8109	-2.6111	-0.0000	-0.8109	2.6111	0.0012	0.0476	0.0010
21P	0.0000	0.9648	-3.3078	-0.0000	-0.9648	3.3078	0.0007	0.0317	0.0012
22P	0.0000	0.9640	-3.5544	0.0000	-0.9640	3.5544	0.0002	0.0107	0.0014
23P	0.0000	0.4449	-0.6738	-0.0000	-0.4449	0.6738	0.0001	0.0616	-0.0045
24P	0.0000	0.0000	-0.6738	-0.0000	0.0000	0.6738	-0.0019	0.0035	-0.0018
25P	0.0000	0.4777	-1.8595	-0.0000	-0.4777	1.8595	0.0000	0.0036	0.0008
26P	0.0000	0.2375	-0.8267	-4.0832	5.2685	35.6175	0.0000	0.0000	0.0000
1X	-0.0140	0.3770	-1.4504	0.0140	-0.3770	1.4504	0.0086	0.2358	-0.0183
1XY	0.0000	0.0000	-0.2974	-0.0000	0.0000	0.2974	0.0086	0.2317	-0.0169
1Y	0.0000	0.1035	-0.2974	-0.0000	-0.1035	0.2974	0.0127	0.2316	-0.0006
2X	0.0000	1.4660	-1.7474	-0.0000	-1.4660	1.7474	0.0038	0.2340	-0.0383
3X	0.0000	0.0000	-0.3321	0.0000	0.0000	0.3321	0.0075	0.2218	-0.0182
3XY	0.0000	0.0000	-0.3321	0.0000	0.0000	0.3321	0.0075	0.2177	-0.0169
3Y	0.0000	0.2343	-0.3321	0.0000	-0.2343	0.3321	0.0116	0.2176	-0.0006
4X	0.0140	0.2730	-1.9923	-0.0140	-0.2730	1.9923	0.0065	0.2076	-0.0179
4XY	0.0000	0.0000	-0.4163	-0.0000	0.0000	0.4163	0.0064	0.2036	-0.0166
4Y	0.0000	0.1892	-0.4163	-0.0000	-0.1892	0.4163	0.0103	0.2038	-0.0006
5X	0.0000	1.9930	-3.2112	-0.0000	-1.9930	3.2112	0.0029	0.2055	-0.0339
6X	0.0000	0.0000	-0.3575	0.0000	0.0000	0.3575	0.0055	0.1943	-0.0173
6XY	0.0000	0.0000	-0.3575	0.0000	0.0000	0.3575	0.0054	0.1904	-0.0162
6Y	0.0000	0.2348	-0.3575	-0.0000	-0.2348	0.3575	0.0094	0.1891	-0.0006
7X	0.0000	0.1340	-1.0225	-0.0000	-0.1340	1.0225	0.0046	0.1798	-0.0169
7XY	0.0000	0.0000	-0.5665	-0.0000	0.0000	0.5665	0.0044	0.1760	-0.0157
7Y	0.0000	0.2275	-0.5665	-0.0000	-0.2274	0.5665	0.0082	0.1763	-0.0007
8X	0.0000	1.9930	-3.2424	-0.0000	-1.9930	3.2424	0.0001	0.1776	-0.0391
9X	0.0000	0.2270	-1.1215	0.0000	-0.2270	1.1215	0.0039	0.1671	-0.0162
9XY	0.0000	0.0000	-0.4505	0.0000	0.0000	0.4505	0.0035	0.1633	-0.0152
9Y	0.0000	0.2508	-0.4505	0.0000	-0.2508	0.4505	0.0075	0.1625	-0.0009
10X	0.0000	0.1510	-1.1064	-0.0000	-0.1510	1.1064	0.0029	0.1539	-0.0154
10XY	0.0000	0.0000	-0.5924	-0.0000	0.0000	0.5924	0.0029	0.1503	-0.0144
10Y	0.0000	0.2187	-0.5924	-0.0000	-0.2187	0.5924	0.0064	0.1505	-0.0012
11X	0.0000	1.9930	-3.2112	-0.0000	-1.9930	3.2112	-0.0003	0.1520	-0.0308
12X	0.0000	0.1960	-1.0677	0.0000	-0.1960	1.0677	0.0025	0.1444	-0.0156
12XY	0.0000	0.0000	-0.4887	0.0000	0.0000	0.4887	0.0018	0.1403	-0.0146
12Y	0.0000	0.2063	-0.4887	0.0000	-0.2063	0.4887	0.0061	0.1401	-0.0005
13X	0.0000	0.1690	-1.1519	0.0000	-0.1690	1.1519	0.0017	0.1330	-0.0158
13XY	0.0000	0.0000	-0.5779	0.0000	0.0000	0.5779	0.0009	0.1284	-0.0147
13Y	0.0000	0.2535	-0.5779	0.0000	-0.2535	0.5779	0.0055	0.1283	0.0002

14X	0.0000	0.2330	-1.3477	0.0000	-0.2330	1.3477	0.0008	0.1207	-0.0157
14XY	0.0000	0.0000	-0.6577	0.0000	0.0000	0.6577	-0.0001	0.1156	-0.0146
14Y	0.0000	0.2911	-0.6577	0.0000	-0.2911	0.6577	0.0050	0.1155	0.0008
15X	0.0000	0.1810	-1.3240	0.0000	-0.1810	1.3240	-0.0001	0.1089	-0.0156
15XY	0.0000	0.0000	-0.7070	0.0000	0.0000	0.7070	-0.0010	0.1035	-0.0144
15Y	0.0000	0.3074	-0.7070	0.0000	-0.3074	0.7070	0.0044	0.1033	0.0013
16X	0.0000	0.2490	-1.4815	0.0000	-0.2490	1.4815	-0.0011	0.0983	-0.0153
16XY	0.0000	0.0000	-0.7455	0.0000	0.0000	0.7455	-0.0018	0.0925	-0.0141
16Y	0.0000	0.3188	-0.7455	0.0000	-0.3188	0.7455	0.0039	0.0924	0.0016
17X	0.0000	0.0000	-0.7846	0.0000	0.0000	0.7846	-0.0018	0.0886	-0.0148
17XY	0.0000	0.0000	-0.7846	0.0000	0.0000	0.7846	-0.0026	0.0826	-0.0136
17Y	0.0000	0.3305	-0.7846	0.0000	-0.3305	0.7846	0.0035	0.0825	0.0019
18X	0.0000	0.4420	-2.7384	-0.0000	-0.4420	2.7384	-0.0027	0.0800	-0.0143
18XY	0.0000	0.0000	-1.3474	-0.0000	0.0000	1.3474	-0.0032	0.0737	-0.0130
18Y	0.0000	0.5059	-1.3474	-0.0000	-0.5059	1.3474	0.0031	0.0735	0.0020
19X	0.0000	0.4380	-3.0981	-0.0000	-0.4380	3.0981	-0.0036	0.0640	-0.0128
19XY	0.0000	0.0000	-1.7251	-0.0000	0.0000	1.7251	-0.0046	0.0571	-0.0116
19Y	0.0000	0.6304	-1.7251	-0.0000	-0.6304	1.7251	0.0023	0.0578	0.0020
20X	0.0000	0.4260	-3.3581	-0.0000	-0.4260	3.3581	-0.0046	0.0462	-0.0114
20XY	0.0000	0.0000	-2.0231	-0.0000	0.0000	2.0231	-0.0052	0.0400	-0.0101
20Y	0.0000	0.6379	-2.0231	-0.0000	-0.6379	2.0231	0.0015	0.0411	0.0022
21X	0.0000	0.5140	-4.2158	-0.0000	-0.5140	4.2158	-0.0055	0.0300	-0.0097
21XY	0.0000	0.0000	-2.6038	-0.0000	0.0000	2.6038	-0.0056	0.0254	-0.0083
21Y	0.0000	0.7578	-2.6038	-0.0000	-0.7578	2.6038	0.0010	0.0267	0.0021
22X	0.0000	0.5030	-4.4394	0.0000	-0.5030	4.4394	-0.0007	0.0101	-0.0059
22XY	0.0000	0.0000	-2.8624	-0.0000	0.0000	2.8624	-0.0013	0.0085	-0.0054
22Y	0.0000	0.7610	-2.8624	-0.0000	-0.7610	2.8624	0.0007	0.0089	0.0018
23X	0.0000	0.0000	-0.6738	0.0000	0.0000	0.6738	-0.0006	-0.0048	-0.0042
24Y	0.0000	0.0000	-0.6738	0.0000	0.0000	0.6738	0.0013	0.0025	-0.0015
25X	0.0000	0.4310	-2.8945	0.0000	-0.4310	2.8945	-0.0007	0.0035	-0.0032
25XY	0.0000	0.0000	-1.5815	-0.0000	0.0000	1.5815	-0.0006	0.0025	-0.0029
25Y	0.0000	0.3967	-1.5815	0.0000	-0.3967	1.5815	0.0003	0.0026	0.0011
26X	0.0000	0.0000	-0.8267	11.8188	14.1044	-104.1718	0.0000	0.0000	0.0000
26XY	0.0000	0.0000	-0.8267	-12.4556	12.2847	-96.8661	0.0000	0.0000	0.0000
26Y	0.0000	0.2375	-0.8267	4.7200	4.9000	39.6037	0.0000	0.0000	0.0000

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.
23P	23Y	Long only	-0.33	-0.17	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23X	23XY	Long only	-0.07	-0.20	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23XY	23X	Long only	-0.20	-0.07	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23Y	23P	Long only	-0.17	-0.33	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
25P	25Y	Long only	-0.43	-0.30	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
25Y	25P	Long only	-0.30	-0.43	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
27P	27Y	Long only	-1.08	-0.75	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
27Y	27P	Long only	-0.75	-1.08	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
29P	29Y	Long only	-0.79	-0.57	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
29Y	29P	Long only	-0.57	-0.79	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
31P	31Y	Long only	-1.09	-0.64	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
31Y	31P	Long only	-0.64	-1.09	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33P	33Y	Long only	-2.24	-1.92	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33Y	33P	Long only	-1.92	-2.24	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
35P	35Y	Short only	-1.10	0.08	32.90	0.767	0.535	0.535	114.00	115.50	2	31.38	1.000	119.39	119.70	3

37X	37XY	Short only	-0.02	-0.46	27.12	0.768	0.536	0.536	134.05	130.75	5	26.46	1.000	140.13	132.38	6
37XY	37X	Short only	-0.46	-0.02	27.12	0.768	0.536	0.536	134.05	130.75	5	26.46	1.000	140.13	132.38	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.349	50.00	50.00	4.70
2	2.281	50.00	50.00	4.56
3	3.830	50.00	50.00	7.66
4	3.779	50.00	50.00	7.56
5	3.857	50.00	50.00	7.71
6	3.806	50.00	50.00	7.61
7	3.830	50.00	50.00	7.66
8	3.779	50.00	50.00	7.56
9	0.315	50.00	50.00	0.63
10	0.457	50.00	50.00	0.91
11	0.516	50.00	50.00	1.03
12	0.530	50.00	50.00	1.06
13	0.719	50.00	50.00	1.44
14	0.811	50.00	50.00	1.62
15	1.439	50.00	50.00	2.88
16	1.837	50.00	50.00	3.67
17	2.121	50.00	50.00	4.24
18	2.712	50.00	50.00	5.42
19	2.962	50.00	50.00	5.92
20	1.631	50.00	50.00	3.26
21	0.719	50.00	50.00	1.44
22	0.811	50.00	50.00	1.62
23	2.104	50.00	50.00	4.21
24	2.472	50.00	50.00	4.94
25	2.734	50.00	50.00	5.47
26	3.446	50.00	50.00	6.89
27	3.683	50.00	50.00	7.37
28	1.920	50.00	50.00	3.84
29	0.658	50.00	50.00	1.32
30	1.177	50.00	50.00	2.35
31	0.406	50.00	50.00	0.81
32	0.406	50.00	50.00	0.81
33	0.851	50.00	50.00	1.70
34	0.297	50.00	50.00	0.59
35	0.332	50.00	50.00	0.66
37	1.499	50.00	50.00	3.00
38	1.660	50.00	50.00	3.32
39	2.011	50.00	50.00	4.02
40	1.085	50.00	50.00	2.17
41	1.031	50.00	50.00	2.06
42	1.167	50.00	50.00	2.33
43	1.117	50.00	50.00	2.23
44	1.227	50.00	50.00	2.45
45	1.164	50.00	50.00	2.33
46	1.411	50.00	50.00	2.82
47	1.336	50.00	50.00	2.67
48	2.774	50.00	50.00	5.55

49	3.129	50.00	50.00	6.26
50	3.385	50.00	50.00	6.77
51	4.247	50.00	50.00	8.49
52	4.468	50.00	50.00	8.94
53	2.926	50.00	50.00	5.85
54	1.144	50.00	50.00	2.29
55	1.086	50.00	50.00	2.17
56	1.368	50.00	50.00	2.74
57	1.502	50.00	50.00	3.00

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 9

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	-0.2906	0.6061	0.02124	-0.3019	-0.1750	0.1409	3.334	-3.019	190
2P	-0.2702	0.5971	0.05463	-0.3039	-0.1753	0.1409	-0.2702	-11.4	190.1
3P	-0.272	0.5741	0.02123	-0.3072	-0.1783	0.1381	3.353	-3.051	184
4P	-0.2531	0.5422	0.021	-0.3016	-0.1785	0.1352	3.372	-3.083	178
5P	-0.2383	0.5338	0.04319	-0.2930	-0.1718	0.1344	-0.2383	-9.466	178
6P	-0.2343	0.5101	0.02032	-0.3054	-0.1815	0.1288	3.391	-3.115	172
7P	-0.2154	0.4789	0.01962	-0.2893	-0.1719	0.1267	3.41	-3.146	166
8P	-0.1973	0.4709	0.05159	-0.2856	-0.1623	0.1241	-0.1973	-11.53	166.1
9P	-0.1978	0.449	0.0184	-0.2860	-0.1706	0.1227	3.427	-3.176	160
10P	-0.1802	0.4199	0.01662	-0.2579	-0.1491	0.1186	3.445	-3.205	154
11P	-0.1667	0.4122	0.03781	-0.2737	-0.1397	0.1249	-0.1667	-9.588	154
12P	-0.1666	0.3985	0.0183	-0.2378	-0.1328	0.1141	3.931	-3.7	148.8
13P	-0.1501	0.373	0.01988	-0.2287	-0.1292	0.1086	4.534	-4.311	142.3
14P	-0.1324	0.3448	0.02107	-0.2092	-0.1146	0.1020	5.235	-5.022	134.7
15P	-0.1154	0.3181	0.02185	-0.1900	-0.1051	0.0961	5.973	-5.77	126.7
16P	-0.09999	0.2933	0.02201	-0.1795	-0.0928	0.0891	6.708	-6.515	118.7
17P	-0.08628	0.2703	0.02185	-0.1542	-0.0846	0.0843	7.443	-7.259	110.7
18P	-0.07348	0.2508	0.02106	-0.1484	-0.0762	0.0776	8.177	-7.999	102.7
19P	-0.0518	0.2032	0.02001	-0.1748	-0.0588	0.0611	9.7	-9.549	86.02
20P	-0.03402	0.1558	0.01838	-0.1566	-0.0475	0.0500	11.21	-11.08	69.52
21P	-0.02118	0.1131	0.0155	-0.1523	-0.0324	0.0252	12.66	-12.57	53.52
22P	-0.008657	0.05773	0.01004	-0.0792	-0.0288	-0.0218	14.79	-14.74	30.01
23P	-0.001365	0.136	-0.007381	-0.1129	-0.0060	0.0158	-0.001365	-16.01	14.99
24P	-0.01566	0.03471	-0.0129	0.0423	-0.0313	0.0833	16.13	0.03471	14.99
25P	-0.001744	0.03474	0.004692	-0.1331	-0.0221	-0.0948	16.15	-16.12	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	-0.3088	0.6062	-0.01611	-0.3020	-0.1791	0.1468	3.316	4.231	190
1XY	-0.3087	0.5874	-0.03804	-0.3001	-0.1763	0.1474	-3.934	4.212	190
1Y	-0.2905	0.5877	-0.0007816	-0.3010	-0.1779	0.1413	-3.916	-3.037	190
2X	-0.3309	0.5968	-0.07201	-0.3092	-0.1739	0.1536	-0.3309	12.6	189.9
3X	-0.29	0.5742	-0.01586	-0.3067	-0.1791	0.1448	3.335	4.199	184
3XY	-0.29	0.5557	-0.03782	-0.3058	-0.1798	0.1455	-3.915	4.181	184
3Y	-0.2718	0.5559	-0.000718	-0.3025	-0.1768	0.1397	-3.897	-3.069	184
4X	-0.271	0.5423	-0.01552	-0.3035	-0.1840	0.1428	3.354	4.167	178
4XY	-0.271	0.524	-0.03724	-0.2963	-0.1808	0.1435	-3.896	4.149	178
4Y	-0.2531	0.5244	-0.0006909	-0.3033	-0.1811	0.1381	-3.878	-3.101	178
5X	-0.2878	0.5332	-0.06077	-0.3120	-0.1688	0.1541	-0.2878	10.53	177.9
6X	-0.2514	0.5101	-0.01502	-0.3025	-0.1812	0.1352	3.374	4.135	172
6XY	-0.2516	0.493	-0.03616	-0.3068	-0.1848	0.1365	-3.877	4.118	172
6Y	-0.2338	0.4922	-0.000709	-0.2938	-0.1771	0.1345	-3.859	-3.133	172
7X	-0.2324	0.4789	-0.01458	-0.2948	-0.1816	0.1328	3.393	4.104	166
7XY	-0.2325	0.4614	-0.03509	-0.2876	-0.1758	0.1342	-3.858	4.086	166
7Y	-0.2154	0.4619	-0.0007485	-0.2929	-0.1771	0.1334	-3.84	-3.163	166
8X	-0.2542	0.4702	-0.06973	-0.3132	-0.1618	0.1546	-0.2542	12.47	165.9
9X	-0.2135	0.4483	-0.01405	-0.2838	-0.1696	0.1269	3.411	4.073	160
9XY	-0.2143	0.4323	-0.03353	-0.2823	-0.1754	0.1292	-3.839	4.057	160
9Y	-0.1969	0.431	-0.0008608	-0.2809	-0.1662	0.1322	-3.822	-3.194	160
10X	-0.1965	0.4201	-0.01339	-0.2598	-0.1634	0.1209	3.429	4.045	154
10XY	-0.1962	0.403	-0.03138	-0.2605	-0.1563	0.1242	-3.821	4.028	154
10Y	-0.1804	0.4035	-0.001087	-0.2591	-0.1545	0.1312	-3.805	-3.222	154

11X	-0.2121	0.4117	-0.05426	-0.2958	-0.1423	0.1496	-0.2121	10.41	153.9
12X	-0.1825	0.3979	-0.01362	-0.2491	-0.1575	0.1159	3.916	4.496	148.8
12XY	-0.1837	0.3796	-0.03283	-0.2387	-0.1428	0.1201	-4.282	4.478	148.8
12Y	-0.1655	0.3788	-0.0004137	-0.2532	-0.1461	0.1274	-4.263	-3.719	148.8
13X	-0.1671	0.372	-0.01388	-0.2283	-0.1371	0.1114	4.517	5.056	142.3
13XY	-0.1685	0.3513	-0.03405	-0.2302	-0.1369	0.1157	-4.853	5.035	142.3
13Y	-0.1488	0.3505	0.0002488	-0.2276	-0.1289	0.1204	-4.833	-4.334	142.3
14X	-0.151	0.3442	-0.01403	-0.2112	-0.1244	0.1046	5.216	5.711	134.7
14XY	-0.1526	0.3209	-0.03466	-0.2055	-0.1188	0.1101	-5.52	5.688	134.7
14Y	-0.1309	0.3199	0.0007867	-0.2107	-0.1184	0.1143	-5.498	-5.047	134.7
15X	-0.1361	0.317	-0.01416	-0.1944	-0.1054	0.0985	5.952	6.405	126.7
15XY	-0.1378	0.2918	-0.03478	-0.1895	-0.1078	0.1049	-6.226	6.38	126.7
15Y	-0.1139	0.2907	0.001175	-0.1855	-0.1048	0.1072	-6.202	-5.797	126.7
16X	-0.1235	0.2925	-0.01414	-0.1740	-0.0972	0.0918	6.685	7.101	118.7
16XY	-0.1246	0.2651	-0.03421	-0.1649	-0.0899	0.0995	-6.933	7.073	118.7
16Y	-0.09873	0.2647	0.00129	-0.1735	-0.0956	0.1017	-6.907	-6.543	118.7
17X	-0.1118	0.2703	-0.01392	-0.1610	-0.0774	0.0860	7.417	7.799	110.7
17XY	-0.114	0.2421	-0.0331	-0.1495	-0.0788	0.0947	-7.643	7.771	110.7
17Y	-0.08479	0.2403	0.001344	-0.1468	-0.0847	0.0950	-7.614	-7.289	110.7
18X	-0.1034	0.2485	-0.01386	-0.1701	-0.0731	0.0768	8.147	8.499	102.7
18XY	-0.1031	0.219	-0.03181	-0.1625	-0.0895	0.0904	-8.353	8.469	102.7
18Y	-0.07268	0.2204	0.001028	-0.1383	-0.0753	0.0900	-8.323	-8.03	102.7
19X	-0.0784	0.1973	-0.01284	-0.1766	-0.0943	0.0573	9.674	9.949	85.99
19XY	-0.07673	0.1671	-0.02943	-0.1583	-0.0901	0.0812	-9.829	9.919	85.97
19Y	-0.05005	0.1711	0.001578	-0.1626	-0.0613	0.0844	-9.802	-9.581	86
20X	-0.05657	0.1514	-0.01146	-0.1542	-0.0684	0.0457	11.18	11.39	69.49
20XY	-0.05558	0.1237	-0.026	-0.1289	-0.0661	0.0725	-11.3	11.36	69.47
20Y	-0.03299	0.1265	0.001974	-0.1327	-0.0463	0.0742	-11.27	-11.11	69.5
21X	-0.03968	0.1078	-0.009946	-0.1612	-0.0645	0.0177	12.64	12.79	53.49
21XY	-0.03872	0.08536	-0.0215	-0.1281	-0.0645	0.0690	-12.72	12.77	53.48
21Y	-0.01982	0.08875	0.001921	-0.1261	-0.0348	0.0698	-12.7	-12.59	53.5
22X	-0.0183	0.05202	-0.006689	-0.0628	-0.0167	-0.0289	14.78	14.85	29.99
22XY	-0.0177	0.03906	-0.01372	-0.0438	-0.0243	0.0786	-14.82	14.84	29.99
22Y	-0.006667	0.04238	0.001501	-0.0557	-0.0201	0.0749	-14.81	-14.76	30
23X	-0.01385	0.13	-0.003688	-0.1004	0.0153	0.0180	-0.01385	16.28	15
24Y	0.0006526	0.02617	-0.01524	0.0284	-0.0271	-0.0296	-16.15	0.02617	14.98
25X	-0.01403	0.03493	-0.003027	-0.1185	-0.0410	-0.1082	16.14	16.18	15
25XY	-0.0134	0.02619	-0.005883	-0.0819	-0.0508	0.1290	-16.16	16.18	14.99
25Y	-0.0009803	0.02622	6.251e-005	-0.0950	-0.0031	0.1219	-16.15	-16.12	15
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	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 %
26P	28.82	0.0	-49.62	0.0	0.0	253.63	0.0	0.0	260.04	0.0	10.06	0.0	0.2	0.0	0.0	2.25	0.0	0.0
26X	-10.82	0.0	-14.01	0.0	0.0	-137.58	0.0	0.0	138.72	0.0	10.77	0.0	4.5	0.0	0.0	2.87	0.0	0.0
26XY	24.24	0.0	-25.29	0.0	0.0	-267.67	0.0	0.0	269.95	0.0	7.96	0.0	4.5	0.0	0.0	-2.33	0.0	0.0
26Y	-10.63	0.0	-21.99	0.0	0.0	80.49	0.0	0.0	84.11	0.0	7.72	0.0	-0.3	0.0	0.0	-2.48	0.0	0.0

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

Joint Label	X External Load	Y External Load	Z External Load	X Member Force	Y Member Force	Z Member Force	X Disp.	Y Disp.	Z Disp.

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0070	2.0326	0.2662	-0.0070	-2.0326	-0.2662	-0.2906	0.6061	0.0212
2P	-2.7390	1.9766	-0.5648	2.7390	-1.9766	0.5648	-0.2702	0.5971	0.0546
3P	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2720	0.5741	0.0212
4P	-0.0070	0.7036	-0.8788	0.0070	-0.7036	0.8788	-0.2531	0.5422	0.0210
5P	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.2383	0.5338	0.0432
6P	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2343	0.5101	0.0203
7P	0.0000	0.7056	-0.4248	-0.0000	-0.7056	0.4248	-0.2154	0.4789	0.0196
8P	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.1973	0.4709	0.0516
9P	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.1978	0.4490	0.0184
10P	0.0000	1.4116	-1.0104	-0.0000	-1.4116	1.0104	-0.1802	0.4199	0.0166
11P	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.1667	0.4122	0.0378
12P	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1666	0.3985	0.0183
13P	0.0000	1.1110	-0.8036	-0.0000	-1.1110	0.8036	-0.1501	0.3730	0.0199
14P	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1324	0.3448	0.0211
15P	0.0000	1.1400	-0.8216	-0.0000	-1.1400	0.8216	-0.1154	0.3181	0.0218
16P	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1000	0.2933	0.0220
17P	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0863	0.2703	0.0219
18P	0.0000	1.1590	-0.8306	0.0000	-1.1590	0.8306	-0.0735	0.2508	0.0211
19P	0.0000	1.1390	-0.8186	-0.0000	-1.1390	0.8186	-0.0518	0.2032	0.0200
20P	0.0000	2.0443	-1.8542	-0.0000	-2.0443	1.8542	-0.0340	0.1558	0.0184
21P	0.0000	1.4713	-1.3405	-0.0000	-1.4713	1.3405	-0.0212	0.1131	0.0155
22P	0.0000	1.4603	-1.3355	-0.0000	-1.4603	1.3355	-0.0087	0.0577	0.0100
23P	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0014	0.1360	-0.0074
24P	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0157	0.0347	-0.0129
25P	0.0000	1.1383	-1.1615	-0.0000	-1.1383	1.1615	-0.0017	0.0347	0.0047
26P	0.0000	0.9243	-1.0445	-28.8244	48.6937	254.6743	0.0000	0.0000	0.0000
1X	-0.0070	2.0326	-1.5848	0.0070	-2.0326	1.5848	-0.3088	0.6062	-0.0161
1XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.3087	0.5874	-0.0380
1Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2905	0.5877	-0.0008
2X	-2.7390	1.9766	-0.5648	2.7390	-1.9766	0.5648	-0.3309	0.5968	-0.0720
3X	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2900	0.5742	-0.0159
3XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2900	0.5557	-0.0378
3Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2718	0.5559	-0.0007
4X	0.0070	1.2696	-0.7398	-0.0070	-1.2696	0.7398	-0.2710	0.5423	-0.0155
4XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2710	0.5240	-0.0372
4Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2531	0.5244	-0.0007
5X	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.2878	0.5332	-0.0608
6X	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2514	0.5101	-0.0150
6XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2516	0.4930	-0.0362
6Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2338	0.4922	-0.0007
7X	0.0000	0.7056	-0.4248	-0.0000	-0.7056	0.4248	-0.2324	0.4789	-0.0146
7XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2325	0.4614	-0.0351
7Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2154	0.4619	-0.0007
8X	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.2542	0.4702	-0.0697
9X	0.0000	1.2646	-0.4138	-0.0000	-1.2646	0.4138	-0.2135	0.4483	-0.0140
9XY	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.2143	0.4323	-0.0335
9Y	0.0000	0.3466	-0.2318	-0.0000	-0.3466	0.2318	-0.1969	0.4310	-0.0009
10X	0.0000	1.4116	-1.0104	-0.0000	-1.4116	1.0104	-0.1965	0.4201	-0.0134
10XY	0.0000	1.0076	-0.7934	-0.0000	-1.0076	0.7934	-0.1962	0.4030	-0.0314
10Y	0.0000	1.0076	-0.7934	-0.0000	-1.0076	0.7934	-0.1804	0.4035	-0.0011
11X	-4.3560	4.0846	-1.1808	4.3560	-4.0846	1.1808	-0.2121	0.4117	-0.0543
12X	0.0000	1.4530	-0.7186	-0.0000	-1.4530	0.7186	-0.1825	0.3979	-0.0136
12XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1837	0.3796	-0.0328
12Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1655	0.3788	-0.0004
13X	0.0000	1.1110	-0.8036	-0.0000	-1.1110	0.8036	-0.1671	0.3720	-0.0139
13XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1685	0.3513	-0.0341
13Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1488	0.3505	0.0002

14X	0.0000	1.6040	-0.7486	-0.0000	-1.6040	0.7486	-0.1510	0.3442	-0.0140
14XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1526	0.3209	-0.0347
14Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1309	0.3199	0.0008
15X	0.0000	1.1400	-0.8216	-0.0000	-1.1400	0.8216	-0.1361	0.3170	-0.0142
15XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1378	0.2918	-0.0348
15Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1139	0.2907	0.0012
16X	0.0000	1.6670	-0.7616	-0.0000	-1.6670	0.7616	-0.1235	0.2925	-0.0141
16XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1246	0.2651	-0.0342
16Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0987	0.2647	0.0013
17X	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1118	0.2703	-0.0139
17XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.1140	0.2421	-0.0331
17Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0848	0.2403	0.0013
18X	0.0000	2.1870	-1.0346	0.0000	-2.1870	1.0346	-0.1034	0.2485	-0.0139
18XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	-0.1031	0.2190	-0.0318
18Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0727	0.2204	0.0010
19X	0.0000	2.1830	-1.0256	-0.0000	-2.1830	1.0256	-0.0784	0.1973	-0.0128
19XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0767	0.1671	-0.0294
19Y	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	-0.0501	0.1711	0.0016
20X	0.0000	3.0663	-2.0572	-0.0000	-3.0663	2.0572	-0.0566	0.1514	-0.0115
20XY	0.0000	1.5853	-1.6062	-0.0000	-1.5853	1.6062	-0.0556	0.1237	-0.0260
20Y	0.0000	1.5853	-1.6062	-0.0000	-1.5853	1.6062	-0.0330	0.1265	0.0020
21X	0.0000	2.7133	-1.5865	-0.0000	-2.7133	1.5865	-0.0397	0.1078	-0.0099
21XY	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0387	0.0854	-0.0215
21Y	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0198	0.0888	0.0019
22X	0.0000	2.6703	-1.5755	-0.0000	-2.6703	1.5755	-0.0183	0.0520	-0.0067
22XY	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0177	0.0391	-0.0137
22Y	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0067	0.0424	0.0015
23X	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0138	0.1300	-0.0037
24Y	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	0.0007	0.0262	-0.0152
25X	0.0000	2.5533	-1.4425	-0.0000	-2.5533	1.4425	-0.0140	0.0349	-0.0030
25XY	0.0000	0.9243	-1.0445	-0.0000	-0.9243	1.0445	-0.0134	0.0262	-0.0059
25Y	0.0000	0.9243	-1.0445	0.0000	-0.9243	1.0445	-0.0010	0.0262	0.0001
26X	0.0000	0.9243	-1.0445	10.8220	13.0830	-136.5374	0.0000	0.0000	0.0000
26XY	0.0000	0.9243	-1.0445	-24.2367	24.3666	-266.6227	0.0000	0.0000	0.0000
26Y	0.0000	0.9243	-1.0445	10.6253	21.0675	81.5301	0.0000	0.0000	0.0000

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	3.425	50.00	50.00	6.85
2	3.425	50.00	50.00	6.85
3	6.087	50.00	50.00	12.17
4	6.087	50.00	50.00	12.17
5	6.087	50.00	50.00	12.17
6	6.087	50.00	50.00	12.17
7	6.087	50.00	50.00	12.17
8	6.087	50.00	50.00	12.17
9	0.417	50.00	50.00	0.83
10	0.417	50.00	50.00	0.83
11	0.417	50.00	50.00	0.83
12	0.867	50.00	50.00	1.73
13	0.867	50.00	50.00	1.73
14	0.867	50.00	50.00	1.73

15	0.867	50.00	50.00	1.73
16	0.867	50.00	50.00	1.73
17	2.257	50.00	50.00	4.51
18	1.395	50.00	50.00	2.79
19	1.395	50.00	50.00	2.79
20	1.395	50.00	50.00	2.79
21	0.867	50.00	50.00	1.73
22	0.867	50.00	50.00	1.73
23	1.426	50.00	50.00	2.85
24	1.403	50.00	50.00	2.81
25	2.760	50.00	50.00	5.52
26	1.990	50.00	50.00	3.98
27	1.979	50.00	50.00	3.96
28	1.626	50.00	50.00	3.25
29	0.867	50.00	50.00	1.73
30	2.050	50.00	50.00	4.10
31	0.417	50.00	50.00	0.83
32	0.417	50.00	50.00	0.83
33	0.867	50.00	50.00	1.73
34	0.417	50.00	50.00	0.83
35	0.417	50.00	50.00	0.83
37	2.577	50.00	50.00	5.15
38	1.126	50.00	50.00	2.25
39	1.469	50.00	50.00	2.94
40	0.824	50.00	50.00	1.65
41	0.824	50.00	50.00	1.65
42	1.736	50.00	50.00	3.47
43	1.736	50.00	50.00	3.47
44	1.371	50.00	50.00	2.74
45	1.371	50.00	50.00	2.74
46	1.405	50.00	50.00	2.81
47	1.405	50.00	50.00	2.81
48	2.419	50.00	50.00	4.84
49	2.412	50.00	50.00	4.82
50	3.692	50.00	50.00	7.38
51	3.143	50.00	50.00	6.29
52	3.100	50.00	50.00	6.20
53	2.933	50.00	50.00	5.87
54	1.331	50.00	50.00	2.66
55	1.621	50.00	50.00	3.24
56	1.770	50.00	50.00	3.54
57	1.833	50.00	50.00	3.67

*** Analysis Results for Load Case No. 3 "NESX Heavy Broken Wire" - Number of iterations in SAPS 10

Equilibrium Joint Positions and Rotations for Load Case "NESX Heavy Broken Wire":

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	-0.446	0.1578	0.01397	-0.1056	-0.3080	-0.8140	3.179	-3.467	190
2P	-0.57	0.2113	0.01112	-0.1104	-0.2899	-0.8650	-0.57	-11.79	190
3P	-0.4136	0.1469	0.01403	-0.0919	-0.3133	-0.7819	3.211	-3.478	184
4P	-0.3804	0.1372	0.01359	-0.0774	-0.3311	-0.7497	3.245	-3.488	178
5P	-0.472	0.1878	0.007364	-0.1039	-0.2556	-0.8518	-0.472	-9.812	178
6P	-0.3438	0.1314	0.01281	-0.0462	-0.3518	-0.6479	3.281	-3.494	172
7P	-0.3085	0.1251	0.01203	-0.0618	-0.3174	-0.6157	3.317	-3.5	166
8P	-0.4013	0.166	0.01362	-0.1332	-0.2323	-0.6468	-0.4013	-11.83	166
9P	-0.2769	0.1186	0.01084	-0.0662	-0.2929	-0.5737	3.348	-3.506	160
10P	-0.2478	0.1107	0.009144	-0.0575	-0.2577	-0.5317	3.377	-3.514	154
11P	-0.3084	0.1453	0.003613	-0.0683	-0.1933	-0.5520	-0.3084	-9.855	154
12P	-0.2298	0.1024	0.0102	-0.0351	-0.2361	-0.5053	3.868	-3.996	148.8
13P	-0.2091	0.09239	0.01115	-0.0400	-0.2167	-0.4746	4.475	-4.592	142.3
14P	-0.1873	0.08163	0.01183	-0.0333	-0.1932	-0.4376	5.18	-5.285	134.7
15P	-0.1671	0.07142	0.0123	-0.0317	-0.1701	-0.4021	5.921	-6.017	126.7
16P	-0.1494	0.0619	0.01238	-0.0273	-0.1549	-0.3657	6.659	-6.746	118.7
17P	-0.1331	0.05366	0.01232	-0.0248	-0.1325	-0.3324	7.396	-7.475	110.7
18P	-0.1199	0.04583	0.01187	-0.0230	-0.1221	-0.2980	8.13	-8.204	102.7
19P	-0.08825	0.03305	0.01152	-0.0163	-0.1300	-0.2280	9.664	-9.719	86.01
20P	-0.0594	0.02247	0.01084	-0.0167	-0.1016	-0.1663	11.18	-11.22	69.51
21P	-0.03736	0.01459	0.009271	-0.0108	-0.0797	-0.1223	12.64	-12.67	53.51
22P	-0.01292	0.006511	0.006236	-0.0114	-0.0517	-0.0840	14.79	-14.79	30.01
23P	-0.003452	0.06527	-0.005418	-0.0344	-0.0039	-0.0073	-0.003452	-16.08	14.99
24P	0.002303	0.001323	0.001782	-0.0038	-0.0039	-0.0128	16.15	0.001323	15
25P	-0.003621	0.001486	0.003501	-0.0051	-0.0310	-0.0855	16.15	-16.15	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	-0.3416	0.1575	0.000508	-0.1070	-0.2834	-0.7996	3.283	3.783	190
1XY	-0.3407	0.2619	-0.03522	-0.1091	-0.2818	-0.8003	-3.966	3.887	190
1Y	-0.4451	0.263	-0.02271	-0.1086	-0.3098	-0.8131	-4.07	-3.362	190
2X	-0.221	0.2091	-0.03422	-0.1243	-0.2822	-0.8339	-0.221	12.21	190
3X	-0.3123	0.1466	0.0006371	-0.0915	-0.2851	-0.7662	3.313	3.772	184
3XY	-0.3115	0.2494	-0.03501	-0.1242	-0.2849	-0.7683	-3.936	3.874	184
3Y	-0.4127	0.2504	-0.0226	-0.1161	-0.3124	-0.7795	-4.038	-3.375	184
4X	-0.2826	0.137	0.0008718	-0.0809	-0.2800	-0.7328	3.342	3.762	178
4XY	-0.282	0.2355	-0.03449	-0.1201	-0.2790	-0.7363	-3.907	3.86	178
4Y	-0.3796	0.2368	-0.0221	-0.1378	-0.3352	-0.7460	-4.005	-3.388	178
5X	-0.1951	0.1855	-0.03052	-0.1381	-0.2942	-0.8054	-0.1951	10.19	178
6X	-0.2552	0.1308	0.0006978	-0.0499	-0.2578	-0.6350	3.37	3.756	172
6XY	-0.2547	0.2207	-0.03316	-0.1603	-0.2584	-0.6417	-3.88	3.846	172
6Y	-0.3429	0.2186	-0.02127	-0.1349	-0.3481	-0.6401	-3.968	-3.406	172
7X	-0.2287	0.1243	0.00036	-0.0660	-0.2483	-0.6041	3.396	3.749	166
7XY	-0.2283	0.2042	-0.03186	-0.1284	-0.2466	-0.6114	-3.853	3.829	166
7Y	-0.3081	0.2049	-0.02043	-0.1349	-0.3205	-0.6065	-3.933	-3.42	166
8X	-0.1355	0.1635	-0.02846	-0.0860	-0.2794	-0.6493	-0.1355	12.16	166
9X	-0.2038	0.1173	-0.0002831	-0.0622	-0.2333	-0.5607	3.421	3.742	160
9XY	-0.2037	0.1915	-0.03005	-0.1233	-0.2371	-0.5701	-3.829	3.817	160
9Y	-0.2761	0.1891	-0.01937	-0.1212	-0.2927	-0.5610	-3.901	-3.436	160
10X	-0.1807	0.1103	-0.0009877	-0.0627	-0.2006	-0.5173	3.444	3.735	154
10XY	-0.1803	0.1777	-0.02784	-0.1143	-0.1958	-0.5288	-3.805	3.803	154
10Y	-0.2476	0.1784	-0.01799	-0.1076	-0.2577	-0.5155	-3.873	-3.447	154

11X	-0.1201	0.1436	-0.02712	-0.1266	-0.2332	-0.5490	-0.1201	10.14	154
12X	-0.1601	0.1011	-0.0004679	-0.0487	-0.1702	-0.4887	3.938	4.199	148.8
12XY	-0.1603	0.1719	-0.0285	-0.1061	-0.1625	-0.5012	-4.258	4.27	148.8
12Y	-0.2292	0.1708	-0.01801	-0.1276	-0.2393	-0.4881	-4.327	-3.927	148.8
13X	-0.1369	0.09092	5.194e-005	-0.0420	-0.1539	-0.4558	4.547	4.775	142.3
13XY	-0.1373	0.164	-0.02897	-0.1075	-0.1524	-0.4685	-4.821	4.848	142.3
13Y	-0.2084	0.1628	-0.01794	-0.1033	-0.2152	-0.4583	-4.892	-4.521	142.3
14X	-0.1126	0.08026	0.0005224	-0.0383	-0.1364	-0.4179	5.254	5.447	134.7
14XY	-0.113	0.1555	-0.02903	-0.0930	-0.1321	-0.4308	-5.48	5.523	134.7
14Y	-0.1867	0.1543	-0.01774	-0.0988	-0.1920	-0.4210	-5.554	-5.213	134.7
15X	-0.08971	0.06998	0.0009536	-0.0337	-0.1192	-0.3809	5.998	6.158	126.7
15XY	-0.09025	0.1478	-0.02883	-0.0877	-0.1202	-0.3941	-6.178	6.236	126.7
15Y	-0.1665	0.1465	-0.01749	-0.0818	-0.1717	-0.3855	-6.255	-5.942	126.7
16X	-0.06952	0.06091	0.001276	-0.0316	-0.1086	-0.3447	6.738	6.869	118.7
16XY	-0.06963	0.1405	-0.02827	-0.0713	-0.1020	-0.3578	-6.878	6.949	118.7
16Y	-0.1485	0.1402	-0.01722	-0.0813	-0.1498	-0.3487	-6.957	-6.668	118.7
17X	-0.05083	0.05238	0.001612	-0.0276	-0.0964	-0.3104	7.478	7.581	110.7
17XY	-0.05184	0.1356	-0.02734	-0.0647	-0.0966	-0.3240	-7.581	7.665	110.7
17Y	-0.1332	0.1334	-0.01674	-0.0601	-0.1340	-0.3156	-7.662	-7.396	110.7
18X	-0.03563	0.04527	0.001777	-0.0235	-0.0670	-0.2745	8.214	8.295	102.7
18XY	-0.0347	0.1282	-0.02649	-0.0932	-0.0806	-0.2862	-8.285	8.378	102.7
18Y	-0.1182	0.1301	-0.01659	-0.0620	-0.1373	-0.2787	-8.368	-8.12	102.7
19X	-0.01665	0.03191	0.001565	-0.0217	-0.0310	-0.2068	9.735	9.784	86
19XY	-0.01422	0.1018	-0.02404	-0.1095	-0.0268	-0.2138	-9.766	9.854	85.98
19Y	-0.08442	0.1066	-0.01458	-0.1158	-0.1269	-0.2037	-9.836	-9.645	85.99
20X	-0.003863	0.02187	0.001274	-0.0186	-0.0256	-0.1459	11.24	11.26	69.5
20XY	-0.002461	0.07837	-0.02083	-0.0867	-0.0211	-0.1533	-11.24	11.32	69.48
20Y	-0.05715	0.08128	-0.01219	-0.0918	-0.0965	-0.1419	-11.3	-11.16	69.49
21X	0.003493	0.0139	0.0008814	-0.0164	-0.0033	-0.0958	12.68	12.69	53.5
21XY	0.004853	0.05731	-0.017	-0.0776	-0.0017	-0.1049	-12.68	12.74	53.48
21Y	-0.03512	0.06041	-0.009889	-0.0755	-0.0780	-0.0873	-12.72	-12.62	53.49
22X	0.006084	0.005551	0.0003083	-0.0147	-0.0203	-0.0423	14.81	14.81	30
22XY	0.00728	0.02844	-0.01054	-0.0799	-0.0147	-0.0526	-14.79	14.83	29.99
22Y	-0.01157	0.03128	-0.006	-0.0869	-0.0413	-0.0124	-14.81	-14.77	29.99
23X	0.0108	-0.001647	-0.009086	-0.0355	-0.0324	-0.0086	0.0108	16.15	14.99
24Y	0.005467	0.008143	0.0007507	0.0210	0.0062	-0.0423	-16.14	0.008143	15
25X	0.01063	0.001347	0.0006544	-0.0098	0.0232	-0.0149	16.16	16.15	15
25XY	0.01074	0.008114	-0.00648	-0.0611	0.0306	-0.0228	-16.14	16.16	14.99
25Y	-0.003315	0.008302	-0.002581	-0.0645	-0.0182	0.0423	-16.15	-16.14	15
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0

Joint Support Reactions for Load Case "NESX Heavy Broken Wire":

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 %
26P	14.52	0.0	-13.46	0.0	0.0	117.30	0.0	0.0	118.96	0.0	-0.11	0.0	0.7	0.0	0.0	1.33	0.0	0.0
26X	-1.54	0.0	-1.03	0.0	0.0	-12.64	0.0	0.0	12.77	0.0	0.17	0.0	-4.1	0.0	0.0	-0.10	0.0	0.0
26XY	12.24	0.0	-15.54	0.0	0.0	-174.60	0.0	0.0	175.72	0.0	1.15	0.0	-4.2	0.0	0.0	0.02	0.0	0.0
26Y	7.77	0.0	-4.20	0.0	0.0	-55.45	0.0	0.0	56.15	0.0	1.14	0.0	0.5	0.0	0.0	-0.71	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESX Heavy Broken Wire":

Joint Label	X External Load	Y External Load	Z External Load	X Member Force	Y Member Force	Z Member Force	X Disp.	Y Disp.	Z Disp.

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0140	0.4805	-1.0744	-0.0140	-0.4805	1.0744	-0.4460	0.1578	0.0140
2P	-13.2000	0.3814	-0.4934	13.2000	-0.3814	0.4934	-0.5700	0.2113	0.0111
3P	0.0000	0.2343	-0.3321	-0.0000	-0.2343	0.3321	-0.4136	0.1469	0.0140
4P	-0.0140	0.3222	-1.6283	0.0140	-0.3222	1.6283	-0.3804	0.1372	0.0136
5P	-19.8000	0.4721	-0.7282	19.8000	-0.4721	0.7282	-0.4720	0.1878	0.0074
6P	0.0000	0.2348	-0.3575	0.0000	-0.2348	0.3575	-0.3438	0.1314	0.0128
7P	0.0000	0.3615	-1.0225	-0.0000	-0.3615	1.0225	-0.3085	0.1251	0.0120
8P	0.0000	2.0881	-3.2424	-0.0000	-2.0881	3.2424	-0.4013	0.1660	0.0136
9P	0.0000	0.2508	-0.4505	-0.0000	-0.2508	0.4505	-0.2769	0.1186	0.0108
10P	0.0000	0.3697	-1.1064	-0.0000	-0.3697	1.1064	-0.2478	0.1107	0.0091
11P	0.0000	2.0881	-3.2112	-0.0000	-2.0881	3.2112	-0.3084	0.1453	0.0036
12P	0.0000	0.2063	-0.4887	-0.0000	-0.2063	0.4887	-0.2298	0.1024	0.0102
13P	0.0000	0.4225	-1.1519	-0.0000	-0.4225	1.1519	-0.2091	0.0924	0.0111
14P	0.0000	0.2911	-0.6577	-0.0000	-0.2911	0.6577	-0.1873	0.0816	0.0118
15P	0.0000	0.4884	-1.3240	-0.0000	-0.4884	1.3240	-0.1671	0.0714	0.0123
16P	0.0000	0.3188	-0.7455	-0.0000	-0.3188	0.7455	-0.1494	0.0619	0.0124
17P	0.0000	0.3305	-0.7846	-0.0000	-0.3305	0.7846	-0.1331	0.0537	0.0123
18P	0.0000	0.6939	-1.9864	-0.0000	-0.6939	1.9864	-0.1199	0.0458	0.0119
19P	0.0000	0.8104	-2.3351	-0.0000	-0.8104	2.3351	-0.0883	0.0330	0.0115
20P	0.0000	0.8109	-2.6111	-0.0000	-0.8109	2.6111	-0.0594	0.0225	0.0108
21P	0.0000	0.9648	-3.3078	-0.0000	-0.9648	3.3078	-0.0374	0.0146	0.0093
22P	0.0000	0.9640	-3.5544	-0.0000	-0.9640	3.5544	-0.0129	0.0065	0.0062
23P	0.0000	0.4449	-0.6738	-0.0000	-0.4449	0.6738	-0.0035	0.0653	-0.0054
24P	0.0000	0.0000	-0.6738	-0.0000	0.0000	0.6738	0.0023	0.0013	0.0018
25P	0.0000	0.4777	-1.8595	-0.0000	-0.4777	1.8595	-0.0036	0.0015	0.0035
26P	0.0000	0.2375	-0.8267	-14.5250	13.2205	118.1278	0.0000	0.0000	0.0000
1X	-0.0140	0.3770	-1.4504	0.0140	-0.3770	1.4504	-0.3416	0.1575	0.0005
1XY	0.0000	0.0000	-0.2974	-0.0000	0.0000	0.2974	-0.3407	0.2619	-0.0352
1Y	0.0000	0.1035	-0.2974	-0.0000	-0.1035	0.2974	-0.4451	0.2630	-0.0227
2X	0.0000	1.4660	-1.7474	-0.0000	-1.4660	1.7474	-0.2210	0.2091	-0.0342
3X	0.0000	0.0000	-0.3321	-0.0000	0.0000	0.3321	-0.3123	0.1466	0.0006
3XY	0.0000	0.0000	-0.3321	-0.0000	0.0000	0.3321	-0.3115	0.2494	-0.0350
3Y	0.0000	0.2343	-0.3321	-0.0000	-0.2343	0.3321	-0.4127	0.2504	-0.0226
4X	0.0140	0.2730	-1.9923	-0.0140	-0.2730	1.9923	-0.2826	0.1370	0.0009
4XY	0.0000	0.0000	-0.4163	-0.0000	0.0000	0.4163	-0.2820	0.2355	-0.0345
4Y	0.0000	0.1892	-0.4163	-0.0000	-0.1892	0.4163	-0.3796	0.2368	-0.0221
5X	0.0000	1.9930	-3.2112	-0.0000	-1.9930	3.2112	-0.1951	0.1855	-0.0305
6X	0.0000	0.0000	-0.3575	0.0000	0.0000	0.3575	-0.2552	0.1308	0.0007
6XY	0.0000	0.0000	-0.3575	0.0000	0.0000	0.3575	-0.2547	0.2207	-0.0332
6Y	0.0000	0.2348	-0.3575	0.0000	-0.2348	0.3575	-0.3429	0.2186	-0.0213
7X	0.0000	0.1340	-1.0225	-0.0000	-0.1340	1.0225	-0.2287	0.1243	0.0004
7XY	0.0000	0.0000	-0.5665	-0.0000	-0.0000	0.5665	-0.2283	0.2042	-0.0319
7Y	0.0000	0.2275	-0.5665	-0.0000	-0.2275	0.5665	-0.3081	0.2049	-0.0204
8X	0.0000	1.9930	-3.2424	-0.0000	-1.9930	3.2424	-0.1355	0.1635	-0.0285
9X	0.0000	0.2270	-1.1215	-0.0000	-0.2270	1.1215	-0.2038	0.1173	-0.0003
9XY	0.0000	0.0000	-0.4505	-0.0000	0.0000	0.4505	-0.2037	0.1915	-0.0301
9Y	0.0000	0.2508	-0.4505	-0.0000	-0.2508	0.4505	-0.2761	0.1891	-0.0194
10X	0.0000	0.1510	-1.1064	0.0000	-0.1510	1.1064	-0.1807	0.1103	-0.0010
10XY	0.0000	0.0000	-0.5924	-0.0000	0.0000	0.5924	-0.1803	0.1777	-0.0278
10Y	0.0000	0.2187	-0.5924	-0.0000	-0.2187	0.5924	-0.2476	0.1784	-0.0180
11X	0.0000	1.9930	-3.2112	-0.0000	-1.9930	3.2112	-0.1201	0.1436	-0.0271
12X	0.0000	0.1960	-1.0677	-0.0000	-0.1960	1.0677	-0.1601	0.1011	-0.0005
12XY	0.0000	0.0000	-0.4887	-0.0000	-0.0000	0.4887	-0.1603	0.1719	-0.0285
12Y	0.0000	0.2063	-0.4887	-0.0000	-0.2063	0.4887	-0.2292	0.1708	-0.0180
13X	0.0000	0.1690	-1.1519	-0.0000	-0.1690	1.1519	-0.1369	0.0909	0.0001
13XY	0.0000	0.0000	-0.5779	-0.0000	-0.0000	0.5779	-0.1373	0.1640	-0.0290
13Y	0.0000	0.2535	-0.5779	-0.0000	-0.2535	0.5779	-0.2084	0.1628	-0.0179

14X	0.0000	0.2330	-1.3477	-0.0000	-0.2330	1.3477	-0.1126	0.0803	0.0005
14XY	0.0000	0.0000	-0.6577	-0.0000	0.0000	0.6577	-0.1130	0.1555	-0.0290
14Y	0.0000	0.2911	-0.6577	-0.0000	-0.2911	0.6577	-0.1867	0.1543	-0.0177
15X	0.0000	0.1810	-1.3240	-0.0000	-0.1810	1.3240	-0.0897	0.0700	0.0010
15XY	0.0000	0.0000	-0.7070	-0.0000	0.0000	0.7070	-0.0902	0.1478	-0.0288
15Y	0.0000	0.3074	-0.7070	-0.0000	-0.3074	0.7070	-0.1665	0.1465	-0.0175
16X	0.0000	0.2490	-1.4815	-0.0000	-0.2490	1.4815	-0.0695	0.0609	0.0013
16XY	0.0000	0.0000	-0.7455	-0.0000	0.0000	0.7455	-0.0696	0.1405	-0.0283
16Y	0.0000	0.3188	-0.7455	-0.0000	-0.3188	0.7455	-0.1485	0.1402	-0.0172
17X	0.0000	0.0000	-0.7846	-0.0000	0.0000	0.7846	-0.0508	0.0524	0.0016
17XY	0.0000	0.0000	-0.7846	-0.0000	-0.0000	0.7846	-0.0518	0.1356	-0.0273
17Y	0.0000	0.3305	-0.7846	-0.0000	-0.3305	0.7846	-0.1332	0.1334	-0.0167
18X	0.0000	0.4420	-2.7384	-0.0000	-0.4420	2.7384	-0.0356	0.0453	0.0018
18XY	0.0000	0.0000	-1.3474	-0.0000	-0.0000	1.3474	-0.0347	0.1282	-0.0265
18Y	0.0000	0.5059	-1.3474	-0.0000	-0.5059	1.3474	-0.1182	0.1301	-0.0166
19X	0.0000	0.4380	-3.0981	-0.0000	-0.4380	3.0981	-0.0166	0.0319	0.0016
19XY	0.0000	0.0000	-1.7251	-0.0000	0.0000	1.7251	-0.0142	0.1018	-0.0240
19Y	0.0000	0.6304	-1.7251	-0.0000	-0.6304	1.7251	-0.0844	0.1066	-0.0146
20X	0.0000	0.4260	-3.3581	-0.0000	-0.4260	3.3581	-0.0039	0.0219	0.0013
20XY	0.0000	0.0000	-2.0231	-0.0000	0.0000	2.0231	-0.0025	0.0784	-0.0208
20Y	0.0000	0.6379	-2.0231	-0.0000	-0.6379	2.0231	-0.0571	0.0813	-0.0122
21X	0.0000	0.5140	-4.2158	-0.0000	-0.5140	4.2158	0.0035	0.0139	0.0009
21XY	0.0000	0.0000	-2.6038	-0.0000	0.0000	2.6038	0.0049	0.0573	-0.0170
21Y	0.0000	0.7578	-2.6038	-0.0000	-0.7578	2.6038	-0.0351	0.0604	-0.0099
22X	0.0000	0.5030	-4.4394	-0.0000	-0.5030	4.4394	0.0061	0.0056	0.0003
22XY	0.0000	0.0000	-2.8624	-0.0000	0.0000	2.8624	0.0073	0.0284	-0.0105
22Y	0.0000	0.7610	-2.8624	-0.0000	-0.7610	2.8624	-0.0116	0.0313	-0.0060
23X	0.0000	0.0000	-0.6738	-0.0000	0.0000	0.6738	0.0108	-0.0016	-0.0091
24Y	0.0000	0.0000	-0.6738	-0.0000	0.0000	0.6738	0.0055	0.0081	0.0008
25X	0.0000	0.4310	-2.8945	-0.0000	-0.4310	2.8945	0.0106	0.0013	0.0007
25XY	0.0000	0.0000	-1.5815	-0.0000	0.0000	1.5815	0.0107	0.0081	-0.0065
25Y	0.0000	0.3967	-1.5815	-0.0000	-0.3967	1.5815	-0.0033	0.0083	-0.0026
26X	0.0000	0.0000	-0.8267	1.5382	1.0302	-11.8104	0.0000	0.0000	0.0000
26XY	0.0000	0.0000	-0.8267	-12.2392	15.5363	-173.7726	0.0000	0.0000	0.0000
26Y	0.0000	0.2375	-0.8267	-7.7740	3.9657	-54.6244	0.0000	0.0000	0.0000

Crossing Diagonal Check for Load Case "NESX Heavy Broken Wire" (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.
23P	23Y	Long only	-0.10	-0.38	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23Y	23P	Long only	-0.38	-0.10	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
33P	33Y	Long only	-1.52	-2.23	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33Y	33P	Long only	-2.23	-1.52	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6

Summary of Clamp Capacities and Usages for Load Case "NESX Heavy Broken Wire":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	13.215	50.00	50.00	26.43

2	2.281	50.00	50.00	4.56
3	19.819	50.00	50.00	39.64
4	3.779	50.00	50.00	7.56
5	3.857	50.00	50.00	7.71
6	3.806	50.00	50.00	7.61
7	3.830	50.00	50.00	7.66
8	3.779	50.00	50.00	7.56
9	0.315	50.00	50.00	0.63
10	0.457	50.00	50.00	0.91
11	0.516	50.00	50.00	1.03
12	0.530	50.00	50.00	1.06
13	0.719	50.00	50.00	1.44
14	0.811	50.00	50.00	1.62
15	1.439	50.00	50.00	2.88
16	1.837	50.00	50.00	3.67
17	2.121	50.00	50.00	4.24
18	2.712	50.00	50.00	5.42
19	2.962	50.00	50.00	5.92
20	1.631	50.00	50.00	3.26
21	0.719	50.00	50.00	1.44
22	0.811	50.00	50.00	1.62
23	2.104	50.00	50.00	4.21
24	2.472	50.00	50.00	4.94
25	2.734	50.00	50.00	5.47
26	3.446	50.00	50.00	6.89
27	3.683	50.00	50.00	7.37
28	1.920	50.00	50.00	3.84
29	0.658	50.00	50.00	1.32
30	1.177	50.00	50.00	2.35
31	0.406	50.00	50.00	0.81
32	0.406	50.00	50.00	0.81
33	0.851	50.00	50.00	1.70
34	0.297	50.00	50.00	0.59
35	0.332	50.00	50.00	0.66
37	1.499	50.00	50.00	3.00
38	1.660	50.00	50.00	3.32
39	2.011	50.00	50.00	4.02
40	1.085	50.00	50.00	2.17
41	1.031	50.00	50.00	2.06
42	1.167	50.00	50.00	2.33
43	1.117	50.00	50.00	2.23
44	1.227	50.00	50.00	2.45
45	1.164	50.00	50.00	2.33
46	1.411	50.00	50.00	2.82
47	1.336	50.00	50.00	2.67
48	2.774	50.00	50.00	5.55
49	3.129	50.00	50.00	6.26
50	3.385	50.00	50.00	6.77
51	4.247	50.00	50.00	8.49
52	4.468	50.00	50.00	8.94
53	2.926	50.00	50.00	5.85
54	1.144	50.00	50.00	2.29
55	1.086	50.00	50.00	2.17
56	1.368	50.00	50.00	2.74
57	1.502	50.00	50.00	3.00

*** 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. Control Member	Comp. Force	Comp. Load Case	L/R	Comp. Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R
				(ksi)	%		%		(kips)			(kips)	(kips)	(kips)				
Leg1	6x6x3/8	SAE	6X6X0.375	33.0	20.41	Comp	20.41	5XY	-26.263	NESX Hea	128.698	163.200	303.750	1.000	1.000	1.000	60.50
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	35.90	Tens	33.47	8XY	-80.533	NESX Hea	240.633	301.600	629.999	1.000	1.000	1.000	45.28
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	44.63	Tens	43.93	11XY	-137.354	NESC Ext	312.686	414.700	1191.092	1.000	1.000	1.000	58.19
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	49.75	Tens	49.68	13XY	-167.278	NESC Ext	336.697	490.100	1535.623	1.000	1.000	1.000	61.25
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	52.99	Tens	52.33	15XY	-189.149	NESC Ext	361.445	527.800	1791.560	1.000	1.000	1.000	61.64
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	54.84	Comp	54.84	16XY	-210.872	NESC Ext	384.502	565.500	2067.184	0.500	0.500	0.500	64.34
Leg7	8x8x15/16	SAE	8X8X0.9375	33.0	57.16	Comp	57.16	18XY	-236.732	NESC Ext	414.146	603.200	2362.496	0.500	0.500	0.500	61.76
Leg8	8x8x1	SAE	8X8X1	33.0	60.96	Tens	60.18	21XY	-268.827	NESC Ext	446.741	640.900	2677.496	0.500	0.500	0.500	58.16
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	61.18	Comp	61.18	24Y	-9.801	NESX Hea	16.019	27.200	33.750	0.500	0.750	0.500	143.07
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.38	Comp	92.38	27X	-24.880	NESX Hea	26.934	40.800	50.625	0.500	0.750	0.500	112.48
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	60.96	Comp	60.96	31X	-25.092	NESX Hea	41.160	54.400	84.375	0.750	0.500	0.500	95.87
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	54.98	Comp	54.98	34Y	-18.090	NESX Hea	32.903	54.400	84.375	0.767	0.535	0.535	114.00
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	60.39	Comp	60.39	46Y	-10.048	NESX Hea	16.638	40.800	50.625	0.763	0.527	0.527	177.45
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	82.22	Comp	82.22	48P	-4.645	NESC Hea	5.650	54.400	84.375	0.764	0.529	0.529	319.36
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	94.96	Comp	94.96	53P	-2.586	NESC Hea	2.724	40.800	63.281	0.517	0.759	0.517	449.38
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.01	Comp	38.01	82P	-6.591	NESC Ext	17.340	40.800	50.625	0.500	1.000	0.500	181.65
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	86.48	Comp	86.48	84P	-16.777	NESC Ext	18.928	40.800	50.625	0.500	1.000	0.500	187.24
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	64.92	Comp	64.92	88P	-20.640	NESC Ext	31.791	81.600	101.250	0.500	1.000	0.500	191.40
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	34.87	Comp	34.87	90P	-21.700	NESC Ext	62.237	81.600	101.250	0.500	0.500	0.500	142.08

Member Comp.	Bolts	Comp. (ft)
Leg1	12	60.50
Leg2	16	45.28
Leg3	22	58.19
Leg4	26	61.25
Leg5	28	61.64
Leg6	30	64.34
Leg7	32	61.76
Leg8	34	58.16
XBR1	2	137.62
XBR2	3	114.36
XBR3	4	101.90
XBR4	4	115.50
XBR5	3	163.82
XBR6	4	271.95
XBR7	3	371.03
HBR1	3	167.02
HBR2	3	171.28
HBR3	3	174.44
HBR4		

																		133.58	29.600	6	3
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.81	Comp	54.81	73Y	-22.364	NESX Hea	65.312	40.800	63.281	1.000	0.500	0.500	57.44	88.72	7.334	3	3
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.85	Comp	88.85	94P	-9.408	NESX Hea	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	91.89	Comp	91.89	97XY	-5.137	NESX Hea	5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	4.81	Comp	4.81	79X	-2.023	NESC Ext	42.081	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.65	Comp	21.65	61P	-3.024	NESX Hea	13.968	27.200	33.750	0.500	0.750	0.500	155.87	147.38	10.253	5	2
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	47.08	Comp	47.08	78P	-2.629	NESC Ext	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	44.66	Comp	44.66	64X	-1.935	NESC Ext	4.332	27.200	25.312	0.500	0.750	0.500	282.84	244.13	23.335	5	2
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	59.62	Comp	59.62	65X	-1.160	NESC Ext	1.946	27.200	33.750	0.500	0.750	0.500	511.54	418.39	41.861	5	2
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	98.18	Tens	96.19	58X	-6.726	NESC Hea	6.992	54.400	84.375	0.500	0.500	0.500	283.29	244.47	23.088	5	4
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	6x6x3/8	SAE	6X6X0.375	33.0	20.41	Comp	17.21	5P	18.966	NESX Hea	110.204	163.200	303.750	281.250	6.000	12	3.110	0.875
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	35.90	Tens	35.90	8P	70.025	NESC Ext	195.030	301.600	629.999	699.999	6.000	16	3.680	1
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	44.63	Tens	44.63	11P	118.078	NESC Ext	264.598	414.700	1191.092	1134.373	7.661	22	3.610	1
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	49.75	Tens	49.75	13P	143.368	NESC Ext	288.172	490.100	1535.623	1462.498	8.065	26	3.610	1
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	52.99	Tens	52.99	15P	164.066	NESC Ext	309.643	527.800	1791.560	1706.247	8.065	28	3.590	1
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	54.84	Comp	50.03	16P	166.553	NESC Ext	332.928	565.500	2067.184	1968.747	16.835	30	3.590	1
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	57.16	Comp	56.28	18P	199.351	NESC Ext	354.234	603.200	2362.496	2249.997	16.129	32	3.590	1
Leg8	8x8x1	SAE	8X8X1	33.0	60.96	Tens	60.96	21P	228.725	NESC Ext	375.209	640.900	2677.496	2549.996	15.121	34	3.630	1
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	61.18	Comp	34.35	25XY	8.583	NESX Hea	24.985	27.200	33.750	29.297	9.411	2	1.000	0.875
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.38	Comp	76.10	27XY	24.663	NESX Hea	32.410	40.800	50.625	45.328	9.411	3	1.000	0.875
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	60.96	Comp	56.49	31XY	25.275	NESX Hea	44.745	54.400	84.375	66.504	9.411	4	1.000	0.875
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	54.98	Comp	46.45	35XY	16.421	NESX Hea	35.352	54.400	84.375	62.637	9.322	4	1.000	0.875

XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	60.39	Comp	36.65	38XY	13.238	NESX	Hea	36.123	54.400	67.500	53.203	12.619	4	1.000	0.875
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	82.22	Comp	65.87	48X	23.212	NESC	Ext	35.241	54.400	84.375	62.637	24.601	4	1.000	0.875
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	94.96	Comp	91.54	54X	28.183	NESC	Ext	30.786	54.400	84.375	62.637	36.220	4	1.000	0.875
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.01	Comp	4.10	83P	1.673	NESC	Hea	43.696	40.800	50.625	46.875	16.500	3	1.000	0.875
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	86.48	Comp	6.91	85P	2.820	NESC	Hea	51.121	40.800	50.625	46.875	19.504	3	1.000	0.875
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	64.92	Comp	3.32	87P	2.713	NESC	Hea	87.392	81.600	101.250	93.750	22.480	3	2.000	0.875
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	34.87	Comp	2.64	91P	2.152	NESC	Hea	102.242	81.600	101.250	93.750	29.600	3	2.000	0.875
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.81	Comp	52.40	73P	21.380	NESX	Hea	67.911	40.800	63.281	44.613	7.334	3	1.000	0.875
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.85	Comp	31.72	94Y	8.629	NESX	Hea	36.271	27.200	33.750	31.250	10.922	2	1.000	0.875
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	91.89	Comp	40.42	97X	10.098	NESX	Hea	24.985	27.200	33.750	28.641	9.475	2	1.000	0.875
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	4.81	Comp	4.80	79P	2.516	NESC	Ext	63.159	54.400	84.375	52.441	7.250	4	1.000	0.875
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.65	Comp	11.61	61X	2.900	NESX	Hea	24.985	27.200	33.750	31.250	10.253	2	1.000	0.875
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	47.08	Comp	27.88	78X	2.688	NESC	Ext	19.184	13.600	12.656	9.640	7.250	1	1.000	0.875
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	44.66	Comp	2.60	64X	0.537	NESC	Hea	21.917	27.200	25.312	20.707	23.335	2	1.000	0.875
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	59.62	Comp	3.74	65P	1.018	NESX	Hea	28.846	27.200	33.750	27.609	41.861	2	1.000	0.875
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	98.18	Tens	98.18	58P	34.600	NESC	Ext	35.241	54.400	84.375	62.637	23.088	4	1.000	0.875
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000			0.000	0.000	0.000	0.000	0.000	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	96.19	58X	Angle
NESC Extreme	98.18	58P	Angle
NESX Heavy Broken Wire	92.38	27X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	26.43	NESX Heavy Broken Wire	0.0
2	Clamp	6.85	NESC Extreme	0.0
3	Clamp	39.64	NESX Heavy Broken Wire	0.0

4	Clamp	12.17	NESC Extreme	0.0
5	Clamp	12.17	NESC Extreme	0.0
6	Clamp	12.17	NESC Extreme	0.0
7	Clamp	12.17	NESC Extreme	0.0
8	Clamp	12.17	NESC Extreme	0.0
9	Clamp	0.83	NESC Extreme	0.0
10	Clamp	0.91	NESC Heavy	0.0
11	Clamp	1.03	NESC Heavy	0.0
12	Clamp	1.73	NESC Extreme	0.0
13	Clamp	1.73	NESC Extreme	0.0
14	Clamp	1.73	NESC Extreme	0.0
15	Clamp	2.88	NESC Heavy	0.0
16	Clamp	3.67	NESC Heavy	0.0
17	Clamp	4.51	NESC Extreme	0.0
18	Clamp	5.42	NESC Heavy	0.0
19	Clamp	5.92	NESC Heavy	0.0
20	Clamp	3.26	NESC Heavy	0.0
21	Clamp	1.73	NESC Extreme	0.0
22	Clamp	1.73	NESC Extreme	0.0
23	Clamp	4.21	NESC Heavy	0.0
24	Clamp	4.94	NESC Heavy	0.0
25	Clamp	5.52	NESC Extreme	0.0
26	Clamp	6.89	NESC Heavy	0.0
27	Clamp	7.37	NESC Heavy	0.0
28	Clamp	3.84	NESC Heavy	0.0
29	Clamp	1.73	NESC Extreme	0.0
30	Clamp	4.10	NESC Extreme	0.0
31	Clamp	0.83	NESC Extreme	0.0
32	Clamp	0.83	NESC Extreme	0.0
33	Clamp	1.73	NESC Extreme	0.0
34	Clamp	0.83	NESC Extreme	0.0
35	Clamp	0.83	NESC Extreme	0.0
37	Clamp	5.15	NESC Extreme	0.0
38	Clamp	3.32	NESC Heavy	0.0
39	Clamp	4.02	NESC Heavy	0.0
40	Clamp	2.17	NESC Heavy	0.0
41	Clamp	2.06	NESC Heavy	0.0
42	Clamp	3.47	NESC Extreme	0.0
43	Clamp	3.47	NESC Extreme	0.0
44	Clamp	2.74	NESC Extreme	0.0
45	Clamp	2.74	NESC Extreme	0.0
46	Clamp	2.82	NESC Heavy	0.0
47	Clamp	2.81	NESC Extreme	0.0
48	Clamp	5.55	NESC Heavy	0.0
49	Clamp	6.26	NESC Heavy	0.0
50	Clamp	7.38	NESC Extreme	0.0
51	Clamp	8.49	NESC Heavy	0.0
52	Clamp	8.94	NESC Heavy	0.0
53	Clamp	5.87	NESC Extreme	0.0
54	Clamp	2.66	NESC Extreme	0.0
55	Clamp	3.24	NESC Extreme	0.0
56	Clamp	3.54	NESC Extreme	0.0
57	Clamp	3.67	NESC Extreme	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X	Structure Attach Load Y	Structure Attach Load Z	Structure Attach Load Res.

				(kips)	(kips)	(kips)	(kips)
NESC Heavy	1	Clamp	2P	0.000	1.570	1.747	2.349
NESC Heavy	2	Clamp	2X	0.000	1.466	1.747	2.281
NESC Heavy	3	Clamp	5P	0.000	2.088	3.211	3.830
NESC Heavy	4	Clamp	5X	0.000	1.993	3.211	3.779
NESC Heavy	5	Clamp	8P	0.000	2.088	3.242	3.857
NESC Heavy	6	Clamp	8X	0.000	1.993	3.242	3.806
NESC Heavy	7	Clamp	11P	0.000	2.088	3.211	3.830
NESC Heavy	8	Clamp	11X	0.000	1.993	3.211	3.779
NESC Heavy	9	Clamp	1Y	0.000	0.104	0.297	0.315
NESC Heavy	10	Clamp	4Y	0.000	0.189	0.416	0.457
NESC Heavy	11	Clamp	9Y	0.000	0.251	0.450	0.516
NESC Heavy	12	Clamp	12Y	0.000	0.206	0.489	0.530
NESC Heavy	13	Clamp	14Y	0.000	0.291	0.658	0.719
NESC Heavy	14	Clamp	16Y	0.000	0.319	0.745	0.811
NESC Heavy	15	Clamp	18Y	0.000	0.506	1.347	1.439
NESC Heavy	16	Clamp	19Y	0.000	0.630	1.725	1.837
NESC Heavy	17	Clamp	20Y	0.000	0.638	2.023	2.121
NESC Heavy	18	Clamp	21Y	0.000	0.758	2.604	2.712
NESC Heavy	19	Clamp	22Y	0.000	0.761	2.862	2.962
NESC Heavy	20	Clamp	25Y	0.000	0.397	1.582	1.631
NESC Heavy	21	Clamp	14P	0.000	0.291	0.658	0.719
NESC Heavy	22	Clamp	16P	0.000	0.319	0.745	0.811
NESC Heavy	23	Clamp	18P	0.000	0.694	1.986	2.104
NESC Heavy	24	Clamp	19P	0.000	0.810	2.335	2.472
NESC Heavy	25	Clamp	20P	0.000	0.811	2.611	2.734
NESC Heavy	26	Clamp	21P	0.000	0.965	3.308	3.446
NESC Heavy	27	Clamp	22P	0.000	0.964	3.554	3.683
NESC Heavy	28	Clamp	25P	0.000	0.478	1.860	1.920
NESC Heavy	29	Clamp	14XY	0.000	0.000	0.658	0.658
NESC Heavy	30	Clamp	1P	0.014	0.481	1.074	1.177
NESC Heavy	31	Clamp	3P	0.000	0.234	0.332	0.406
NESC Heavy	32	Clamp	3Y	0.000	0.234	0.332	0.406
NESC Heavy	33	Clamp	17P	0.000	0.331	0.785	0.851
NESC Heavy	34	Clamp	1XY	0.000	0.000	0.297	0.297
NESC Heavy	35	Clamp	3XY	0.000	0.000	0.332	0.332
NESC Heavy	37	Clamp	1X	-0.014	0.377	1.450	1.499
NESC Heavy	38	Clamp	4P	-0.014	0.322	1.628	1.660
NESC Heavy	39	Clamp	4X	0.014	0.273	1.992	2.011
NESC Heavy	40	Clamp	7P	0.000	0.361	1.023	1.085
NESC Heavy	41	Clamp	7X	0.000	0.134	1.023	1.031
NESC Heavy	42	Clamp	10P	0.000	0.370	1.106	1.167
NESC Heavy	43	Clamp	10X	0.000	0.151	1.106	1.117
NESC Heavy	44	Clamp	13P	0.000	0.423	1.152	1.227
NESC Heavy	45	Clamp	13X	0.000	0.169	1.152	1.164
NESC Heavy	46	Clamp	15P	0.000	0.488	1.324	1.411
NESC Heavy	47	Clamp	15X	0.000	0.181	1.324	1.336
NESC Heavy	48	Clamp	18X	0.000	0.442	2.738	2.774
NESC Heavy	49	Clamp	19X	0.000	0.438	3.098	3.129
NESC Heavy	50	Clamp	20X	0.000	0.426	3.358	3.385
NESC Heavy	51	Clamp	21X	0.000	0.514	4.216	4.247
NESC Heavy	52	Clamp	22X	0.000	0.503	4.439	4.468
NESC Heavy	53	Clamp	25X	0.000	0.431	2.895	2.926
NESC Heavy	54	Clamp	9X	0.000	0.227	1.121	1.144
NESC Heavy	55	Clamp	12X	0.000	0.196	1.068	1.086
NESC Heavy	56	Clamp	14X	0.000	0.233	1.348	1.368
NESC Heavy	57	Clamp	16X	0.000	0.249	1.481	1.502
NESC Extreme	1	Clamp	2P	-2.739	1.977	0.565	3.425

NESC Extreme	2	Clamp	2X	-2.739	1.977	0.565	3.425
NESC Extreme	3	Clamp	5P	-4.356	4.085	1.181	6.087
NESC Extreme	4	Clamp	5X	-4.356	4.085	1.181	6.087
NESC Extreme	5	Clamp	8P	-4.356	4.085	1.181	6.087
NESC Extreme	6	Clamp	8X	-4.356	4.085	1.181	6.087
NESC Extreme	7	Clamp	11P	-4.356	4.085	1.181	6.087
NESC Extreme	8	Clamp	11X	-4.356	4.085	1.181	6.087
NESC Extreme	9	Clamp	1Y	0.000	0.347	0.232	0.417
NESC Extreme	10	Clamp	4Y	0.000	0.347	0.232	0.417
NESC Extreme	11	Clamp	9Y	0.000	0.347	0.232	0.417
NESC Extreme	12	Clamp	12Y	0.000	0.661	0.562	0.867
NESC Extreme	13	Clamp	14Y	0.000	0.661	0.562	0.867
NESC Extreme	14	Clamp	16Y	0.000	0.661	0.562	0.867
NESC Extreme	15	Clamp	18Y	0.000	0.661	0.562	0.867
NESC Extreme	16	Clamp	19Y	0.000	0.661	0.562	0.867
NESC Extreme	17	Clamp	20Y	0.000	1.585	1.606	2.257
NESC Extreme	18	Clamp	21Y	0.000	0.924	1.045	1.395
NESC Extreme	19	Clamp	22Y	0.000	0.924	1.045	1.395
NESC Extreme	20	Clamp	25Y	0.000	0.924	1.045	1.395
NESC Extreme	21	Clamp	14P	0.000	0.661	0.562	0.867
NESC Extreme	22	Clamp	16P	0.000	0.661	0.562	0.867
NESC Extreme	23	Clamp	18P	0.000	1.159	0.831	1.426
NESC Extreme	24	Clamp	19P	0.000	1.139	0.819	1.403
NESC Extreme	25	Clamp	20P	0.000	2.044	1.854	2.760
NESC Extreme	26	Clamp	21P	0.000	1.471	1.341	1.990
NESC Extreme	27	Clamp	22P	0.000	1.460	1.336	1.979
NESC Extreme	28	Clamp	25P	0.000	1.138	1.162	1.626
NESC Extreme	29	Clamp	14XY	0.000	0.661	0.562	0.867
NESC Extreme	30	Clamp	1P	0.007	2.033	-0.266	2.050
NESC Extreme	31	Clamp	3P	0.000	0.347	0.232	0.417
NESC Extreme	32	Clamp	3Y	0.000	0.347	0.232	0.417
NESC Extreme	33	Clamp	17P	0.000	0.661	0.562	0.867
NESC Extreme	34	Clamp	1XY	0.000	0.347	0.232	0.417
NESC Extreme	35	Clamp	3XY	0.000	0.347	0.232	0.417
NESC Extreme	37	Clamp	1X	-0.007	2.033	1.585	2.577
NESC Extreme	38	Clamp	4P	-0.007	0.704	0.879	1.126
NESC Extreme	39	Clamp	4X	0.007	1.270	0.740	1.469
NESC Extreme	40	Clamp	7P	0.000	0.706	0.425	0.824
NESC Extreme	41	Clamp	7X	0.000	0.706	0.425	0.824
NESC Extreme	42	Clamp	10P	0.000	1.412	1.010	1.736
NESC Extreme	43	Clamp	10X	0.000	1.412	1.010	1.736
NESC Extreme	44	Clamp	13P	0.000	1.111	0.804	1.371
NESC Extreme	45	Clamp	13X	0.000	1.111	0.804	1.371
NESC Extreme	46	Clamp	15P	0.000	1.140	0.822	1.405
NESC Extreme	47	Clamp	15X	0.000	1.140	0.822	1.405
NESC Extreme	48	Clamp	18X	0.000	2.187	1.035	2.419
NESC Extreme	49	Clamp	19X	0.000	2.183	1.026	2.412
NESC Extreme	50	Clamp	20X	0.000	3.066	2.057	3.692
NESC Extreme	51	Clamp	21X	0.000	2.713	1.587	3.143
NESC Extreme	52	Clamp	22X	0.000	2.670	1.576	3.100
NESC Extreme	53	Clamp	25X	0.000	2.553	1.443	2.933
NESC Extreme	54	Clamp	9X	0.000	1.265	0.414	1.331
NESC Extreme	55	Clamp	12X	0.000	1.453	0.719	1.621
NESC Extreme	56	Clamp	14X	0.000	1.604	0.749	1.770
NESC Extreme	57	Clamp	16X	0.000	1.667	0.762	1.833
NESX Heavy Broken Wire	1	Clamp	2P	-13.200	0.381	0.493	13.215
NESX Heavy Broken Wire	2	Clamp	2X	0.000	1.466	1.747	2.281
NESX Heavy Broken Wire	3	Clamp	5P	-19.800	0.472	0.728	19.819
NESX Heavy Broken Wire	4	Clamp	5X	0.000	1.993	3.211	3.779

NESX Heavy Broken Wire	5	Clamp	8P	0.000	2.088	3.242	3.857
NESX Heavy Broken Wire	6	Clamp	8X	0.000	1.993	3.242	3.806
NESX Heavy Broken Wire	7	Clamp	11P	0.000	2.088	3.211	3.830
NESX Heavy Broken Wire	8	Clamp	11X	0.000	1.993	3.211	3.779
NESX Heavy Broken Wire	9	Clamp	1Y	0.000	0.104	0.297	0.315
NESX Heavy Broken Wire	10	Clamp	4Y	0.000	0.189	0.416	0.457
NESX Heavy Broken Wire	11	Clamp	9Y	0.000	0.251	0.450	0.516
NESX Heavy Broken Wire	12	Clamp	12Y	0.000	0.206	0.489	0.530
NESX Heavy Broken Wire	13	Clamp	14Y	0.000	0.291	0.658	0.719
NESX Heavy Broken Wire	14	Clamp	16Y	0.000	0.319	0.745	0.811
NESX Heavy Broken Wire	15	Clamp	18Y	0.000	0.506	1.347	1.439
NESX Heavy Broken Wire	16	Clamp	19Y	0.000	0.630	1.725	1.837
NESX Heavy Broken Wire	17	Clamp	20Y	0.000	0.638	2.023	2.121
NESX Heavy Broken Wire	18	Clamp	21Y	0.000	0.758	2.604	2.712
NESX Heavy Broken Wire	19	Clamp	22Y	0.000	0.761	2.862	2.962
NESX Heavy Broken Wire	20	Clamp	25Y	0.000	0.397	1.582	1.631
NESX Heavy Broken Wire	21	Clamp	14P	0.000	0.291	0.658	0.719
NESX Heavy Broken Wire	22	Clamp	16P	0.000	0.319	0.745	0.811
NESX Heavy Broken Wire	23	Clamp	18P	0.000	0.694	1.986	2.104
NESX Heavy Broken Wire	24	Clamp	19P	0.000	0.810	2.335	2.472
NESX Heavy Broken Wire	25	Clamp	20P	0.000	0.811	2.611	2.734
NESX Heavy Broken Wire	26	Clamp	21P	0.000	0.965	3.308	3.446
NESX Heavy Broken Wire	27	Clamp	22P	0.000	0.964	3.554	3.683
NESX Heavy Broken Wire	28	Clamp	25P	0.000	0.478	1.860	1.920
NESX Heavy Broken Wire	29	Clamp	14XY	0.000	0.000	0.658	0.658
NESX Heavy Broken Wire	30	Clamp	1P	0.014	0.481	1.074	1.177
NESX Heavy Broken Wire	31	Clamp	3P	0.000	0.234	0.332	0.406
NESX Heavy Broken Wire	32	Clamp	3Y	0.000	0.234	0.332	0.406
NESX Heavy Broken Wire	33	Clamp	17P	0.000	0.331	0.785	0.851
NESX Heavy Broken Wire	34	Clamp	1XY	0.000	0.000	0.297	0.297
NESX Heavy Broken Wire	35	Clamp	3XY	0.000	0.000	0.332	0.332
NESX Heavy Broken Wire	37	Clamp	1X	-0.014	0.377	1.450	1.499
NESX Heavy Broken Wire	38	Clamp	4P	-0.014	0.322	1.628	1.660
NESX Heavy Broken Wire	39	Clamp	4X	0.014	0.273	1.992	2.011
NESX Heavy Broken Wire	40	Clamp	7P	0.000	0.361	1.023	1.085
NESX Heavy Broken Wire	41	Clamp	7X	0.000	0.134	1.023	1.031
NESX Heavy Broken Wire	42	Clamp	10P	0.000	0.370	1.106	1.167
NESX Heavy Broken Wire	43	Clamp	10X	0.000	0.151	1.106	1.117
NESX Heavy Broken Wire	44	Clamp	13P	0.000	0.423	1.152	1.227
NESX Heavy Broken Wire	45	Clamp	13X	0.000	0.169	1.152	1.164
NESX Heavy Broken Wire	46	Clamp	15P	0.000	0.488	1.324	1.411
NESX Heavy Broken Wire	47	Clamp	15X	0.000	0.181	1.324	1.336
NESX Heavy Broken Wire	48	Clamp	18X	0.000	0.442	2.738	2.774
NESX Heavy Broken Wire	49	Clamp	19X	0.000	0.438	3.098	3.129
NESX Heavy Broken Wire	50	Clamp	20X	0.000	0.426	3.358	3.385
NESX Heavy Broken Wire	51	Clamp	21X	0.000	0.514	4.216	4.247
NESX Heavy Broken Wire	52	Clamp	22X	0.000	0.503	4.439	4.468
NESX Heavy Broken Wire	53	Clamp	25X	0.000	0.431	2.895	2.926
NESX Heavy Broken Wire	54	Clamp	9X	0.000	0.227	1.121	1.144
NESX Heavy Broken Wire	55	Clamp	12X	0.000	0.196	1.068	1.086
NESX Heavy Broken Wire	56	Clamp	14X	0.000	0.233	1.348	1.368
NESX Heavy Broken Wire	57	Clamp	16X	0.000	0.249	1.481	1.502

Overturning Moments For User Input Concentrated Loads:

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

Load Case	Total Tran.	Total Long.	Total Vert.	Transverse Overturning	Longitudinal Overturning	Torsional Moment

	Load (kips)	Load (kips)	Load (kips)	Moment (ft-k)	Moment (ft-k)	(ft-k)
NESC Heavy	22.011	0.000	45.308	3375.503	196.887	60.447
NESC Extreme	49.808	-31.614	15.257	6978.043	-5307.918	202.093
NESX Heavy Broken Wire	19.206	-33.000	41.571	2901.823	-5835.513	-295.953

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 55876.9
Total: 55876.9

*** End of Report

CENTEK engineering
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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 # Dist East River x-ing (Uplift Pier)
Location:		Old Lyme, CT
Rev. 0: 1/30/14		Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Foundation Analysis

(Uplift Pier)

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 18·1.1·kips = 19.8·kips	(User Input from PLS node 26X)
Compression =	Comp := 138·1.1·kips = 151.8·kips	(User Input from PLS node 26X)
Uplift =	Uplift := 254·1.1·kips = 279.4·kips	(User Input from PLS node 26P)

Tower Properties:

Tower Height =	$H_t := 190 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 12.5 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 3.5 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 6.0 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 10 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 115 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 5000 \cdot psf$	(User Input)

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Subject:	Foundation Analysis CL&P Tower # Dist East River x-ing (Uplift Pier)
Location:	Old Lyme, CT
Rev. 0: 1/30/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Calculated Data:

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

Section Modulus of Pad = $S_{pad} := \frac{Pd_w^{\,3}}{6} = 166.67\,ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^{\,2} = 100\,ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2\cdot\tan(\psi)\cdot\left(P_H - P_P\right) + Pd_w\right]^2 = 569.13\,ft^2$

Volume of the Concrete Pad = $V_{pad} := Pd_w^{\,2}\cdot Pd_t = 200\,ft^3$

Volume of the Concrete Pier = $V_{pier} := P_H\cdot\left[P_{w2}\cdot P_{w1} + \frac{1}{12}\cdot\left[2\cdot\left(P_{w2} - P_{w1}\right)\right]^2\right] = 288.54\,ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 488.5\,ft^3$

Volume of Soil = $V_{Soil} := \left[\frac{1}{3}\cdot\left(P_H - P_P\right)\cdot\left(B_1 + B_2 + \sqrt{B_1\cdot B_2}\right)\right] - V_{pier} = 3342.2\,ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc}\cdot\gamma c = 73.3\,kips$

Mass of Soil = $Mass_{Soil} := V_{Soil}\cdot\gamma s = 384.4\,kips$

Total Mass = $Mass_{Tot} := Mass_{Soil} + Mass_{Conc} = 457.6\,kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.5$

$ActualFS := \frac{Mass_{Tot}}{Uplift} = 1.64$

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

Uplift_Check = "OK"

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pier}} + \frac{Shear\cdot\left(P_H + Pd_t\right)}{S_{pad}} = 3.97\,ksf$

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

Bearing_Check = "OK"

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Subject:	Foundation Analysis CL&P Tower # Dist East River x-ing (Compression Pier)
Location:	Old Lyme, CT
Rev. 1: 3/13/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Foundation Analysis

(Compression Pier)

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 35·1.1·kips = 38.5·kips	(User Input from PLS node 26XY)
Compression =	Comp := 268·1.1·kips = 294.8·kips	(User Input from PLS node 26XY)
Uplift =	Uplift := 81·1.1·kips = 89.1·kips	(User Input from PLS node 26Y)

Tower Properties:

Tower Height =	$H_t := 190 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 0 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 0 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 0 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0 \cdot ft$	(User Input)
Pad Width 1 =	$Pd_w := 19 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 7.5 \cdot ft$	(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 =	$\gamma s := 110 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

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Subject:	Foundation Analysis CL&P Tower # Dist East River x-ing (Compression Pier)
Location:	Old Lyme, CT
Rev. 1: 3/13/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14025.003

Calculated Data:

Cross Sectional Area of Pad = $A_{pier} := Pd_w^{\,2} = 361\,ft^2$

Section Modulus of Pad = $S_{pad} := \frac{Pd_w^{\,3}}{6} = 1143\,ft^3$

Volume of the Concrete Pad = $V_{pad} := Pd_w^{\,2} \cdot Pd_t = 2707.5\,ft^3$

Volume of the Concrete Pier = $V_{pier} := P_H \cdot \left[P_{w2} \cdot P_{w1} + \frac{1}{12} \cdot \left[2 \cdot \left(P_{w2} - P_{w1} \right) \right]^2 \right] = 0\,ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 2707.5\,ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 406.1\,kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.5$

$$ActualFS := \frac{Mass_{Conc}}{Uplift} = 4.56$$

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

Uplift_Check = "OK"

Check Bearing:

$$Bearing := \frac{Comp + Mass_{Conc}}{A_{pier}} + \frac{Shear \cdot \left(P_H + Pd_t \right)}{S_{pad}} = 2.19\,ksf$$

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

Bearing_Check = "OK"

Network Modernization RFDS v3.0

Site ID	CT11036C	Latitude	41.32033
		Longitude	-72.34406
Site Name	CT036/OldLyme/ I-95/ X70	Site Type	Structure (Non-Building)
Address	8 Old Bridge Road (BTS Site), Old Lyme, CONNECTICUT, 06371	Site Class	Utility Lattice Tower
Market	CONNECTICUT	Landlord	North East Utility/ CL&P

Configuration
4B

Approvals	
Market RF	
Market Development	

RFDS Revision		Date	01/15/2014
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				
	5			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

Install one 6102 UMTS cabinet. Remove existing S8000 GSM cabinet. Add 2 DUW30, DUL20, DUG20, 6 RUS01 B2 and 6 RUS01 B4 radios to 6102 cabinet. Add 6 E/// GMAs on the ground, remove existing TMAs. Add 6 coax lines. Install 1 home run for RETs. .

ALPHA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [x] Add TMA
- [x] Swap TMA
- [ ] 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 antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 coax lines. .

BETA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [x] Add TMA
- [x] Swap TMA
- [ ] 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 antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 coax lines. .

GAMMA - Scope of Work

- [ ] Add new mount
- [ ] Relocate antenna
- [ ] Add antenna
- [x] Swap antenna
- [ ] Remove antenna
- [x] Add TMA
- [x] Swap TMA
- [ ] 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 antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 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	**CT11036C**	**Latitude**	41.32033
		Longitude	-72.34406
Site Name	CT036/OldLyme/ I-95/ X70	**Site Type**	Structure (Non-Building)
Address	8 Old Bridge Road (BTS Site), Old Lyme, CONNECTICUT, 06371	**Site Class**	Utility Lattice Tower
Market	CONNECTICUT	**Landlord**	North East Utility/ CL&P

Configuration

4B

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	

Date 01/15/2014

ALPHA (view from behind)

Existing Configuration					Proposed Configuration			
X				Mount	X			
GSM				Technology	GSM/UMTS: B2 / UMTS/LTE: B4			
B2				Band	P			
P				Active/Passive	P			
Dual pole				Ant. Type	Quad pole			
Existing				Ant. Model	APX16DWV_16DWVS			
				Ant. Vendor	RFS			
180				Ant. Height	180			
30				Azimuth	30			
Yes				RET deployed	Yes			
2				E-Tilt	2			
0				M-Tilt	0			
1				TMA #	1			
dd B2				TMA Type	dd B2 / dd B4			
				RRU #				
				RRU Type				
2				Used Coax #	2			
1 5/8"				Coax Type	1 5/8"			
200				Coax Length (ft)	200			
				Fiber (CPRI) #				
				Splitter #				
				Combiner #				
				Combiner Type				

	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
X	Add TMA		Add fiber cables
X	Swap TMA		Add hybrid combiner
	Remove TMA		Add filter combiner

Scope of work

Swap existing antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 coax lines. .

BETA (view from behind)

Existing Configuration					Proposed Configuration			
X				Mount	X			
GSM				Technology	GSM/UMTS: B2 / UMTS/LTE: B4			
B2				Band	P			
P				Active/Passive	P			
Dual pole				Ant. Type	Quad pole			
Existing				Ant. Model	APX16DWV_16DWVS			
				Ant. Vendor	RFS			
180				Ant. Height	180			
150				Azimuth	150			
Yes				RET deployed	Yes			
2				E-Tilt	2			
0				M-Tilt	0			
1				TMA #	1			
dd B2				TMA Type	dd B2 / dd B4			
				RRU #				
				RRU Type				
2				Used Coax #	2			
1 5/8"				Coax Type	1 5/8"			
200				Coax Length (ft)	200			
				Fiber (CPRI) #				
				Splitter #				
				Combiner #				
				Combiner Type				

	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
X	Add TMA		Add fiber cables
X	Swap TMA		Add hybrid combiner
	Remove TMA		Add filter combiner

Scope of work

Swap existing antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 coax lines. .

Network Modernization RFDS v3.0

Site ID	**CT11036C**	**Latitude**	41.32033
		Longitude	-72.34406
Site Name	CT036/OldLyme/ I-95/ X70	**Site Type**	Structure (Non-Building)
Address	8 Old Bridge Road (BTS Site), Old Lyme, CONNECTICUT, 06371	**Site Class**	Utility Lattice Tower
Market	CONNECTICUT	**Landlord**	North East Utility/ CL&P

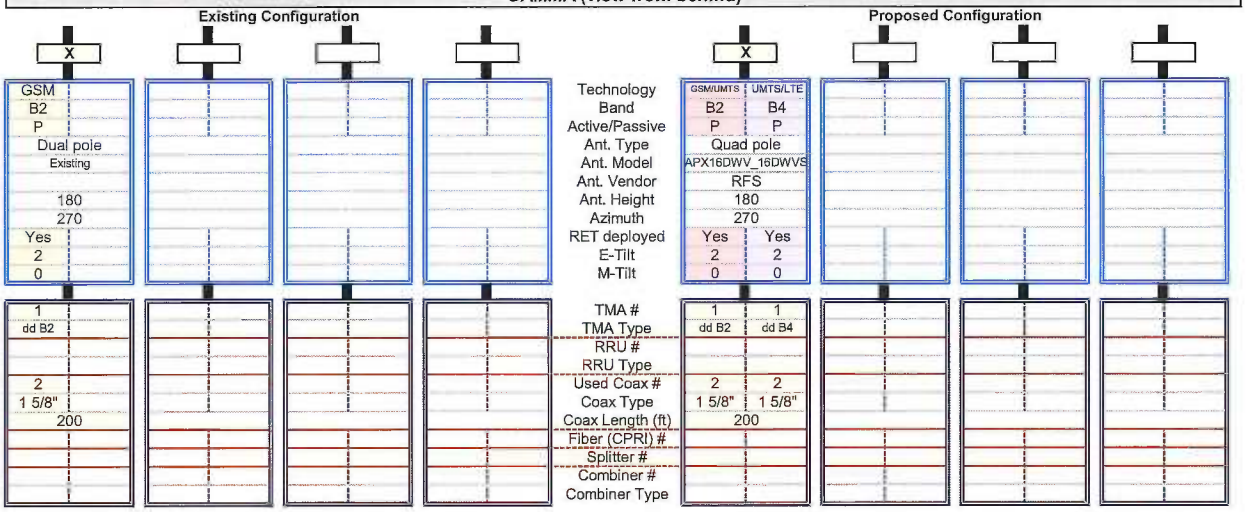
Configuration
4B

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	

Date 01/15/2014

GAMMA (view from behind)

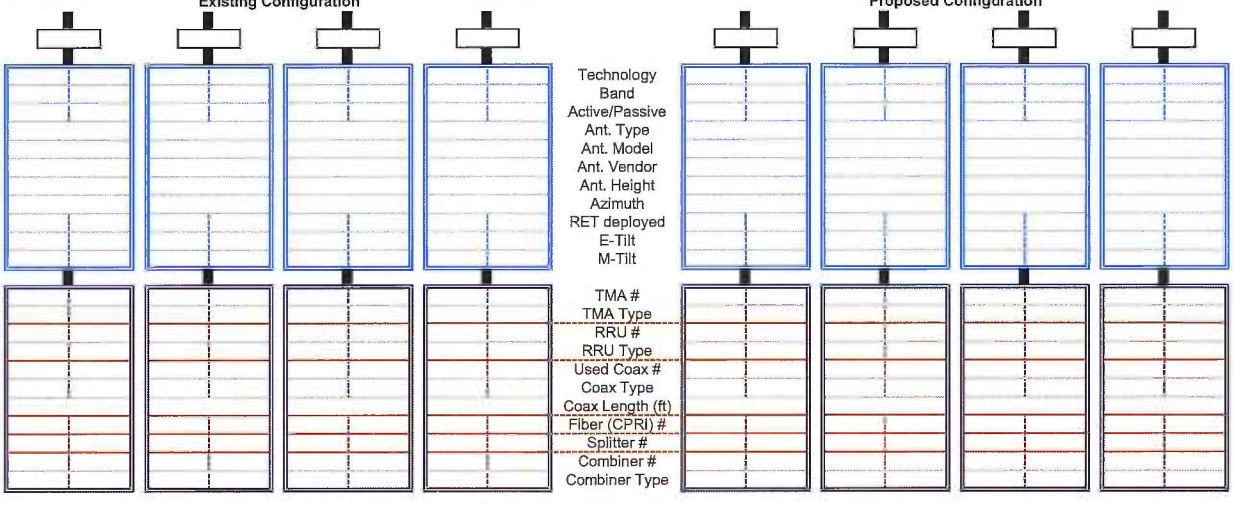


	Add new mount		Add RRU
	Relocate antenna		Swap existing RRU
	Add antenna		Remove RRU
X	Swap antenna		Consolidate coax cables
	Remove antenna	X	Add coax cables
X	Add TMA		Add fiber cables
X	Swap TMA		Add hybrid combiner
	Remove TMA		Add filter combiner

Scope of work

Swap existing antenna with quad pole antenna APX16DWV_16DWVS at position 1. Add AWS dd B4 TMA at position 1/right. 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 UMTS/LTE in cabinet radio units to passive antenna at position 1/left and /right respectively via coax lines. Add 2 E/// GMAs on the ground, remove existing TMA. Add 2 coax lines. .

DELTA (view from behind)



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

Scope of work

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

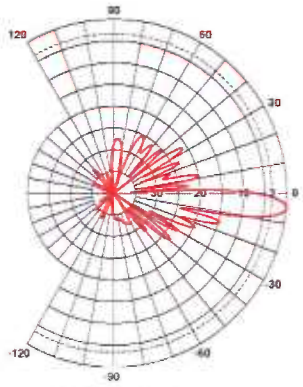
Frequency Range, MHz	1710-2200
Horizontal Beamwidth, deg	65
Vertical Beamwidth, deg	5.9 to 7.7
Electrical Downtilt, deg	0-10
Gain, dBi (dBd)	18.4 (16.3)
1st Upper Sidelobe Suppression, dB	> 18 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Front-To-Back Ratio, dB	>26 (typically 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

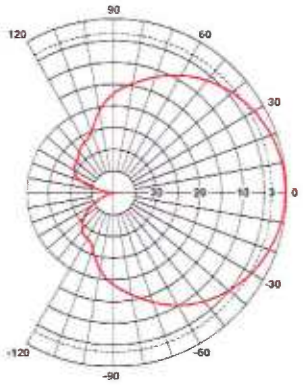
Dimensions - HxWxD, mm (in)	1420 x 331 x 80 (55.9 x 13 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	18.5 (40.7)
Survival Wind Speed, km/h (mph)	200 (125)
Rated Wind Speed, km/h (mph)	160 (100)
Max Wind Loading Area, m² (ft²)	0.47 (5.03)
Front Thrust @ Rated Wind, N (lbf)	756 (170)
Maximum Thrust @ Rated 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

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street • P.O. Box 397
Glastonbury, CT 06033

(860) 633-4623 / FAX (860) 657-2514

February 24, 2011

Mr. Timothy J. Lynn, EIT
Centek Engineering, Inc.
63-2 North Branford Road
Branford, CT 06405

Re: Geotechnical Study to Provide Design Parameters for Assessment of Existing NEU Transmission Tower Foundations, Old Lyme and Old Saybrook, CT

Dear Mr. Lynn:

1.0 Herewith are the data from the test borings taken at the above referenced site. One boring was drilled at each of the subject towers to a depth of about 30 feet below the existing grades. The borings were taken about 10 feet from the existing lattice tower structures. The boring locations are shown on the attached sketch. *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The purpose of this investigation was to provide foundation design parameters to evaluate the existing structure foundation design with a proposed increase to the loading on the structure. The existing towers are 100+ foot high lattice type structures which support the NEU transmission lines crossing the Connecticut River. The four legs for each of the subject tower structures are supported on concrete piers atop spread footings. It is our understanding that the bottom of the foundations at each tower are located at 14.5+ feet below the existing grades, that the foundations are 2 feet thick, and the maximum existing design bearing pressure is 4,000 psf. The maximum bearing pressure is assumed to occur from wind forces. It is our understanding that the proposed additional loading on the tower may increase the maximum bearing to as much as 5,000 psf.

3.0 The **Soil/Rock Cross Section** from the borings was generally as follows:

Old Saybrook NEU Tower (see boring B-1)

Gravel FILL to 12"

Fine to fine to medium SAND, trace to little Silt to 15 feet, loose to medium compact
Note: Based on the proximity of the boring to the tower foundations the soils to about 10 feet may have been disturbed.

Fine to coarse SAND, some Gravel, trace Silt to 30 feet, medium compact

Fine to medium SAND, trace Silt to 31.5+ feet, loose

Old Lyme NEU Tower (see boring B-2)

FILL; fine SAND, some Silt, few Cobbles to 2'

FILL; fine SAND, little Silt to 5 feet, medium compact

Fine to coarse SAND, some Gravel, trace Silt to 15 feet, medium compact to dense

Fine to coarse SAND, some Silt, little Gravel to 28.5 feet, dense

Rock Fragments, Possible Weathered Rock to 30 feet, very dense

3.1 The **Ground Water Table** was not encountered at the completion of the borings. The soils were wet at 31 feet at the Old Saybrook tower. The water table will probably not rise above 20 feet and will have no effect on the bearing capacity.

4.0 In general the criteria for tower support is that the foundation capacity would exceed the loads, which might collapse the tower. **Movements from strains in the soils should be limited to differential settlement (or lateral movements of less than ½").**

5.0 Based on the borings, the **recommended design parameters** to be used to evaluate the foundation for additional loading are as follows:

Design Parameter	Value
Allowable Bearing Pressure at 14+ feet below the existing grades	5,000 psf
Uplift Angle with Vertical	30°
Unit Weight of Soil to to top of foundations at 12.5 feet below existing grades	115 pcf
Unit Weight of Soil, below water table	53 pcf
Design Groundwater Table	20+ feet below finished grade

5.1 The estimated maximum foundation settlements due to an increase in the maximum bearing pressure from 4,000 psf to 5,000 psf would be 1/4". This would occur with sustained loadings. The settlements due to cyclic wind loadings would be less 1/4".

6.0 This report has been prepared for specific a application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Dr. Clarence Welti, P.E., P.C., should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented as they were intended.

If you have any questions please call me.

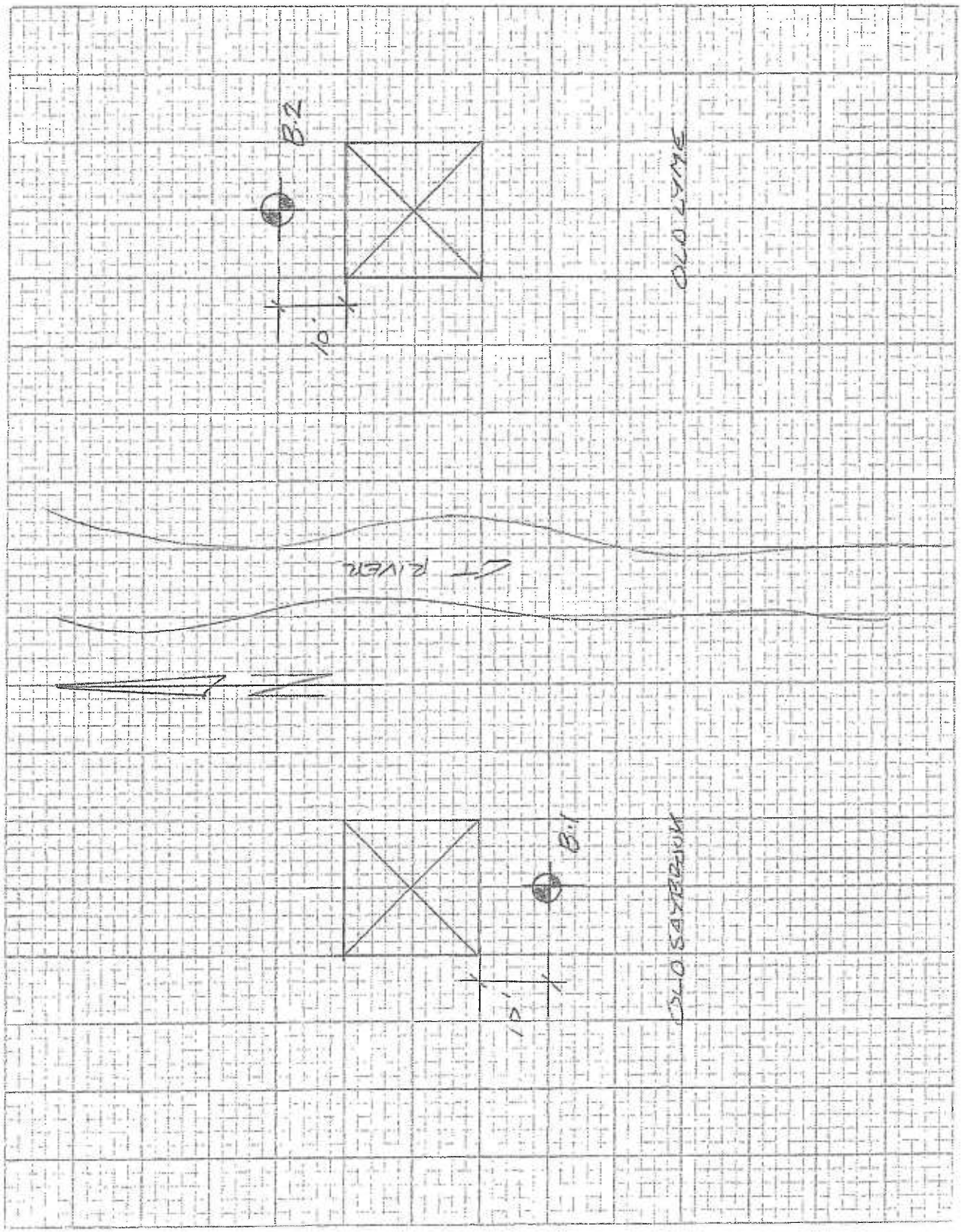
Very truly yours,

Max Welti, P.E.

Clarence Welti, PhD, P. E.
President, Dr. Clarence Welti, P.E., P.C.

DR. CLARENCE WELTI, PE, PC
P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

CLIENT CENTEK ENGINEERING
PROJECT NEW TOWER FOUNDATIONS
SUBJECT OLD SAYBROOK, 150 LYME ST
BY MW DATE 2/22/11 SHEET NO.



CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT CENTEK ENGINEERING	PROJECT NAME NEU TRANSMISSION LINE TOWER FOUNDATION LOCATION OLD SAYBROOK, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-1

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 2/22/11
FINISH DATE 2/22/11

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-4-5-4	0.00'-2.00'		RED/BR. GRAVEL	
					BR. FINE-MED. SAND, TRACE SILT	1.0
5	2	3-4-5-6	5.00'-7.00'			
10	3	4-5-4	10.00'-11.50'		BR. FINE SAND, LITTLE SILT	10.0
15	4	7-15-13	15.00'-16.50'		GREY/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	15.0
20	5	6-5-4	20.00'-21.50'		BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	20.0
25	6	6-5-5	25.00'-26.50'			
30	7	1-3-3	30.00'-31.50'		BR. FINE-MED. SAND, TRACE SILT	30.0
					BOTTOM OF BORING @ 31.5'	31.5
35					NOTE: SOILS WERE WET @ 31.0'	

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: D. BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-1**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
CENTEK ENGINEERING

PROJECT NAME
NEU TRANSMISSION LINE TOWER FOUNDATION
LOCATION
OLD LYME, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-2**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 2/22/11
FINISH DATE 2/22/11

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	10-9-6-5	0.00'-2.00'		DARK BR. FINE SAND, SOME SILT, FEW COBBLES	
					2.0 RED/BR. FINE SAND, LITTLE SILT	
5	2	9-7-8	5.00'-6.50'		5.0 RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
10	3	21-25-25	10.00'-11.50'		10.0 BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
15	4	11-15-22	15.00'-16.50'		15.0 BR. FINE-CRS. SAND, SOME SILT, LITTLE GRAVEL	
20	5	22-46-60	20.00'-21.50'			
25	6	19-31-47	25.00'-26.50'			
					28.5 GREY ROCK FRAGMENTS	
30	7	60	30.00'-30.00'		30.0 BOTTOM OF BORING @ 30.0'	
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: D. BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-2**

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

April 3, 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):

8 Old Bridge Road
Old Lyme, CT
Pole 1485
CT11036C

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: 4-8-2014

8 Old Bridge Road
Old Lyme, CT
Pole 1485
CT11036C

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: CT11036C

CT036 / OldLyme / I-95 / X70 (CL&P #1485)

8 Old Bridge Road
Old Lyme, CT 06371

March 19, 2014

EBI Project Number: 62141632

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

EBI Consulting
environmental | engineering | due diligence

March 19, 2014

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

Re: Emissions Values for Site: **CT11036C - CT036 / OldLyme / I-95 / X70 (CL&P #1485**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 8 Old Bridge Road, Old Lyme, 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 and AWS bands 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 8 Old Bridge Road, Old Lyme, 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 / UMTS channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz) were considered for each sector of the proposed installation.
2) 4 UMTS / LTE channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the RFS APX16DWV-16DWV-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

6) The antenna mounting height centerline of the proposed antennas is **196 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Site ID	CT11036C - CT036/OldLyme/ I-95/ X70 (CL&P #1485)
Site Addresss	8 Old Bridge Road , Old Lyme, CT 06371
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-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	196	190	7/8"	1.2	0	21.535316	0.214462	0.02145%
1B	RFS	APX16DWV-16DWVS-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	196	190	7/8"	1.2	0	57.42751	0.571898	0.05719%
														Sector total Power Density Value:		0.079%	

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-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	196	190	7/8"	1.2	0	21.535316	0.214462	0.02145%
1B	RFS	APX16DWV-16DWVS-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	196	190	1-5/8"	1.2	0	57.42751	0.571898	0.05719%
														Sector total Power Density Value:		0.079%	

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-A20	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.25	196	190	7/8"	1.2	0	21.535316	0.214462	0.02145%
1B	RFS	APX16DWV-16DWVS-A20	Active	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.25	196	190	1-5/8"	1.2	0	57.42751	0.571898	0.05719%
														Sector total Power Density Value:		0.079%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.236%
Total Site MPE %	**0.236%**

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 **0.236% (0.079% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **0.079%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803