STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

September 24, 2009

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-T-MOBILE-103-090901** - New Cingular Wireless PCS, LLC and T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located off Willruss Street, Norwalk, Connecticut.

Dear Mr. Levine:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated September 1, 2009, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Richard Moccia, Mayor, City of Norwalk
Michael Greene, Director of Planning and Zoning, City of Norwalk
Hans Fiedler, T-Mobile USA, Inc.
John R. Morissette, Manager - Transmission Siting and Permitting, Northeast Utilities Service Company
Daniel J. Garstka, Senior Engineer, Transmission Project, Northeast Utilities Service Company

CSC
CONNECTICUT SITING COUNCIL

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

September 2, 2009

The Honorable Richard Moccia
Mayor
City of Norwalk
City Hall
125 East Avenue
P. O. Box 5125
Norwalk, CT 06856-5125

RE: **EM-CING-T-MOBILE-103-090901** - New Cingular Wireless PCS, LLC and T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located off Willruss Street, Norwalk, Connecticut.

Dear Mayor Moccia:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by September 17, 2009.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps

S. Derek Phelps
Executive Director

SDP/jbw

Enclosure: Notice of Intent

c: Michael Greene, Director of Planning and Zoning, City of Norwalk

CSC
CONNECTICUT SITING COUNCIL

EM-CING-T-MOBILE-103-090901

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

ORIGINAL

September 1, 2009

Honorable Daniel F. Caruso, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Notice of Exempt Modification – Existing CL&P Transmission Tower off Willruss Street, Norwalk

Dear Chairman Caruso and Members of the Council:

New Cingular Wireless PCS, LLC ("AT&T") and T-Mobile Northeast LLC ("T-Mobile") intend to modify their existing telecommunications facilities off Willruss Street in Norwalk. AT&T and T-Mobile each operate under licenses issued by the Federal Communications Commission ("FCC") to provide cellular and PCS mobile telephone service in Fairfield County.

T-Mobile has authorized AT&T to submit this Notice on its behalf.

Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to the Mayor of Norwalk.

Existing Facility

The Norwalk facility is located off Willruss Street, approximately 1/3 mile west of the intersection of US Hwy 7 and CT Rte 123. Site coordinates (NAD83) are N41° 07' 34" and W73° 25' 58".

The facility is owned and managed by the Connecticut Light and Power Company ("CL&P"), and consists of a 94-foot self-supporting lattice electric transmission structure (CL&P Line #1880, Structure #1102) and separate fenced compounds for AT&T and T-Mobile radio

equipment. AT&T was approved under Council Petition 446 in 2000 to install an extension mast and three antennas atop the CL&P structure. Subsequently, T-Mobile was approved under Petition 734 in 2005 to install a second extension mast with two clusters of three antennas each.

Currently, AT&T and T-Mobile antennas are mounted on separate masts extending to 13 ft. and 23 ft. AGL, respectively, above the transmission structure. AT&T currently operates antennas at a centerline height of 104 ft. AGL on its extension mast. T-Mobile installed three of the six antennas originally planned for the site, and currently operates antennas at centerline114 ft. AGL on its mast.

Proposed Modifications

Attached to this Notice are a location map, pre- and post-modification tower profile drawings, site plans, and a structural analysis report demonstrating that the tower is structurally capable of supporting the proposed AT&T and T-Mobile modifications.

T-Mobile

T-Mobile proposes to replace its three existing panel antennas and three TMAs with different antennas at 114 ft. AGL. In addition, T-Mobile will install three additional panel antennas, for a total of six. Were these antennas placed on the existing T-Mobile mast at a height of 104 ft. AGL, as contemplated in Petition No. 734, there would be potential for significant RF interference between these antennas and the AT&T antennas also at 104 ft. AGL. In order to resolve this RF issue, the two carriers have agreed that the existing AT&T mast should be replaced with a new 10-ft.-longer mast to match the height of the existing T-Mobile mast. Both sets of T-Mobile antennas will be installed at a centerline height of 114 ft. AGL (on separate masts), and AT&T's will remain at 104 ft. AGL, thereby eliminating the potential for RF interference. Six additional coaxial cables, associated with the second set of antennas, will also be installed.

T-Mobile has two equipment cabinets within a fenced compound. One of the two cabinets will be replaced with a new cabinet.

AT&T

AT&T's proposed modifications would take place on the replacement extension mast proposed by T-Mobile, per the above discussion. As shown on the attached drawings and as further described below, AT&T proposes to replace its existing antenna array with a new array of three Powerwave 7770-panel antennas, or their functional equivalents, and six Powerwave TMA's at the existing centerline height of 104 ft. AGL. No additional coax cables are required. This modification is for the purpose of installing UMTS equipment as part of the on-going statewide UMTS upgrade.

Statutory Considerations

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

1. The height of the overall structure will be unaffected. The proposed replacement mast will not exceed the height of the existing T-Mobile mast.

2. The proposed changes will not affect the property boundaries. All new construction will take place inside the existing fenced compound.

3. The proposed additions will not increase the noise level at the existing facility by six decibels or more.

4. Operation of the T-Mobile and AT&T antennas will not increase the total radio frequency electromagnetic radiation power density, measured at the tower base, to or above the standard adopted by the State of Connecticut and the FCC. The "worst-case" exposure calculation in accordance with FCC OET Bulletin No. 65 (1997) for a point of interest at the base of the structure in relation to the operation of the proposed antenna arrays is as follows:

Company	Centerline Height (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density† (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
T-Mobile GSM *	114	1945	8	185	0.0409	1.0000	4.09
T-Mobile UMTS *	114	2100	2	772	0.0427	1.0000	4.27
AT&T GSM	104	1930-1935 1965-1970	2	427	0.0284	1.0000	2.84
AT&T GSM	104	880-894	4	296	0.0394	0.5867	6.71
AT&T UMTS	104	1930-1935 1965-1970	1	500	0.0166	1.0000	1.66
AT&T UMTS	104	880-894	1	500	0.0166	0.5867	2.83
TOTAL							22.4%

* Power density parameters from T-Mobile.

† Please note that the standard power density equation provided by the Council in its memo of January 22, 2001 incorporates a ground reflection factor of 2.56 (i.e., the square of 1.6) as described in FCC OET Bulletin No. 65.

As the table demonstrates, the cumulative "worst-case" power density would be 22.4 % of the ANSI/IEEE standard, as calculated for mixed frequency sites. Total power density levels

resulting from AT&T's and T-Mobile's use of the tower facility would thus remain within applicable standards.

For the foregoing reasons, New Cingular Wireless PCS, LLC and T-Mobile Northeast LLC respectfully submit that proposed changes at the Norwalk facility constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me with any questions concerning this notice. Thank you for your consideration in this matter.

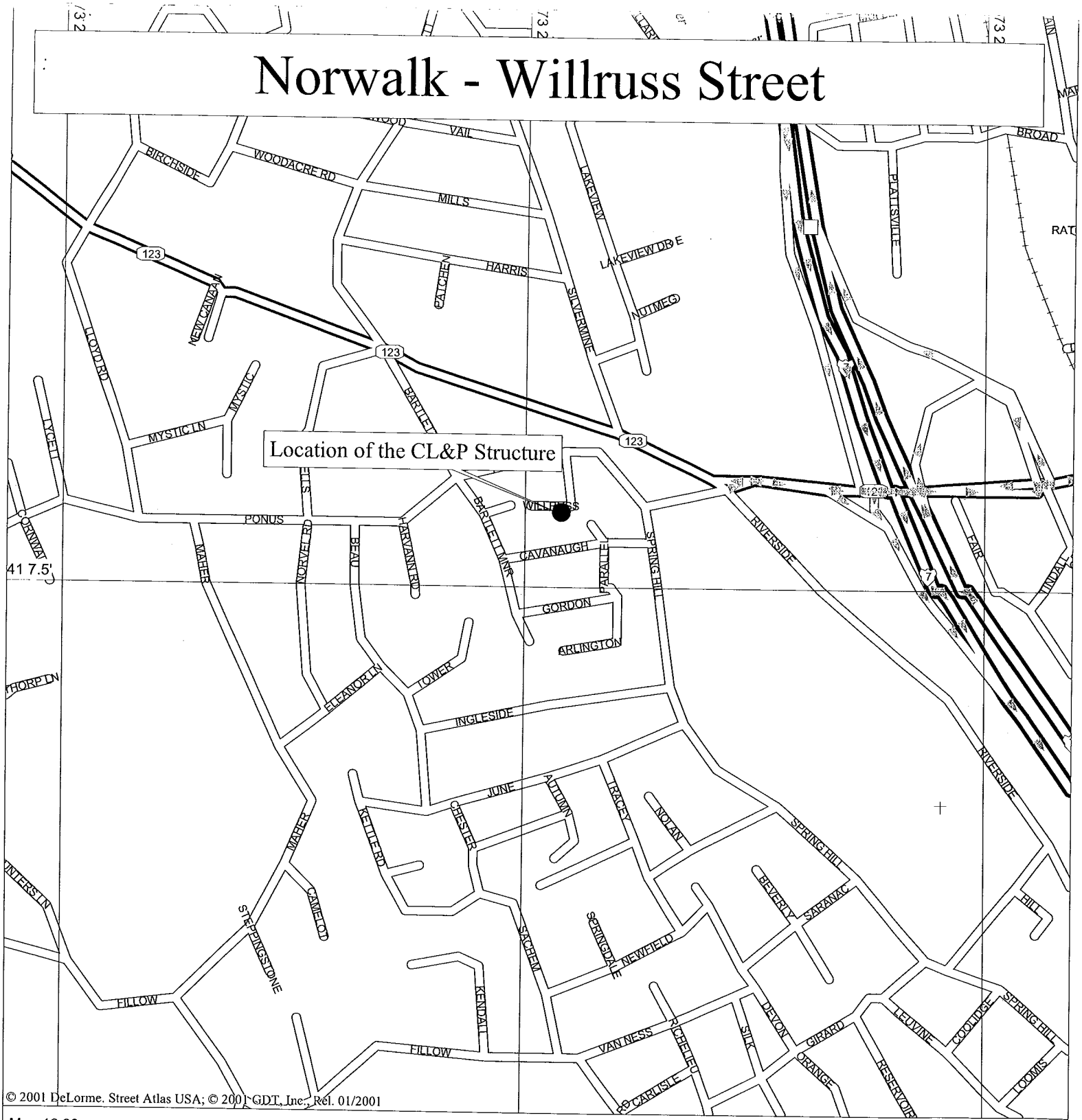
Respectfully yours,

Steve Levine
Real Estate Consultant

Enclosures

cc: Honorable Richard Moccia, Mayor, City of Norwalk
Michele G. Briggs, Manager of Real Estate
Jennifer Young Gaudet, T-Mobile Northeast LLC
Christopher B. Fisher, Esq.

Norwalk - Willruss Street



Mag 16.00
Thu Aug 27 09:19 2009
Scale 1:7,812 (at center)
500 Feet
200 Meters

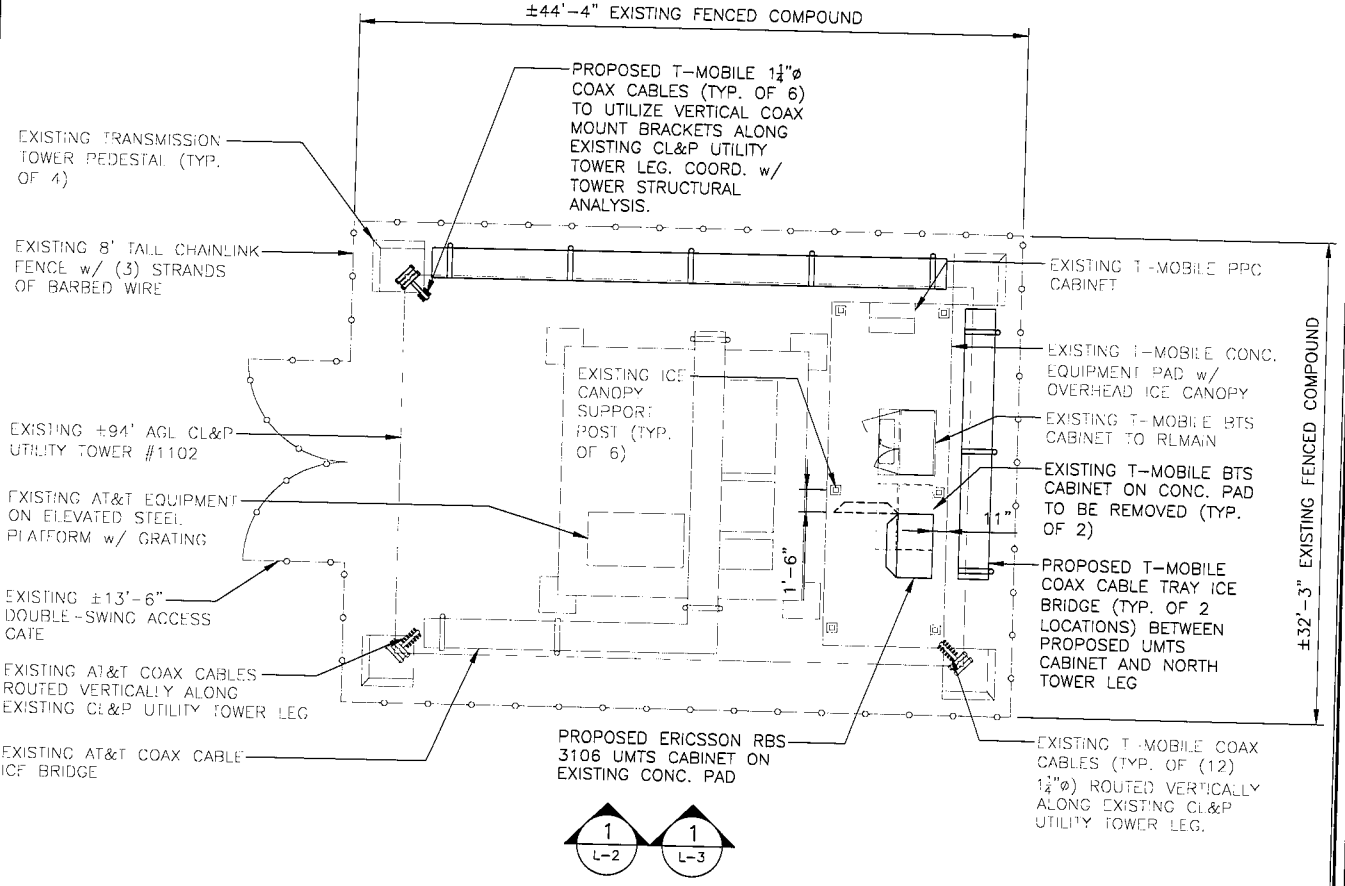
- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- Exit
- Railroad
- Cemetery
- Population Center
- Water
- River/Canal

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.

UMTS UPGRADE PROJECT SCOPE

EQUIPMENT TYPE	PROPOSED CHANGES
RADIO CABINET	REMOVE (1) OF (2) EXISTING BTS CABINETS ON EXISTING CONC. EQUIPMENT PAD. INSTALL (1) ERICSSON RBS 3106 UMTS CABINET ON EXISTING CONC. EQUIPMENT PAD AS SHOWN.
ANTENNAS/ TMAs	NO CHANGE IS PROPOSED FOR THE (3) EXISTING PANEL ANTENNAS AND (6) TMAs. ADDITIONALLY (3) RFS APX16 SERIES PANEL ANTENNAS ARE PROPOSED TO BE INSTALLED ON A PROPOSED ANTENNA MAST AS SHOWN ON L-3. CONFIGURATION TO BE COORDINATED w/ TOWER STRUCTURAL ANALYSIS.
COAX CABLES	NO CHANGE IS PROPOSED FOR THE (12) EXISTING 1¼"ø COAX CABLES ROUTED VERTICALLY ALONG A LEG OF THE EXISTING CL&P UTILITY TOWER #1102. ADDITIONALLY, (6) 1¼"ø COAX CABLES ARE PROPOSED TO BE ROUTED VERTICALLY ALONG THE EXISTING CL&P UTILITY TOWER #1102 (SIMILAR TO THE EXISTING). THE PROPOSED COAX ROUTING CONFIGURATION TO BE COORDINATED WITH TOWER STRUCTURAL ANALYSIS.
COMPOUND LIMITS	NO CHANGE TO THE LIMITS OF THE EXISTING FENCED COMPOUND IS PROPOSED.



1 / L-1 **COMPOUND PLAN**

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

APPROX. NORTH

GRAPHIC SCALE

8 0 4 8 16 32

(IN FEET)

1 inch = 8 ft.

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

REV.'S	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
00	8/25/09	BEB	CFC	LEASE EXHIBIT
A	12/5/08	FV	CFC	LEASE EXHIBIT - REVIEW

PROFESSIONAL ENGINEER SEAL

T Mobile

NATSOMMA

T-MOBILE

PROPOSED WIRELESS COMMUNICATIONS FACILITY UMTS UPGRADE

CT11356C

CL&P TOWER - RTE 123

CL&P STRUCTURE #1102
10 WILLARD STREET
NORWALK, CT 06850

DATE:	12/4/08
SCALE:	AS SHOWN
JOB NO.	08174.C05

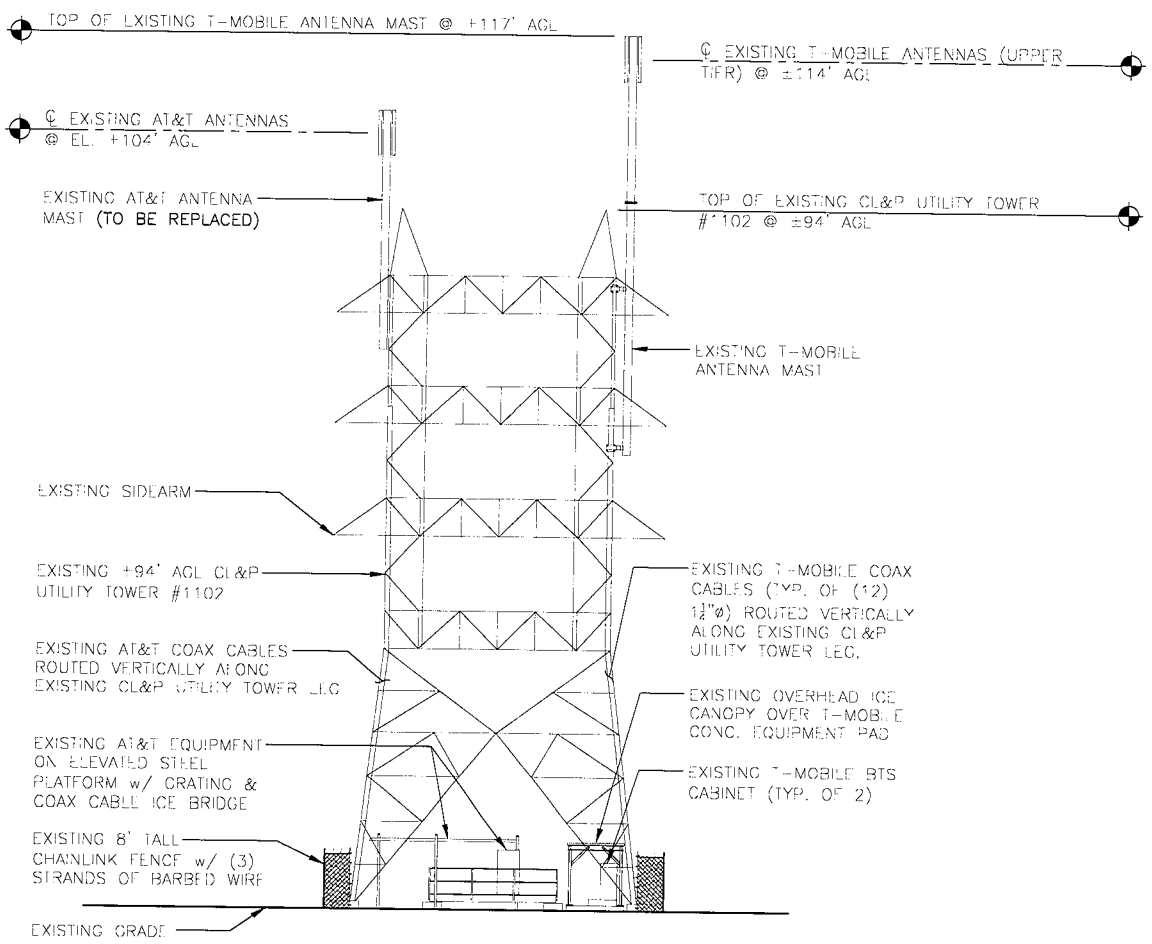
LEASE EXHIBIT

SHEET NO. L-1

Sheet No. 1 of 2

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.



1 / L-2

SOUTHWEST ELEVATION EXISTING CONDITION

SCALE: 1/16" = 1'-0"

GRAPHIC SCALE

16 0 8 16 32 64

(IN FEET)

1 inch = 16 ft.

DESIGNED BY:			CFC
DRAWN BY:			FV
CHK'D BY:			CFC
00	8/25/09	DEB	LEASE EXHIBIT
01	12/5/08	FV	LEASE EXHIBIT - REVIEW
ISS.	DATE	DRAWN BY	CHK'D BY DESCRIPTION

PROFESSIONAL ENGINEER SEAL

T Mobile

NATSORMIN

T-MOBILE

PROPOSED WIRELESS COMMUNICATIONS FACILITY UNITS UNKNOWN

CT11356C

CL&P TOWER - RTE 123

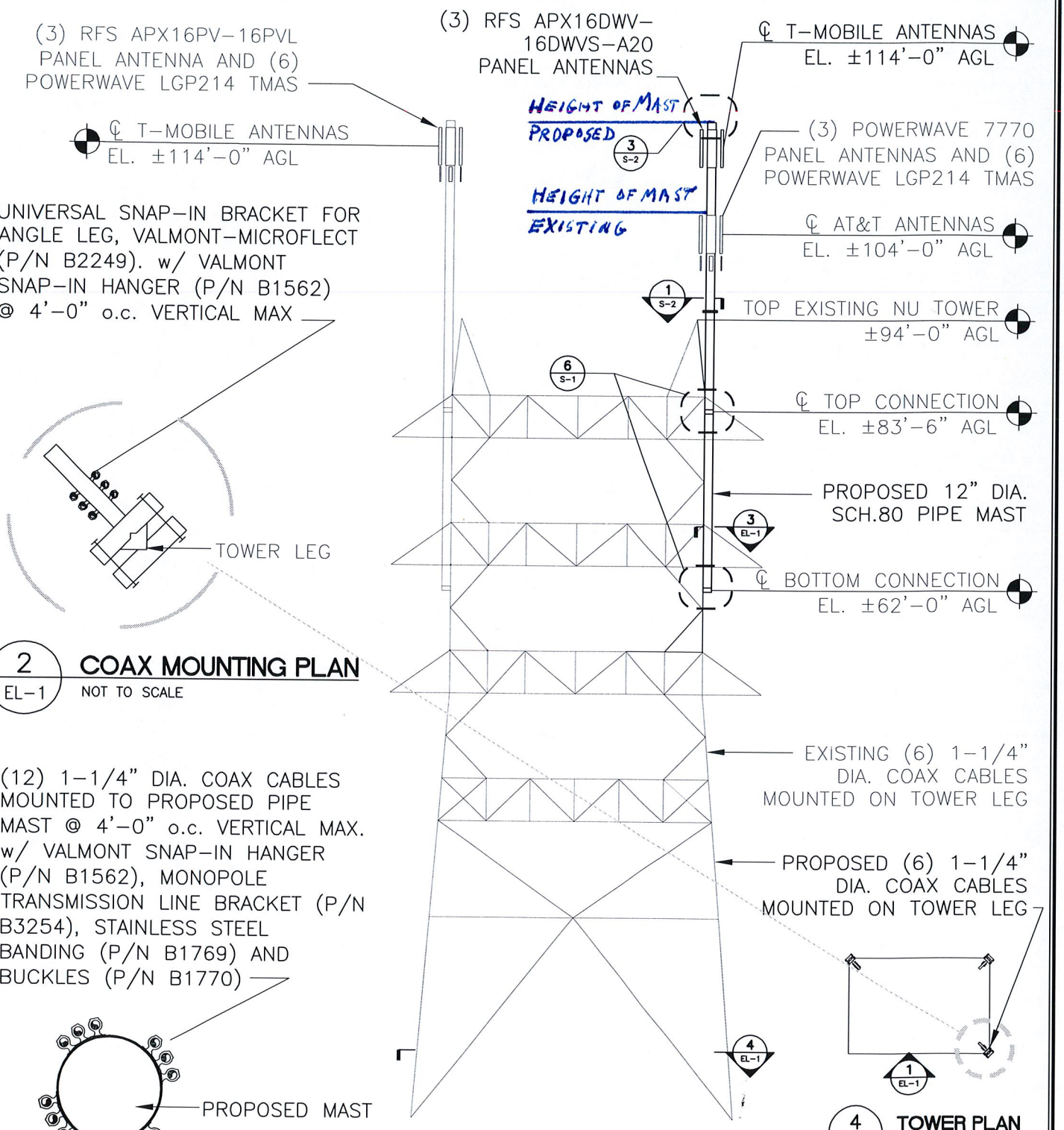
CL&P STRUCTURE #1102
72 WILLIAMS STREET
NORWALK, CT 06850

DATE:	12/4/08
SCALE:	AS SHOWN
JOB NO.	08174.C05

LEASE EXHIBIT

SHEET NO. L-2

Sheet No. 2 of 3



2 EL-1 **COAX MOUNTING PLAN** NOT TO SCALE

3 EL-1 **COAX MOUNTING PLAN** NOT TO SCALE

1 EL-1 **NORTHEAST ELEVATION** SCALE: NOT TO SCALE

4 EL-1 **TOWER PLAN** SCALE: NOT TO SCALE

REVISIONS		
00	3/25/09	REPORT
01	7/09/09	ISSUED FOR REVIEW

NATCOMM INC CONSULTING ENGINEERS
p: 203.488.0580 f: 203.488.8587
w: nat-eng.com e: info@nat-eng.com
63-2 N. Branford Rd. Branford, CT 06405

NORWALK RT.123
NU STRUCTURE #1102

10 WILLRUSS STREET

PROJECT NO:	08174.CO5
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED

T-Mobile

TOWER & MAST ELEVATION

EL-1

NATCOMM inc
CONSULTING ENGINEERS

Structural Analysis of PCS Mast and CL&P Tower

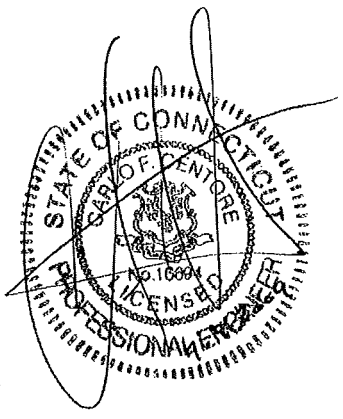
T-Mobile: CT11356-Rt.123

CL&P Structure No. 1102
94' Electric Transmission Tower
and existing 55' PCS Mast

10 Willruss Street,
Norwalk, CT

Natcomm Project No. 08174.CO.05

~~Date: April 9, 2009~~
Rev 1: July 9, 2009



Prepared for:
HPC Development, LLC
53 Lake Ave Ext
Danbury, CT 06811

p: 203.488.0580
f: 203.488.8587
w: nat-eng.com
63-2 N. Branford Rd.
Branford, CT 06405

Table of Contents

Natcomm, Inc.
Structural Analysis – T-Mobile: CT11356-Rt.123
CL&P Structure No. 1102
Norwalk, CT
Revision 1 ~ July 9, 2009

Introduction

The purpose of this report is to design a proposed pipe mast and analyze the existing 94' CL&P tower located at 10 Willruss Street Norwalk, CT for the proposed antenna and equipment upgrade by T-Mobile.

The proposed loads consist of the following:

- T-MOBILE (Existing to be remain):

  Antennas: Three (3) RFS APX16PV-16PVL panel antennas and six (6) TMAs mounted on an existing PCS mast with a RAD center elevation of 114-ft above the tower base plate.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables.

- AT&T (Future):

  Antennas: Three (3) Powerwave 7770 panel antennas and six (6) Powerwave LGP214 TMAs mounted on a proposed PCS mast with a RAD center elevation of 104-ft above grade level.
  Coax Cables: Six (6) 1-1/4" ∅ and three (3) 1/2" ∅ coax cables.

- **T-MOBILE (Proposed):**

  Antennas: Three (3) RFS APX16DWV-16DWVS-C-A20 panel antennas mounted on a proposed PCS mast with a RAD center elevation of 114-ft above grade level.
  Coax Cables: Six (6) 1-1/4" ∅ coax cables.

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. 72, "Design of Steel Transmission Pole Structures Second Edition", defines allowable steel stresses for evaluation of the CL&P utility structure.
- All utility structure 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 pole 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 Natcomm, Inc.
- Pipe mast and utility structure will be in plumb condition.
- Utility structure 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 completed using the current version of RISA-3D computer program licensed to Natcomm, Inc.

The proposed pipe mast is a 55' long 12" SCH 80 pipe (dia. = 12.8") attached to the CL&P pole structure at two locations. It 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 pole 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 pole 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. 72 – "Design of Steel Transmission Pole Structures Second Edition", NESC C2-2007 and Northeast Utilities Design Criteria.

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

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole 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. 72.

  Load cases considered:

  Load Case 1: NESC Heavy

Wind Pressure.....	4.0 psf
Vertical Overload Capacity Factor.....	1.50
Wind Overload Capacity Factor.....	2.50
Wire Tension Overload Capacity Factor.....	1.65

  Load Case 2: NESC Extreme

Wind Speed.....	110 mph [1]
Radial Ice Thickness.....	0"

  Note 1: NESC C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-secong gust)

- ANTENNA MAST ANALYSIS

The antenna mast pipe, appurtenances and connections to the utility pole 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

- PIPE MAST

The proposed pipe mast was determined to be structural adequate.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12" SCH 80 Pipe (diam = 12.8")	Bending	71.9%	**PASS**

- UTILITY TOWER

This analysis finds that the subject utility tower is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", for the applied NESC Heavy and Extreme 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 **92.14%** occurs in the utility tower under the NESC Heavy Broken Wire loading condition.

TOWER SECTION:

The utility tower was found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
156XY	Angle	92.14%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a four (4) 6-ft x 6-ft tapering to 3-ft x 3-ft x 9-ft-6-in long reinforced concrete piers with 11-ft x 11-ft x 3-ft thick pads. The base of the tower is connected to the foundation by means of one (1) anchor stub per leg.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code check of for uplift:

BASE REACTIONS:

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

Load Case	Shear	Compression	Uplift
NESC Heavy Wind	40.14 kips	124.72 kips	66.21 kips
NESC Extreme Wind	41.22 kips	120.03 kips	92.79 kips
NESC Heavy Wind w/ Broken Wire	43.62 kips	129.65 kips	87.42 kips

FOUNDATION:

The foundation factor of safety (FS) was found to be within allowable limits.

Foundation	Design Limit	NU Required (FS) [2]	Proposed Loading (FS) [2]	Result
Reinf. Conc. Pier w/ Rock Anchors	UL [1]	1.5	3.1	**PASS**

Note 1: UL denotes uplift.
Note 2: FS denotes Factor of Safety.

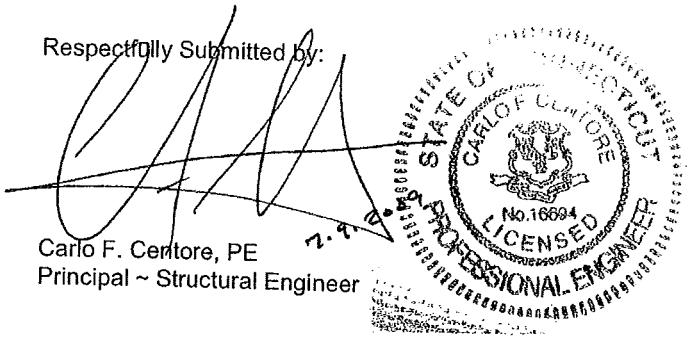
Conclusions

This analysis shows that the subject utility tower **is adequate** to support the proposed antenna mast and related appurtenances.

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, Natcomm, 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

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

September 1, 2009

Honorable Richard Moccia, Mayor
City of Norwalk
City Hall 125 East Avenue
Norwalk, CT 06856

Re: Notice of Exempt Modification – Existing CL&P Transmission Tower off Willruss Street, Norwalk

Dear Mayor Moccia:

New Cingular Wireless PCS, LLC ("AT&T") and T-Mobile Northeast LLC ("T-Mobile") intend to modify telecommunications antennas and associated equipment at an existing telecommunications facility off Willruss Street in Norwalk.

The facility is owned and managed by the Connecticut Light and Power Company ("CL&P").

A Notice of Exempt Modification has been filed with the Connecticut Siting Council as required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73. Please accept this letter as notification to the City of Norwalk under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The attached letter fully sets forth the AT&T and T-Mobile proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council's procedures, please contact Mr. Tim Burks at 860-080-0001 (AT&T), Ms. Jennifer Young Gaudet (T-Mobile), or Mr. Derek Phelps, Executive Director of the Connecticut Siting Council, at (860) 827-2935.

Sincerely,

Steve Levine
Real Estate Consultant

Enclosure

NATCOMM INC.
CONSULTING ENGINEERS

RECEIVED
SEP - 1 2009
CONNECTICUT
SITING COUNCIL

Structural Analysis of PCS Mast and CL&P Tower

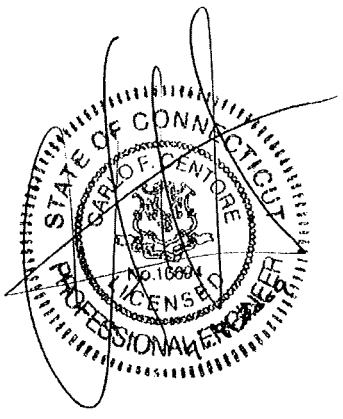
T-Mobile: CT11356-Rt.123

CL&P Structure No. 1102
94' Electric Transmission Tower
and existing 55' PCS Mast

10 Willruss Street,
Norwalk, CT

Natcomm Project No. 08174.CO.05

~~Date: April 9, 2009~~
Rev 1: July 9, 2009



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Natcomm, Inc.
Structural Analysis – T-Mobile: CT11356-Rt.123
CL&P Structure No. 1102
Norwalk, CT
Revision 1 ~ July 9, 2009

Introduction

The purpose of this report is to design a proposed pipe mast and analyze the existing 94' CL&P tower located at 10 Willruss Street Norwalk, CT for the proposed antenna and equipment upgrade by T-Mobile.

The proposed loads consist of the following:

- T-MOBILE (Existing to be remain):
  Antennas: Three (3) RFS APX16PV-16PVL panel antennas and six (6) TMAs mounted on an existing PCS mast with a RAD center elevation of 114-ft above the tower base plate.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables.

- AT&T (Future):
  Antennas: Three (3) Powerwave 7770 panel antennas and six (6) Powerwave LGP214 TMAs mounted on a proposed PCS mast with a RAD center elevation of 104-ft above grade level.
  Coax Cables: Six (6) 1-1/4" ∅ and three (3) 1/2" ∅ coax cables.

- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APX16DWV-16DWVS-C-A20 panel antennas mounted on a proposed PCS mast with a RAD center elevation of 114-ft above grade level.
  Coax Cables: Six (6) 1-1/4" ∅ coax cables.

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. 72, "Design of Steel Transmission Pole Structures Second Edition", defines allowable steel stresses for evaluation of the CL&P utility structure.
- All utility structure 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 pole 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 Natcomm, Inc.
- Pipe mast and utility structure will be in plumb condition.
- Utility structure 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 completed using the current version of RISA-3D computer program licensed to Natcomm, Inc.

The proposed pipe mast is a 55' long 12" SCH 80 pipe (dia. = 12.8") attached to the CL&P pole structure at two locations. It 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 pole 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 pole 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. 72 – "Design of Steel Transmission Pole Structures Second Edition", NESC C2-2007 and Northeast Utilities Design Criteria.

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

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole 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. 72.

  Load cases considered:

  Load Case 1: NESC Heavy
  Wind Pressure..... 4.0 psf
  Vertical Overload Capacity Factor..... 1.50
  Wind Overload Capacity Factor..... 2.50
  Wire Tension Overload Capacity Factor..... 1.65

  Load Case 2: NESC Extreme
  Wind Speed..... 110 mph [1]
  Radial Ice Thickness..... 0"

  Note 1: NESC C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-secong gust)

- ANTENNA MAST ANALYSIS

The antenna mast pipe, appurtenances and connections to the utility pole 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

- PIPE MAST

The proposed pipe mast was determined to be structural adequate.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12" SCH 80 Pipe (diam = 12.8")	Bending	71.9%	**PASS**

- UTILITY TOWER

This analysis finds that the subject utility tower is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", for the applied NESC Heavy and Extreme 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 **92.14%** occurs in the utility tower under the NESC Heavy Broken Wire loading condition.

TOWER SECTION:

The utility tower was found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
156XY	Angle	92.14%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a four (4) 6-ft x 6-ft tapering to 3-ft x 3-ft x 9-ft-6-in long reinforced concrete piers with 11-ft x 11-ft x 3-ft thick pads. The base of the tower is connected to the foundation by means of one (1) anchor stub per leg.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code check of for uplift:

BASE REACTIONS:

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

Load Case	Shear	Compression	Uplift
NESC Heavy Wind	40.14 kips	124.72 kips	66.21 kips
NESC Extreme Wind	41.22 kips	120.03 kips	92.79 kips
NESC Heavy Wind w/ Broken Wire	43.62 kips	129.65 kips	87.42 kips

FOUNDATION:

The foundation factor of safety (FS) was found to be within allowable limits.

Foundation	**Design Limit**	**NU Required (FS)** [2]	**Proposed Loading (FS)** [2]	**Result**
Reinf. Conc. Pier w/ Rock Anchors	UL [1]	1.5	3.1	**PASS**

Note 1: UL denotes uplift.
Note 2: FS denotes Factor of Safety.

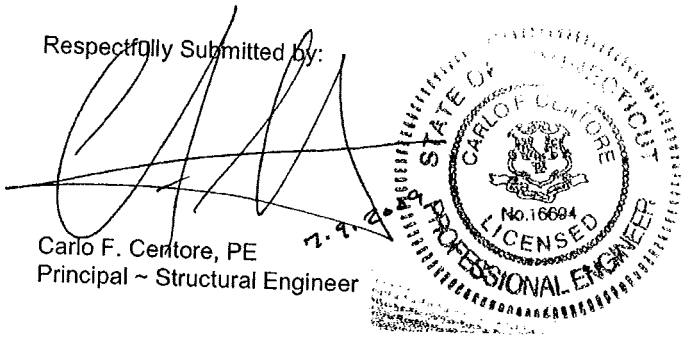
Conclusions

This analysis shows that the subject utility tower **is adequate** to support the proposed antenna mast and related appurtenances.

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, Natcomm, 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

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 Natcomm, 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 Natcomm, 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. Natcomm, 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

Natcomm, Inc.
Structural Analysis – T-Mobile: CT11356-Rt.123
CL&P Structure No. 1102
Norwalk, CT
Revision 1 ~ July 9, 2009

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

Introduction

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

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

ANSI Standard C2-2002 (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 provided from Northeast Utilities.*

PCS Mast

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

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

ELECTRIC TRANSMISSION TOWER

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

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

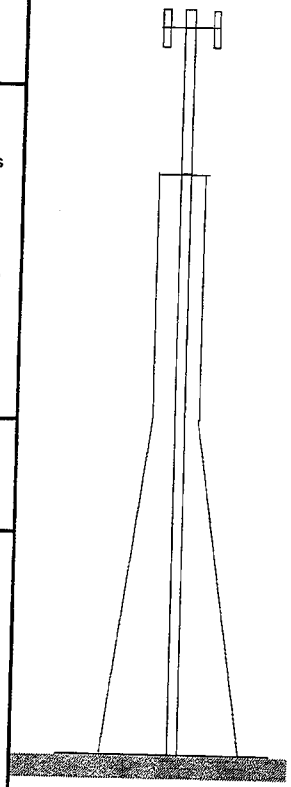
The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2002 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with 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.

J:\PCS Wireless\Vendor Design Package\Design Criteria Table(Rev04).xls

NU DESIGN CRITERIA TABLE

	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef - Shape Factor	
	V (mph)	q (psf)	Kz	Gh			
EXTREME WIND (50-YR)							
PCS Mast, etc. Design (Allowable stress)	85	TIA	TIA	TIA	TIA except no Sect 3.1.1.1	TIA	
Tower/Pole Analysis (yield stress)							
PCS above tower/pole-top	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading 1.25 x Gust Response Factor Height above groundline based on top of mast/antenna					1.60 flat surfaces 1.30 round surfaces	
Tower/Pole & PCS below tower/pole-top	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading Height above groundline based on top of tower/pole					1.60 flat surfaces 1.30 round surfaces	
Conductors							
Only for structures installed 2007 and after>>	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading, and Use NESC C2-2007, Section 25, Rule 250D; Combined Extreme Ice and Wind					1.00 1.00	
NESC HEAVY							
PCS Design (Allowable stress)	TIA	TIA (.75Wi)	TIA	TIA	TIA except no Sect 3.1.1.1	TIA	
Tower/Pole Analysis (yield stress)							
PCS above tower/pole-top		4	1.00	1.00	2.50	1.60 flat surfaces 1.30 round surfaces	
Tower (on each of 2 faces)/pole and PCS below tower-top		4	1.00	1.00	2.50	1.60 flat surfaces 1.30 round surfaces	
Conductors							
Wind		4	1.00	1.00	2.50	1.00	
Horizontal comp. of tension					1.65		
Vertical weight w/ 1/2" ice					1.50		



rev 12/19/07

Northeast Utilities/ Western Massachusetts Electric Co.
Transmission Structure Shape factor Criteria Supporting PCS Antennas (Issued April 12, 2007)

The shape factor Multiplier.

- Flat member Cd = 1.6:
- Round Member Cd=1.3

Where the coax cables are mounted along side of the pole structure the shape factor multiplier shall be as follows:

- Coax cables attached on outside periphery of the pole in one layer Cd=1.45 to the pole and the coax.
- Coax cables mounted on stand off, use Cd=1.6 for coax cables and Cd=1.3 for pole

Mohsen Sahirad, P.E.
Transmission Civil Engineer

Northeast Utilities System

Job : AT&T Norwalk, CT-5046
Description:

Spec. Number
Computed by
Checked by

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Date 7/21/08
Date

INPUT DATA

TOWER ID: 1102

Structure Height (ft) : 94

Wind Zone : Central CT (green)

Wind Speed : 110 mph

Tower Type : ○ Suspension ◉ Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

	BACK	AHEAD
NAME =	*0.438 COMP*	*0.438 COMP*
DESCRIPTION =	0.438	0.438
STRANDING =	9/3 Cu/Cal Brz	9/3 Cu/Cal Brz
DIAMETER =	0.438 in	0.438 in
WEIGHT =	0.408 lb/ft	0.408 lb/ft

Conductor Properties:

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

Insulator Weight = 200 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,800	7,000	3,800	7,000
EXTREME WIND =	3,140	7,568	3,140	7,568
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,412	2,734	1,412	2,734

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	13	AHEAD:	13	**26**
WIND SPAN (ft) =	BACK:	409	AHEAD:	409	**818**
WEIGHT SPAN (ft) =	BACK:	415	AHEAD:	415	**830**

Northeast Utilities System

Job : AT&T Norwalk, CT-5046
Description:

Spec. Number
Computed by
Checked by

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Sheet of
Date 7/21/08
Date

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1102

Wind Span =	818 ft
Weight Span =	830 ft
Total Angle =	26 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 =	3,810 lb	0 lb	1,234 lb	1,905 lb	6,108 lb	617 lb
Conductor =	6,618 lb	0 lb	2,924 lb	3,309 lb	11,252 lb	1,462 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	2,270 lb	0 lb	339 lb
Conductor =	5,486 lb	0 lb	1,143 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	339 lb
Conductor =	#VALUE!	#VALUE!	1,143 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,823 lb
Conductor =	#VALUE!	#VALUE!	3,272 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	823 lb
Conductor =	#VALUE!	#VALUE!	1,949 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	637 lb	0 lb	339 lb
Conductor =	1,234 lb	0 lb	1,143 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	956 lb	0 lb	508 lb
Conductor =	1,851 lb	0 lb	1,714 lb

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

Northeast Utilities System

Job : AT&T Norwalk, CT-5046
Description:

Spec. Number
Computed by
Checked by

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Date

INPUT DATA

TOWER ID: 1102

Structure Height (ft) : 94

Wind Zone : Central CT (green)

Wind Speed : 110 mph

Tower Type : ○ Suspension
◉ Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

	BACK	AHEAD
NAME =	*OPGW-120*	*OPGW-120*
DESCRIPTION =	6-Groove	6-Groove
STRANDING =	10/9 FOCAS	10/9 FOCAS
DIAMETER =	0.738 in	0.738 in
WEIGHT =	0.518 lb/ft	0.518 lb/ft

Conductor Properties:

	BACK	AHEAD		
NAME =	*NONE*	*NONE*		
Number of Conductors per phase: 1	-	-	1	Number of Conductors per phase
	- -	- -		
DIAMETER =	0.000 in	0.000 in		
WEIGHT =	0.000 lb/ft	0.000 lb/ft		

Insulator Weight = 200 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	6,000	na	6,000	na
EXTREME WIND =	7,760	na	7,760	na
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 =	2,076	na	2,076	na

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	13	AHEAD:	13	**26**
WIND SPAN (ft) =	BACK:	409	AHEAD:	409	**818**
WEIGHT SPAN (ft) =	BACK:	415	AHEAD:	415	**830**

Northeast Utilities System

Job : AT&T Norwalk, CT-5046
Description:

Spec. Number
Computed by
Checked by

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Sheet of
Date 7/21/08
Date

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1102

Wind Span =	818 ft
Weight Span =	830 ft
Total Angle =	26 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 =	5,652 lb	0 lb	1,603 lb	2,826 lb	9,645 lb	802 lb
Conductor =	#VALUE!	#VALUE!	987 lb	#VALUE!	#VALUE!	494 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	4,939 lb	0 lb	430 lb
Conductor =	#VALUE!	#VALUE!	400 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	430 lb
Conductor =	#VALUE!	#VALUE!	400 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	2,224 lb
Conductor =	#VALUE!	#VALUE!	1,432 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,069 lb
Conductor =	#VALUE!	#VALUE!	658 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	937 lb	0 lb	430 lb
Conductor =	#VALUE!	#VALUE!	400 lb

7. Construction

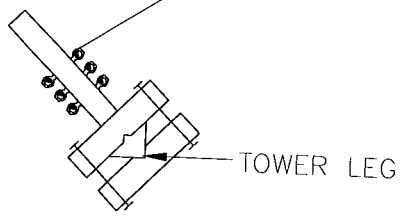
	Horizontal	Longitudinal	Vertical
Shield Wire =	1,405 lb	0 lb	645 lb
Conductor =	#VALUE!	#VALUE!	600 lb

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

(3) RFS APX16PV-16PVL PANEL ANTENNA AND (6) POWERWAVE LGP214 TMAS

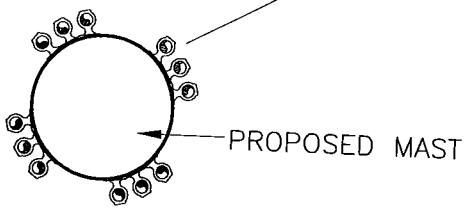
℄ T-MOBILE ANTENNAS EL. ±114'-0" AGL

UNIVERSAL SNAP-IN BRACKET FOR ANGLE LEG, VALMONT-MICROFLECT (P/N B2249). w/ VALMONT SNAP-IN HANGER (P/N B1562) @ 4'-0" o.c. VERTICAL MAX



2 EL-1 COAX MOUNTING PLAN
NOT TO SCALE

(12) 1-1/4" DIA. COAX CABLES MOUNTED TO PROPOSED PIPE MAST @ 4'-0" o.c. VERTICAL MAX. w/ VALMONT SNAP-IN HANGER (P/N B1562), MONOPOLE TRANSMISSION LINE BRACKET (P/N B3254), STAINLESS STEEL BANDING (P/N B1769) AND BUCKLES (P/N B1770)



3 EL-1 COAX MOUNTING PLAN
NOT TO SCALE

(3) RFS APX16DWV-16DWVS-A20 PANEL ANTENNAS

℄ T-MOBILE ANTENNAS EL. ±114'-0" AGL

(3) POWERWAVE 7770 PANEL ANTENNAS AND (6) POWERWAVE LGP214 TMAS

℄ AT&T ANTENNAS EL. ±104'-0" AGL

TOP EXISTING NU TOWER ±94'-0" AGL

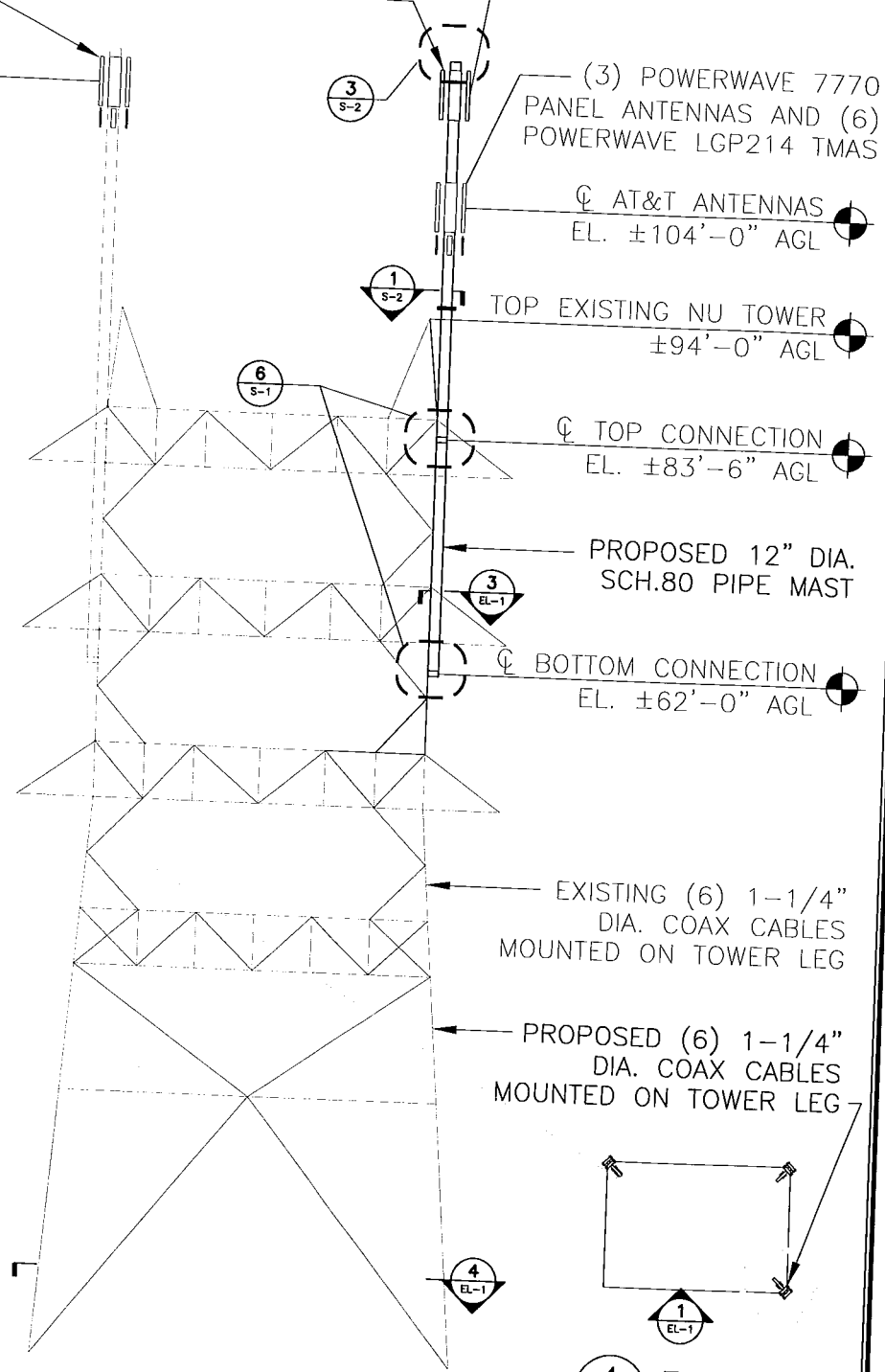
℄ TOP CONNECTION EL. ±83'-6" AGL

PROPOSED 12" DIA. SCH.80 PIPE MAST

℄ BOTTOM CONNECTION EL. ±62'-0" AGL

EXISTING (6) 1-1/4" DIA. COAX CABLES MOUNTED ON TOWER LEG

PROPOSED (6) 1-1/4" DIA. COAX CABLES MOUNTED ON TOWER LEG



1 EL-1 NORTHEAST ELEVATION
SCALE: NOT TO SCALE

4 EL-1 TOWER PLAN
SCALE: NOT TO SCALE

TRUE NORTH

REVISIONS		
00	3/25/09	REPORT
01	7/09/09	ISSUED FOR REVIEW

NATCOMM INC CONSULTING ENGINEERS
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63-2 N. Branford Rd. Branford, CT 06405

NORWALK RT.123
NU STRUCTURE #1102

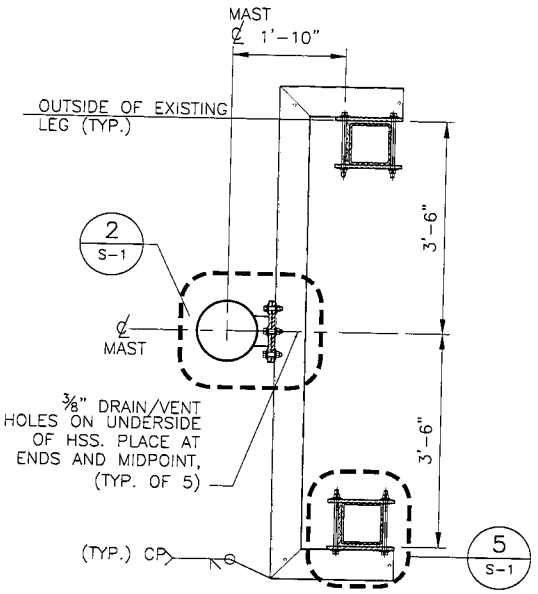
10 WILLRUSS STREET

PROJECT NO:	08174.CO5
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED

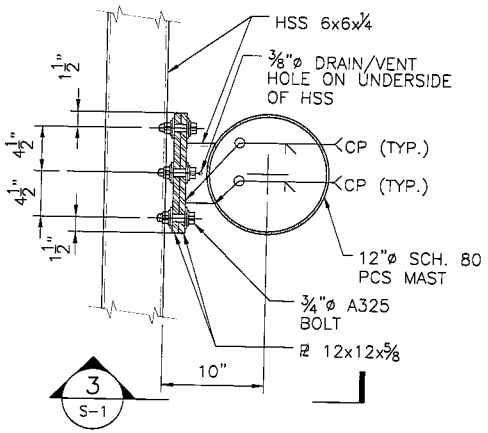
T-Mobile

TOWER & MAST ELEVATION

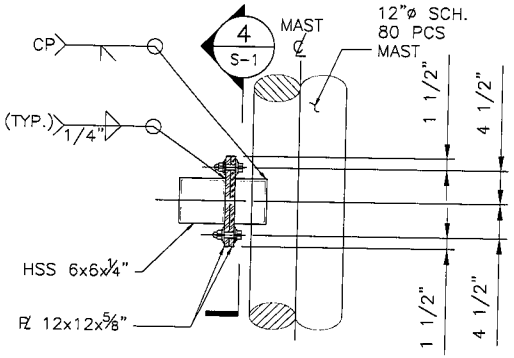
EL-1



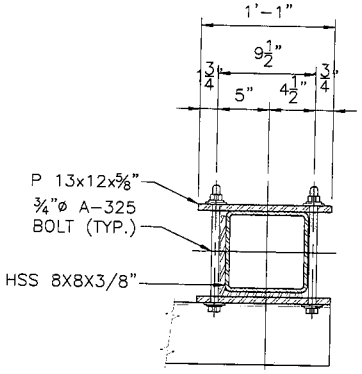
1 S-1 **SECTION**
SCALE: 1/2"=1'-0"



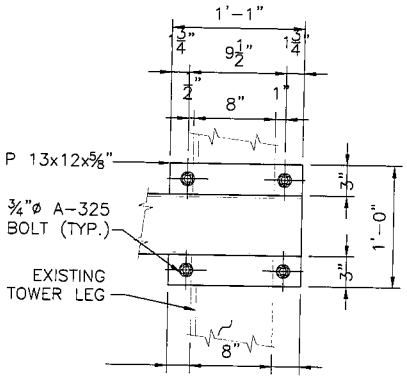
2 S-1 **DETAIL**
SCALE: 1"=1'-0"



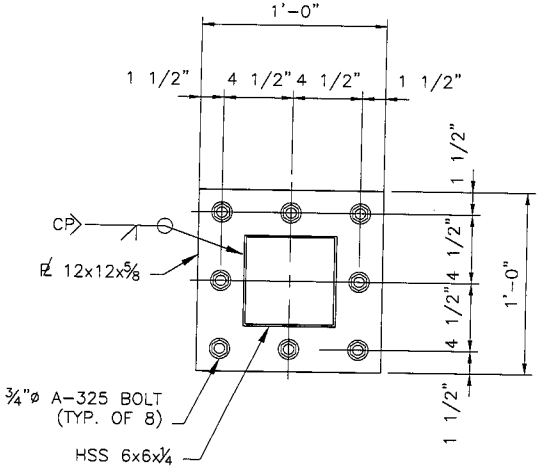
3 S-1 **SECTION**
SCALE: 3/4"= 1'-0"



5 S-1 **DETAIL**
SCALE: 1"= 1'-0"



6 S-1 **DETAIL**
SCALE: 1"= 1'-0"



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

DESIGNED BY:
DRAWN BY:
CHK'D BY:

NO	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
00	7/09/09	TAL	CFC	ISSUED FOR REVIEW

PROFESSIONAL ENGINEER SEAL

T-Mobile

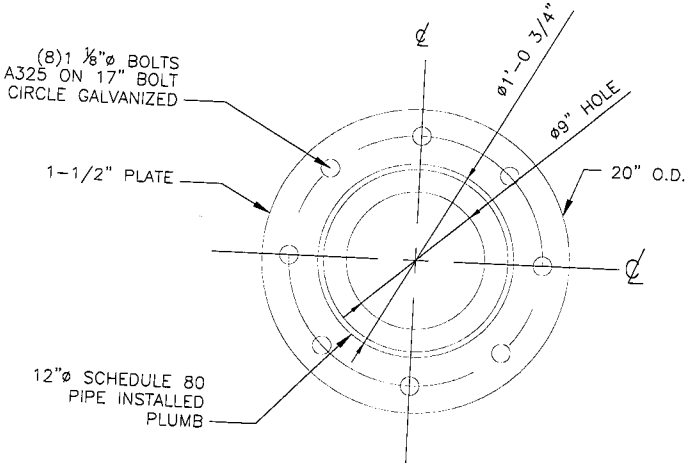
NATCOMM

T-MOBILE PCS MAST INSTALLATION
NORWALK
CT-11-356
CL&P STRUCTURE #1102
10 WILLIAMS STREET
NORWALK, CT

DATE: 7/09/09
SCALE: AS SHOWN
JOB NO. DB174.C05

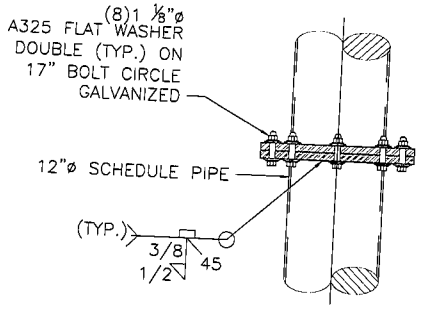
MAST CONNECTION DETAILS

SHEET NO.
S-1
Sheet No. 2 of 4



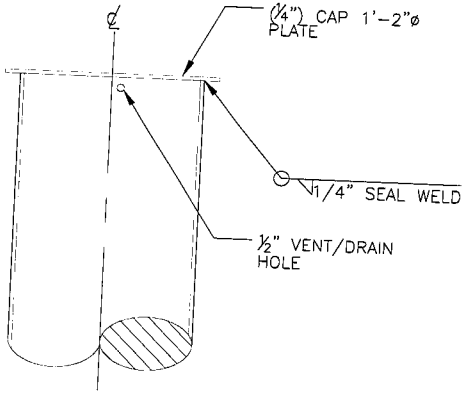
1 / S-2 MAST FLANGE CONNECTION PLAN

SCALE: 1 1/2"=1'-0"



2 / S-2 MAST FLANGE CONNECTION

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



3 / S-2 TOP COVER PLATE

SCALE: 1 1/2"=1'-0"

DESIGNED BY:	
DRAWN BY:	
CHK'D BY:	

NO.	REV. DATE	DRAWN BY	CHK'D BY	ISSUED FOR REVIEW
00	7/09/09	TH	CFC	

PROFESSIONAL ENGINEER SEAL

T-Mobile

NATCOMM

T-MOBILE PCS MAST INSTALLATION

NORWALK
CT-11-356
CL&P STRUCTURE #1102

10 WILLRUSS STREET
NORWALK, CT 06851

DATE:	7/09/09
SCALE:	AS SHOWN
JOB NO.	08174.C05

FLANGE CONNECTION DETAILS

SHEET NO.
S-2
Sheet No. 3 of 4

GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES", ASCE MANUAL NO. 72 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2002 AND NORTHEAST UTILITIES DESIGN CRITERIA.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES.
3. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
5. 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.
6. NO DRILLING, TAPPING OR WELDING ON CL&P OWNED EQUIPMENT

STRUCTURAL STEEL NOTES:

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
   - A. STRUCTURAL STEEL (W SHAPES)---ASTM A992, (FY = 50 KSI)
   - B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36, (FY = 36 KSI)
   - C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   - D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   - C. CONNECTION BOLTS---ASTM A325-N
   - D. ANCHOR RODS---ASTM F 1554
   - E. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. NOTIFY THE ENGINEER PRIOR TO FIELD CUTTING OR MODIFYING APPROVED FABRICATIONS.
8. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
9. 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.
10. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
11. 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 E70XX 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.
12. 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.
13. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325 WITH NUTS AND PAL NUTS. ALL BOLTS TO BE TENSIONED IN ACCORDANCE WITH TABLE 4 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. 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.
17. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
18. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY. THE INSPECTOR SHALL OBSERVE INSTALLATION OF BOLTS AND TEST WITH A CALIBRATED TORQUE WRENCH NOT LESS THAN 20% OF THE BOLTS AND NOT LESS THAN TWO BOLTS, SELECTED AT RANDOM, IN EACH CONNECTION.
19. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

DESIGNED BY:
DRAWN BY:
CHK'D BY:

NO	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	7/09/09	TJC	CFC	ISSUED FOR REVIEW

PROFESSIONAL ENGINEER SEAL

T-Mobile

NATCOMM

T-MOBILE PCS MAST INSTALLATION
NORWALK
CT-11-356
CL&P STRUCTURE #1102
10 WILLIAMS STREET
NORWALK, CT 06851

DATE:	7/09/09
SCALE:	AS SHOWN
JOB NO.	08174.COS

STRUCTURAL SPECIFICATIONS

SHEET NO.
S-3
Sheet No. 4 of 4

NATCOMM INC.
CONSULTING ENGINEERS
p: 203.488.0580 f: 203.488.8587 w: natcomm.com
63-2 N. Branford Rd. Branford, CT 06405

Subject: Load Analysis of Proposed PCS Mast on CL&P Tower #1102

Location: Norwalk, CT

Rev. 1: 7/7/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174-CO.5

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

Wind Speeds

Basic Wind Speed, V: $V := 85$ mph (per NU Mast Design Criteria Exception 1)

Basic Wind Speed with Ice, V_i: $V_i := 74$ mph (per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Mast, z_{mast}: $z_{mast} := 90.0$ ft

Antenna, z_{ant}: $z_{ant} := 104.0$ ft

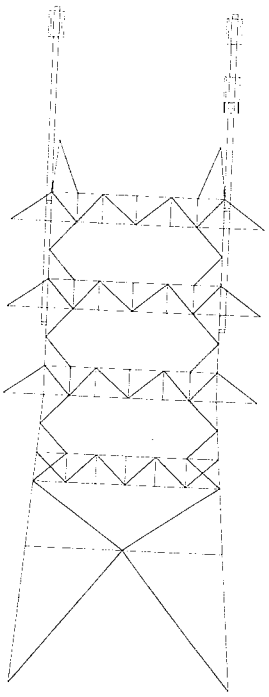
Antenna2, z_{ant2}: $z_{ant2} := 114.0$ ft

TMA, z_{TMA}: $z_{TMA} := 104.0$ ft

Mount, z_{mnt}: $z_{mnt} := 104.0$ ft

Mount2 z_{mnt2}: $z_{mnt2} := 114.0$ ft

Coax Cable, z_{coax}: $z_{coax} := 90.0$ ft



Exposure Coefficients, kz

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

Mast, kz_{mast}: $Kz_{mast} := \left(\frac{z_{mast}}{33}\right)^{\frac{2}{7}} = 1.332$

Antenna, kz_{ant}: $Kz_{ant} := \left(\frac{z_{ant}}{33}\right)^{\frac{2}{7}} = 1.388$

Antenna2, kz_{ant2}: $Kz_{ant2} := \left(\frac{z_{ant2}}{33}\right)^{\frac{2}{7}} = 1.425$

TMA, kz_{tma}: $Kz_{TMA} := \left(\frac{z_{TMA}}{33}\right)^{\frac{2}{7}} = 1.388$

Mount, kz_{mnt}: $Kz_{mnt} := \left(\frac{z_{mnt}}{33}\right)^{\frac{2}{7}} = 1.388$

Mount2, kz_{mnt2}: $Kz_{mnt2} := \left(\frac{z_{mnt2}}{33}\right)^{\frac{2}{7}} = 1.425$

Coax Cable, kz_{coax}: $Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.332$

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

Mast, qz_{mast} $qz_{mast} := 0.00256 \cdot Kz_{mast} \cdot V^2 = 24.636$

Antenna, qz_{ant} $qz_{ant} := 0.00256 \cdot Kz_{ant} \cdot V^2 = 25.675$

Antenna2, qz_{ant2} $qz_{ant2} := 0.00256 \cdot Kz_{ant2} \cdot V^2 = 26.357$

TMA, qz_{tma} $qz_{TMA} := 0.00256 \cdot Kz_{TMA} \cdot V^2 = 25.675$

Mount, qz_{mnt} $qz_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V^2 = 25.675$

Mount2, qz_{mnt2} $qz_{mnt2} := 0.00256 \cdot Kz_{mnt2} \cdot V^2 = 26.357$

Coax Cable, qz_{coax} $qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 24.636$

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

Mast, $qzICE_{mast}$ $qzICE_{mast} := 0.00256 \cdot Kz_{mast} \cdot V_i^2 = 18.672$

Antenna, $qzICE_{ant}$ $qzICE_{ant} := 0.00256 \cdot Kz_{ant} \cdot V_i^2 = 19.46$

Antenna2, $qzICE_{ant2}$ $qzICE_{ant2} := 0.00256 \cdot Kz_{ant2} \cdot V_i^2 = 19.977$

TMA, $qzICE_{tma}$ $qzICE_{TMA} := 0.00256 \cdot Kz_{TMA} \cdot V_i^2 = 19.46$

Mount, $qzICE_{mnt}$ $qzICE_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V_i^2 = 19.46$

Mount2 $qzICE_{mnt2}$ $qzICE_{mnt2} := 0.00256 \cdot Kz_{mnt2} \cdot V_i^2 = 19.977$

Coax Cable, $qzICE_{coax}$ $qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 18.672$

TIA/EIA Common Factors:

Gust Response Factor =	$G_H := 1.69$		(per TIA/EIA-222-F Section 2.3.4)
Gust Response Factor Multiplier =	$m := 1.25$		(per TIA/EIA-222-F Section 2.3.4.4)
Radial Ice Thickness =	$Ir := 0.50$	in	(per TIA/EIA-222-F Section 2.3.1)
Radial Ice Density =	$Id := 56.00$	pcf	

NATCOMM LLC
CONSULTING ENGINEERS
63-2 N. Branford Rd. Branford, CT 06405

Subject: Load Analysis of Proposed PCS Mast on CL&P Tower #1102

Location: Norwalk, CT

Rev. 1: 7/7/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174-CO.5

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

PCS Mast Data:

Mast Shape = Round

Mast Diameter = $D_{mast} := 12.8$ in (Pipe 12" SCH. 80)

Mast Length = $L_{mast} := 55$ ft

Mast Thickness = $t_{mast} := 0.5$ in

Mast Aspect Ratio = $Ar_{mast} := \frac{12 L_{mast}}{D_{mast}} = 51.6$

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

Velocity Coefficient = $C := \left(\sqrt{Kz_{mast}}\right) \cdot V \cdot \frac{D_{mast}}{12} = 104.639$

Structure Force Coefficient = $C_{Fmast} = 0.59$ (per TIA/EIA-222-F Table 1 for round pole)

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

Assumes Mast is Shielded by Coax Cable Antennas and TMAs Top 32' of Mast

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.067$ sq ft/ft

Total Mast Wind Force = $qz_{mast} \cdot G_H \cdot C_{Fmast} \cdot Ca_{mast} \cdot A_{mast} = 31$ plf **BLC 5**

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

Assumes Mast is Shielded by Coax Cable Antennas and TMAs Top 32' of Mast

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot Ir\right)}{12} = 1.15$ sq ft/ft

Total Mast Wind Force w/ Ice = $qzICE_{mast} \cdot G_H \cdot C_{Fmast} \cdot Ca_{mast} \cdot AICE_{mast} = 26$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir \cdot 2\right)^2 - D_{mast}^2\right] = 20.9$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 8$ plf **BLC 3**

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Subject:	Load Analysis of Proposed PCS Mast on CL&P Tower #1102
Location:	Norwalk, CT
Rev. 1: 7/7/09	Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174-CO.5

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

Antenna Data: (AT&T @ 104')

Antenna Model = Powerwave 7770

Antenna Shape = Flat

Antenna Height = $L_{ant} := 55$ in

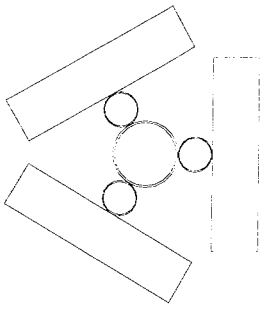
Antenna Width = $W_{ant} := 11$ in

Antenna Thickness = $T_{ant} := 5$ in

Antenna Weight = $WT_{ant} := 35$ lbs

Number of Antennas = $N_{ant} := 3$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$



Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

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

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 12.6$ sf

Total Antenna Wind Force = $F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 766$ lbs **BLC 5**

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

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{ant} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 645$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 105$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 33$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 98$ lbs **BLC 3**

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

Antenna Data: (T-Mobile @ 114')

Antenna Model = RFS APX16DWV-16DWVS-C-A20

Antenna Shape = Flat

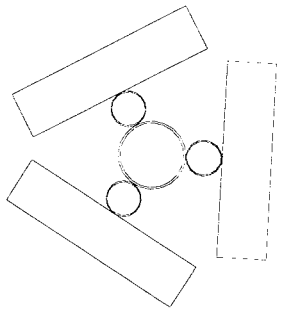
Antenna Height = $L_{ant2} := 55.9$ in

Antenna Width = $W_{ant2} := 13.3$ in

Antenna Thickness = $T_{ant2} := 3.15$ in

Antenna Weight = $WT_{ant2} := 40.7$ lbs

Number of Antennas = $N_{ant2} := 3$



Antenna Aspect Ratio = $Ar_{ant2} := \frac{L_{ant2}}{W_{ant2}} = 4.2$

Antenna Force Coefficient = $Ca_{ant2} = 1.4$ (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 on Antennas

Surface Area for One Antenna = $SA_{ant2} := \frac{L_{ant2} \cdot W_{ant2}}{144} = 5.2$ sf

Antenna Projected Surface Area = $A_{ant2} := SA_{ant2} \cdot N_{ant2} = 15.5$ sf

Total Antenna Wind Force = $F_{ant2} := qz_{ant2} \cdot G_H \cdot Ca_{ant2} \cdot A_{ant2} = 966$ lbs **BLC 5**

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

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant2} := \frac{(L_{ant2} + 1) \cdot (W_{ant2} + 1)}{144} = 5.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant2} := SA_{ICEant2} \cdot N_{ant2} = 17$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := qzICE_{ant2} \cdot G_H \cdot Ca_{ant2} \cdot A_{ICEant2} = 801$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant2} \cdot N_{ant2} = 122$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant2} := L_{ant2} \cdot W_{ant2} \cdot T_{ant2} = 2342$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant2} + 1)(W_{ant2} + 1) \cdot (T_{ant2} + 1) - V_{ant2} = 1035$ cu in

Weight of Ice on Each Antenna = $W_{ICEant2} := \frac{V_{ice}}{1728} \cdot Id = 34$ lbs

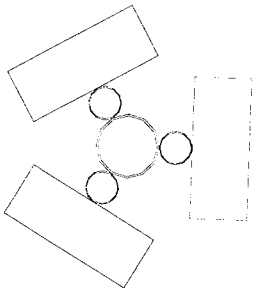
Weight of Ice on All Antennas = $W_{ICEant2} \cdot N_{ant2} = 101$ lbs **BLC 3**

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

TMA Data: (AT&T @ 104')

TMA Model = Powerwave LGP214

TMA Shape = Flat



TMA Height = $L_{TMA} := 9.2$ in

TMA Width = $W_{TMA} := 14.4$ in

TMA Thickness = $T_{TMA} := 2.6$ in

TMA Weight = $WT_{TMA} := 14.1$ lbs

Number of TMA's = $N_{TMA} := 6$

TMA Aspect Ratio = $Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 0.6$

TMA Force Coefficient = $Ca_{TMA} = 1.4$ (per TIA/EIA-222-F Table 3)

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

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 5.5$ sf

Total TMA Wind Force = $F_{TMA} := qz_{TMA} \cdot G_H \cdot Ca_{TMA} \cdot A_{TMA} = 335$ lbs **BLC 5**

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

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 1.1$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 6.5$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qzICE_{TMA} \cdot G_H \cdot Ca_{TMA} \cdot A_{ICETMA} = 301$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All TMA's = $WT_{TMA} \cdot N_{TMA} = 85$ lbs **BLC 2**

Gravity Load (with ice)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 221$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$ lbs

Weight of Ice on All TMA's = $W_{ICETMA} \cdot N_{TMA} = 43$ lbs **BLC 3**

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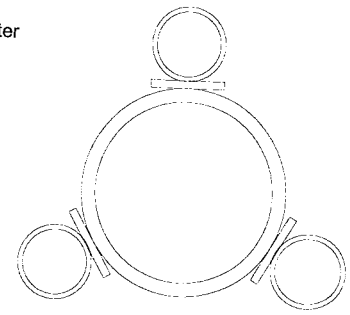
Subject:	Load Analysis of Proposed PCS Mast on CL&P Tower #1102
Location:	Norwalk, CT
Rev. 1: 7/7/09	Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174-CO.5

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

Mount Data: (AT&T @ 104')

Mount Type: Microflect Tri-Sector Adapter Mountw/ 3 Pipes



Mount Shape = Round

Pipe Mount Length = $L_{mnt} := 66$ in

2 inch Pipe Mount Linear Weight = $W_{mnt} := 3.66$ plf

Pipe Mount Outside Diameter = $D_{mnt} := 2.375$ in

Number of Mounting Pipes = $N_{mnt} := 3$

Tri Sector Adapter Mount Weight = $W_{tsa.mnt} := 20$ lbs

Mount Aspect Ratio = $Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 28$

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

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area = $A_{mnt} := 0.0$ sf

Total Mount Wind Force = $F_{mnt} := qz_{mnt} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 0$ lbs **BLC 5**

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area w/ Ice = $A_{ICEmnt} := 0.0$ sf

Total Mount Wind Force = $Fi_{mnt} := qzICE_{mnt} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 0$ lbs **BLC 4**

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

Weight Each Pipe Mount = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$ lbs

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} + W_{tsa.mnt} = 80$ lbs **BLC 2**

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

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 292$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 307$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot ld = 10$ lbs

Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 5 = 35$ lbs **BLC 3**

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Subject: Load Analysis of Proposed PCS Mast on CL&P Tower #1102

Location: Norwalk, CT

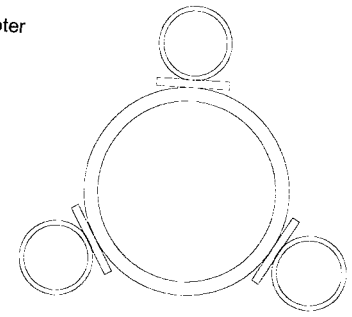
Rev. 1: 7/7/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174-CO.5

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

Mount Data: (T-Mobile @ 114')

Mount Type: Microflect Tri-Sector Adapter Mountw/ 3 Pipes



Mount Shape = Round

Pipe Mount Length = $L_{mnt2} := 66$ in

2 inch Pipe Mount Linear Weight = $W_{mnt2} := 3.66$ plf

Pipe Mount Outside Diameter = $D_{mnt2} := 2.375$ in

Number of Mounting Pipes = $N_{mnt2} := 3$

Tri Sector Adapter Mount Weight = $W_{tsa.mnt2} := 20$ lbs

Mount Aspect Ratio = $Ar_{mnt2} := \frac{L_{mnt2}}{D_{mnt2}} = 28$

Mount Force Coefficient = $Ca_{mnt2} = 1.2$ (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 = $A_{mnt2} := 0.0$ sf

Total Mount Wind Force = $F_{mnt2} := qz_{mnt2} \cdot G_H \cdot Ca_{mnt2} \cdot A_{mnt2} = 0$ lbs **BLC 5**

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area w/ Ice = $A_{ICEmnt2} := 0.0$ sf

Total Mount Wind Force = $Fi_{mnt2} := qzICE_{mnt2} \cdot G_H \cdot Ca_{mnt2} \cdot A_{ICEmnt2} = 0$ lbs **BLC 4**

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

Weight Each Pipe Mount = $WT_{mnt2} := W_{mnt2} \cdot \frac{L_{mnt2}}{12} = 20$

Weight of All Mounts = $WT_{mnt2} \cdot N_{mnt2} + W_{tsa.mnt2} = 80$ lbs **BLC 2**

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

Volume of Each Pipe = $V_{mnt2} := \frac{\pi}{4} \cdot D_{mnt2}^{2} \cdot L_{mnt2} = 292$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt2} + 1\right)^2\right] \cdot \left(L_{mnt2} + 1\right)\right] - V_{mnt2} = 307$ cu in

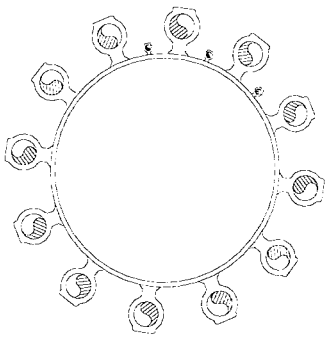
Weight of Ice each mount (incl, hardware) = $W_{ICEmnt2} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

Weight of Ice on All Mounts = $W_{ICEmnt2} \cdot N_{mnt2} + 5 = 35$ lbs **BLC 3**

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

Coax Cable Data: (T-Mobile & AT&T)

Shape = Round



Coax Type = HELIAX 1-1/4" Φ

Coax Outside Diameter = $D_{coax1} := 1.55$ in

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf

Total Number of Coax = $N_{coax1} := 12$ (6 T-Mobile & 6 AT&T)

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

Coax Type = HELIAX 1/2" Φ

Coax Outside Diameter = $D_{coax2} := 0.58$ in

Weight of Coax per foot = $Wt_{coax2} := 0.25$ plf

Total Number of Coax = $N_{coax2} := 3$ (3 AT&T RET Cables)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax2} := 0$

Coax Cable Length = $L_{coax} := 21$ ft

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax1}} = 162.6$

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

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

Coax projected surface area = $A_{coax} := \frac{(NP_{coax1} D_{coax1} + D_{mast})}{12} = 1.3$ sq ft/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 66$ plf **BLC 5**

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

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax1} \cdot D_{coax1} + D_{mast} + 2 \cdot Ir)}{12} = 1.4$ sq ft/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 53$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} + Wt_{coax2} \cdot N_{coax2} = 9$ plf **BLC 2**

Gravity Loads (ice only)

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

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

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Design of PCS Mast Only**
Tabulated Load Cases

Location: **Norwalk, CT**

Date: 3/23/09 Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO5

Load Case	Description
1	Self Weight (PCS Mast)
2	Weight of PCS Structure (1) (no Ice)
3	Weight of Ice Only on PCS Mast + PCS Structure
4	TIA/EIA Wind with Ice on PCS Mast + PCS Structure
5	TIA/EIA Wind on PCS Mast + PCS Structure

Footnotes:
(1) PCS Structure includes: Antennas, TMA's, Mounts, Coax Cable

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

Location: **Norwalk, CT**
Date: 3/23/09 Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO5

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

Footnotes:
(1) BLC = Basic Load Case
(2) PCS Structure includes: antennas, tma's, mounts, coax cable, and miscellaneous hardware

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Hot Rolled Steel Code	AISC: ASD 9th
Cold Formed Steel Code	AISI 99: ASD
Wood Code	NDS 91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2002

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]
1	A572 Gr.50	29000	11154	.3	.65	.49	50
2	A992	29000	11154	.3	.65	.49	50
3	A500 Gr.42	29000	11154	.3	.65	.49	42
4	A500 Gr. C	29000	11154	.3	.65	.49	50
5	A53 Gr. B	29000	11154	.3	.65	.49	35

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-...	Cb	y sw...	z sw...	Function
1	M1	MAST	33												Lateral
2	M2	MAST	22												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_12.0X	Column	Pipe	A53 Gr. B	Typical	17.9	339	339	678

Member Primary Data

	Label	I Joint	J Joint	K ...	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	BOTTOM_CONN...	FLANGE_...			MAST	Column	Pipe	A53 Gr. B	Typical
2	M2	FLANGE_CONNE...	TOPOFM...			MAST	Column	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	BOTTOM_CONNECTION	0	0	0	0	
2	TOP_CONNECTION	0	21.5	0	0	
3	FLANGE_CONNECTION	0	33	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
4	ANTENNA_CL1	0	42	0	0	
5	ANTENNA_CL2	0	52	0	0	
6	TOPOFMAST	0	55	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	BOTTOM_CONN...	Reaction	Reaction	Reaction				
2	TOP_CONNECTI...	Reaction	Reaction	Reaction				
3	FLANGE_CONNE...							
4	ANTENNA_CL1							
5	ANTENNA_CL2							
6	TOPOFMAST							

Joint Loads and Enforced Displacements (BLC 2 : Weight of Antennas, Mounts)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.105
2	ANTENNA_CL2	L	Y	-.122
3	ANTENNA_CL1	L	Y	-.085
4	ANTENNA_CL1	L	Y	-.08
5	ANTENNA_CL2	L	Y	-.08

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.098
2	ANTENNA_CL2	L	Y	-.101
3	ANTENNA_CL1	L	Y	-.043
4	ANTENNA_CL1	L	Y	-.035
5	ANTENNA_CL2	L	Y	-.035

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.645
2	ANTENNA_CL2	L	X	.801
3	ANTENNA_CL1	L	X	.301

Joint Loads and Enforced Displacements (BLC 5 : TIA/EIA Wind)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.766
2	ANTENNA_CL2	L	X	.966
3	ANTENNA_CL1	L	X	.335

Member Distributed Loads (BLC 2 : Weight of Antennas, Mounts)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.009	-.009	23	33
2	M2	Y	-.009	-.009	0	9
3	M2	Y	-.005	-.005	9	19

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.015	-.015	23	33
2	M1	Y	-.008	-.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
3	M2	Y	-.015	-.015	0	9
4	M2	Y	-.008	-.008	9	19
5	M2	Y	-.008	-.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.026	.026	0	23
2	M1	X	.053	.053	23	33
3	M2	X	.053	.053	0	7
4	M2	X	.053	.053	11	17

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.031	.031	0	23
2	M1	X	.066	.066	23	33
3	M2	X	.066	.066	0	7
4	M2	X	.066	.066	11	17

Basic Load Cases

	BLC Description	Category	X Gra...	Y Grav...	Z Gra...	Joint	Point	Distributed	Area (Mem...	Surfa...
1	Self Weight (PCS Mast)	None		-1						
2	Weight of Antennas, Mounts	None				5	3			
3	Weight of Ice Only	None				5	5			
4	TIA/EIA Wind with Ice	None				3	4			
5	TIA/EIA Wind	None				3	4			

Load Combinations

	Description	Solve	PD...	SR...	BLCFa...		BLCFa...		BLCFa...		BLCFa...		BLCFa...	BLCFa...	BLCFa...	BLCFa...
1	TIA/EIA Wind + Ice	Yes			1	1	2	1	3	1	4	1				
2	TIA/EIA Wind	Yes			1	1	2	1	5	1						
3	Self Weight				1	1										

Envelope Member Section Forces

	Member	Sec		Axial[k]	lc	y Shear[k]	lc	z Shear[k]	lc	Torque[k-ft]	lc	y-y Mome...	lc	z-z Momen...	lc
1	M1	1	max	.741	1	-2.556	1	0	1	0	1	0	1	0	1
2			min	.655	2	-3.08	2	0	1	0	1	0	1	0	1
3		2	max	.172	1	-2.771	1	0	1	0	1	0	1	26.466	2
4			min	.152	2	-3.336	2	0	1	0	1	0	1	21.975	1
5		3	max	-.35	2	-2.985	1	0	1	0	1	0	1	55.041	2
6			min	-.396	1	-3.592	2	0	1	0	1	0	1	45.72	1
7		4	max	3.413	1	3.469	2	0	1	0	1	0	1	61.801	2
8			min	2.52	2	2.873	1	0	1	0	1	0	1	51.384	1
9		5	max	2.646	1	2.925	2	0	1	0	1	0	1	35.424	2
10			min	1.943	2	2.436	1	0	1	0	1	0	1	29.483	1
11	M2	1	max	2.646	1	2.925	2	0	1	0	1	0	1	35.424	2
12			min	1.943	2	2.436	1	0	1	0	1	0	1	29.483	1
13		2	max	2.135	1	2.562	2	0	1	0	1	0	1	20.335	2
14			min	1.559	2	2.144	1	0	1	0	1	0	1	16.887	1
15		3	max	1.2	1	1.361	2	0	1	0	1	0	1	8.916	2
16			min	.912	2	1.118	1	0	1	0	1	0	1	7.362	1
17		4	max	.75	1	.999	2	0	1	0	1	0	1	2.423	2
18			min	.55	2	.827	1	0	1	0	1	0	1	2.009	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	lc	y Shear[k]	lc	z Shear[k]	lc	Torque[k-ft]	lc	y-y Mome...	lc	z-z Momen...	lc
19		5	max	0	1	0	1	0	1	0	1	0	1	0	1
20			min	0	1	0	1	0	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	.041	1	-.286	1	0	1	0	1	0	1	0	1	0	1
2			min	.037	2	-.344	2	0	1	0	1	0	1	0	1	0	1
3		2	max	.01	1	-.31	1	0	1	-4.959	1	5.972	2	0	1	0	1
4			min	.009	2	-.373	2	0	1	-5.972	2	4.959	1	0	1	0	1
5		3	max	-.02	2	-.334	1	0	1	-10.317	1	12.421	2	0	1	0	1
6			min	-.022	1	-.401	2	0	1	-12.421	2	10.317	1	0	1	0	1
7		4	max	.191	1	.388	2	0	1	-11.596	1	13.946	2	0	1	0	1
8			min	.141	2	.321	1	0	1	-13.946	2	11.596	1	0	1	0	1
9		5	max	.148	1	.327	2	0	1	-6.653	1	7.994	2	0	1	0	1
10			min	.109	2	.272	1	0	1	-7.994	2	6.653	1	0	1	0	1
11	M2	1	max	.148	1	.327	2	0	1	-6.653	1	7.994	2	0	1	0	1
12			min	.109	2	.272	1	0	1	-7.994	2	6.653	1	0	1	0	1
13		2	max	.119	1	.286	2	0	1	-3.811	1	4.589	2	0	1	0	1
14			min	.087	2	.24	1	0	1	-4.589	2	3.811	1	0	1	0	1
15		3	max	.067	1	.152	2	0	1	-1.661	1	2.012	2	0	1	0	1
16			min	.051	2	.125	1	0	1	-2.012	2	1.661	1	0	1	0	1
17		4	max	.042	1	.112	2	0	1	-.453	1	.547	2	0	1	0	1
18			min	.031	2	.092	1	0	1	-.547	2	.453	1	0	1	0	1
19		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
20			min	0	1	0	1	0	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	BOTTOM_CON...	max	3.08	2	.741	1	0	1	0	1	0	1	0	1
2		min	2.556	1	.655	2	0	1	0	1	0	1	0	1
3	TOP_CONNEC...	max	-6.12	1	4.419	1	0	1	0	1	0	1	0	1
4		min	-7.378	2	3.388	2	0	1	0	1	0	1	0	1
5	ANTENNA_CL1	max	NC		NC		NC		NC		LOCKED		NC	
6		min	NC		NC		NC		NC		LOCKED		NC	
7	Totals:	max	-3.564	1	5.16	1	0	1						
8		min	-4.298	2	4.043	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	lc	Y [in]	lc	Z [in]	lc	X Rotation...	lc	Y Rotation...	lc	Z Rotation ...	lc
1	BOTTOM_CO...	max	0	1	0	2	0	1	0	1	0	1	3.632e-3	2
2		min	0	2	0	1	0	1	0	1	0	1	3.016e-3	1
3	TOP_CONNE...	max	0	2	0	2	0	1	0	1	0	1	-6.269e-3	1
4		min	0	1	0	1	0	1	0	1	0	1	-7.548e-3	2
5	FLANGE_CO...	max	1.744	2	0	2	0	1	0	1	0	1	-1.379e-2	1
6		min	1.449	1	0	1	0	1	0	1	0	1	-1.659e-2	2
7	ANTENNA_CL1	max	3.731	2	0	2	0	1	0	1	0	1	-1.633e-2	1
8		min	3.101	1	-.001	1	0	1	0	1	0	1	-1.964e-2	2
9	ANTENNA_CL2	max	6.154	2	-.001	2	0	1	0	1	0	1	-1.698e-2	1
10		min	5.114	1	-.002	1	0	1	0	1	0	1	-2.043e-2	2
11	TOPOFMAST	max	6.89	2	-.001	2	0	1	0	1	0	1	-1.698e-2	1
12		min	5.726	1	-.002	1	0	1	0	1	0	1	-2.043e-2	2

Envelope AISC ASD Steel Code Checks

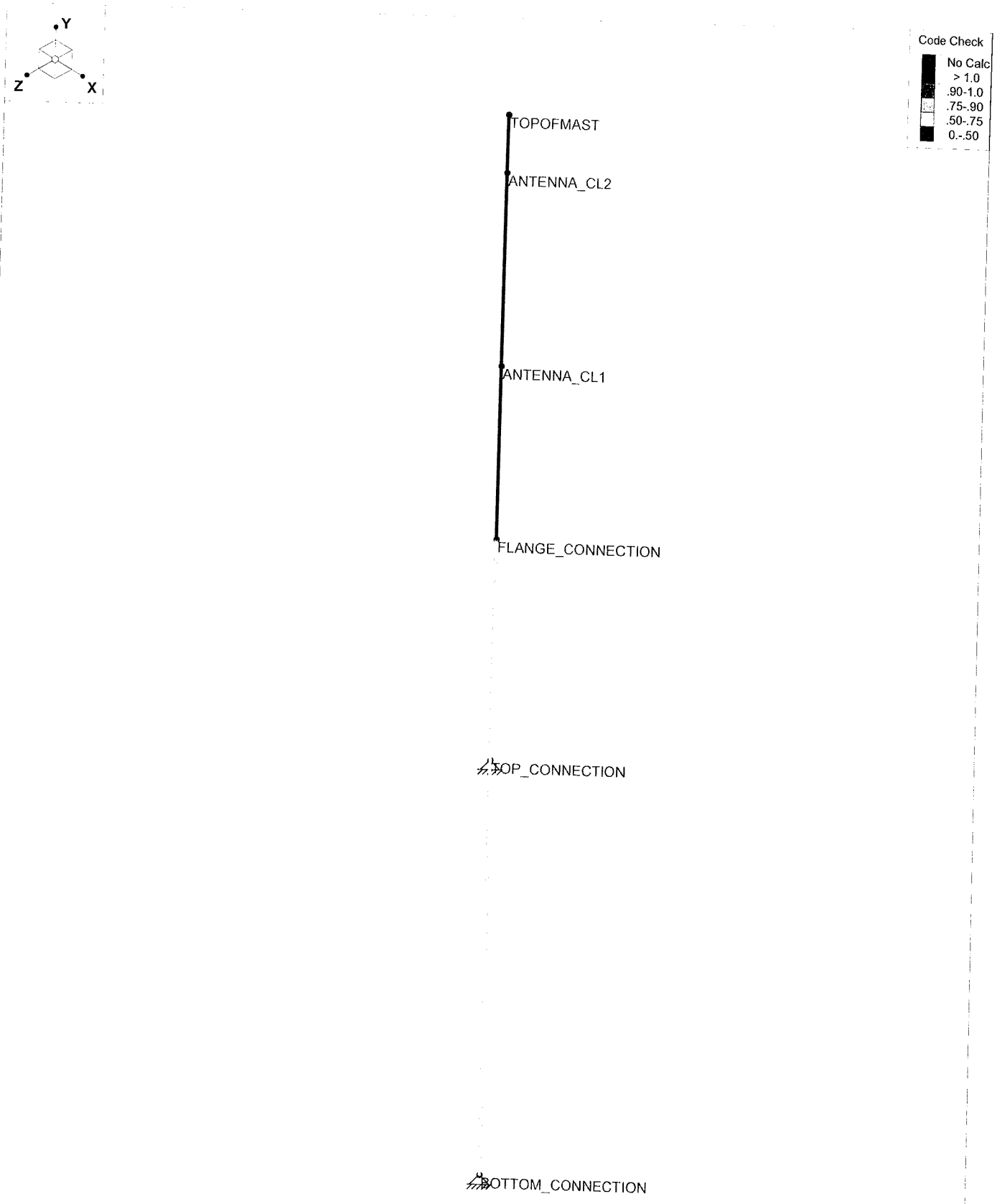
	Member	Shape	Code Check	Loc[ft]	lc	Shear Check	Loc[ft]	...	lc	Fa ...	Ft [.....	Fb	C..	C..	AS...
1	M1	PIPE_12.0X	.719	21.656	2	.030	21.313		2	13....	21	... 23.1	1	.6	.85 H1-2
2	M2	PIPE_12.0X	.351	0	2	.023	0		2	16....	21	... 23.1	...	.6	.85 H1-2

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTTOM_CONNECTION	2.556	.741	0	0	0	0
2	1	TOP_CONNECTION	-6.12	4.419	0	0	0	0
3	1	ANTENNA_CL1	NC	NC	NC	NC	LOCKED	NC
4	1	Totals:	-3.564	5.16	0			
5	1	COG (ft):	X: 0	Y: 31.291	Z: 0			

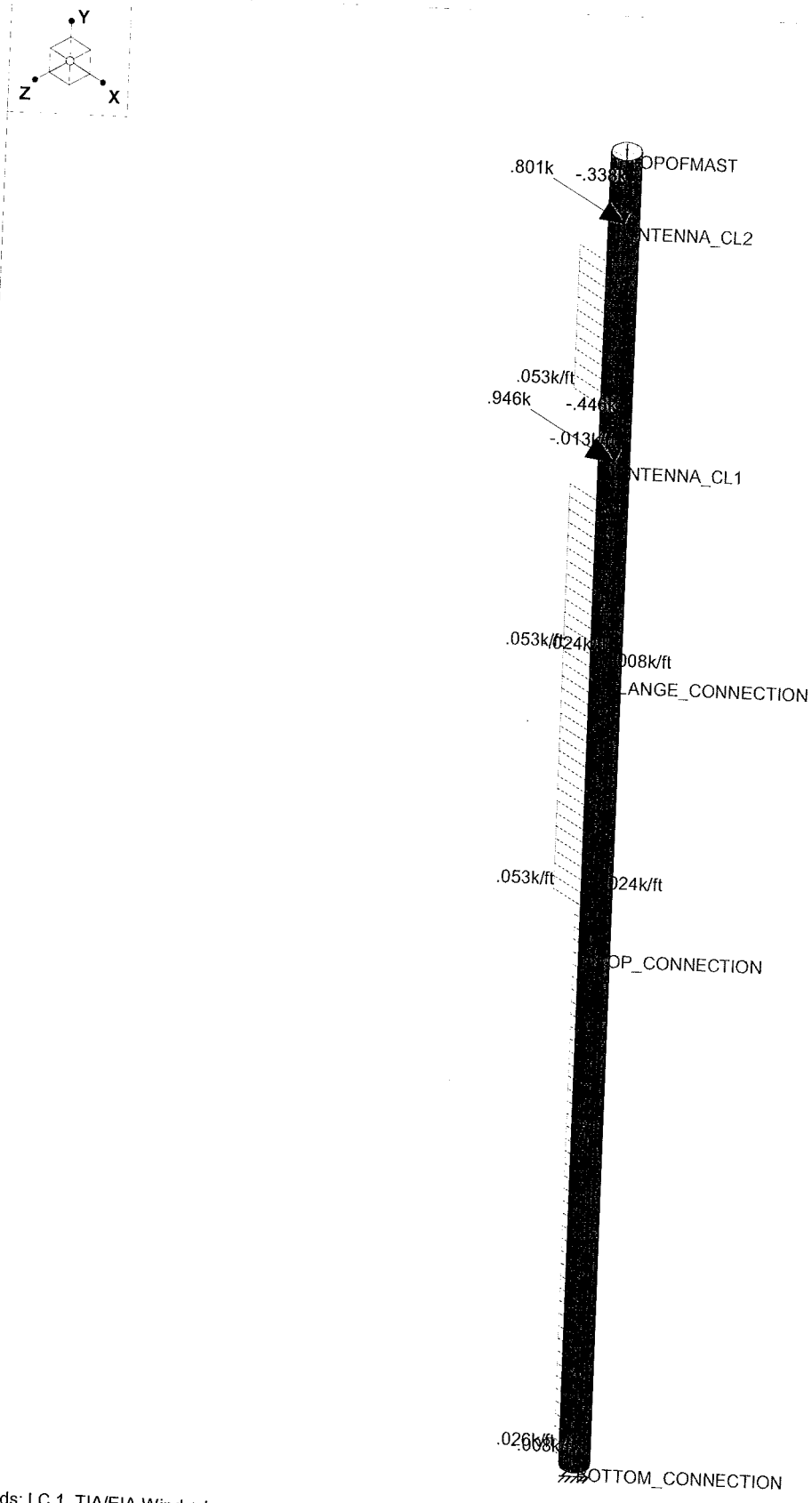
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTTOM_CONNECTION	3.08	.655	0	0	0	0
2	2	TOP_CONNECTION	-7.378	3.388	0	0	0	0
3	2	ANTENNA_CL1	NC	NC	NC	NC	LOCKED	NC
4	2	Totals:	-4.298	4.043	0			
5	2	COG (ft):	X: 0	Y: 30.145	Z: 0			



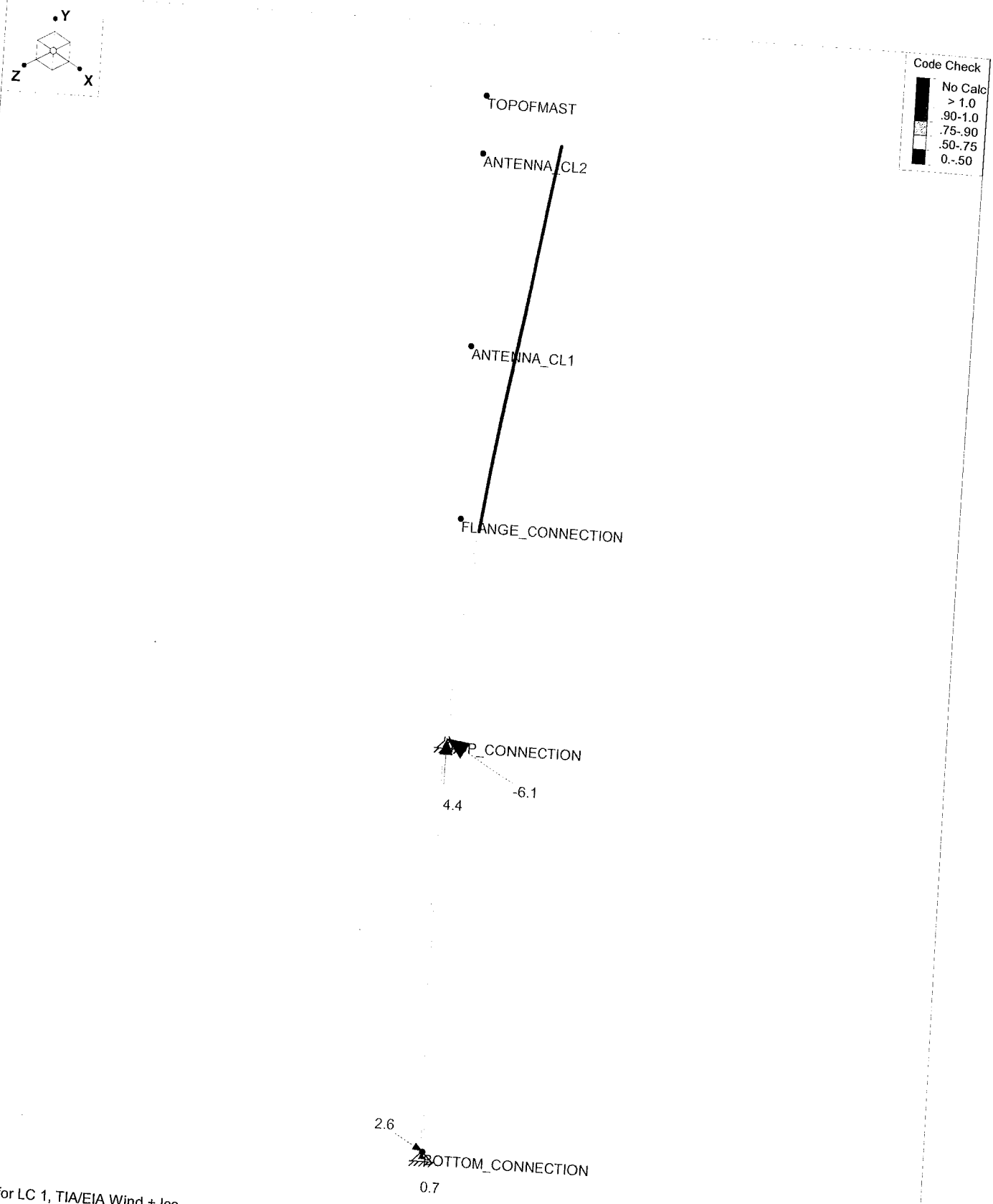
Solution: Envelope

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 4:11 PM
08174-CO.5	Unity Check	Proposed Pipe Mast TIA-EIA.r3d



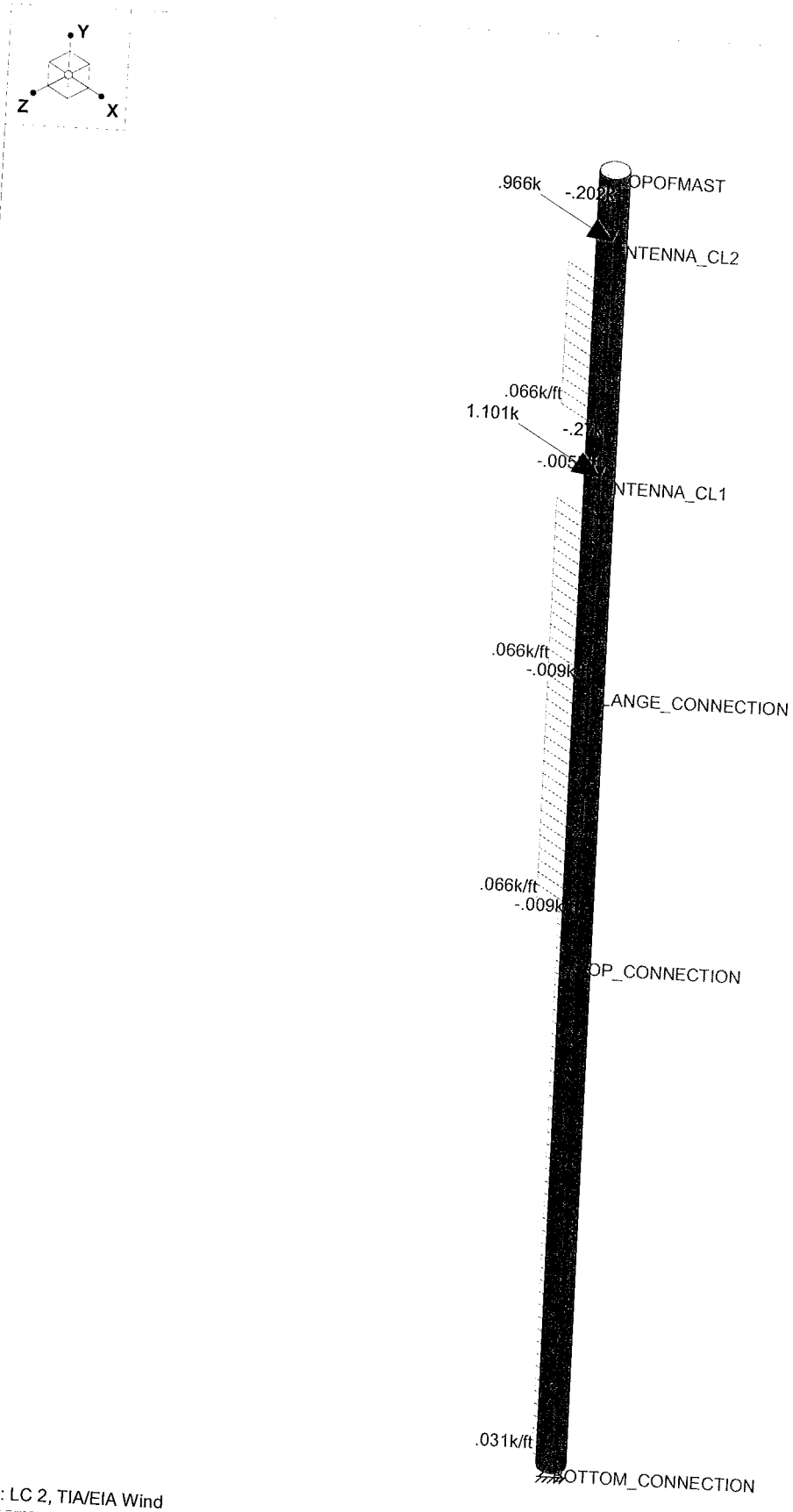
Loads: LC 1, TIA/EIA Wind + Ice

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 4:10 PM
08174-CO.5	LC # 1 Loads	Proposed Pipe Mast TIA-EIA.r3d



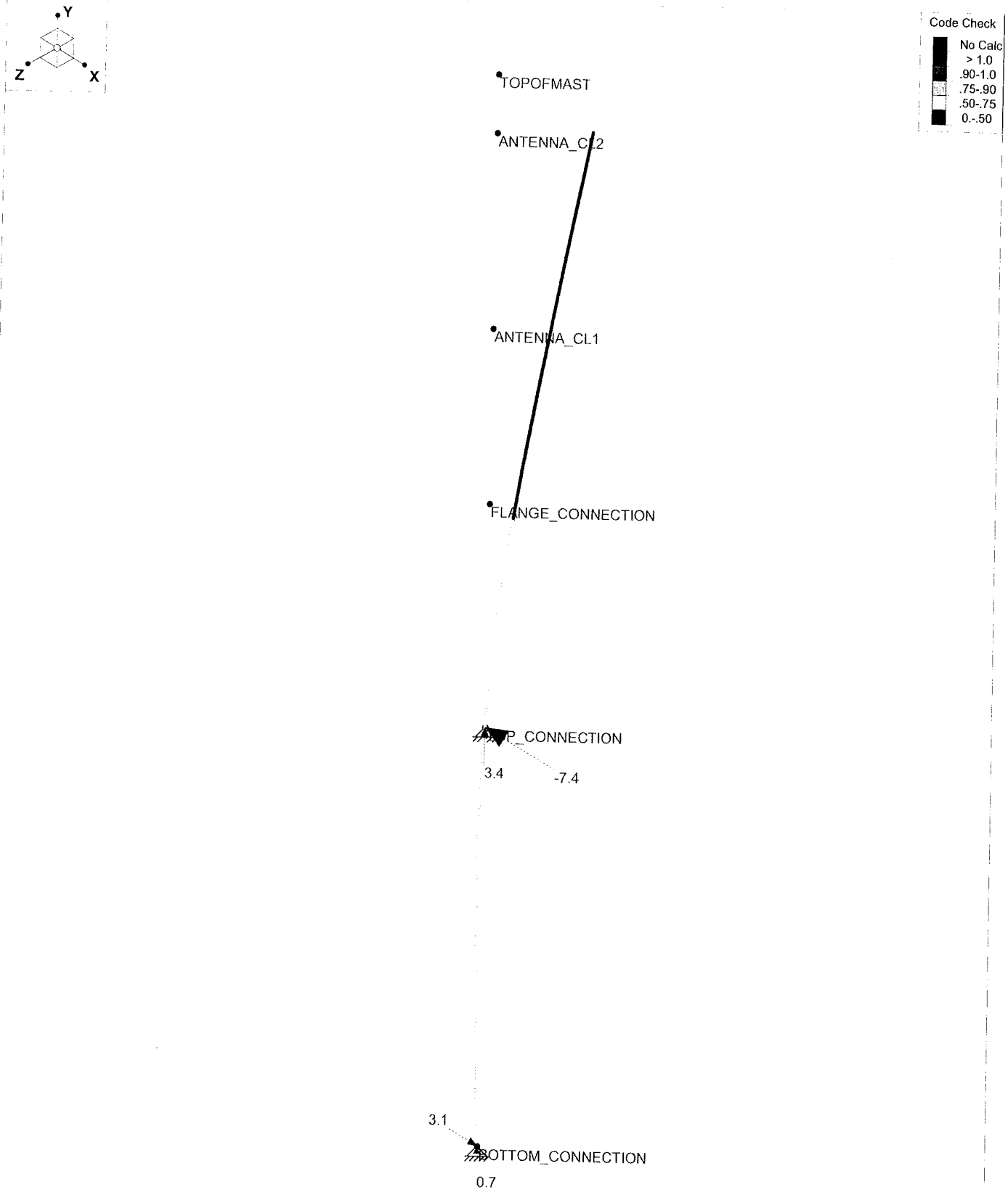
Results for LC 1, TIA/EIA Wind + Ice
Reaction units are k and k-ft

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 4:12 PM
08174-CO.5	LC # 1 Reactions and Deflected Shape	Proposed Pipe Mast TIA-EIA.r3d



Loads: LC 2, TIA/EIA Wind

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		
08174-CO.5	LC # 2 Loads	July 8, 2009 at 4:11 PM
		Proposed Pipe Mast TIA-EIA.r3d

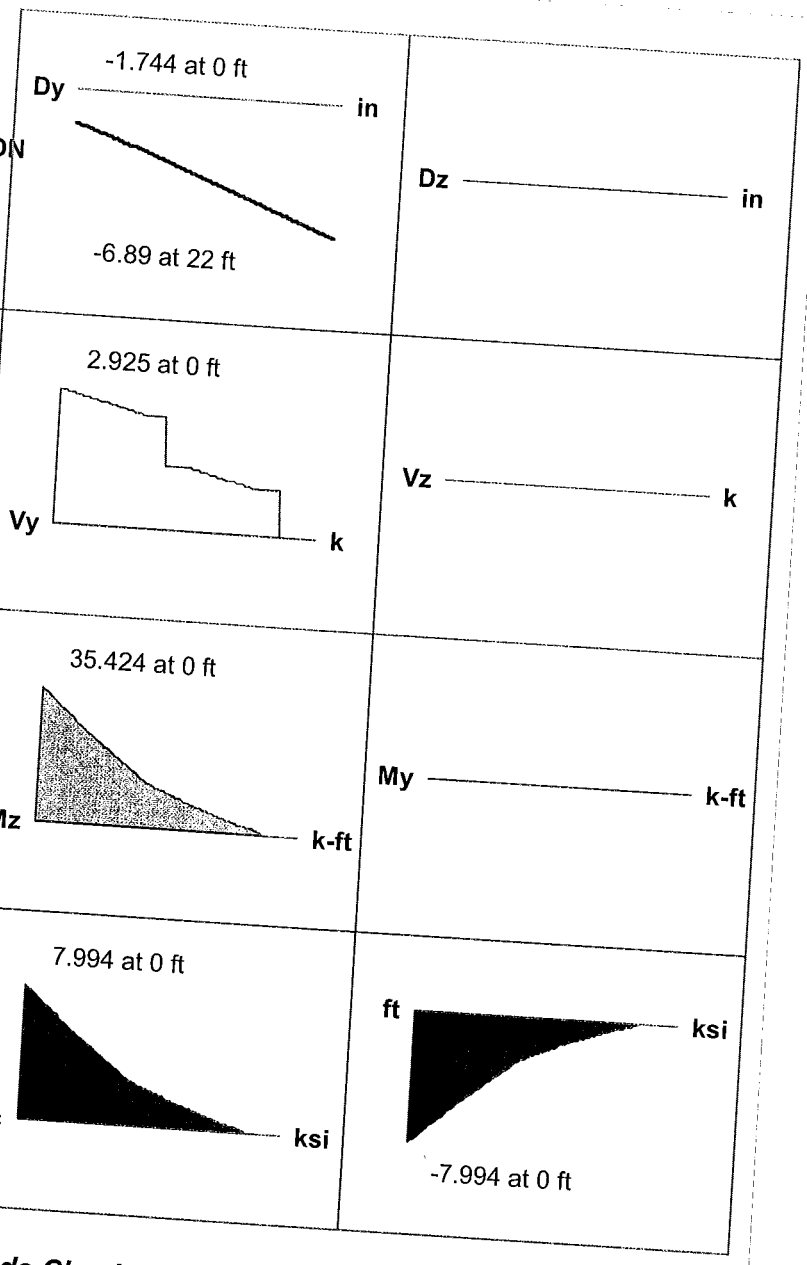


Results for LC 2, TIA/EIA Wind
Reaction units are k and k-ft

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 4:13 PM
08174-CO.5	LC # 2 Reactions and Deflected Shape	Proposed Pipe Mast TIA-EIA.r3d

Column: ***M2***

Shape: **PIPE_12.0X**
Material: **A53 Gr. B**
Length: **22 ft**
I Joint: **FLANGE_CONNECTION**
J Joint: **TOPOFMAST**
LC 2: TIA/EIA Wind
Code Check: **0.351 (bending)**
Report Based On 97 Sections



AISC ASD 9th Ed. Code Check

Max Bending Check	**0.351**	Max Shear Check	**0.023 (s)**
Location	**0 ft**	Location	**0 ft**
Equation	**H1-2**	Max Defl Ratio	**L/51**

Compact

Fy	**35 ksi**
Fa	**16.963 ksi**
Ft	**21 ksi**
Fby	**23.1 ksi**
Fbz	**23.1 ksi**
Fvy	**14 ksi**
Fvz	**14 ksi**
Cb	**1.75**

	Y-Y	Z-Z
Cm	**.6**	**.85**
Lb	**22 ft**	**22 ft**
KL/r	**60.664**	**60.664**
Sway	**No**	**No**

L Comp Flange	**22 ft**
Torque Length	**NC**

NATCOMM INC
CONSULTING ENGINEERS
63-2 N. Branford Rd., Branford, CT 06405

Subject:	FLANGE BOLTS AND PLATE
Location:	Norwalk, CT
Rev. 1: 7/8/09	Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO5

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 35.5·ft·kips	(Input From Risa-3D LC #2)
Shear Force =	Shear := 3·kips	(Input From Risa-3D LC #2)
Axial Force =	Axial := 2·kips	(Input From Risa-3D LC #2)

Anchor Bolt Data:

Use ASTM A325

Number of Anchor Bolts =	N := 8	(User Input)
Diameter of Bolt Circle =	D_{bc} := 17.0·in	(User Input)
Bolt "Column" Distance =	l := 0·in	(User Input)
Bolt Ultimate Strenght =	F_u := 120·ksi	(User Input)
Bolt Yield Strenght =	F_y := 92·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.125·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Base Plate Data:

Use ASTM A36

Plate Yield Strength =	Fy_{bp} := 36·ksi	(User Input)
Base Plate Thickness =	t_{bp} := 1.5·in	(User Input)
Base Plate Diameter =	D_{bp} := 20·in	(User Input)
Outer Pole Diameter =	D_{pole} := 12.8·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 8.5 \cdot in$

Distance to Bolts = $i := 1 .. N$

$$d_i := \left| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$$

$d_1 = 6.01 \cdot in$ $d_6 = -8.50 \cdot in$

$d_2 = 8.50 \cdot in$ $d_7 = -6.01 \cdot in$

$d_3 = 6.01 \cdot in$ $d_8 = -0.00 \cdot in$

$d_4 = 0.00 \cdot in$

$d_5 = -6.01 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 6.4 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

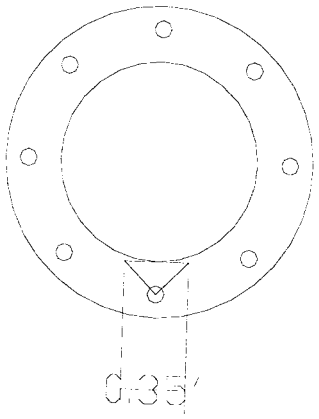
$MA_1 = 0.00 \cdot in$ $MA_6 = 0.00 \cdot in$

$MA_2 = 2.10 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_4 = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$



Effective Width = $W_{eff} := 4.2 \cdot in$

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 289 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.994 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.79 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.003 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.251 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.099 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 12.3 \cdot kips$

Allowable Tensile Force Gross Area = $T_{ALL.Gross} := \left(0.33 \cdot A_g \cdot F_u\right) = 39.4 \cdot kips$

Allowable Tensile Force Net Area = $T_{ALL.Net} := \left(0.6 \cdot A_n \cdot F_y\right) = 43.6 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 0.281$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Gross}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Base Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{|Axial|}{N}$

$C_1 = 9.1 \cdot kips$

$C_2 = 12.8 \cdot kips$

$C_3 = 9.1 \cdot kips$

$C_4 = 0.3 \cdot kips$

$C_5 = -8.6 \cdot kips$

$C_6 = -12.3 \cdot kips$

$C_7 = -8.6 \cdot kips$

$C_8 = 0.2 \cdot kips$

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{6\left(C_i \cdot MA_i\right)}{\left(W_{eff} \cdot t_{bp}^{\,2}\right)} = 17 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 0.75 \cdot Fy_{bp} = 27 \cdot ksi$

Plate Bending Stresse % of Capacity = $\frac{f_{bp}}{F_{bp}} = 0.631$

Condition3 = $Condition2 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

$Condition2 = "Ok"$

NATCOMM INC
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63-2 N. Branford Rd., Branford, CT 06405

Subject: Connection of Mast to CL&P Tower # 1102

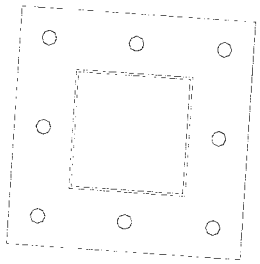
Location: Norwalk, CT

Rev. 1: 7/8/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174.CO.5

Mast Connection to CL&P Tower:

Mast To HSS Tube Connection:



Reactions:

Moment = Moment := 0·kips (Input From Risa-3D LC #2)

Vertical = Vertical := 3.5·kips (Input From Risa-3D LC #2)

Horizontal = Horizontal := 7.5·kips (Input From Risa-3D LC #2)

Bolt Data:

Bolt Type = ASTM A325

Bolt Diameter = $D := 0.75 \cdot in$ (User Input)

Number of Bolts = $N_b := 8$ (User Input)

Allowable Tensile Strength = $F_t := 19.9 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 10.6 \cdot kips$ (User Input)

Maximum Tensile Force = $f_t := \frac{Horizontal}{N_b} = 0.9 \cdot kips$

Bolt Tension % of Capacity = $\frac{f_t}{F_t} = 4.71 \cdot \%$

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

Bolt_Tension = "OK"

Maximum Shear Force = $f_v := \frac{Vertical}{N_b} = 0.4 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 4.13 \cdot \%$

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

Bolt_Shear = "OK"

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63-2 N. Branford Rd. Branford, CT 06405

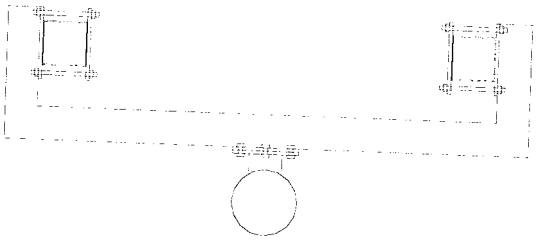
Subject: Connection of Mast to CL&P Tower # 1102

Location: Norwalk, CT

Rev. 1: 7/8/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174.CO.5

Connecting Tube



Reactions:

Moment = Moment := 0·kips (Input From Risa-3D LC #2)

Vertical = Vertical := 3.5·kips (Input From Risa-3D LC #2)

Horizontal = Horizontal := 7.5·kips (Input From Risa-3D LC #2)

Tube Data:

Tube Size = HSS 6x6x1/4 (User Input)

Steel Grade = A500 Grade B (User Input)

Section Modulus = $S_x := 9.54 \cdot in^3$ (User Input)

Length of Tube = Length := 7·ft (User Input)

Allowable Bending Stress = $F_b := 0.66 \cdot 46 \cdot ksi = 30.4 \cdot ksi$

Maximum Moment in Tube = $M_{max} := \frac{Horizontal \cdot Length}{4} = 13.125 \cdot kip \cdot ft$

Actual Bending Stress in Tube = $f_b := \frac{M_{max}}{S_x} = 16.5 \cdot ksi$

Check Bending Tube Stress = $Bending\_Stress := if\left(\frac{f_t}{F_t} \le 1.00, "OK", "Overstressed"\right)$

Bending_Stress = "OK"

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63-2 N. Branford Rd. Branford, CT 06405

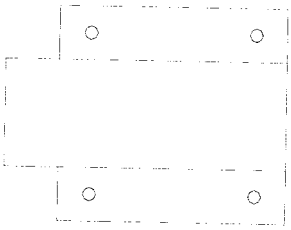
Subject: Connection of Mast to CL&P Tower # 1102

Location: Norwalk, CT

Rev. 1: 7/8/09

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 08174.CO.5

Tube To Tower Leg Connection:



Reactions:

Moment =	Moment := 0·kips	(Input From Risa-3D LC #2)
Vertical =	Vertical := 1.75·kips	(Input From Risa-3D LC #2)
Horizontal =	Horizontal := 3.75·kips	(Input From Risa-3D LC #2)

Bolt Data:

Bolt Type =	ASTM A325	(User Input)
Bolt Diameter =	D := 0.75·in	(User Input)
Number of Bolts =	$N_b := 4$	(User Input)
Allowable Tensile Strength =	$F_t := 19.9 \cdot kips$	(User Input)
Allowable Shear Strength =	$F_v := 10.6 \cdot kips$	(User Input)

Horizontal Shear Force = $f_{v\_horz} := \frac{Horizontal}{N_b} = 0.9 \cdot kips$

Vertical Shear Force = $f_{v\_vert} := \frac{Vertical}{N_b} = 0.4 \cdot kips$

Combined Shear Force = $f_{v\_tot} := f_{v\_horz} + f_{v\_vert} = 1.4 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_{v\_tot}}{F_t} = 6.91 \cdot \%$

Check Combined Vertical and Horizontal Bolt Shear = $Bolt\_Shear := if\left(\frac{f_{v\_tot}}{F_v} \le 1.00, "OK", "Overstressed"\right)$

Bolt_Shear = "OK"

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Subject:	Load Analysis of Existing PCS Mast on CL&P Structure #1102
Location:	Norwalk, CT
Rev. 1: 7/8/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Basic Components

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

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 117	ft	
Multiplier Gust Response Factor =	m := 1.25		(Only for NESC Extreme case NU criteria)
NESC Factor =	kv := 1.43		(NESC 2007 Table 250-3 equation)
Importance Factor =	I := 1.0		(NESC Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(0.67 \cdot \frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.202$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.306$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.834$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.858$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.9$ psf (NESC 2007 Section 250.C.2)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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

Overload Factors

Overload Factors for Wind Loads:

NU Design Criteria Table

NESC Heavy Loading =	**2.5**	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	Apply in Risa-3D Analysis

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Subject: Load Analysis of Existing PCS Mast on CL&P Structure #1102

Location: Norwalk, CT

Rev. 1: 7/8/09 Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on PCS Mast

PCS Mast Data:

Mast Shape = Round

Mast Diameter = $D_{mast} := 12.8$ in (Pipe 12" SCH. 80)

Mast Length = $L_{mast} := 55$ ft

Mast Thickness = $t_{mast} := 0.5$ in

Wind Load (NESC Extreme)

Assumes Mast is Shielded by Coax Cable and Antennas Top 32' of Mast

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.067$ sq ft/ft

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_R \cdot A_{mast} = 44$ plf **BLC 5**

Wind Load (NESE Heavy)

Assumes Mast is Shielded by Coax Cable and Antennas Top 32' of Mast

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 1.15$ sq ft/ft

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

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 = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 20.9$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 8$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile @ 114')

Antenna Model = RFS APX16PV-16PVL

Antenna Shape = Flat

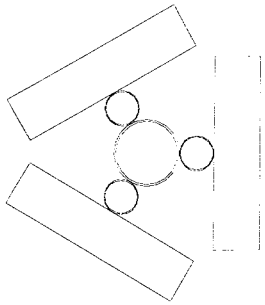
Antenna Height = $L_{ant2} := 53$ in

Antenna Width = $W_{ant2} := 12.9$ in

Antenna Thickness = $T_{ant2} := 3.1$ in

Antenna Weight = $WT_{ant2} := 39.6$ lbs

Number of Antennas = $N_{ant2} := 3$



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant2} := \frac{L_{ant2} \cdot W_{ant2}}{144} = 4.7$ sf

Antenna Projected Surface Area = $A_{ant2} := SA_{ant2} \cdot N_{ant2} = 14.2$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant2} \cdot m = 910$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant2} := \frac{(L_{ant2} + 1) \cdot (W_{ant2} + 1)}{144} = 5.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant2} := SA_{ICEant2} \cdot N_{ant2} = 15.6$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant2} = 100$ lbs **BLC 4**

Gravity Load (without Ice)

Weight of All Antennas = $WT_{ant2} \cdot N_{ant2} = 119$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant2} := L_{ant2} \cdot W_{ant2} \cdot T_{ant2} = 2119$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant2} + 1)(W_{ant2} + 1) \cdot (T_{ant2} + 1) - V_{ant2} = 958$ cu in

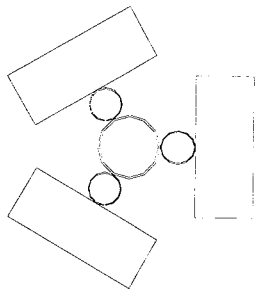
Weight of Ice on Each Antenna = $W_{ICEant2} := \frac{V_{ice}}{1728} \cdot Id = 31$ lbs

Weight of Ice on All Antennas = $W_{ICEant2} \cdot N_{ant2} = 93$ lbs **BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data: (T-Mobile @ 114')

TMA Model =	Powerwave LGP214	
TMA Shape =	Flat	
TMA Height =	$L_{TMA} := 9.2$	in
TMA Width =	$W_{TMA} := 14.4$	in
TMA Thickness =	$T_{TMA} := 2.6$	in
TMA Weight =	$WT_{TMA} := 15$	lbs
Number of TMA's =	$N_{TMA} := 6$	



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 5.5$	sf	
Total TMA Wind Force =	$F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 353$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 6.5$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 42$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 90$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 43$	lbs	**BLC 3**

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CONSULTING ENGINEERS
63-2 N. Branford Rd., Branford, CT 06405

Subject: Load Analysis of Existing PCS Mast on CL&P Structure #1102

Location: Norwalk, CT

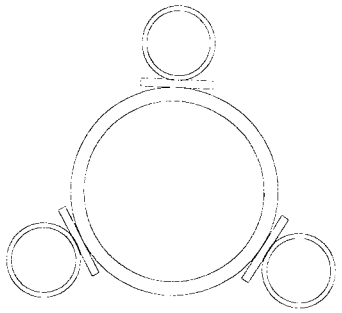
Rev. 1: 7/8/09

Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile @ 114')

Mount Type: Microflect Tri-Sector Adapter Mountw/ 3 Pipes



Mount Shape = Round

Pipe Mount Length = $L_{mnt} := 66$ in

2 inch Pipe Mount Linear Weight = $W_{mnt} := 3.66$ plf

Pipe Mount Outside Diameter = $D_{mnt} := 2.375$ in

Number of Mounting Pipes = $N_{mnt} := 3$

Tri Sector Adapter Mount Weight = $W_{tsa.mnt} := 20$ lbs

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 = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$ lbs

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} + W_{tsa.mnt} = 80$ lbs **BLC 2**

Gravity Loads (ice only)

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

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 292$ cu in

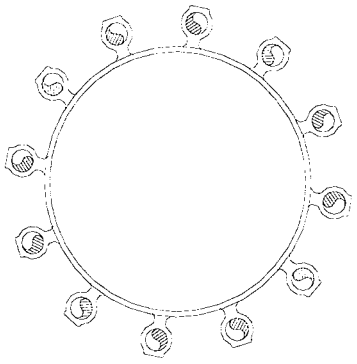
Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 307$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 5 = 35$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (T-Mobile)



Shape =	Round	
Coax Cable Length =	$L_{coax} := 21$	ft
Coax Type =	HELIAX 1-1/4" Φ	
Coax Outside Diameter =	$D_{coax} := 1.55$	in
Weight of Coax per foot =	$Wt_{coax} := 0.66$	plf
Total Number of Coax =	$N_{coax} := 12$	
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 2$	

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax} + D_{mast})}{12} = 1.3$ sq ft/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 77$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + D_{mast} + 2 \cdot Ir)}{12} = 1.4$ sq ft/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 8$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

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

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

NATCOMM INC.
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Subject: Load Analysis of Proposed PCS Mast on CL&P Structure #1102

Location: Norwalk, CT

Rev. 1: 7/7/09 Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Basic Components

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

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 117	ft	
Multiplier Gust Response Factor =	m := 1.25		(Only for NESC Extreme case NU criteria)
NESC Factor =	kv := 1.43		(NESC 2007 Table 250-3 equation)
Importance Factor =	I := 1.0		(NESC Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(0.67 \cdot \frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.202$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.306$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.834$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.858$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.9$ psf (NESC 2007 Section 250.C.2)

Shape Factors

Shape Factor for Round Members =		NUS Design Criteria Issued April 12, 2007
Shape Factor for Round Members =	$Cd_R := 1.3$	
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_F := 1.6$	
	$Cd_{coax} := 1.45$	

Overload Factors

Overload Factors for Wind Loads:

		NU Design Criteria Table
NESC Heavy Loading =	**2.5**	
NESC Extreme Loading =	**1.0**	Apply in Risa-3D Analysis
		Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	
NESC Extreme Loading =	**1.0**	Apply in Risa-3D Analysis
		Apply in Risa-3D Analysis

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63-2 N. Branford Rd. Branford, CT 06405

Subject:	Load Analysis of Proposed PCS Mast on CL&P Structure #1102
Location:	Norwalk, CT
Rev. 1: 7/7/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on PCS Mast

PCS Mast Data:

Mast Shape = Round

Mast Diameter = $D_{mast} := 12.8$ in (Pipe 12" SCH.80)

Mast Length = $L_{mast} := 55$ ft

Mast Thickness = $t_{mast} := 0.5$ in

Wind Load (NESC Extreme)

Assumes Mast is Shielded by Coax Cable Antennas and TMA's Top 32' of Mast

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.067$ sq ft/ft

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_R \cdot A_{mast} = 44$ plf **BLC 5**

Wind Load (NESE Heavy)

Assumes Mast is Shielded by Coax Cable Antennas and TMA's Top 32' of Mast

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 1.15$ sq ft/ft

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

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 = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 20.9$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 8$ plf **BLC 3**

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63-2 N. Branford Rd., Branford, CT 06405

Subject: Load Analysis of Proposed PCS Mast on CL&P Structure #1102

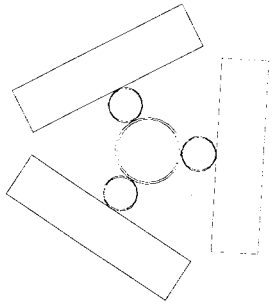
Location: Norwalk, CT

Rev. 1: 7/7/09 Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T @ 104')

Antenna Model =	Powerwave 7770		
Antenna Shape =	Flat		
Antenna Height =	$L_{ant} := 55$	in	
Antenna Width =	$W_{ant} := 11$	in	
Antenna Thickness =	$T_{ant} := 5$	in	
Antenna Weight =	$WT_{ant} := 35$	lbs	
Number of Antennas =	$N_{ant} := 3$		



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 12.6$	sf	
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 805$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 90$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 105$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 98$	lbs	**BLC 3**

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Subject:	Load Analysis of Proposed PCS Mast on CL&P Structure #1102
Location:	Norwalk, CT
Rev. 1: 7/7/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile @ 114')

Antenna Model = RFS APX16DWV-16DWVS-C-A20

Antenna Shape = Flat

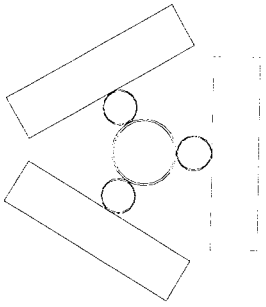
Antenna Height = $L_{ant} := 55.9$ in

Antenna Width = $W_{ant} := 13.3$ in

Antenna Thickness = $T_{ant} := 3.15$ in

Antenna Weight = $WT_{ant} := 40.7$ lbs

Number of Antennas = $N_{ant} := 3$



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 15.5$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 990$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 17$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 108$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2342$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1035$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 34$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 101$ lbs **BLC 3**

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Subject: Load Analysis of Proposed PCS Mast on CL&P Structure #1102

Location: Norwalk, CT

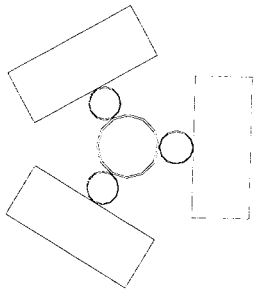
Rev. 1: 7/7/09

Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T @ 104')

TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		
TMA Height =	$L_{TMA} := 9.2$	in	
TMA Width =	$W_{TMA} := 14.4$	in	
TMA Thickness =	$T_{TMA} := 2.6$	in	
TMA Weight =	$WT_{TMA} := 14.1$	lbs	
Number of TMA's =	$N_{TMA} := 6$		



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 5.5$	sf	
Total TMA Wind Force =	$F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 353$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 6.5$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 42$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 85$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 43$	lbs	**BLC 3**

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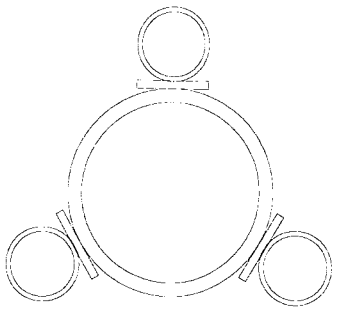
Subject:	Load Analysis of Proposed PCS Mast on CL&P Structure #1102
Location:	Norwalk, CT
Rev. 1: 7/7/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (AT&T @ 104')

Mount Type: Microflect Tri-Sector Adapter Mountw/ 3 Pipes



Mount Shape = Round

Pipe Mount Length = $L_{mnt} := 66$ in

2 inch Pipe Mount Linear Weight = $W_{mnt} := 3.66$ plf

Pipe Mount Outside Diameter = $D_{mnt} := 2.375$ in

Number of Mounting Pipes = $N_{mnt} := 3$

Tri Sector Adapter Mount Weight = $W_{tsa.mnt} := 20$ lbs

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 = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$ lbs

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} + W_{tsa.mnt} = 80$ lbs **BLC 2**

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

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 292$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 307$ cu in

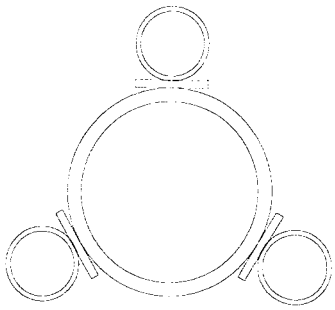
Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot ld = 10$ lbs

Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 5 = 35$ lbs **BLC 3**

NATCOMM INC. CONSULTING ENGINEERS	Subject:	Load Analysis of Proposed PCS Mast on CL&P Structure #1102
	Location:	Norwalk, CT
63-2 N. Branford Rd. Branford, CT 06405	Rev. 1: 7/7/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.5

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile @ 114')



Mount Type:	Microflect Tri-Sector Adapter Mountw/ 3 Pipes		
Mount Shape =	Round		
Pipe Mount Length =	$L_{mnt} := 66$	in	
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	
Number of Mounting Pipes =	$N_{mnt} := 3$		
Tri Sector Adapter Mount Weight =	$W_{tsa.mnt} := 20$	lbs	

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 =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$	lbs	
Weight of All Mounts =	$WT_{mnt} \cdot N_{mnt} + W_{tsa.mnt} = 80$	lbs	**BLC 2**

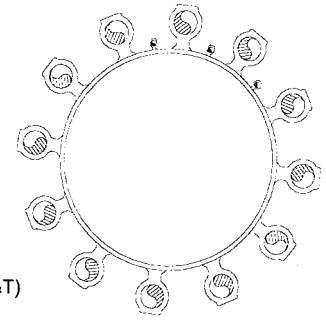
Gravity Loads (ice only) (per TIA/EIA-222-F-1996)

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

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (T-Mobile & AT&T)

Shape = Round



Coax Cable Length = $L_{coax} := 21$ ft

Coax Type = HELIAX 1-1/4" Φ

Coax Outside Diameter = $D_{coax1} := 1.55$ in

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf

Total Number of Coax = $N_{coax1} := 12$ (6 T-Mobile 6 AT&T)

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

Coax Type = HELIAX 1/2" Φ

Coax Outside Diameter = $D_{coax2} := 0.58$ in

Weight of Coax per foot = $Wt_{coax2} := 0.25$ plf

Total Number of Coax = $N_{coax2} := 3$ (3 AT&T)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax2} := 0$

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{\left(NP_{coax1} D_{coax1} + D_{mast}\right)}{12} = 1.3$ sq ft/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 77$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{\left(NP_{coax1} \cdot D_{coax1} + D_{mast} + 2 \cdot Ir\right)}{12} = 1.4$ sq ft/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 8$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} + Wt_{coax2} \cdot N_{coax2} = 9$ plf **BLC 2**

Gravity Loads (ice only)

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

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

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Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining PCS Mast Reactions Applied to CL&P Tower Tabulated Load Cases**

Location: **Norwalk, CT**

Date:3/23/09 Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO.5

Load Case	Description
1	Self Weight (PCS Mast)
2	Weight of Antennas, TMA's, Mounts, Coax Cables
3	Weight of Ice Only on PCS Structure (1)
4	NESC Heavy Wind on PCS Structure
5	NESC Extreme Wind on PCS Structure

Footnotes:
(1) PCS Structure includes: PCS Mast, Antennas, TMA's, Mounts, Coax Cable

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Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining PCS Mast Reactions Applied to CL&P Tower Load Combinations Table**

Location: **Norwalk, CT**

Date: 3/23/09 Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO.5

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

Footnotes:
(1) BLC = Basic Load Case
(2) PCS Structure includes: mast, antennas, tma's, mounts, coax cable, and miscellaneous hardware

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Hot Rolled Steel Code	AISC: ASD 9th
Cold Formed Steel Code	AISI 99: ASD
Wood Code	NDS 91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2002

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]
1	A572 Gr.50	29000	11154	.3	.65	.49	50
2	A992	29000	11154	.3	.65	.49	50
3	A500 Gr.42	29000	11154	.3	.65	.49	42
4	A500 Gr. C	29000	11154	.3	.65	.49	50
5	A53 Gr. B	29000	11154	.3	.65	.49	35

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-...	Cb	y sw...	z sw...	Function
1	M1	MASt	55												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_12.0X	Column	Pipe	A53 Gr. B	Typical	17.9	339	339	678

Member Primary Data

	Label	I Joint	J Joint	K ...	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	BOTTOM_CONN...	TOPOFM...			MASt	Column	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	BOTTOM_CONNECTION	0	0	0	0	
2	TOP_CONNECTION	0	21.5	0	0	
3	FLANGE_CONNECTION	0	33	0	0	
4	ANTENNA_CL1	0	52	0	0	
5	TOPOFMAST	0	55	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	BOTTOM_CONN...	Reaction	Reaction	Reaction				
2	TOP_CONNECTI...	Reaction	Reaction	Reaction				
3	FLANGE_CONNE...							
4	ANTENNA_CL1							
5	TOPOFMAST							

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.119
2	ANTENNA_CL1	L	Y	-.09
3	ANTENNA_CL1	L	Y	-.08

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.093
2	ANTENNA_CL1	L	Y	-.043
3	ANTENNA_CL1	L	Y	-.035

Joint Loads and Enforced Displacements (BLC 4 : NESC Heavy Wind)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.1
2	ANTENNA_CL1	L	X	.042

Joint Loads and Enforced Displacements (BLC 5 : NESC Extreme Wind)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.91
2	ANTENNA_CL1	L	X	.353

Member Distributed Loads (BLC 2 : Weight of PCS Structure)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	23	52

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	0	0
2	M1	Y	-.015	-.015	23	52

Member Distributed Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.006	.006	0	23
2	M1	X	.008	.008	23	50

Member Distributed Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.044	.044	0	23
2	M1	X	.077	.077	23	50

Basic Load Cases

	BLC Description	Category	X Gra...	Y Grav...	Z Gra...	Joint	Point	Distributed	Area (Mem...	Surfa...
1	Self Weight (PCS Mast)	None		-1						
2	Weight of PCS Structure	None				3	1			
3	Weight of Ice Only on PCS Struct	None				3	2			
4	NESC Heavy Wind	None				2	2			
5	NESC Extreme Wind	None				2	2			

Load Combinations

	Description	Solve	PD...	SR..	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	NESC Heavy Wind on PCS Mast and...	Yes			1	1.5	2	1.5	3	1.5	4	2.5						
2	NESC Extreme Wind on PCS Mast a...	Yes			1	1	2	1	5	1								
3	Self Weight				1	1												

Envelope Member Section Forces

	Member	Sec		Axial[k]	lc	y Shear[k]	lc	z Shear[k]	lc	Torque[k-ft]	lc	y-y Mome...	lc	z-z Momen...	lc
1	M1	1	max	1.111	1	-.72	1	0	1	0	1	0	1	0	1
2			min	.655	2	-2.771	2	0	1	0	1	0	1	0	1
3		2	max	-.183	2	-.926	1	0	1	0	1	0	1	42.267	2
4			min	-.31	1	-3.376	2	0	1	0	1	0	1	11.316	1
5		3	max	4.378	1	2.996	2	0	1	0	1	0	1	50.434	2
6			min	2.16	2	.805	1	0	1	0	1	0	1	13.76	1
7		4	max	2.482	1	1.937	2	0	1	0	1	0	1	16.525	2
8			min	1.213	2	.53	1	0	1	0	1	0	1	4.582	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1

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	.062	1	-.08	1	0	1	0	1	0	1	0	1	0	1
2			min	.037	2	-.31	2	0	1	0	1	0	1	0	1	0	1
3		2	max	-.01	2	-.103	1	0	1	-2.554	1	9.538	2	0	1	0	1
4			min	-.017	1	-.377	2	0	1	-9.538	2	2.554	1	0	1	0	1
5		3	max	.245	1	.335	2	0	1	-3.105	1	11.381	2	0	1	0	1
6			min	.121	2	.09	1	0	1	-11.381	2	3.105	1	0	1	0	1
7		4	max	.139	1	.216	2	0	1	-1.034	1	3.729	2	0	1	0	1
8			min	.068	2	.059	1	0	1	-3.729	2	1.034	1	0	1	0	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1

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	BOTTOM_CON...	max	2.771	2	1.111	1	0	1	0	1	0	1	0	1
2		min	.72	1	.655	2	0	1	0	1	0	1	0	1
3	TOP_CONNEC...	max	-1.96	1	6.264	1	0	1	0	1	0	1	0	1
4		min	-7.125	2	3.216	2	0	1	0	1	0	1	0	1
5	FLANGE_CON...	max	NC		NC		NC		NC		LOCKED		NC	
6		min	NC		NC		NC		NC		LOCKED		NC	
7	Totals:	max	-1.24	1	7.376	1	0	1						
8		min	-4.354	2	3.871	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	lc	Y [in]	lc	Z [in]	lc	X Rotation...	lc	Y Rotation...	lc	Z Rotation ...	lc
1	BOTTOM_CO...	max	0	1	0	2	0	1	0	1	0	1	3.364e-3	2
2		min	0	2	0	1	0	1	0	1	0	1	8.951e-4	1
3	TOP_CONNE...	max	0	2	0	2	0	1	0	1	0	1	-1.906e-3	1
4		min	0	1	0	1	0	1	0	1	0	1	-7.086e-3	2
5	FLANGE_CO...	max	1.649	2	0	2	0	1	0	1	0	1	-4.276e-3	1
6		min	.446	1	-.001	1	0	1	0	1	0	1	-1.578e-2	2
7	ANTENNA_CL1	max	5.921	2	-.001	2	0	1	0	1	0	1	-5.455e-3	1
8		min	1.607	1	-.002	1	0	1	0	1	0	1	-2.004e-2	2
9	TOPOFMAST	max	6.643	2	-.001	2	0	1	0	1	0	1	-5.455e-3	1
10		min	1.803	1	-.002	1	0	1	0	1	0	1	-2.004e-2	2

Envelope AISC ASD Steel Code Checks

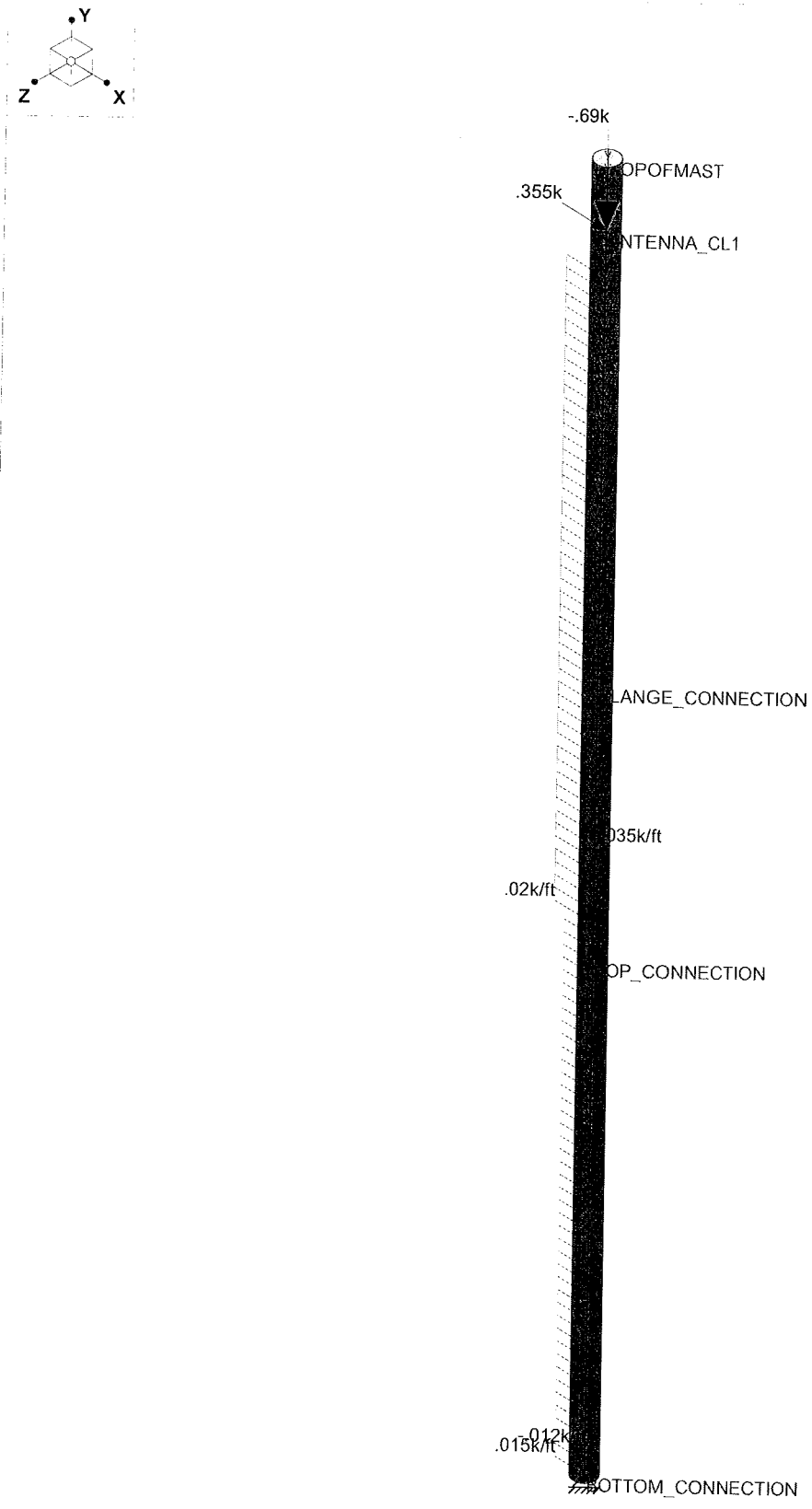
	Member	Shape	Code Check	Loc[ft]	lc	Shear Check	Loc[ft]	...	lc	Fa ...Ft [...,..Fb ..... C..C..AS...
1	M1	PIPE_12.0X	.679	21.771	2	.030	21.198	...	2	6.4... 21 ... 23.1 1 .6 85H1-2

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTTOM_CONNECTION	.72	1.111	0	0	0	0
2	1	TOP_CONNECTION	-1.96	6.264	0	0	0	0
3	1	FLANGE_CONNECTION	NC	NC	NC	NC	LOCKED	NC
4	1	Totals:	-1.24	7.376	0			
5	1	COG (ft):	X: 0	Y: 31.149	Z: 0			

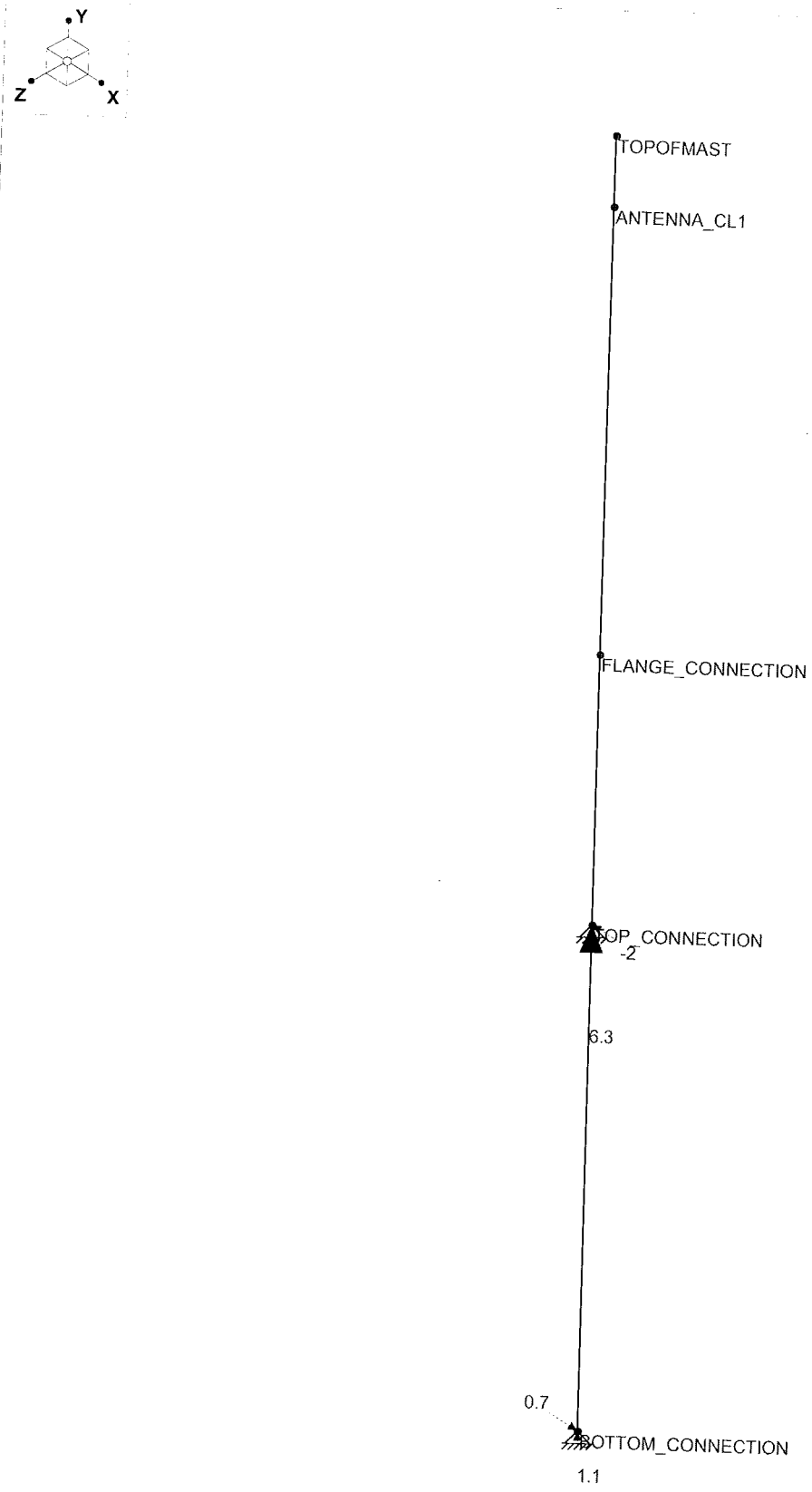
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTTOM_CONNECTION	2.771	.655	0	0	0	0
2	2	TOP_CONNECTION	-7.125	3.216	0	0	0	0
3	2	FLANGE_CONNECTION	NC	NC	NC	NC	LOCKED	NC
4	2	Totals:	-4.354	3.871	0			
5	2	COG (ft):	X: 0	Y: 29.928	Z: 0			



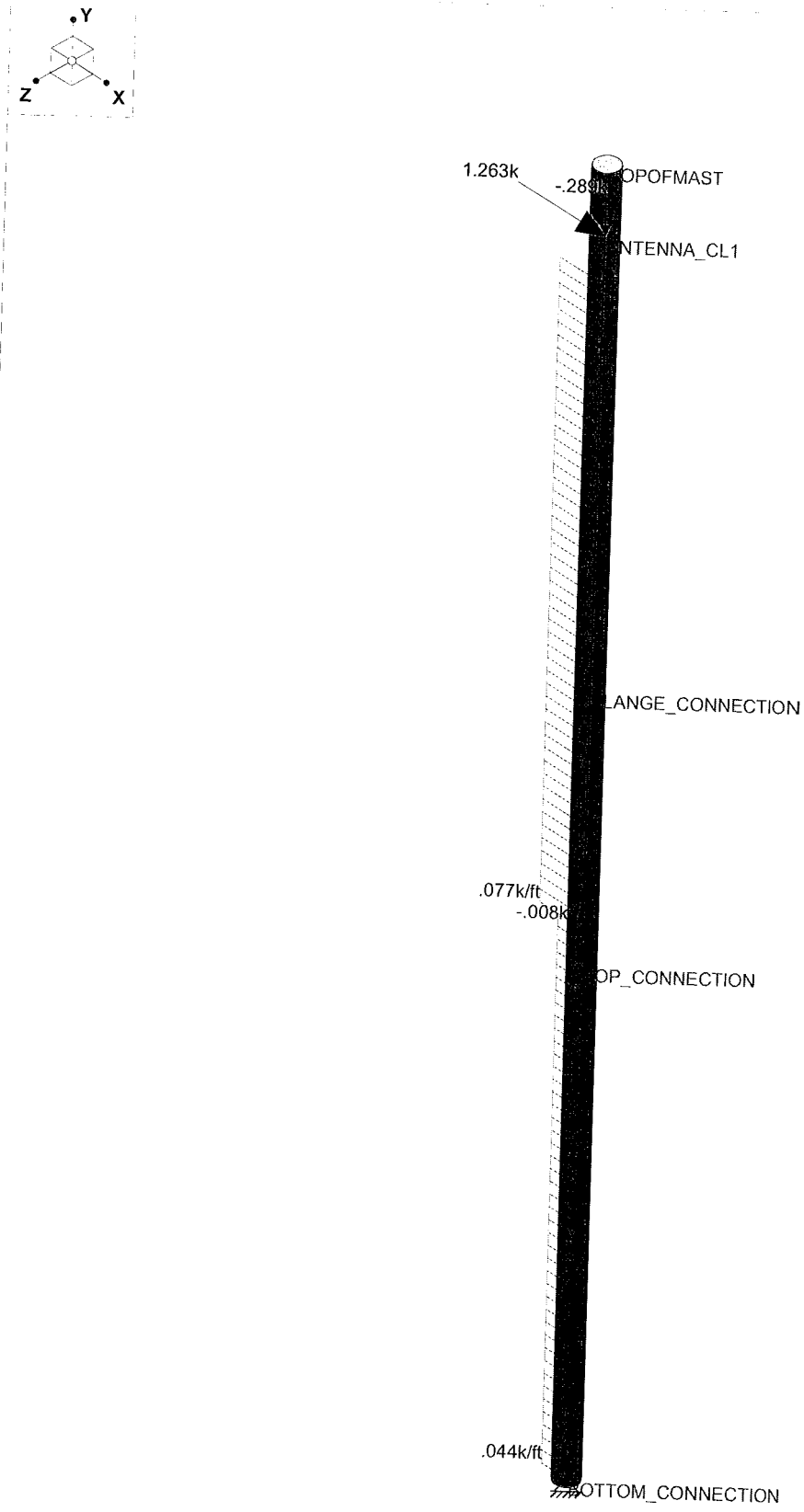
Loads: LC 1, NESC Heavy Wind on PCS Mast and PCS Structure

Natcomm Inc	Existing Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 9:45 AM
08174-CO.5	LC # 1 Loads	Existing - Pipe Mast NESC.r3d



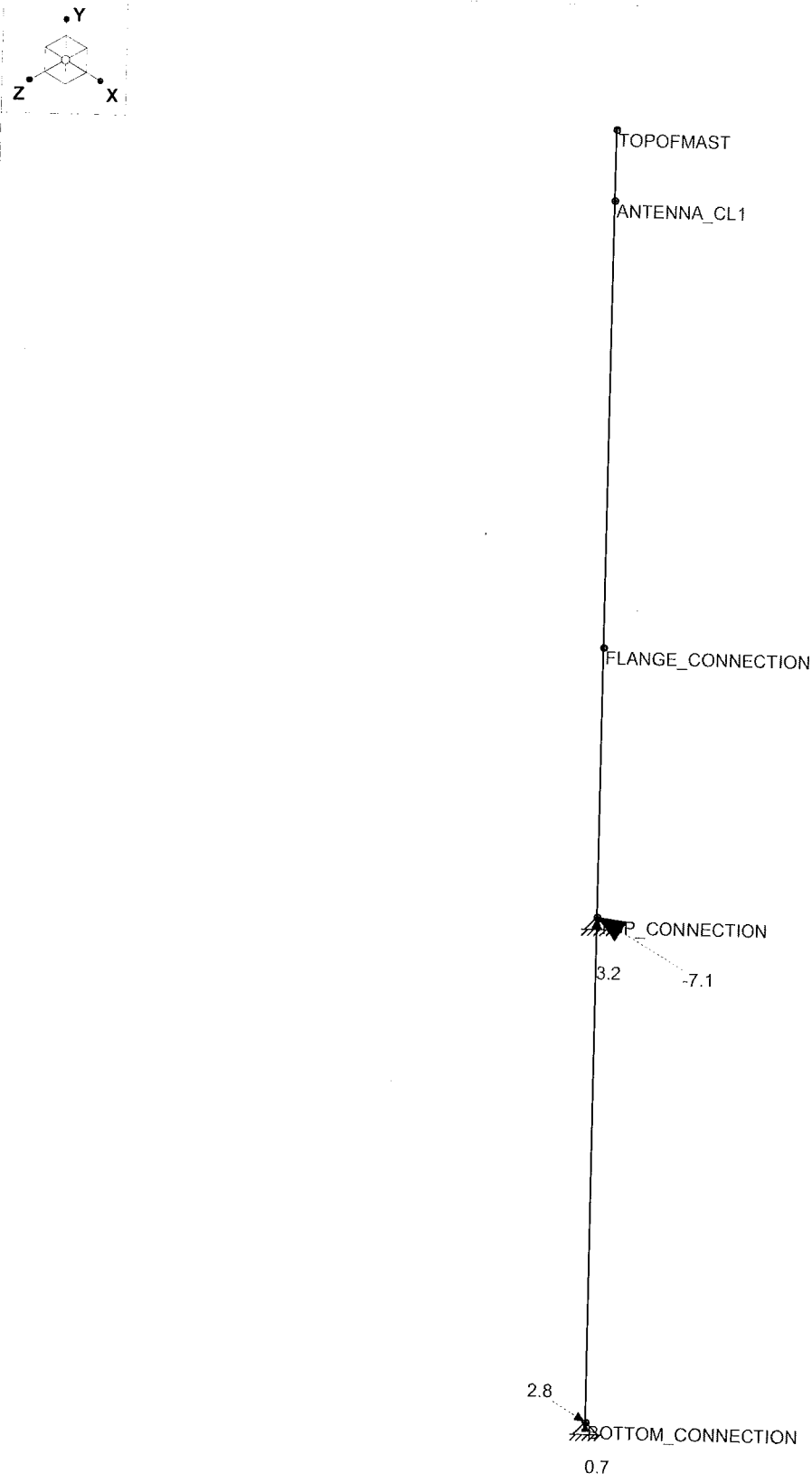
Results for LC 1, NESC Heavy Wind on PCS Mast and PCS Structure
Reaction units are k and k-ft

Natcomm Inc	Existing Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 9:47 AM
08174-CO.5	LC # 1 Reactions	Existing - Pipe Mast NESC.r3d



Loads: LC 2, NESC Extreme Wind on PCS Mast and PCS Structure

Natcomm Inc	Existing Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 9:46 AM
08174-CO.5	LC # 2 Loads	Existing - Pipe Mast NESC.r3d



Results for LC 2, NESC Extreme Wind on PCS Mast and PCS Structure
Reaction units are k and k-ft

Natcomm Inc	Existing Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 9:47 AM
08174-CO.5	LC # 2 Reactions	Existing - Pipe Mast NESC.r3d

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Hot Rolled Steel Code	AISC: ASD 9th
Cold Formed Steel Code	AISI 99: ASD
Wood Code	NDS 91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2002

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]
1	A572 Gr.50	29000	11154	.3	.65	.49	50
2	A992	29000	11154	.3	.65	.49	50
3	A500 Gr.42	29000	11154	.3	.65	.49	42
4	A500 Gr. C	29000	11154	.3	.65	.49	50
5	A53 Gr. B	29000	11154	.3	.65	.49	35

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-...	Cb	y sw...	z sw...	Function
1	M1	MASt	55												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_12.0X	Column	Pipe	A53 Gr. B	Typical	17.9	339	339	678

Member Primary Data

	Label	I Joint	J Joint	K...	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	BOTTOM_CONN...	TOP_OF_...			MASt	Column	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	BOTTOM_CONNECTION	0	0	0	0	
2	TOP_CONNECTION	0	21.5	0	0	
3	FLANGE_CONNECTION	0	33	0	0	
4	ANTENNA_CL1	0	42	0	0	
5	ANTENNA_CL2	0	52	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
6	TOP_OF_MAST	0	55	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	BOTTOM_CONN...	Reaction	Reaction	Reaction				
2	TOP_CONNECTI...	Reaction	Reaction	Reaction				
3	FLANGE_CONNE...							
4	ANTENNA_CL1							
5	ANTENNA_CL2							

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.105
2	ANTENNA_CL1	L	Y	-.085
3	ANTENNA_CL1	L	Y	-.08
4	ANTENNA_CL2	L	Y	-.122
5	ANTENNA_CL2	L	Y	-.08

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	Y	-.098
2	ANTENNA_CL1	L	Y	-.043
3	ANTENNA_CL1	L	Y	-.035
4	ANTENNA_CL2	L	Y	-.101
5	ANTENNA_CL2	L	Y	-.035

Joint Loads and Enforced Displacements (BLC 4 : NESC Heavy Wind)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.09
2	ANTENNA_CL1	L	X	.042
3	ANTENNA_CL2	L	X	.108

Joint Loads and Enforced Displacements (BLC 5 : NESC Extreme Wind)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft...
1	ANTENNA_CL1	L	X	.805
2	ANTENNA_CL1	L	X	.353
3	ANTENNA_CL2	L	X	.99

Member Distributed Loads (BLC 2 : Weight of PCS Structure)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.009	-.009	23	52

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	0	0
2	M1	Y	-.015	-.015	23	52

Member Distributed Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.006	.006	0	23
2	M1	X	.008	.008	23	40

Member Distributed Loads (BLC 4 : NESC Heavy Wind) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
3	M1	X	.008	.008	44	50

Member Distributed Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.044	.044	0	23
2	M1	X	.077	.077	23	40
3	M1	X	.077	.077	44	50

Basic Load Cases

	BLC Description	Category	X Gra...	Y Grav...	Z Gra...	Joint	Point	Distributed	Area (Mem...	Surfa...
1	Self Weight (PCS Mast)	None		-1						
2	Weight of PCS Structure	None				5	1			
3	Weight of Ice Only on PCS Struct	None				5	2			
4	NESC Heavy Wind	None				3	3			
5	NESC Extreme Wind	None				3	3			

Load Combinations

	Description	Solve	PD...	SR...	BLCFa...		BLCFa...		BLCFa...		BLCFa...		BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
1	NESC Heavy Wind on PCS Mast and...	Yes			1	1.5	2	1.5	3	1.5	4	2.5						
2	NESC Extreme Wind on PCS Mast a...	Yes			1	1	2	1	5	1								
3	Self Weight				1	1												

Envelope Member Section Forces

	Member	Sec		Axial[k]	lc	y Shear[k]	lc	z Shear[k]	lc	Torque[k-ft]	lc	y-y Mome...	lc	z-z Momen...	lc
1	M1	1	max	1.111	1	-.838	1	0	1	0	1	0	1	0	1
2			min	.655	2	-3.195	2	0	1	0	1	0	1	0	1
3		2	max	-.183	2	-1.044	1	0	1	0	1	0	1	0	1
4			min	-.31	1	-3.8	2	0	1	0	1	0	1	48.086	2
5		3	max	4.901	1	3.572	2	0	1	0	1	0	1	12.936	1
6			min	2.368	2	.97	1	0	1	0	1	0	1	56.071	2
7		4	max	2.984	1	2.61	2	0	1	0	1	0	1	15.303	1
8			min	1.406	2	.72	1	0	1	0	1	0	1	14.167	2
9		5	max	0	1	0	1	0	1	0	1	0	1	3.84	1
10			min	0	1	0	1	0	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	.062	1	-.094	1	0	1	0	1	0	1	0	1	0	1
2			min	.037	2	-.357	2	0	1	0	1	0	1	0	1	0	1
3		2	max	-.01	2	-.117	1	0	1	-2.919	1	10.851	2	0	1	0	1
4			min	-.017	1	-.425	2	0	1	-10.851	2	2.919	1	0	1	0	1
5		3	max	.274	1	.399	2	0	1	-3.453	1	12.653	2	0	1	0	1
6			min	.132	2	.108	1	0	1	-12.653	2	3.453	1	0	1	0	1
7		4	max	.167	1	.292	2	0	1	-.867	1	3.197	2	0	1	0	1
8			min	.079	2	.08	1	0	1	-3.197	2	.867	1	0	1	0	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1

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	BOTTOM_CON...	max	3.195	2	1.111	1	0	1	0	1	0	1	0	1
2		min	.838	1	.655	2	0	1	0	1	0	1	0	1
3	TOP_CONNEC...	max	-2.243	1	6.794	1	0	1	0	1	0	1	0	1
4		min	-8.126	2	3.428	2	0	1	0	1	0	1	0	1
5	ANTENNA_CL1	max	NC		NC		NC		NC		LOCKED		NC	
6		min	NC		NC		NC		NC		LOCKED		NC	
7	Totals:	max	-1.405	1	7.905	1	0	1						
8		min	-4.931	2	4.083	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	lc	Y [in]	lc	Z [in]	lc	X Rotation...	lc	Y Rotation...	lc	Z Rotation ...	lc
1	BOTTOM_CO...	max	0	1	0	2	0	1	0	1	0	1	3.837e-3	2
2		min	0	2	0	1	0	1	0	1	0	1	1.027e-3	1
3	TOP_CONNE...	max	0	2	0	2	0	1	0	1	0	1	-2.173e-3	1
4		min	0	1	0	1	0	1	0	1	0	1	-8.045e-3	2
5	FLANGE_CO...	max	1.862	2	0	2	0	1	0	1	0	1	-4.81e-3	1
6		min	.505	1	-.001	1	0	1	0	1	0	1	-1.771e-2	2
7	ANTENNA_CL1	max	3.982	2	0	2	0	1	0	1	0	1	-5.689e-3	1
8		min	1.081	1	-.002	1	0	1	0	1	0	1	-2.093e-2	2
9	ANTENNA_CL2	max	6.562	2	-.001	2	0	1	0	1	0	1	-5.911e-3	1
10		min	1.782	1	-.002	1	0	1	0	1	0	1	-2.175e-2	2
11	TOP_OF_MAST	max	7.346	2	-.001	2	0	1	0	1	0	1	-5.911e-3	1
12		min	1.995	1	-.002	1	0	1	0	1	0	1	-2.175e-2	2

Envelope AISC ASD Steel Code Checks

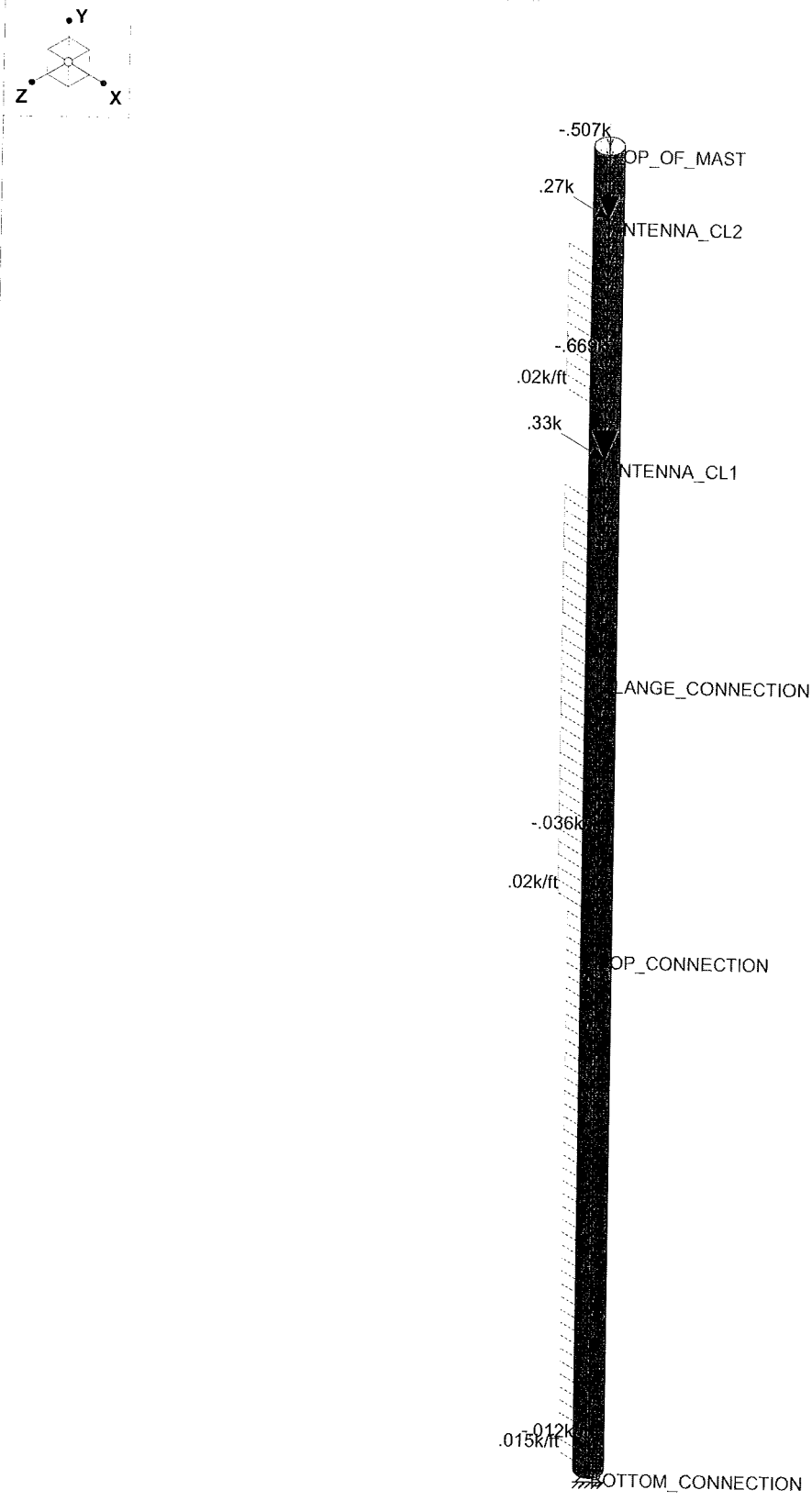
	Member	Shape	Code Check	Loc[ft]	lc	Shear Check	Loc[ft]	...	lc	Fa ...	Ft [	...	Fb ...	...	C..	C..	AS...
1	M1	PIPE_12.0X	.767	21.771	2	.033	21.198	...	2	6.4...	21	...	23.1	1	.6	.85	H1-2

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTTOM_CONNECTION	.838	1.111	0	0	0	0
2	1	TOP_CONNECTION	-2.243	6.794	0	0	0	0
3	1	ANTENNA_CL1	NC	NC	NC	NC	LOCKED	NC
4	1	Totals:	-1.405	7.905	0			
5	1	COG (ft):	X: 0	Y: 31.619	Z: 0			

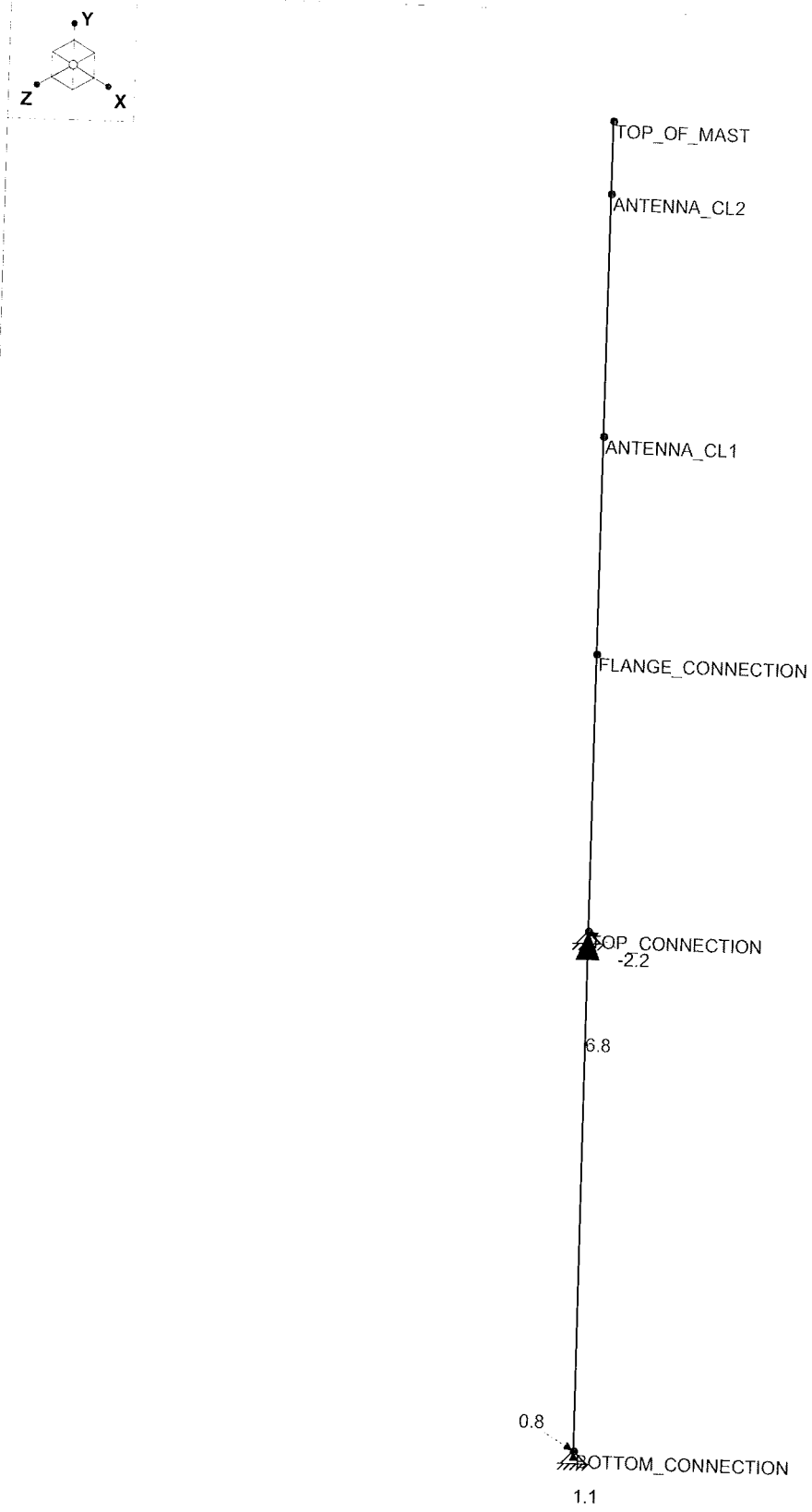
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTTOM_CONNECTION	3.195	.655	0	0	0	0
2	2	TOP_CONNECTION	-8.126	3.428	0	0	0	0
3	2	ANTENNA_CL1	NC	NC	NC	NC	LOCKED	NC
4	2	Totals:	-4.931	4.083	0			
5	2	COG (ft):	X: 0	Y: 30.31	Z: 0			



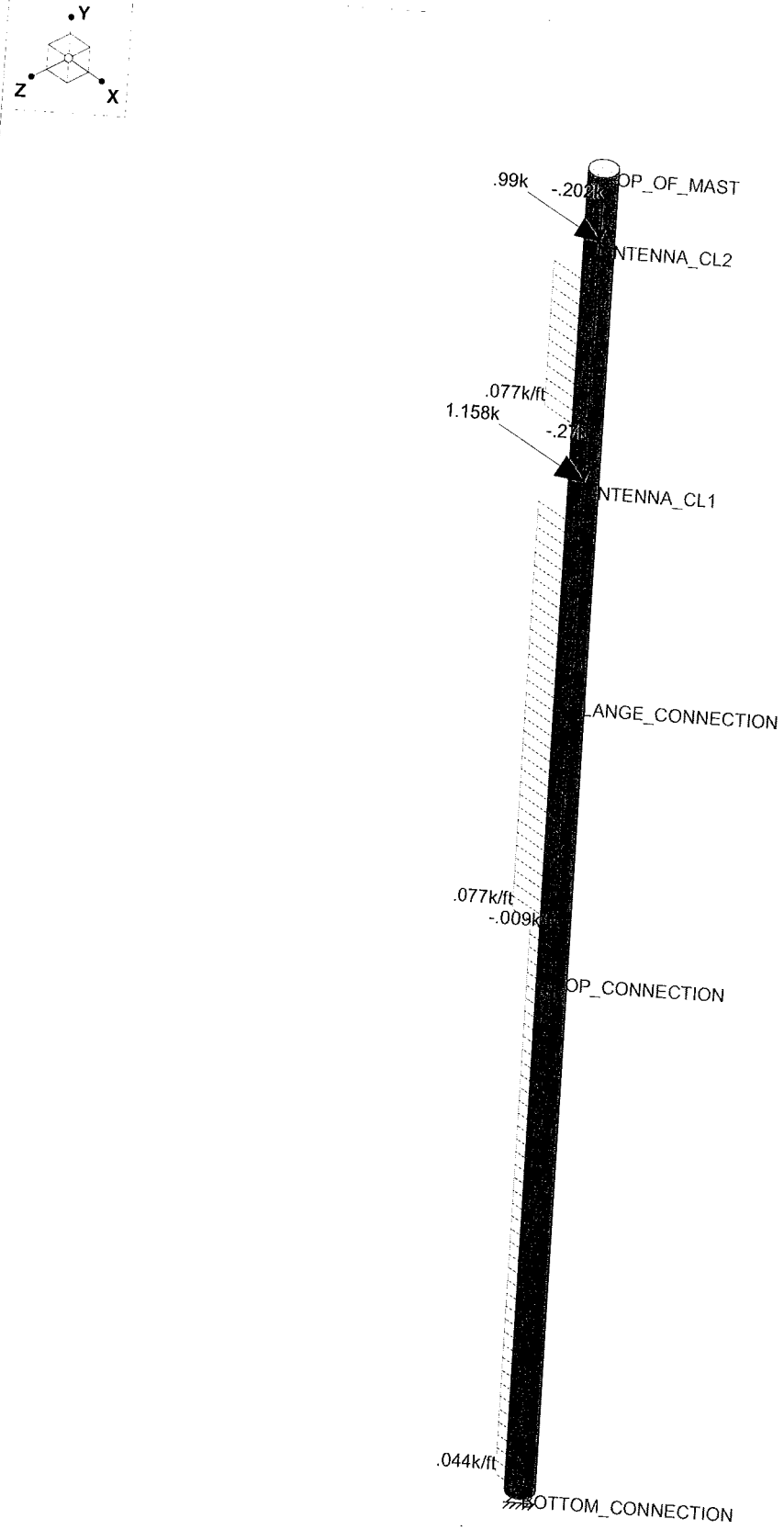
Loads: LC 1, NESC Heavy Wind on PCS Mast and PCS Structure

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 11:58 AM
08174-CO.5	LC # 1 Loads	Proposed - Pipe Mast NESC.r3d



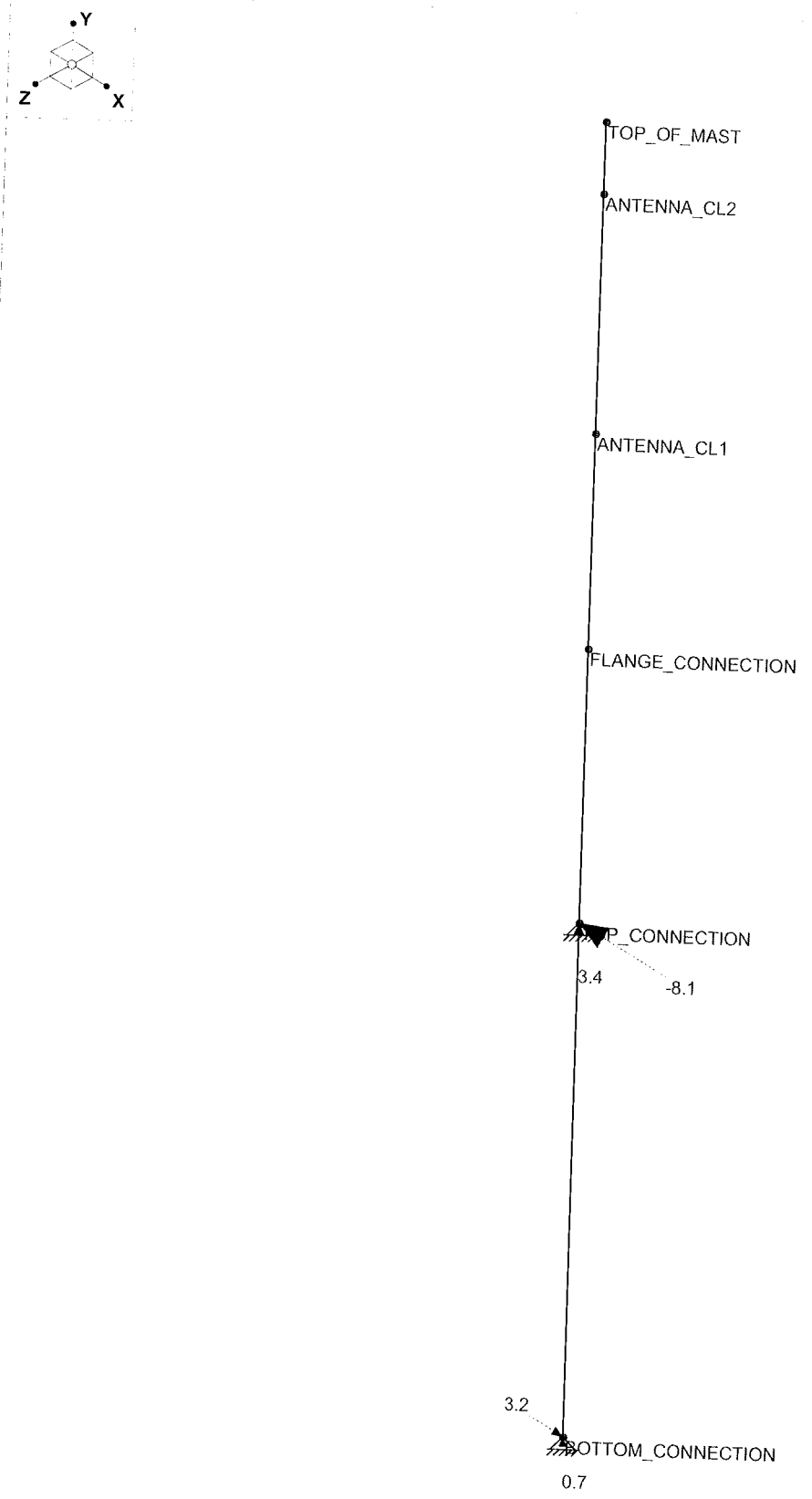
Results for LC 1, NESC Heavy Wind on PCS Mast and PCS Structure
Reaction units are k and k-ft

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 11:59 AM
08174-CO.5	LC # 1 Reactions	Proposed - Pipe Mast NESC.r3d



Loads: LC 2, NESC Extreme Wind on PCS Mast and PCS Structure

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		
08174-CO.5	LC # 2 Loads	July 8, 2009 at 11:58 AM
		Proposed - Pipe Mast NESC.r3d



Results for LC 2, NESC Extreme Wind on PCS Mast and PCS Structure
Reaction units are k and k-ft

Natcomm Inc	Proposed Mast on CL&P Tower # 1102	
tjl / cfc		July 8, 2009 at 11:59 AM
08174-CO.5	LC # 2 Reactions	Proposed - Pipe Mast NESC.r3d

NATCOMM INC
CONSULTING ENGINEERS
p: 203.488.0580 f: 203.488.8587 www.natcomm.com
63-2 N. Branford Rd. Branford, CT 06405

Subject:	Coax Cable Below Existing Mast on CL&P Tower #1102
Location:	Norwalk, CT
Rev. 1: 7/8/09	Prepared by: T.J.L Checked by: C.F.C. Job No. 08174.CO.05

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span (from Top of Tower Down Coax run on mast at 85' AGL Coax attached to tower at 10' AGL) =

$Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 15 \\ 20 \end{pmatrix} \cdot ft$ *(User Input)*

Coax Cable Type =	Helix 1-1/4" Φ	*(User Input)*	
Diameter of Coax Cable =	$D_{coax} := 1.55 \cdot in$	*(User Input)*	
Weight of Coax Cable =	$W_{coax} := 0.66 \cdot plf$	*(User Input)*	
Number of Coax Cables =	$N_{coax} := 12$	*(User Input)*	(T-Mobile)
Number of Coax Cables Projected =	$NP_{coax} := 6$	*(User Input)*	
Extreme Wind Pressure =	$qz := 31.9 \cdot psf$	*(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 = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 10.3 \cdot in$

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 9.3 \cdot in$

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

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

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 344 \\ 344 \\ 344 \\ 344 \\ 516 \\ 688 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 124 \\ 124 \\ 124 \\ 124 \\ 187 \\ 249 \end{pmatrix} lb$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 79 \\ 79 \\ 79 \\ 79 \\ 119 \\ 158 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 358 \\ 358 \\ 358 \\ 358 \\ 538 \\ 717 \end{pmatrix} lb$$

NATCOMM LLC
CONSULTING ENGINEERS
63-2 N. Branford Rd. Branford, CT 06405

Subject:	Coax Cable Below Proposed Mast on CL&P Tower #1102
Location:	Norwalk, CT
Rev. 1: 7/8/09	Prepared by: T.J.L Checked by: C.F.C.

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span (from Top of Tower Down Coax run on mast at 85' AGL Coax attached to tower at 10' AGL) = $Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 15 \\ 20 \end{pmatrix} \cdot ft$ *(User Input)*

Coax Cable Type =	Helix 1-1/4" Φ	*(User Input)*	
Diameter of Coax Cable =	$D_{coax1} := 1.55 \cdot in$	*(User Input)*	
Weight of Coax Cable =	$W_{coax1} := 0.66 \cdot plf$	*(User Input)*	
Number of Coax Cables =	$N_{coax1} := 12$	*(User Input)*	(6 T-Mobile 6 AT&T)
Number of Coax Cables Projected =	$NP_{coax1} := 6$	*(User Input)*	

Coax Cable Type =	Helix 1/2" Φ	*(User Input)*	
Diameter of Coax Cable =	$D_{coax2} := 0.58 \cdot in$	*(User Input)*	
Weight of Coax Cable =	$W_{coax2} := 0.25 \cdot plf$	*(User Input)*	
Number of Coax Cables =	$N_{coax2} := 3$	*(User Input)*	(3 AT&T)
Number of Coax Cables Projected =	$NP_{coax2} := 0$	*(User Input)*	

Extreme Wind Pressure =	$qz := 31.9 \cdot psf$	*(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)*

NATCOMM INC.
CONSULTING ENGINEERS
63-2 North Branford Rd., Branford, CT 06405

Subject: Coax Cable Below Proposed Mast on CL&P Tower #1102

Location: Norwalk, CT

Rev. 1: 7/8/09 Prepared by: T.J.L Checked by: C.F.C.

Wind Area with Ice = $A_{ice} := \left(NP_{coax1} \cdot D_{coax1} + 2 \cdot Ir\right) = 10.3 \cdot in$

Wind Area without Ice = $A := \left(NP_{coax1} \cdot D_{coax1}\right) = 9.3 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax1} + 2 \cdot Ir\right)^2 - D_{coax1}^{\ 2}\right] = 0.022 ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot ld \cdot N_{coax1} = 15.027 \cdot plf$

Heavy Vertical Load =

$$Heavy_{Vert} := \overrightarrow{\left[\left(N_{coax1} \cdot W_{coax1} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HV}\right]}$$

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 344 \\ 344 \\ 344 \\ 344 \\ 516 \\ 688 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 124 \\ 124 \\ 124 \\ 124 \\ 187 \\ 249 \end{pmatrix} lb$$

Extreme Vertical Load =

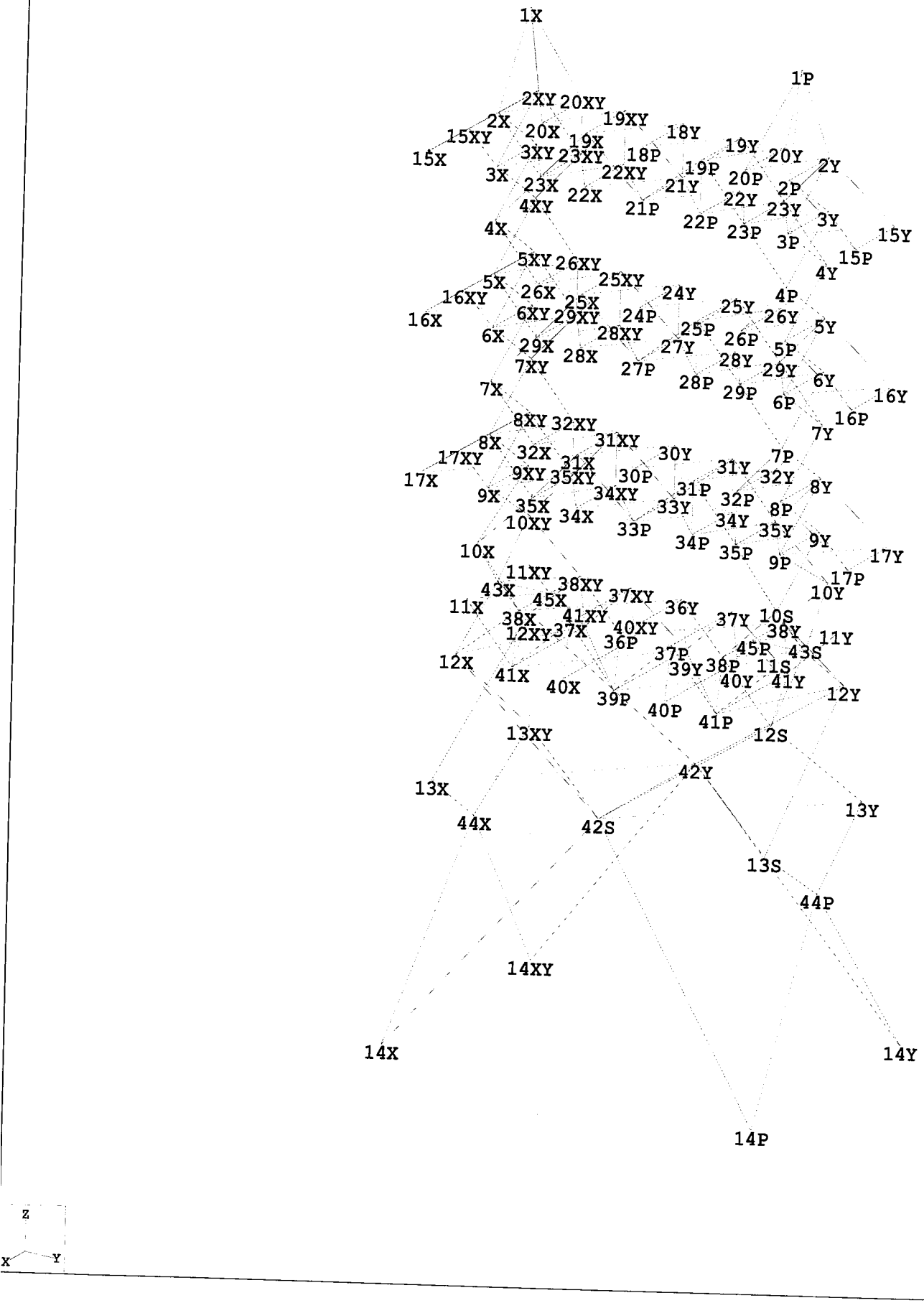
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax1} \cdot W_{coax1} + N_{coax2} \cdot W_{coax2}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

Extreme Transverse Load =

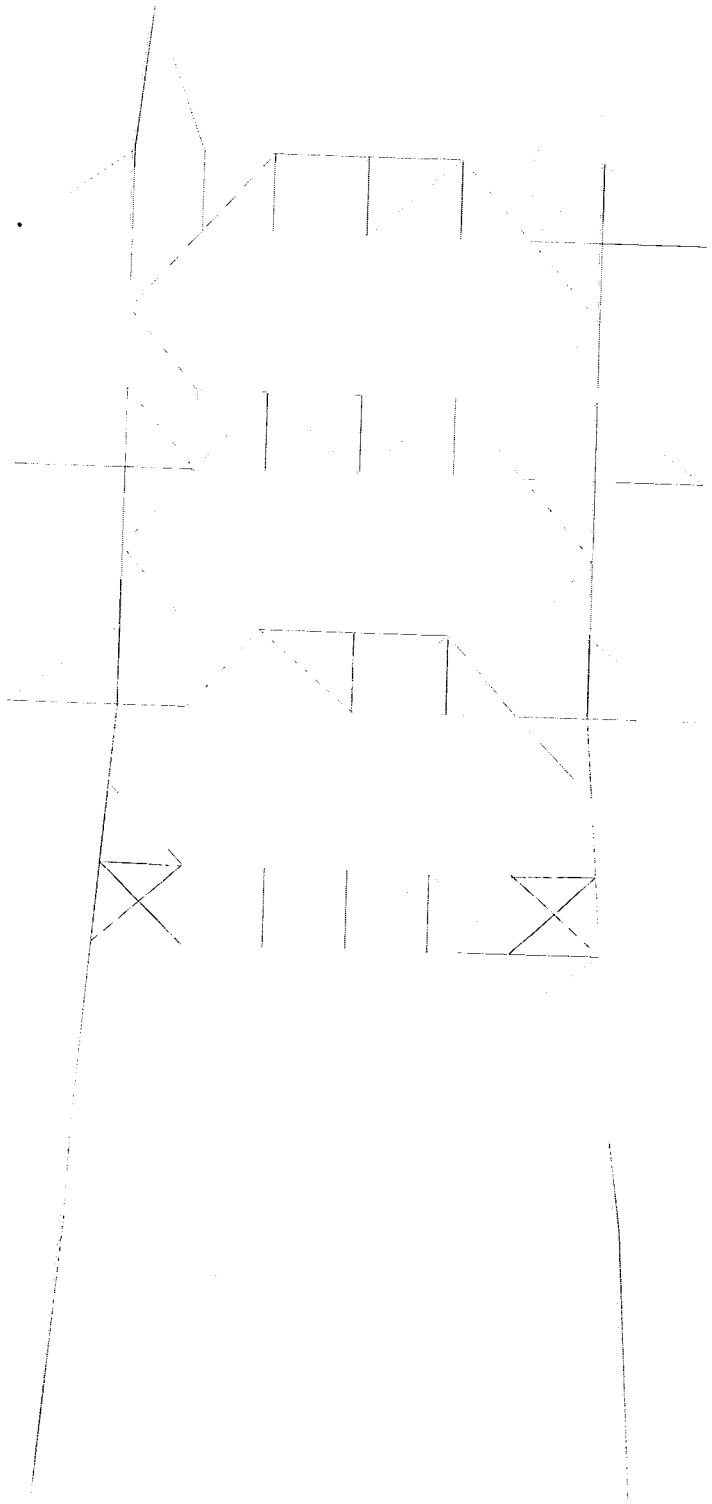
$$Extreme_{Trans} := \overrightarrow{\left[\left(qz \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EW}\right]}$$

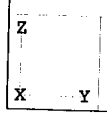
$$Extreme_{Vert} = \begin{pmatrix} 87 \\ 87 \\ 87 \\ 87 \\ 130 \\ 173 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 358 \\ 358 \\ 358 \\ 358 \\ 538 \\ 717 \end{pmatrix} lb$$

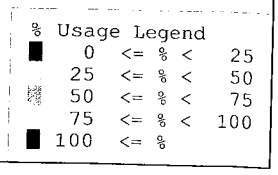
Tower Version 9.04, 11:35:21 AM Wednesday, July 08, 2009
Undeformed geometry displayed



Tower version 9.04, 11:40:21 AM Wednesday, July 08, 2009
Displaying geometry for multiple load cases







Project Name : Nowalk Tower #1102
Project Notes: T-MOBILE PCS
Project File : J:\Jobs\0817400.WI - HPC-T-Mobile\CO05 - CT11356-CL&P Tower - Rte 123\Engineering\Structural\Rev (1)\Calcs\Pls-Tower\norwalk1102.tow
Date run : 11:36:05 AM Wednesday, July 08, 2009
by : Tower Version 9.04
Licensed to : Natcomm

Successfully performed nonlinear analysis

KL/R value of 213.20 exceeds maximum of 200.00 for member "94P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "94X" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "96P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "96X" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "101P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "109P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "117P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "125P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "126AP" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "126BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "127P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "127X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "128AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "128BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "129P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "129X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "130AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "130BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "131P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "132AP" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "132BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "133P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "133X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "134AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "134BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "135P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "135X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "136AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "136BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "137P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "138AP" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "138BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "139P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "139X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "140AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "140BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "141P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "141X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "142AP" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "142BP" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144P" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144X" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144XY" ??
KL/R value of 203.04 exceeds maximum of 200.00 for member "144Y" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "150P" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151P" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151X" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151XY" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "151Y" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154P" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154X" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154XY" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "154Y" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156P" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156X" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156XY" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156Y" ??
Clamp insulator "C33" has a structure attach joint "14XY" that is fixed with respect to translation ??

Clamp insulator "C40" has a structure attach joint "14Y" that is fixed with respect to translation ??
The model has 59 warnings. ??

Member check option: ASCE 10
Connection rupture check: Not Checked
Crossing diagonal check: Fixed

Loads from file: j:\jobs\0817400.wi - hpc-t-mobile\co05 - ct11356-c1&p tower - rte 123\engineering\structural\rev (1)\calcs\pls-tower\norwalk1102.lca

*** Analysis Results:

Maximum element usage is 92.14% for Angle "156XY" in load case "NESC Broken Wire"
Maximum insulator usage is 23.70% for Clamp "C5" in load case "NESC 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)	Vert. Moment (ft-k)	Bending Moment (ft-k)	Found. Usage %
NESC Heavy	14P	-23.13	-32.46	123.91	39.86	0.13	0.15	0.04	0.20	0.00
NESC Heavy	14X	14.36	-22.60	-66.21	26.77	0.31	0.03	-0.01	0.31	0.00
NESC Heavy	14XY	-14.25	-22.63	-64.94	26.74	0.34	-0.07	0.01	0.35	0.00
NESC Heavy	14Y	23.02	-32.89	124.72	40.14	0.15	-0.21	-0.05	0.26	0.00
NESC Extreme	14P	-21.67	-34.55	120.03	40.79	0.29	0.20	0.07	0.35	0.00
NESC Extreme	14X	20.45	-29.66	-92.79	36.03	0.36	0.10	0.01	0.38	0.00
NESC Extreme	14XY	-20.16	-30.25	-91.97	36.35	0.44	-0.07	-0.02	0.44	0.00
NESC Extreme	14Y	21.37	-35.25	119.71	41.22	0.36	-0.25	-0.07	0.44	0.00
NESC Broken Wire	14P	-23.62	-36.67	129.65	43.62	0.17	0.12	-0.01	0.21	0.00
NESC Broken Wire	14X	9.33	-20.93	-38.34	22.91	0.44	0.13	-0.04	0.46	0.00
NESC Broken Wire	14XY	-18.20	-22.71	-87.42	29.10	0.20	0.03	-0.03	0.20	0.00
NESC Broken Wire	14Y	21.23	-26.96	112.14	34.32	0.11	-0.28	-0.09	0.30	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 (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	14P	13S	13P	128.238	22.316	22.379	-23.13	-32.46	123.91
NESC Heavy	14X	13X	13X	-69.313	17.207	17.289	14.36	-22.60	-66.21
NESC Heavy	14XY	13XY	13XY	-68.052	17.347	17.432	-14.25	-22.63	-64.94
NESC Heavy	14Y	13Y	13Y	129.040	22.682	22.742	23.02	-32.89	124.72
NESC Extreme	14P	13S	13P	124.334	24.750	24.811	-21.67	-34.55	120.03
NESC Extreme	14X	13X	13X	-97.042	22.144	22.260	20.45	-29.66	-92.79
NESC Extreme	14XY	13XY	13XY	-96.231	22.781	22.896	-20.16	-30.25	-91.97
NESC Extreme	14Y	13Y	13Y	124.020	25.481	25.541	21.37	-35.25	119.71
NESC Broken Wire	14P	13S	13P	134.281	26.070	26.136	-23.62	-36.67	129.65
NESC Broken Wire	14X	13X	13X	-40.955	17.826	17.916	9.33	-20.93	-38.34
NESC Broken Wire	14XY	13XY	13XY	-90.813	15.581	15.654	-18.20	-22.71	-87.42
NESC Broken Wire	14Y	13Y	13Y	115.918	17.777	17.830	21.23	-26.96	112.14

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC Heavy	7243.450	-27.144	7243.501
NESC Extreme	8096.535	-6.532	8096.538
NESC Broken Wire	7010.317	870.569	7064.165

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each loadcase.

Group Summary (Compression Portion):

	Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Conn. Shear Capacity (kips)	Comp. Conn. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
1	L1	SAE	2.5X2.5X0.1875		33.0	40.35	40.35	1Y	-7.122	NESC Broke	17.649	27.200	24.469	0.500	0.500	0.500	117.68	9.708	3	2
2	L2	SAE	5X5X0.375		33.0	9.36	9.36	2XY	-9.974	NESC Heavy	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
3	L3	SAE	5X5X0.375		33.0	14.96	14.96	3X	-15.940	NESC Broke	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
4	L4	SAE	5X5X0.375		33.0	28.78	28.78	4P	-30.659	NESC Broke	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
5	L5	SAE	5X5X0.375		33.0	24.75	24.75	5X	-26.358	NESC Broke	106.517	136.000	244.687	1.000	1.000	1.000	60.61	5.000	1	0
6	L6	SAE	8X8X0.5		33.0	14.46	14.46	6X	-35.453	NESC Broke	245.252	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	10
7	L7	SAE	8X8X0.5		33.0	23.49	23.49	7P	-57.613	NESC Broke	245.252	0.000	0.000	1.000	1.000	1.000	37.74	5.000	1	0
8	L8	SAE	8X8X0.5		33.0	17.99	16.11	8X	-39.514	NESC Broke	245.252	272.000	326.249	1.000	1.000	1.000	37.74	5.000	1	0
9	L9	SAE	8X8X0.5		50.0	14.14	14.14	9X	-44.203	NESC Broke	312.662	0.000	0.000	1.000	1.000	1.000	37.74	5.000	1	10
10	L10	SAE	8X8X0.5		50.0	27.07	27.07	10P	-84.643	NESC Broke	312.662	380.800	944.999	1.000	1.000	1.000	38.54	5.107	1	0
11	L11	SAE	8X8X0.5		50.0	25.31	25.31	11P	-79.126	NESC Broke	312.662	0.000	0.000	1.000	1.000	1.000	38.54	5.107	1	28
12	L12	SAE	8X8X0.5		50.0	30.88	30.88	12P	-94.943	NESC Broke	307.458	380.800	944.999	0.500	0.500	0.500	43.67	11.573	1	0
13	L13	SAE	8X8X0.5		50.0	31.58	31.58	13P	-96.407	NESC Broke	305.312	380.800	944.999	0.250	0.250	0.250	45.62	24.177	1	28
14	PEAK	SAE	2.5X2.5X0.1875		33.0	29.98	29.19	14X	-4.871	NESC Broke	16.686	27.200	24.469	0.500	0.500	0.500	124.50	10.271	5	2
15	TTTC	SAE	3X3X0.25		33.0	46.99	46.99	16X	-15.152	NESC Broke	32.243	0.000	0.000	1.000	1.000	1.000	91.22	4.500	3	0
16	TTBC	SAE	3X3X0.25		33.0	40.98	40.98	20X	-11.146	NESC Broke	32.243	27.200	32.625	1.000	1.000	1.000	91.22	4.500	3	2
17	ARMTT	SAE	4X4X0.25		33.0	18.91	18.91	39X	-5.144	NESC Broke	40.528	27.200	32.625	1.000	1.000	1.000	105.66	7.000	3	2
18	MTTC	SAE	4X4X0.25		33.0	68.27	68.27	22XY	-32.583	NESC Extre	47.728	0.000	0.000	1.000	1.000	1.000	67.92	4.500	3	0
19	MTBC	SAE	4X4X0.25		33.0	44.02	44.02	25P	-21.009	NESC Extre	47.728	0.000	0.000	1.000	1.000	1.000	67.92	4.500	3	0
20	ARMMT	SAE	4X4X0.25		33.0	12.34	12.34	40XY	-5.002	NESC Broke	40.528	40.800	48.937	1.000	1.000	1.000	105.66	7.000	3	3
21	BTTC	SAE	4X4X0.3125		33.0	71.18	71.18	28XY	-41.976	NESC Extre	58.971	0.000	0.000	1.000	1.000	1.000	68.27	4.500	3	0
22	BTBC	SAE	4X4X0.3125		33.0	51.27	51.27	30P	-27.578	NESC Broke	53.785	54.400	81.562	1.000	1.000	1.000	91.02	6.000	3	4
23	ARMBT	SAE	4X4X0.3125		33.0	12.19	12.19	41XY	-4.974	NESC Broke	50.000	40.800	61.172	1.000	1.000	1.000	106.19	7.000	3	3
24	BBTTC	SAE	8X8X0.5		33.0	15.23	15.23	34X	-31.806	NESC Broke	208.793	0.000	0.000	1.000	1.000	1.000	39.62	5.250	3	0
25	BBTBC	SAE	6X6X0.5		33.0	30.95	18.79	38Y	-23.002	NESC Extre	146.334	122.400	293.625	1.000	1.000	1.000	58.19	5.722	3	9
26	W1	SAE	2X2X0.1875		33.0	40.77	40.77	58X	-4.236	NESC Broke	10.390	27.200	24.469	1.000	1.000	1.000	152.28	5.000	6	2
27	W2	SAE	4X4X0.375		33.0	40.02	40.02	75P	-23.199	NESC Broke	57.974	68.000	122.344	1.000	1.000	1.000	111.37	7.313	3	5
28	W3	SAE	4X4X0.3125		33.0	40.12	36.02	76XY	-19.596	NESC Extre	56.998	54.400	81.562	1.000	1.000	1.000	77.23	5.091	3	4
29	W4	SAE	4X4X0.3125		33.0	70.50	70.50	67X	-32.949	NESC Broke	46.740	54.400	81.562	1.000	1.000	1.000	118.49	7.810	3	4
30	W5	SAE	4X4X0.25		33.0	74.75	74.75	69P	-30.931	NESC Broke	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
31	W6	SAU	4X3.5X0.25		33.0	76.47	76.47	61X	-25.193	NESC Broke	32.946	40.800	48.937	1.000	1.000	1.000	127.69	7.810	6	3
32	W7	SAE	3.5X3.5X0.25		33.0	72.86	72.86	63P	-24.283	NESC Broke	33.327	40.800	48.937	1.000	1.000	1.000	116.31	6.727	3	3
33	W8	SAE	3X3X0.1875		33.0	79.53	79.53	55X	-12.148	NESC Broke	15.275	27.200	24.469	1.000	1.000	1.000	157.25	7.810	6	2
34	W9	SAE	3X3X0.3125		33.0	53.04	53.04	59Y	-15.866	NESC Extre	29.912	40.800	61.172	1.000	1.000	1.000	137.05	6.727	6	3
35	W10	SAU	3X2.5X0.25		33.0	52.88	52.88	64XY	-13.867	NESC Extre	26.226	27.200	32.625	1.000	1.000	1.000	113.64	5.000	3	2
36	W11	SAE	4X4X0.25		33.0	63.17	63.17	65P	-26.138	NESC Extre	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
37	W12	SAE	3.5X3.5X0.25		33.0	49.58	49.58	70XY	-19.158	NESC Extre	38.640	40.800	48.937	1.000	1.000	1.000	86.46	5.000	3	3
38	W13	SAE	4X4X0.375		33.0	48.70	48.70	71Y	-29.572	NESC Extre	60.729	68.000	122.344	1.000	1.000	1.000	102.44	6.727	3	5
39	KB1	SAE	4X4X0.375		33.0	61.78	61.78	49P	-36.528	NESC Broke	59.125	68.000	122.344	1.000	1.000	1.000	107.68	7.071	3	5
40	KB2	SAE	4X4X0.25		33.0	74.06	74.06	47P	-30.644	NESC Extre	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
41	KB3	SAE	3X3X0.3125		33.0	65.19	65.19	45P	-19.498	NESC Broke	29.912	40.800	61.172	1.000	1.000	1.000	137.05	6.727	6	3
42	B1	BAR	2 x 0.1875		33.0	44.07	0.00	44Y	0.000		0.072	27.200	24.469	1.000	1.000	1.000	1911.63	8.602	6	2
43	DB1	DAS	3.5X3X0.25		33.0	79.38	79.38	51X	-38.885	NESC Broke	48.988	54.400	65.250	0.540	1.000	0.540	144.77	19.905	6	2
44	DB2	DAS	4X3X0.4375		33.0	84.52	84.52	52P	-46.546	NESC Broke	55.071	81.600	171.281	0.250	1.000	0.250	189.13	30.734	6	2
45	HB1	SAE	3X3X0.1875		33.0	9.75	9.75	53XY	-1.187	NESC Extre	12.168	40.800	36.703	0.500	0.500	0.500	172.60	17.145	5	3
46	X1	SAU	7X4X0.4375		33.0	9.58	6.21	77P	-7.965	NESC Extre	128.184	149.600	314.015	0.500	0.750	0.500	59.10	7.354	2	11
47	X2	SAE	2X2X0.1875		33.0	9.98	9.98	79X	-1.226	NESC Broke	12.292	27.200	24.469	0.750	0.500	0.500	131.00	8.602	5	2
48	X3	SAE	2.5X2.5X0.25		33.0	30.65	30.65	80XY	-7.926	NESC Broke	25.861	27.200	32.625	0.750	0.500	0.500	105.12	8.602	2	2
49	X4	SAE	3X3X0.3125		33.0	20.33	19.84	83XY	-8.097	NESC Broke	43.226	40.800	61.172	0.750	0.500	0.500	87.63	8.602	2	3
50	X5	SAE	2.5X2.5X0.25		33.0	10.08	8.24	86X	-1.738	NESC Broke	21.099	27.200	32.625	0.780	0.560	0.560	128.74	9.407	5	2
51	D1	SAE	3X3X0.1875		33.0	28.57	28.57	88P	-4.146	NESC Broke	14.513	27.200	24.469	1.000	1.000	1.000	163.28	8.110	6	2
52	X14	SAU	2.5X2X0.1875		33.0	84.39	84.39	89P	-3.165	NESC Extre	3.750	27.200	24.469	0.530	0.770	0.530	288.77	18.752	5	2
53	DB3	SAU	3X2X0.25		33.0	28.35	0.00	90Y	0.000		6.868	40.800	48.937	1.000	1.000	1.000	286.99	10.403	6	3
54	DB4	SAE	3X3X0.1875		33.0	21.13	1.04	91Y	-0.054	NESC Broke	5.252	40.800	36.703	1.000	0.333	0.333	282.33	22.092	5	3
55	H1	SAE	2.5X2.5X0.1875		33.0	13.59	13.59	93P	-1.547	NESC Extre	11.388	27.200	24.469	1.000	1.000	1.000	169.70	7.000	6	2
56	H2	SAE	2X2X0.1875		33.0	21.13	21.13	96X	-0.945	NESC Extre	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
57	H3	SAE	3.5X3.5X0.3125		33.0	8.07	8.07	97P	-3.216	NESC Heavy	39.830	40.800	61.172	1.000	1.000	1.000	121.74	7.000	6	3
58	H16	SAU	3.5X3X0.25		33.0	3.69	1.56	98X	-0.516	NESC Extre	33.037	40.800	48.937	1.000	1.000	1.000	102.97	5.415	3	3
59	H17	SAU	3.5X3X0.25		33.0	14.74	9.88	99X	-2.472	NESC Extre	25.022	27.200	32.625	1.000	0.500	0.500	137.77	12.744	5	2
60	H18	SAE	3.5X3.5X0.25		33.0	46.39	46.39	100X	-7.594	NESC Extre	16.369	40.800	48.937	1.000	0.500	0.500	188.06	17.082	5	3
61	H2	SAE	2X2X0.1875		33.0	3.12	3.12	101P	-0.139	NESC Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
62	X7	SAE	2X2X0.1875		33.0	29.78	29.78	118P	-3.070	NESC Broke	10.309	13.600	12.234	0.750	0.500	0.500	140.40	9.220	4	1
63	H5	SAE	2.5X2.5X0.25		33.0	25.13	25.13	119X	-3.734	NESC Extre	14.856	27.200	32.625	1.000	1.000	1.000	171.08	7.000	6	2
64	X8	SAE	2X2X0.25		33.0	24.10	24.10	120P	-3.278	NESC Broke	16.440	13.600	16.312	0.750	0.500	0.500	127.70	8.322	4	1

65	H1	SAE	2.5X2.5X0.1875	33.0	13.06	13.06	121P	-1.488	NESC Extre	11.388	27.200	24.469	1.000	1.000	1.000	169.70	7.000	6	2
66	X8	SAE	2X2X0.25	33.0	20.75	20.75	122P	-2.822	NESC Broke	16.440	13.600	16.312	0.750	0.500	0.500	127.70	8.322	4	1
67	X6	SAE	2X2X0.25	33.0	75.78	75.78	107X	-8.835	NESC Broke	11.659	13.600	16.312	0.750	0.500	0.500	151.91	9.899	4	1
68	H4	SAU	3.5X2.5X0.25	33.0	36.70	36.70	108X	-4.991	NESC Broke	36.936	13.600	16.312	0.750	0.500	0.500	77.21	7.000	2	1
69	H2	SAE	2X2X0.1875	33.0	34.97	34.97	131P	-1.564	NESC Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
70	D2	SAE	2.5X2.5X0.1875	33.0	17.21	1.03	132AP	-0.053	NESC Extre	5.168	13.600	12.234	1.000	1.000	1.000	223.50	9.220	4	1
71	H2	SAE	2X2X0.1875	33.0	35.45	35.45	133X	-1.585	NESC Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
72	D2	SAE	2.5X2.5X0.1875	33.0	15.65	0.53	134BP	-0.034	NESC Extre	6.344	13.600	12.234	1.000	1.000	1.000	201.74	8.322	4	1
73	H2	SAE	2X2X0.1875	33.0	79.28	79.28	129P	-3.545	NESC Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
74	D2	SAE	2.5X2.5X0.1875	33.0	15.52	1.55	130BP	-0.098	NESC Extre	6.344	13.600	12.234	1.000	1.000	1.000	201.74	8.322	4	1
75	H10	SAE	3.5X3.5X0.25	33.0	7.15	0.00	143P	0.000		18.774	27.200	32.625	1.000	1.000	1.000	185.88	10.750	6	2
76	X10	SAE	2X2X0.1875	33.0	52.13	52.13	144X	-2.571	NESC Broke	4.933	27.200	24.469	0.750	0.500	0.500	228.84	15.027	5	2
77	H9	SAE	2X2X0.1875	33.0	7.92	7.92	145X	-0.746	NESC Heavy	9.420	27.200	24.469	0.750	0.500	0.500	163.71	10.750	6	2
78	H13	SAE	3X3X0.25	33.0	8.60	0.00	146BX	0.000		29.570	40.800	48.937	1.000	1.000	1.000	108.95	5.375	3	3
79	X9	SAU	2.5X1.5X0.25	33.0	16.08	16.08	147Y	-1.825	NESC Broke	11.348	40.800	48.937	0.500	0.750	0.500	164.54	7.587	5	3
80	X9	SAU	2.5X1.5X0.25	33.0	16.50	16.50	148Y	-1.884	NESC Broke	11.417	40.800	48.937	0.500	0.750	0.500	163.93	7.559	5	3
81	H8	SAE	2X2X0.25	33.0	8.57	0.00	149X	0.000		12.534	27.200	32.625	1.000	1.000	1.000	163.11	5.315	6	2
82	H15	SAE	3X3X0.1875	33.0	5.48	5.48	150P	-0.414	NESC Broke	7.568	27.200	24.469	1.000	1.000	1.000	255.02	12.666	6	2
83	X12	SAE	2X2X0.1875	33.0	21.14	21.14	151Y	-0.684	NESC Extre	3.237	13.600	12.234	0.750	0.500	0.500	250.54	16.452	4	1
84	H14	SAE	2X2X0.1875	33.0	1.21	1.21	152P	-0.066	NESC Heavy	5.462	13.600	12.234	0.750	0.500	0.500	192.88	12.666	4	1
85	H13	SAE	3X3X0.25	33.0	3.57	3.57	153X	-0.685	NESC Heavy	19.149	27.200	32.625	1.000	0.500	0.500	163.43	12.666	6	2
86	X11	SAE	2X2X0.1875	33.0	2.81	1.67	154Y	-0.075	NESC Broke	4.513	13.600	12.234	0.750	0.500	0.500	212.19	13.934	4	1
87	H19	SAE	3X3X0.1875	33.0	2.87	0.10	155P	-0.010	NESC Heavy	10.549	13.600	12.234	0.750	0.500	0.500	171.97	17.082	4	1
88	X13	SAE	2X2X0.1875	33.0	92.14	92.14	156XY	-1.378	NESC Broke	1.496	13.600	12.234	0.500	0.500	0.500	368.56	24.202	4	1

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tens. Conn. Shear Capacity (kips)	Tens. Conn. Bearing Capacity (kips)	Tens. Conn. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
1	L1	SAE	2.5X2.5X0.1875	33.0	40.35	17.56	1X	3.849	NESC Broke	21.917	27.200	24.469	0.000	9.708	2	1.000	0.875
2	L2	SAE	5X5X0.375	33.0	9.36	5.48	2P	5.483	NESC Extre	100.072	0.000	0.000	0.000	5.000	0	1.760	0.875
3	L3	SAE	5X5X0.375	33.0	14.96	4.10	3P	3.394	NESC Extre	82.747	0.000	0.000	0.000	5.000	0	3.360	0.875
4	L4	SAE	5X5X0.375	33.0	28.78	19.33	4X	15.993	NESC Extre	82.747	0.000	0.000	0.000	5.000	0	3.360	0.875
5	L5	SAE	5X5X0.375	33.0	24.75	4.10	5XY	3.112	NESC Broke	75.817	136.000	244.687	0.000	5.000	10	4.000	0.875
6	L6	SAE	8X8X0.5	33.0	14.46	4.53	6XY	10.500	NESC Broke	231.928	0.000	0.000	0.000	5.000	0	1.650	0.875
7	L7	SAE	8X8X0.5	33.0	23.49	21.20	7XY	49.175	NESC Broke	231.928	0.000	0.000	0.000	5.000	0	1.650	0.875
8	L8	SAE	8X8X0.5	33.0	17.99	17.99	8XY	35.614	NESC Broke	198.000	272.000	326.249	0.000	5.000	10	4.000	0.875
9	L9	SAE	8X8X0.5	50.0	14.14	10.93	9XY	38.870	NESC Broke	355.562	0.000	0.000	0.000	5.107	0	1.460	0.875
10	L10	SAE	8X8X0.5	50.0	27.07	24.02	10XY	72.048	NESC Broke	300.000	380.800	944.999	0.000	5.107	28	4.000	0.875
11	L11	SAE	8X8X0.5	50.0	25.31	21.05	11XY	63.140	NESC Broke	300.000	0.000	0.000	0.000	5.107	0	4.000	0.875
12	L12	SAE	8X8X0.5	50.0	30.88	24.16	12XY	72.472	NESC Broke	300.000	380.800	944.999	0.000	11.573	28	4.000	0.875
13	L13	SAE	8X8X0.5	50.0	31.58	22.29	13XY	66.855	NESC Broke	300.000	380.800	944.999	0.000	24.177	28	4.000	0.875
14	PEAK	SAE	2.5X2.5X0.1875	33.0	29.98	29.98	14Y	6.571	NESC Broke	21.917	27.200	24.469	0.000	10.271	2	1.000	0.875
15	TTTC	SAE	3X3X0.25	33.0	46.99	46.05	17Y	12.527	NESC Extre	36.271	27.200	32.625	0.000	4.500	2	1.000	0.875
16	TTBC	SAE	3X3X0.25	33.0	40.98	37.08	19XY	13.449	NESC Broke	36.271	0.000	0.000	0.000	4.500	0	1.000	0.875
17	ARMTT	SAE	4X4X0.25	33.0	18.91	6.99	39Y	1.902	NESC Extre	51.121	27.200	32.625	0.000	7.000	2	1.000	0.875
18	MTTC	SAE	4X4X0.25	33.0	68.27	64.41	22P	32.930	NESC Broke	51.121	0.000	0.000	0.000	4.500	0	1.000	0.875
19	MTBC	SAE	4X4X0.25	33.0	44.02	41.18	25X	21.053	NESC Extre	51.121	0.000	0.000	0.000	4.500	0	1.000	0.875
20	ARMMT	SAE	4X4X0.25	33.0	12.34	4.28	40Y	1.747	NESC Extre	49.952	40.800	48.937	0.000	7.000	3	1.180	0.875
21	BTTC	SAE	4X4X0.3125	33.0	71.18	70.67	28P	44.635	NESC Broke	63.159	0.000	0.000	0.000	4.500	0	1.000	0.875
22	BTBC	SAE	4X4X0.3125	33.0	51.27	41.39	30XY	22.519	NESC Extre	55.038	54.400	81.562	0.000	6.000	4	2.000	0.875
23	ARMBT	SAE	4X4X0.3125	33.0	12.19	4.66	41Y	1.900	NESC Extre	61.697	40.800	61.172	0.000	7.000	3	1.180	0.875
24	BBTTC	SAE	8X8X0.5	33.0	15.23	14.26	34P	30.967	NESC Broke	217.181	0.000	0.000	0.000	5.250	0	1.000	0.875
25	BBTBC	SAE	6X6X0.5	33.0	30.95	30.95	38X	37.889	NESC Broke	131.794	122.400	293.625	0.000	5.722	9	3.000	0.875
26	W1	SAE	2X2X0.1875	33.0	40.77	33.29	58Y	5.398	NESC Broke	16.214	27.200	24.469	0.000	5.000	2	1.000	0.875
27	W2	SAE	4X4X0.375	33.0	40.02	35.77	73P	24.321	NESC Broke	70.324	68.000	122.344	0.000	7.313	5	1.500	0.875
28	W3	SAE	4X4X0.3125	33.0	40.12	40.12	76P	21.826	NESC Broke	63.159	54.400	81.562	0.000	5.091	4	1.000	0.875
29	W4	SAE	4X4X0.3125	33.0	70.50	62.04	67P	33.749	NESC Broke	59.748	54.400	81.562	0.000	7.810	4	1.420	0.875
30	W5	SAE	4X4X0.25	33.0	74.75	52.48	69XY	26.045	NESC Extre	49.627	54.400	65.250	0.000	6.727	4	1.230	0.875
31	W6	SAU	4X3.5X0.25	33.0	76.47	63.53	61P	25.918	NESC Broke	44.531	40.800	48.937	0.000	7.810	3	1.420	0.875
32	W7	SAE	3.5X3.5X0.25	33.0	72.86	48.32	63XY	19.715	NESC Extre	43.696	40.800	48.937	0.000	6.727	3	1.000	0.875
33	W8	SAE	3X3X0.1875	33.0	79.53	51.92	55P	12.703	NESC Broke	27.500	27.200	24.469	0.000	7.810	2	1.000	0.875
34	W9	SAE	3X3X0.3125	33.0	53.04	40.82	59X	16.655	NESC Broke	44.745	40.800	61.172	0.000	6.727	3	1.000	0.875
35	W10	SAU	3X2.5X0.25	33.0	52.88	48.71	64P	13.249	NESC Broke	32.410	27.200	32.625	0.000	5.000	2	1.000	0.875
36	W11	SAE	4X4X0.25	33.0	63.17	57.90	65X	27.570	NESC Extre	47.613	54.400	65.250	0.000	6.727	4	1.540	0.875

37	W12	SAE	3.5X3.5X0.25	33.0	49.58	46.93	70Y	19.147NESC	Extre	43.696	40.800	48.937	0.000	5.000	3	1.000	0.875
38	W13	SAE	4X4X0.375	33.0	48.70	45.44	71XY	30.358NESC	Extre	66.816	68.000	122.344	0.000	6.727	5	1.860	0.875
39	KB1	SAE	4X4X0.375	33.0	61.78	48.49	50P	32.975NESC	Broke	75.197	68.000	122.344	0.000	7.066	5	1.000	0.875
40	KB2	SAE	4X4X0.25	33.0	74.06	60.81	47X	28.951NESC	Extre	47.613	54.400	65.250	0.000	6.727	4	1.540	0.875
41	KB3	SAE	3X3X0.3125	33.0	65.19	47.26	45XY	19.282NESC	Extre	44.745	40.800	61.172	0.000	6.727	3	1.000	0.875
42	B1	BAR	2 x 0.1875	33.0	44.07	44.07	43P	2.761NESC	Heavy	6.265	27.200	24.469	0.000	8.602	2	1.000	0.875
43	DB1	DAS	3.5X3X0.25	33.0	79.38	48.74	51Y	26.514NESC	Extre	72.542	54.400	65.250	0.000	19.905	2	2.000	0.875
44	DB2	DAS	4X3X0.4375	33.0	84.52	47.99	52XY	39.158NESC	Extre	121.751	81.600	171.281	0.000	30.734	3	2.000	0.875
45	HB1	SAE	3X3X0.1875	33.0	9.75	5.64	53Y	1.552NESC	Extre	27.500	40.800	36.703	0.000	17.145	3	1.000	0.875
46	X1	SAU	7X4X0.4375	33.0	9.58	9.58	77XY	9.878NESC	Broke	103.105	149.600	314.015	0.000	7.354	11	3.000	0.875
47	X2	SAE	2X2X0.1875	33.0	9.98	6.37	79P	1.033NESC	Broke	16.214	27.200	24.469	0.000	8.602	2	1.000	0.875
48	X3	SAE	2.5X2.5X0.25	33.0	30.65	29.54	81X	8.034NESC	Broke	28.846	27.200	32.625	0.000	8.602	2	1.000	0.875
49	X4	SAE	3X3X0.3125	33.0	20.33	20.33	84X	8.296NESC	Broke	44.745	40.800	61.172	0.000	8.602	3	1.000	0.875
50	X5	SAE	2.5X2.5X0.25	33.0	10.08	10.08	86Y	2.742NESC	Broke	28.846	27.200	32.625	0.000	9.407	2	1.000	0.875
51	D1	SAE	3X3X0.1875	33.0	28.57	12.22	88XY	2.990NESC	Broke	27.500	27.200	24.469	0.000	8.110	2	1.000	0.875
52	X14	SAU	2.5X2X0.1875	33.0	84.39	11.57	89X	2.220NESC	Broke	19.184	27.200	24.469	0.000	18.752	2	1.000	0.875
53	DB3	SAU	3X2X0.25	33.0	28.35	28.35	90XY	8.177NESC	Extre	28.846	40.800	48.937	0.000	10.403	3	1.000	0.875
54	DB4	SAE	3X3X0.1875	33.0	21.13	21.13	91X	5.810NESC	Extre	27.500	40.800	36.703	0.000	22.092	3	1.000	0.875
55	H1	SAE	2.5X2.5X0.1875	33.0	13.59	9.54	92P	2.090NESC	Heavy	21.917	27.200	24.469	0.000	7.000	2	1.000	0.875
56	H2	SAE	2X2X0.1875	33.0	21.13	14.66	96P	1.794NESC	Heavy	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
57	H3	SAE	3.5X3.5X0.3125	33.0	8.07	3.63	97X	1.483NESC	Extre	53.952	40.800	61.172	0.000	7.000	3	1.000	0.875
58	H16	SAU	3.5X3X0.25	33.0	3.69	3.69	98P	1.469NESC	Broke	39.835	40.800	48.937	0.000	5.415	3	1.000	0.875
59	H17	SAU	3.5X3X0.25	33.0	14.74	14.74	99P	4.010NESC	Extre	39.835	27.200	32.625	0.000	12.744	2	1.000	0.875
60	H18	SAE	3.5X3.5X0.25	33.0	46.39	0.00	100X	0.000		43.696	40.800	48.937	0.000	17.082	3	1.000	0.875
61	H2	SAE	2X2X0.1875	33.0	3.12	1.75	117P	0.214NESC	Broke	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
62	X7	SAE	2X2X0.1875	33.0	29.78	24.79	110X	3.033NESC	Broke	16.214	13.600	12.234	0.000	9.220	1	1.000	0.875
63	H5	SAE	2.5X2.5X0.25	33.0	25.13	14.48	119P	3.938NESC	Extre	28.846	27.200	32.625	0.000	7.000	2	1.000	0.875
64	X8	SAE	2X2X0.25	33.0	24.10	22.48	120X	3.057NESC	Broke	21.421	13.600	16.312	0.000	8.322	1	1.000	0.875
65	H1	SAE	2.5X2.5X0.1875	33.0	13.06	7.71	121X	1.689NESC	Heavy	21.917	27.200	24.469	0.000	7.000	2	1.000	0.875
66	X8	SAE	2X2X0.25	33.0	20.75	13.02	122X	1.771NESC	Broke	21.421	13.600	16.312	0.000	8.322	1	1.000	0.875
67	X6	SAE	2X2X0.25	33.0	75.78	51.69	107XY	7.029NESC	Broke	21.421	13.600	16.312	0.000	9.899	1	1.000	0.875
68	H4	SAU	3.5X2.5X0.25	33.0	36.70	4.05	124X	0.551NESC	Heavy	36.271	13.600	16.312	0.000	7.000	1	1.000	0.875
69	H2	SAE	2X2X0.1875	33.0	34.97	0.00	131P	0.000NESC	Extre	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
70	D2	SAE	2.5X2.5X0.1875	33.0	17.21	17.21	132BP	2.105NESC	Broke	21.917	13.600	12.234	0.000	9.220	1	1.000	0.875
71	H2	SAE	2X2X0.1875	33.0	35.45	0.00	139X	0.000		16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
72	D2	SAE	2.5X2.5X0.1875	33.0	15.65	15.65	134AP	1.915NESC	Broke	21.917	13.600	12.234	0.000	8.322	1	1.000	0.875
73	H2	SAE	2X2X0.1875	33.0	79.28	13.01	129X	1.592NESC	Heavy	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
74	D2	SAE	2.5X2.5X0.1875	33.0	15.52	15.52	136BP	1.899NESC	Broke	21.917	13.600	12.234	0.000	8.322	1	1.000	0.875
75	H10	SAE	3.5X3.5X0.25	33.0	7.15	7.15	143P	1.944NESC	Heavy	43.696	27.200	32.625	0.000	8.322	1	1.000	0.875
76	X10	SAE	2X2X0.1875	33.0	52.13	1.16	144P	0.189NESC	Broke	16.214	27.200	24.469	0.000	10.750	2	1.000	0.875
77	H9	SAE	2X2X0.1875	33.0	7.92	0.00	145X	0.000		16.214	27.200	24.469	0.000	15.027	2	1.000	0.875
78	H13	SAE	3X3X0.25	33.0	8.60	8.60	146BX	3.118NESC	Broke	36.271	40.800	48.937	0.000	10.750	2	1.000	0.875
79	X9	SAU	2.5X1.5X0.25	33.0	16.08	0.00	147Y	0.000		21.421	40.800	48.937	0.000	5.375	3	1.000	0.875
80	X9	SAU	2.5X1.5X0.25	33.0	16.50	0.00	148Y	0.000		21.421	40.800	48.937	0.000	7.587	3	1.000	0.875
81	H8	SAE	2X2X0.25	33.0	8.57	8.57	149P	1.836NESC	Broke	21.421	27.200	32.625	0.000	7.559	3	1.000	0.875
82	H15	SAE	3X3X0.1875	33.0	5.48	0.00	150P	0.000		27.500	27.200	24.469	0.000	5.315	2	1.000	0.875
83	X12	SAE	2X2X0.1875	33.0	21.14	7.77	151XY	0.951NESC	Broke	16.214	13.600	12.234	0.000	12.666	2	1.000	0.875
84	H14	SAE	2X2X0.1875	33.0	1.21	0.00	152X	0.000		16.214	13.600	12.234	0.000	16.452	1	1.000	0.875
85	H13	SAE	3X3X0.25	33.0	3.57	0.09	153P	0.024NESC	Broke	36.271	27.200	32.625	0.000	12.666	1	1.000	0.875
86	X11	SAE	2X2X0.1875	33.0	2.81	2.81	154P	0.344NESC	Heavy	16.214	13.600	12.234	0.000	12.666	2	1.000	0.875
87	H19	SAE	3X3X0.1875	33.0	2.87	2.87	155P	0.351NESC	Extre	27.500	13.600	12.234	0.000	13.934	1	1.000	0.875
88	X13	SAE	2X2X0.1875	33.0	92.14	6.16	156Y	0.754NESC	Broke	16.214	13.600	12.234	0.000	17.082	1	1.000	0.875
													0.000	24.202	1	1.000	0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	83.15	89P	Angle
NESC Extreme	84.39	89P	Angle
NESC Broken Wire	92.14	156XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	12.00	NESC Heavy	0.0
C2	Clamp	8.27	NESC Heavy	0.0
C3	Clamp	7.43	NESC Heavy	0.0
C4	Clamp	7.43	NESC Heavy	0.0
C5	Clamp	23.70	NESC Broken Wire	0.0
C6	Clamp	7.43	NESC Heavy	0.0
C7	Clamp	7.43	NESC Heavy	0.0
C8	Clamp	7.43	NESC Heavy	0.0
C9	Clamp	7.43	NESC Heavy	0.0
C10	Clamp	7.43	NESC Heavy	0.0
C11	Clamp	7.43	NESC Heavy	0.0
C12	Clamp	7.43	NESC Heavy	0.0
C13	Clamp	7.43	NESC Heavy	0.0
C14	Clamp	7.43	NESC Heavy	0.0
C15	Clamp	7.46	NESC Heavy	0.0
C16	Clamp	7.46	NESC Heavy	0.0
C17	Clamp	7.46	NESC Heavy	0.0
C18	Clamp	7.46	NESC Heavy	0.0
C19	Clamp	7.48	NESC Heavy	0.0
C20	Clamp	7.48	NESC Heavy	0.0
C21	Clamp	7.48	NESC Heavy	0.0
C22	Clamp	7.48	NESC Heavy	0.0
C23	Clamp	7.49	NESC Heavy	0.0
C24	Clamp	7.49	NESC Heavy	0.0
C25	Clamp	7.49	NESC Heavy	0.0
C26	Clamp	7.49	NESC Heavy	0.0
C27	Clamp	9.20	NESC Extreme	0.0
C28	Clamp	1.39	NESC Heavy	0.0
C29	Clamp	2.68	NESC Heavy	0.0
C30	Clamp	1.86	NESC Heavy	0.0
C31	Clamp	2.20	NESC Heavy	0.0
C32	Clamp	3.99	NESC Heavy	0.0
C33	Clamp	2.50	NESC Heavy	0.0
C34	Clamp	10.21	NESC Extreme	0.0
C35	Clamp	1.47	NESC Extreme	0.0
C36	Clamp	2.69	NESC Heavy	0.0
C37	Clamp	1.86	NESC Heavy	0.0
C38	Clamp	2.20	NESC Heavy	0.0
C39	Clamp	3.99	NESC Heavy	0.0
C40	Clamp	2.50	NESC Heavy	0.0
C41	Clamp	8.48	NESC Extreme	0.0
C42	Clamp	9.48	NESC Extreme	0.0
C43	Clamp	2.34	NESC Extreme	0.0
C44	Clamp	2.71	NESC Extreme	0.0

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 31305.4
Total: 31305.4

*** End of Report

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*****************************************************************************
*                                                                           *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2006 *
*                                                                           *
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Project Name : Nowalk Tower #1102
Project Notes: T-MOBILE PCS
Project File : J:\Jobs\0817400.WI - HPC-T-Mobile\CO05 - CT11356-CL&P Tower - Rte 123\Engineering\Structural\Rev (1)\Calcs\Pls-Tower\norwalk1102.tow
Date run     : 11:36:03 AM Wednesday, July 08, 2009
by           : Tower Version 9.04
Licensed to  : Natcomm

Successfully performed nonlinear analysis

KL/R value of 213.20 exceeds maximum of 200.00 for member "94P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "94X" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "96P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "96X" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "101P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "109P" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "117P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "125P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "126AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "126BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "127P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "127X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "128AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "128BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "129P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "129X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "130AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "130BP" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "131P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "132AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "132BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "133P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "133X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "134AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "134BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "135P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "135X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "136AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "136BP" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "137P" ??
KL/R value of 223.50 exceeds maximum of 200.00 for member "138AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "138BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "139P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "139X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "140AP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "140BP" ??
KL/R value of 213.20 exceeds maximum of 200.00 for member "141P" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "141X" ??
KL/R value of 201.74 exceeds maximum of 200.00 for member "142AP" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "142BP" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144P" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144X" ??
KL/R value of 202.97 exceeds maximum of 200.00 for member "144XY" ??
KL/R value of 203.04 exceeds maximum of 200.00 for member "144Y" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "150P" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151P" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151X" ??
KL/R value of 250.54 exceeds maximum of 200.00 for member "151XY" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "151Y" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154P" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154X" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154XY" ??
KL/R value of 212.19 exceeds maximum of 200.00 for member "154Y" ??
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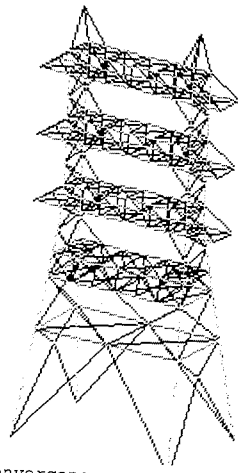
KL/R value of 368.56 exceeds maximum of 200.00 for member "156P" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156X" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156XY" ??
KL/R value of 368.56 exceeds maximum of 200.00 for member "156Y" ??
Clamp insulator "C33" has a structure attach joint "14XY" that is fixed with respect to translation ??
Clamp insulator "C40" has a structure attach joint "14Y" that is fixed with respect to translation ??
The model has 59 warnings. ??



Nonlinear convergence parameters: Use Standard Parameters
Member check option: ASCE 10
Connection rupture check: Not Checked
Crossing diagonal check: Fixed

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	X-Symmetry	0	14	94	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	3.5	15	85	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3.5	15	80	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3.5	15	75	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	3.5	15	70	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3.5	15	65	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3.5	15	60	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.5	15	55	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3.5	15	50	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	13.07	19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15P	XY-Symmetry	3.5	22	80	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	3.5	22	65	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	3.5	22	50	Free	Free	Free	Free	Free	Free
18P	Y-Symmetry	3.5	0	85	Free	Free	Free	Free	Free	Free
19P	XY-Symmetry	3.5	6	85	Free	Free	Free	Free	Free	Free
20P	XY-Symmetry	3.5	10.5	85	Free	Free	Free	Free	Free	Free
21P	Y-Symmetry	3.5	0	80	Free	Free	Free	Free	Free	Free
22P	XY-Symmetry	3.5	6	80	Free	Free	Free	Free	Free	Free
23P	XY-Symmetry	3.5	10.5	80	Free	Free	Free	Free	Free	Free
24P	Y-Symmetry	3.5	0	70	Free	Free	Free	Free	Free	Free
25P	XY-Symmetry	3.5	6	70	Free	Free	Free	Free	Free	Free
26P	XY-Symmetry	3.5	10.5	70	Free	Free	Free	Free	Free	Free
27P	Y-Symmetry	3.5	0	65	Free	Free	Free	Free	Free	Free
28P	XY-Symmetry	3.5	6	65	Free	Free	Free	Free	Free	Free

29P	XY-Symmetry	3.5	10.5	65	Free	Free	Free	Free	Free	Free
30P	Y-Symmetry	3.5	0	55	Free	Free	Free	Free	Free	Free
31P	XY-Symmetry	3.5	6	55	Free	Free	Free	Free	Free	Free
32P	XY-Symmetry	3.5	10.5	55	Free	Free	Free	Free	Free	Free
33P	Y-Symmetry	3.5	0	50	Free	Free	Free	Free	Free	Free
34P	XY-Symmetry	3.5	6	50	Free	Free	Free	Free	Free	Free
35P	XY-Symmetry	3.5	10.5	50	Free	Free	Free	Free	Free	Free
36P	Y-Symmetry	5.375	0	40	Free	Free	Free	Free	Free	Free
37P	XY-Symmetry	5.375	5.25	40	Free	Free	Free	Free	Free	Free
38P	XY-Symmetry	5.375	10.5	40	Free	Free	Free	Free	Free	Free
39P	Y-Symmetry	6.333	0	35	Free	Free	Free	Free	Free	Free
40P	XY-Symmetry	6.333	5.25	35	Free	Free	Free	Free	Free	Free
41P	XY-Symmetry	6.333	10.5	35	Free	Free	Free	Free	Free	Free
44P	X-Symmetry	0	17.63	17.75	Free	Free	Free	Free	Free	Free
45P	X-Symmetry	0	10.5	40	Free	Free	Free	Free	Free	Free
1X	X-Gen	0	-14	94	Free	Free	Free	Free	Free	Free
2X	X-GenXY	3.5	-15	85	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-3.5	-15	85	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-3.5	15	85	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3.5	-15	80	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3.5	-15	80	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3.5	15	80	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3.5	-15	75	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3.5	-15	75	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3.5	15	75	Free	Free	Free	Free	Free	Free
5X	X-GenXY	3.5	-15	70	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-3.5	-15	70	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-3.5	15	70	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3.5	-15	65	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3.5	-15	65	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3.5	15	65	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3.5	-15	60	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3.5	-15	60	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3.5	15	60	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.5	-15	55	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.5	-15	55	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.5	15	55	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3.5	-15	50	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3.5	-15	50	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3.5	15	50	Free	Free	Free	Free	Free	Free
14X	X-GenXY	13.07	-19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
14XY	XY-GenXY	-13.07	-19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
14Y	Y-GenXY	-13.07	19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15X	X-GenXY	3.5	-22	80	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-3.5	-22	80	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-3.5	22	80	Free	Free	Free	Free	Free	Free
16X	X-GenXY	3.5	-22	65	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	-3.5	-22	65	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	-3.5	22	65	Free	Free	Free	Free	Free	Free
17X	X-GenXY	3.5	-22	50	Free	Free	Free	Free	Free	Free
17XY	XY-GenXY	-3.5	-22	50	Free	Free	Free	Free	Free	Free
17Y	Y-GenXY	-3.5	22	50	Free	Free	Free	Free	Free	Free
18Y	Y-Gen	-3.5	0	85	Free	Free	Free	Free	Free	Free
19X	X-GenXY	3.5	-6	85	Free	Free	Free	Free	Free	Free
19XY	XY-GenXY	-3.5	-6	85	Free	Free	Free	Free	Free	Free
19Y	Y-GenXY	-3.5	6	85	Free	Free	Free	Free	Free	Free
20X	X-GenXY	3.5	-10.5	85	Free	Free	Free	Free	Free	Free
20XY	XY-GenXY	-3.5	-10.5	85	Free	Free	Free	Free	Free	Free
20Y	Y-GenXY	-3.5	10.5	85	Free	Free	Free	Free	Free	Free
21Y	Y-Gen	-3.5	0	80	Free	Free	Free	Free	Free	Free
22X	X-GenXY	3.5	-6	80	Free	Free	Free	Free	Free	Free
22XY	XY-GenXY	-3.5	-6	80	Free	Free	Free	Free	Free	Free
22Y	Y-GenXY	-3.5	6	80	Free	Free	Free	Free	Free	Free
23X	X-GenXY	3.5	-10.5	80	Free	Free	Free	Free	Free	Free
23XY	XY-GenXY	-3.5	-10.5	80	Free	Free	Free	Free	Free	Free
23Y	Y-GenXY	-3.5	10.5	80	Free	Free	Free	Free	Free	Free
24Y	Y-Gen	-3.5	0	70	Free	Free	Free	Free	Free	Free
25X	X-GenXY	3.5	-6	70	Free	Free	Free	Free	Free	Free
25XY	XY-GenXY	-3.5	-6	70	Free	Free	Free	Free	Free	Free

25Y	Y-GenXY	-3.5	6	70	Free	Free	Free	Free	Free	Free	
26X	X-GenXY	3.5	-10.5	70	Free	Free	Free	Free	Free	Free	
26XY	XY-GenXY	-3.5	-10.5	70	Free	Free	Free	Free	Free	Free	
26Y	Y-GenXY	-3.5	10.5	70	Free	Free	Free	Free	Free	Free	
27Y	Y-Gen	-3.5	0	65	Free	Free	Free	Free	Free	Free	
28X	X-GenXY	3.5	-6	65	Free	Free	Free	Free	Free	Free	
28XY	XY-GenXY	-3.5	-6	65	Free	Free	Free	Free	Free	Free	
28Y	Y-GenXY	-3.5	6	65	Free	Free	Free	Free	Free	Free	
29X	X-GenXY	3.5	-10.5	65	Free	Free	Free	Free	Free	Free	
29XY	XY-GenXY	-3.5	-10.5	65	Free	Free	Free	Free	Free	Free	
29Y	Y-GenXY	-3.5	10.5	65	Free	Free	Free	Free	Free	Free	
30Y	Y-Gen	-3.5	0	65	Free	Free	Free	Free	Free	Free	
31X	X-GenXY	3.5	-6	55	Free	Free	Free	Free	Free	Free	
31XY	XY-GenXY	-3.5	-6	55	Free	Free	Free	Free	Free	Free	
31Y	Y-GenXY	-3.5	6	55	Free	Free	Free	Free	Free	Free	
32X	X-GenXY	3.5	-10.5	55	Free	Free	Free	Free	Free	Free	
32XY	XY-GenXY	-3.5	-10.5	55	Free	Free	Free	Free	Free	Free	
32Y	Y-GenXY	-3.5	10.5	55	Free	Free	Free	Free	Free	Free	
33Y	Y-Gen	-3.5	0	55	Free	Free	Free	Free	Free	Free	
34X	X-GenXY	3.5	-6	50	Free	Free	Free	Free	Free	Free	
34XY	XY-GenXY	-3.5	-6	50	Free	Free	Free	Free	Free	Free	
34Y	Y-GenXY	-3.5	6	50	Free	Free	Free	Free	Free	Free	
35X	X-GenXY	3.5	-10.5	50	Free	Free	Free	Free	Free	Free	
35XY	XY-GenXY	-3.5	-10.5	50	Free	Free	Free	Free	Free	Free	
35Y	Y-GenXY	-3.5	10.5	50	Free	Free	Free	Free	Free	Free	
36Y	Y-Gen	-5.375	0	50	Free	Free	Free	Free	Free	Free	
37X	X-GenXY	5.375	-5.25	40	Free	Free	Free	Free	Free	Free	
37XY	XY-GenXY	-5.375	-5.25	40	Free	Free	Free	Free	Free	Free	
37Y	Y-GenXY	-5.375	5.25	40	Free	Free	Free	Free	Free	Free	
38X	X-GenXY	5.375	-10.5	40	Free	Free	Free	Free	Free	Free	
38XY	XY-GenXY	-5.375	-10.5	40	Free	Free	Free	Free	Free	Free	
38Y	Y-GenXY	-5.375	10.5	40	Free	Free	Free	Free	Free	Free	
39Y	Y-Gen	-6.333	0	40	Free	Free	Free	Free	Free	Free	
40X	X-GenXY	6.333	-5.25	35	Free	Free	Free	Free	Free	Free	
40XY	XY-GenXY	-6.333	-5.25	35	Free	Free	Free	Free	Free	Free	
40Y	Y-GenXY	-6.333	5.25	35	Free	Free	Free	Free	Free	Free	
41X	X-GenXY	6.333	-10.5	35	Free	Free	Free	Free	Free	Free	
41XY	XY-GenXY	-6.333	-10.5	35	Free	Free	Free	Free	Free	Free	
41Y	Y-GenXY	-6.333	10.5	35	Free	Free	Free	Free	Free	Free	
44X	X-Gen	0	-17.63	35	Free	Free	Free	Free	Free	Free	
45X	X-Gen	0	-10.5	17.75	Free	Free	Free	Free	Free	Free	
				40	Free	Free	Free	Free	Free	Free	

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
10S	XY-Symmetry	9P	14P	0	45	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	9P	14P	0	40	Free	Free	Free	Free	Free	Free
12S	XY-Symmetry	9P	14P	0	35	Free	Free	Free	Free	Free	Free
13S	XY-Symmetry	9P	14P	0	23.67	Free	Free	Free	Free	Free	Free
42S	Y-Symmetry	13X	13S	0.5	0	Free	Free	Free	Free	Free	Free
43S	X-Symmetry	11S	11Y	0.5	0	Free	Free	Free	Free	Free	Free
10X	X-GenXY	9P	14P	0	45	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	9P	14P	0	45	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	9P	14P	0	45	Free	Free	Free	Free	Free	Free
11X	X-GenXY	9P	14P	0	40	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	9P	14P	0	40	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	9P	14P	0	40	Free	Free	Free	Free	Free	Free
12X	X-GenXY	9P	14P	0	35	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	9P	14P	0	35	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	9P	14P	0	35	Free	Free	Free	Free	Free	Free
13X	X-GenXY	9P	14P	0	23.67	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	9P	14P	0	23.67	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	9P	14P	0	23.67	Free	Free	Free	Free	Free	Free
42Y	Y-Gen	13X	13S	0.5	0	Free	Free	Free	Free	Free	Free
43X	X-Gen	11S	11Y	0.5	0	Free	Free	Free	Free	Free	Free

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	All. Member Stress Hyp. 1 (ksi)	All. Member 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	58	0	0	0	0	0	0
A440-50	2.9e+004	50	60	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
3/4 A394	0.75	0.875	13.6	1.35	1.8	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394	1549

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	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	6X6X0.5	6	6	0.5	19.6	5.75	10	1.86	1.86	1.18	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	4X4X0.375	4	4	0.375	9.8	2.86	8.67	1.23	1.23	0.788	1	4	2	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	1	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.3125	3.5	3.5	0.3125	7.2	2.09	9	1.08	1.08	0.69	1	3.5	1.75	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	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAU	7X4X0.4375	7	4	0.4375	15.8	4.62	13.86	2.26	1.12	0.876	1	7	2	0	1.0000	0
SAU	4X3.5X0.25	4	3.5	0.25	6.2	1.81	13.25	1.27	1.07	0.734	1	4	1.75	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
SAU	2.5X1.5X0.25	2.5	1.5	0.25	3.19	0.94	7.75	0.794	0.415	0.324	1	2.5	0.75	0	1.0000	0
DAS	4X3X0.4375	4	3	0.4375	19.6	5.74	7.14	0.871	1.95	0.871	2	4	1.5	0	1.0000	0
DAS	3.5X3X0.25	3.5	3	0.25	10.8	3.13	11.25	0.914	1.65	0.914	2	3.5	1.5	0	1.0000	0
BAR	2 x 0.1875	2	0.1875	0.1875	1.28	0.375	0	0.577	0.054	0.054	1	2	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)
1	L1	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000

2	L2	SAE	5X5X0.375	A7	Beam	Leg	None	0.000
3	L3	SAE	5X5X0.375	A7	Beam	Leg	None	0.000
4	L4	SAE	5X5X0.375	A7	Beam	Leg	None	0.000
5	L5	SAE	5X5X0.375	A7	Beam	Leg	None	0.000
6	L6	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
7	L7	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
8	L8	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
9	L9	SAE	8X8X0.5	A440-50	Beam	Leg	None	0.000
10	L10	SAE	8X8X0.5	A440-50	Beam	Leg	None	0.000
11	L11	SAE	8X8X0.5	A440-50	Beam	Leg	None	0.000
12	L12	SAE	8X8X0.5	A440-50	Beam	Leg	None	0.000
13	L13	SAE	8X8X0.5	A440-50	Beam	Leg	None	0.000
14	PEAK	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
15	TTTC	SAE	3X3X0.25	A7	Beam	Other	None	0.000
16	TTBC	SAE	3X3X0.25	A7	Beam	Other	None	0.000
17	ARMTT	SAE	4X4X0.25	A7	Beam	Other	None	0.000
18	MTTC	SAE	4X4X0.25	A7	Beam	Other	None	0.000
19	MTBC	SAE	4X4X0.25	A7	Beam	Other	None	0.000
20	ARMMT	SAE	4X4X0.25	A7	Beam	Other	None	0.000
21	BTTC	SAE	4X4X0.3125	A7	Beam	Other	None	0.000
22	BTBC	SAE	4X4X0.3125	A7	Beam	Other	None	0.000
23	ARMBT	SAE	4X4X0.3125	A7	Beam	Other	None	0.000
24	BBTTC	SAE	8X8X0.5	A7	Beam	Other	None	0.000
25	BBTBC	SAE	6X6X0.5	A7	Beam	Other	None	0.000
26	W1	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
27	W2	SAE	4X4X0.375	A7	Truss	Other	None	0.000
28	W3	SAE	4X4X0.3125	A7	Truss	Other	None	0.000
29	W4	SAE	4X4X0.3125	A7	Truss	Other	None	0.000
30	W5	SAE	4X4X0.25	A7	Truss	Other	None	0.000
31	W6	SAU	4X3.5X0.25	A7	Truss	Other	None	0.000
32	W7	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
33	W8	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
34	W9	SAE	3X3X0.3125	A7	Truss	Other	None	0.000
35	W10	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
36	W11	SAE	4X4X0.25	A7	Truss	Other	None	0.000
37	W12	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
38	W13	SAE	4X4X0.375	A7	Truss	Other	None	0.000
39	KB1	SAE	4X4X0.375	A7	Truss	Other	None	0.000
40	KB2	SAE	4X4X0.25	A7	Truss	Other	None	0.000
41	KB3	SAE	3X3X0.3125	A7	Truss	Other	None	0.000
42	B1	BAR	2 x 0.1875	A7	T-Only	Other	None	0.000
43	DB1	DAS	3.5X3X0.25	A7	Truss	Other	None	0.000
44	DB2	DAS	4X3X0.4375	A7	Truss	Other	None	0.000
45	HB1	SAE	3X3X0.1875	A7	Beam	Other	None	0.000
46	X1	SAU	7X4X0.4375	A7	Truss	Other	None	0.000
47	X2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
48	X3	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
49	X4	SAE	3X3X0.3125	A7	Truss	Other	None	0.000
50	X5	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
51	D1	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
52	X14	SAU	2.5X2X0.1875	A7	T-Only	Other	None	0.000
53	DB3	SAU	3X2X0.25	A7	T-Only	Other	None	0.000
54	DB4	SAE	3X3X0.1875	A7	T-Only	Other	None	0.000
55	H1	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
56	H2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
57	H3	SAE	3.5X3.5X0.3125	A7	Truss	Other	None	0.000
58	H16	SAU	3.5X3X0.25	A7	Beam	Other	None	0.000
59	H17	SAU	3.5X3X0.25	A7	Beam	Other	None	0.000
60	H18	SAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
61	H2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
62	X7	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
63	H5	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
64	X8	SAE	2X2X0.25	A7	Truss	Other	None	0.000
65	H1	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
66	X8	SAE	2X2X0.25	A7	Truss	Other	None	0.000
67	X6	SAE	2X2X0.25	A7	Truss	Other	None	0.000
68	H4	SAU	3.5X2.5X0.25	A7	Truss	Other	None	0.000
69	H2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
70	D2	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000

71	H2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
72	D2	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
73	H2	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
74	D2	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
75	H10	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
76	X10	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
77	H9	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
78	H13	SAE	3X3X0.25	A7	Truss	Other	None	0.000
79	X9	SAU	2.5X1.5X0.25	A7	Truss	Other	None	0.000
80	X9	SAU	2.5X1.5X0.25	A7	Truss	Other	None	0.000
81	H8	SAE	2X2X0.25	A7	Truss	Other	None	0.000
82	H15	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
83	X12	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
84	H14	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
85	H13	SAE	3X3X0.25	A7	Truss	Other	None	0.000
86	X11	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
87	H19	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
88	X13	SAE	2X2X0.1875	A7	Truss	Other	None	0.000

Aggregate Angle Information:

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

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	2.5X2.5X0.1875	A7	319.10	265.91	979.62
SAE	5X5X0.375	A7	80.00	133.33	984.00
SAE	8X8X0.5	A7	123.26	328.69	3254.04
SAE	8X8X0.5	A440-50	204.28	544.76	5393.08
SAE	3X3X0.25	A7	166.83	166.83	817.48
SAE	4X4X0.25	A7	283.63	378.17	1871.95
SAE	4X4X0.3125	A7	199.60	266.14	1636.76
SAE	6X6X0.5	A7	64.89	129.78	1271.81
BAR	2 x 0.1875	A7	103.23	37.64	132.13
SAE	3X3X0.3125	A7	183.95	183.95	1122.09
SAE	4X4X0.375	A7	141.96	189.28	1391.19
DAS	3.5X3X0.25	A7	79.62	86.26	859.91
DAS	4X3X0.4375	A7	122.94	143.43	2409.55
SAE	3X3X0.1875	A7	304.13	304.13	1128.31
SAE	2X2X0.1875	A7	764.88	509.92	1866.32
SAU	4X3.5X0.25	A7	31.24	39.05	193.69
SAE	3.5X3.5X0.25	A7	91.82	107.13	532.57
SAU	3X2.5X0.25	A7	20.00	18.33	90.00
SAU	7X4X0.4375	A7	60.07	110.13	949.16
SAE	2.5X2.5X0.25	A7	182.85	152.38	749.70
SAU	2.5X2X0.1875	A7	75.01	56.25	206.27
SAU	3X2X0.25	A7	41.61	34.68	170.62
SAE	3.5X3.5X0.3125	A7	14.00	16.33	100.80
SAU	3.5X3X0.25	A7	47.15	51.07	254.59
SAE	2X2X0.25	A7	329.14	219.43	1049.97
SAU	3.5X2.5X0.25	A7	42.00	42.00	205.80
SAU	2.5X1.5X0.25	A7	60.58	40.39	193.26

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 Force Drag x Area Factor	Solid Face
TOWER	14P	1.050	0.000	0.000	0.000	0.000	0.000	0.000	1.600	1.600	1.000	1.000	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)	Rest. Coef.
1P	1		XY-Symmetry	1P	2P	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
1X	1		X-GenXY	1X	2X	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
1XY	1		XY-GenXY	1X	2XY	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
1Y	1		Y-GenXY	1P	2Y	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
2P	2		XY-Symmetry	2P	3P	1	6	1	1	1	3/4 A394	0	1.76	1	Both	0	0	0	0	0
2X	2		X-GenXY	2X	3X	1	6	1	1	1	3/4 A394	0	1.76	1	Both	0	0	0	0	0
2XY	2		XY-GenXY	2XY	3XY	1	6	1	1	1	3/4 A394	0	1.76	1	Both	0	0	0	0	0
2Y	2		Y-GenXY	2Y	3Y	1	6	1	1	1	3/4 A394	0	1.76	1	Both	0	0	0	0	0
3P	3		XY-Symmetry	3P	4P	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
3X	3		X-GenXY	3X	4X	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
3XY	3		XY-GenXY	3XY	4XY	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
3Y	3		Y-GenXY	3Y	4Y	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
4P	4		XY-Symmetry	4P	5P	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
4X	4		X-GenXY	4X	5X	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
4XY	4		XY-GenXY	4XY	5XY	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
4Y	4		Y-GenXY	4Y	5Y	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
5P	5		XY-Symmetry	5P	6P	1	6	1	1	1	3/4 A394	0	3.36	1	Both	0	0	0	0	0
5X	5		X-GenXY	5X	6X	1	6	1	1	1	3/4 A394	10	4	1	Both	0	0	0	0	0
5XY	5		XY-GenXY	5XY	6XY	1	6	1	1	1	3/4 A394	10	4	1	Both	0	0	0	0	0
5Y	5		Y-GenXY	5Y	6Y	1	6	1	1	1	3/4 A394	10	4	1	Both	0	0	0	0	0
6P	6		XY-Symmetry	6P	7P	1	6	1	1	1	3/4 A394	10	4	1	Both	0	0	0	0	0
6X	6		X-GenXY	6X	7X	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
6XY	6		XY-GenXY	6XY	7XY	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
6Y	6		Y-GenXY	6Y	7Y	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
7P	7		XY-Symmetry	7P	8P	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
7X	7		X-GenXY	7X	8X	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
7XY	7		XY-GenXY	7XY	8XY	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
7Y	7		Y-GenXY	7Y	8Y	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
8P	8		XY-Symmetry	8P	9P	1	6	1	1	1	3/4 A394	0	1.65	1	Both	0	0	0	0	0
8X	8		X-GenXY	8X	9X	1	6	1	1	1	3/4 A394	10	4	2	Both	0	0	0	0	0
8XY	8		XY-GenXY	8XY	9XY	1	6	1	1	1	3/4 A394	10	4	2	Both	0	0	0	0	0
8Y	8		Y-GenXY	8Y	9Y	1	6	1	1	1	3/4 A394	10	4	2	Both	0	0	0	0	0
9P	9		XY-Symmetry	9P	10S	1	6	1	1	1	3/4 A394	10	4	2	Both	0	0	0	0	0
9X	9		X-GenXY	9X	10X	1	6	1	1	1	3/4 A394	0	1.46	2	Both	0	0	0	0	0
9XY	9		XY-GenXY	9XY	10XY	1	6	1	1	1	3/4 A394	0	1.46	2	Both	0	0	0	0	0
9Y	9		Y-GenXY	9Y	10Y	1	6	1	1	1	3/4 A394	0	1.46	2	Both	0	0	0	0	0
10P	10		XY-Symmetry	10S	11S	1	6	1	1	1	3/4 A394	0	1.46	2	Both	0	0	0	0	0
10X	10		X-GenXY	10X	11X	1	6	1	1	1	3/4 A394	28	4	1	Both	0	0	0	0	0
10XY	10		XY-GenXY	10XY	11XY	1	6	1	1	1	3/4 A394	28	4	1	Both	0	0	0	0	0
10Y	10		Y-GenXY	10Y	11Y	1	6	1	1	1	3/4 A394	28	4	1	Both	0	0	0	0	0
11P	11		XY-Symmetry	11S	12S	1	6	1	1	1	3/4 A394	28	4	1	Both	0	0	0	0	0
11X	11		X-GenXY	11X	12X	1	6	1	1	1	3/4 A394	0	4	1	Both	0	0	0	0	0
11XY	11		XY-GenXY	11XY	12XY	1	6	1	1	1	3/4 A394	0	4	1	Both	0	0	0	0	0
11Y	11		Y-GenXY	11Y	12Y	1	6	1	1	1	3/4 A394	0	4	1	Both	0	0	0	0	0
12P	12		XY-Symmetry	12S	13S	1	6	1	1	1	3/4 A394	0	4	1	Both	0	0	0	0	0
12X	12		X-GenXY	12X	13X	1	6	0.5	0.5	0.5	3/4 A394	28	4	1	Both	0	0	0	0	0
12XY	12		XY-GenXY	12XY	13XY	1	6	0.5	0.5	0.5	3/4 A394	28	4	1	Both	0	0	0	0	0
12Y	12		Y-GenXY	12Y	13Y	1	6	0.5	0.5	0.5	3/4 A394	28	4	1	Both	0	0	0	0	0
13P	13		XY-Symmetry	13S	14P	1	6	0.5	0.5	0.5	3/4 A394	28	4	1	Both	0	0	0	0	0
13X	13		X-GenXY	13X	14X	1	6	0.25	0.25	0.25	3/4 A394	28	4	1	Both	0	0	0	0	0
13XY	13		XY-GenXY	13XY	14XY	1	6	0.25	0.25	0.25	3/4 A394	28	4	1	Both	0	0	0	0	0
13Y	13		Y-GenXY	13Y	14Y	1	6	0.25	0.25	0.25	3/4 A394	28	4	1	Both	0	0	0	0	0
14P	14		XY-Symmetry	1P	20P	3	5	0.5	0.5	0.5	3/4 A394	28	4	1	Both	0	0	0	0	0
14X	14		X-GenXY	1X	20X	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
14XY	14		XY-GenXY	1X	20XY	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
14Y	14		Y-GenXY	1P	20Y	3	5	0.5	0.5	0.5	3/4 A394	2	1	1	Long only	0	0	0	0	0
15P	15		XY-Symmetry	18P	19P	3	4	1	1	1	3/4 A394	2	1	1	Long only	0	0	0	0	0
15X	15		X-GenXY	18P	19X	3	4	1	1	1	3/4 A394	4	2	1	Long only	0	0	0	0	0
15XY	15		XY-GenXY	18Y	19XY	3	4	1	1	1	3/4 A394	4	2	1	Long only	0	0	0	0	0
15Y	15		Y-GenXY	18Y	19Y	3	4	1	1	1	3/4 A394	4	2	1	Long only	0	0	0	0	0
16P	15		XY-Symmetry	19P	20P	3	4	1	1	1	3/4 A394	4	2	1	Long only	0	0	0	0	0
16X	15		X-GenXY	19X	20X	3	4	1	1	1	3/4 A394	0	1	1	Long only	0	0	0	0	0
16XY	15		XY-GenXY	19XY	20XY	3	4	1	1	1	3/4 A394	0	1	1	Long only	0	0	0	0	0
16Y	15		Y-GenXY	19Y	20Y	3	4	1	1	1	3/4 A394	0	1	1	Long only	0	0	0	0	0

17P	15	XY-Symmetry	20P	2P	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
17X	15	X-GenXY	20X	2X	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
17XY	15	XY-GenXY	20XY	2XY	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
17Y	15	Y-GenXY	20Y	2Y	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
18P	16	XY-Symmetry	21P	22P	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
18X	16	X-GenXY	21P	22X	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
18XY	16	XY-GenXY	21Y	22XY	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
18Y	16	Y-GenXY	21Y	22Y	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
19P	16	XY-Symmetry	22P	23P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
19X	16	X-GenXY	22X	23X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
19XY	16	XY-GenXY	22XY	23XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
19Y	16	Y-GenXY	22Y	23Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
20P	16	XY-Symmetry	23P	3P	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
20X	16	X-GenXY	23X	3X	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
20XY	16	XY-GenXY	23XY	3XY	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
20Y	16	Y-GenXY	23Y	3Y	3	4	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
21P	18	XY-Symmetry	24P	25P	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
21X	18	X-GenXY	24P	25X	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
21XY	18	XY-GenXY	24Y	25XY	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
21Y	18	Y-GenXY	24Y	25Y	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
22P	18	XY-Symmetry	25P	26P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
22X	18	X-GenXY	25X	26X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
22XY	18	XY-GenXY	25XY	26XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
22Y	18	Y-GenXY	25Y	26Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
23P	18	XY-Symmetry	26P	5P	3	4	1	1	1 3/4 A394	3	1.81	1	Long only	0	0	0	0	0
23X	18	X-GenXY	26X	5X	3	4	1	1	1 3/4 A394	3	1.81	1	Long only	0	0	0	0	0
23XY	18	XY-GenXY	26XY	5XY	3	4	1	1	1 3/4 A394	3	1.81	1	Long only	0	0	0	0	0
23Y	18	Y-GenXY	26Y	5Y	3	4	1	1	1 3/4 A394	3	1.81	1	Long only	0	0	0	0	0
24P	19	XY-Symmetry	27P	28P	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
24X	19	X-GenXY	27P	28X	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
24XY	19	XY-GenXY	27Y	28XY	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
24Y	19	Y-GenXY	27Y	28Y	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
25P	19	XY-Symmetry	28P	29P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
25X	19	X-GenXY	28X	29X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
25XY	19	XY-GenXY	28XY	29XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
25Y	19	Y-GenXY	28Y	29Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
26P	19	XY-Symmetry	29P	6P	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
26X	19	X-GenXY	29X	6X	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
26XY	19	XY-GenXY	29XY	6XY	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
26Y	19	Y-GenXY	29Y	6Y	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
27P	21	XY-Symmetry	30P	31P	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
27X	21	X-GenXY	30P	31X	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
27XY	21	XY-GenXY	30Y	31XY	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
27Y	21	Y-GenXY	30Y	31Y	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
28P	21	XY-Symmetry	31P	32P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
28X	21	X-GenXY	31X	32X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
28XY	21	XY-GenXY	31XY	32XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
28Y	21	Y-GenXY	31Y	32Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
29P	21	XY-Symmetry	32P	8P	3	4	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
29X	21	X-GenXY	32X	8X	3	4	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
29XY	21	XY-GenXY	32XY	8XY	3	4	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
29Y	21	Y-GenXY	32Y	8Y	3	4	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
30P	22	XY-Symmetry	33P	34P	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
30X	22	X-GenXY	33P	34X	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
30XY	22	XY-GenXY	33Y	34XY	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
30Y	22	Y-GenXY	33Y	34Y	3	4	1	1	1 3/4 A394	4	2	1	Long only	0	0	0	0	0
31P	22	XY-Symmetry	34P	35P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
31X	22	X-GenXY	34X	35X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
31XY	22	XY-GenXY	34XY	35XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
31Y	22	Y-GenXY	34Y	35Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
32P	22	XY-Symmetry	35P	9P	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
32X	22	X-GenXY	35X	9X	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
32XY	22	XY-GenXY	35XY	9XY	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
32Y	22	Y-GenXY	35Y	9Y	3	4	1	1	1 3/4 A394	4	1	1	Long only	0	0	0	0	0
33P	24	XY-Symmetry	36P	37P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
33X	24	X-GenXY	36P	37X	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
33XY	24	XY-GenXY	36Y	37XY	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
33Y	24	Y-GenXY	36Y	37Y	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0
34P	24	XY-Symmetry	37P	38P	3	4	1	1	1 3/4 A394	0	1	1	Long only	0	0	0	0	0

34X	24	X-GenXY	37X	38X	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
34XY	24	XY-GenXY	37XY	38XY	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
34Y	24	Y-GenXY	37Y	38Y	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
35P	24	XY-Symmetry	38P	11S	3	4	1	1	1	3/4	A394	8	3	1	Long only	0	0	0	0	0
35X	24	X-GenXY	38X	11X	3	4	1	1	1	3/4	A394	8	3	1	Long only	0	0	0	0	0
35XY	24	XY-GenXY	38XY	11XY	3	4	1	1	1	3/4	A394	8	3	1	Long only	0	0	0	0	0
35Y	24	Y-GenXY	38Y	11Y	3	4	1	1	1	3/4	A394	8	3	1	Long only	0	0	0	0	0
36P	25	XY-Symmetry	39P	40P	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
36X	25	X-GenXY	39P	40X	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
36XY	25	XY-GenXY	39Y	40XY	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
36Y	25	Y-GenXY	39Y	40Y	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
37P	25	XY-Symmetry	40P	41P	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
37X	25	X-GenXY	40X	41X	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
37XY	25	XY-GenXY	40XY	41XY	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
37Y	25	Y-GenXY	40Y	41Y	3	4	1	1	1	3/4	A394	0	1	1	Long only	0	0	0	0	0
38P	25	XY-Symmetry	41P	12S	3	4	1	1	1	3/4	A394	9	3	1	Long only	0	0	0	0	0
38X	25	X-GenXY	41X	12X	3	4	1	1	1	3/4	A394	9	3	1	Long only	0	0	0	0	0
38XY	25	XY-GenXY	41XY	12XY	3	4	1	1	1	3/4	A394	9	3	1	Long only	0	0	0	0	0
38Y	25	Y-GenXY	41Y	12Y	3	4	1	1	1	3/4	A394	9	3	1	Long only	0	0	0	0	0
39P	17	XY-Symmetry	3P	15P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
39X	17	X-GenXY	3X	15X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
39XY	17	XY-GenXY	3XY	15XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
39Y	17	Y-GenXY	3Y	15Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
40P	20	XY-Symmetry	6P	16P	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
40X	20	X-GenXY	6X	16X	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
40XY	20	XY-GenXY	6XY	16XY	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
40Y	20	Y-GenXY	6Y	16Y	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
41P	23	XY-Symmetry	9P	17P	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
41X	23	X-GenXY	9X	17X	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
41XY	23	XY-GenXY	9XY	17XY	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
41Y	23	Y-GenXY	9Y	17Y	3	6	1	1	1	3/4	A394	3	1.18	1	Long only	0	0	0	0	0
42P	42	XY-Symmetry	2P	15P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
42X	42	X-GenXY	2X	15X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
42XY	42	XY-GenXY	2XY	15XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
42Y	42	Y-GenXY	2Y	15Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
43P	42	XY-Symmetry	5P	16P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
43X	42	X-GenXY	5X	16X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
43XY	42	XY-GenXY	5XY	16XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
43Y	42	Y-GenXY	5Y	16Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
44P	42	XY-Symmetry	8P	17P	2	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
44X	42	X-GenXY	8X	17X	2	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
44XY	42	XY-GenXY	8XY	17XY	2	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
44Y	42	Y-GenXY	8Y	17Y	2	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
45P	41	XY-Symmetry	23P	4P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
45X	41	X-GenXY	23X	4X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
45XY	41	XY-GenXY	23XY	4XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
45Y	41	Y-GenXY	23Y	4Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
46P	41	XY-Symmetry	4P	26P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
46X	41	X-GenXY	4X	26X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
46XY	41	XY-GenXY	4XY	26XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
46Y	41	Y-GenXY	4Y	26Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
47P	40	XY-Symmetry	29P	7P	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
47X	40	X-GenXY	29X	7X	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
47XY	40	XY-GenXY	29XY	7XY	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
47Y	40	Y-GenXY	29Y	7Y	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
48P	40	XY-Symmetry	7P	32P	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
48X	40	X-GenXY	7X	32X	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
48XY	40	XY-GenXY	7XY	32XY	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
48Y	40	Y-GenXY	7Y	32Y	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
49P	39	XY-Symmetry	35P	10S	3	6	1	1	1	3/4	A394	5	1.68	1	Long only	0	0	0	0	0
49X	39	X-GenXY	35X	10X	3	6	1	1	1	3/4	A394	5	1.68	1	Long only	0	0	0	0	0
49XY	39	XY-GenXY	35XY	10XY	3	6	1	1	1	3/4	A394	5	1.68	1	Long only	0	0	0	0	0
49Y	39	Y-GenXY	35Y	10Y	3	6	1	1	1	3/4	A394	5	1.68	1	Long only	0	0	0	0	0
50P	39	XY-Symmetry	10S	38P	3	6	1	1	1	3/4	A394	5	1	1	Long only	0	0	0	0	0
50X	39	X-GenXY	10X	38X	3	6	1	1	1	3/4	A394	5	1	1	Long only	0	0	0	0	0
50XY	39	XY-GenXY	10XY	38XY	3	6	1	1	1	3/4	A394	5	1	1	Long only	0	0	0	0	0
50Y	39	Y-GenXY	10Y	38Y	3	6	1	1	1	3/4	A394	5	1	1	Long only	0	0	0	0	0
51P	43	XY-Symmetry	42S	12S	2	6	0.54	1	0.54	3/4	A394	2	2	2	Short only	0	0	0	0	0
51X	43	X-GenXY	42S	12X	2	6	0.54	1	0.54	3/4	A394	2	2	2	Short only	0	0	0	0	0

51XY	43	XY-GenXY	42Y	12XY	2	6	0.54	1	0.54	3/4	A394	2	2	2	Short only	0	0	0	0	0
51Y	43	Y-GenXY	42Y	12Y	2	6	0.54	1	0.54	3/4	A394	2	2	2	Short only	0	0	0	0	0
52P	44	XY-Symmetry	14P	42S	1	5	0.25	1	0.25	3/4	A394	3	2	2	Short only	0	0	0	0	0
52X	44	X-GenXY	14X	42S	1	5	0.25	1	0.25	3/4	A394	3	2	2	Short only	0	0	0	0	0
52XY	44	XY-GenXY	14XY	42Y	1	5	0.25	1	0.25	3/4	A394	3	2	2	Short only	0	0	0	0	0
52Y	44	Y-GenXY	14Y	42Y	1	5	0.25	1	0.25	3/4	A394	3	2	2	Short only	0	0	0	0	0
53P	45	XY-Symmetry	42S	13S	3	5	0.5	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
53X	45	X-GenXY	42S	13X	3	5	0.5	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
53XY	45	XY-GenXY	42Y	13XY	3	5	0.5	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
53Y	45	Y-GenXY	42Y	13Y	3	5	0.5	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
54P	26	Y-Symmetry	18P	21P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
54Y	26	Y-Gen	18Y	21Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
55P	33	XY-Symmetry	21P	19P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
55X	33	X-GenXY	21P	19X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
55XY	33	XY-GenXY	21Y	19XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
55Y	33	Y-GenXY	21Y	19Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
56P	26	XY-Symmetry	19P	22P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
56X	26	X-GenXY	19X	22X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
56XY	26	XY-GenXY	19XY	22XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
56Y	26	Y-GenXY	19Y	22Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
57P	33	XY-Symmetry	19P	23P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
57X	33	X-GenXY	19X	23X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
57XY	33	XY-GenXY	19XY	23XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
57Y	33	Y-GenXY	19Y	23Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
58P	26	XY-Symmetry	20P	23P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
58X	26	X-GenXY	20X	23X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
58XY	26	XY-GenXY	20XY	23XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
58Y	26	Y-GenXY	20Y	23Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
59P	34	XY-Symmetry	23P	2P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
59X	34	X-GenXY	23X	2X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
59XY	34	XY-GenXY	23XY	2XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
59Y	34	Y-GenXY	23Y	2Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
60P	26	Y-Symmetry	24P	27P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
60Y	26	Y-Gen	24Y	27Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
61P	31	XY-Symmetry	27P	25P	3	6	1	1	1	3/4	A394	3	1.42	1	Long only	0	0	0	0	0
61X	31	X-GenXY	27P	25X	3	6	1	1	1	3/4	A394	3	1.42	1	Long only	0	0	0	0	0
61XY	31	XY-GenXY	27Y	25XY	3	6	1	1	1	3/4	A394	3	1.42	1	Long only	0	0	0	0	0
61Y	31	Y-GenXY	27Y	25Y	3	6	1	1	1	3/4	A394	3	1.42	1	Long only	0	0	0	0	0
62P	26	XY-Symmetry	25P	28P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
62X	26	X-GenXY	25X	28X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
62XY	26	XY-GenXY	25XY	28XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
62Y	26	Y-GenXY	25Y	28Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
63P	32	XY-Symmetry	25P	29P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
63X	32	X-GenXY	25X	29X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
63XY	32	XY-GenXY	25XY	29XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
63Y	32	Y-GenXY	25Y	29Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
64P	35	XY-Symmetry	26P	29P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
64X	35	X-GenXY	26X	29X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
64XY	35	XY-GenXY	26XY	29XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
64Y	35	Y-GenXY	26Y	29Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
65P	36	XY-Symmetry	29P	5P	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
65X	36	X-GenXY	29X	5X	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
65XY	36	XY-GenXY	29XY	5XY	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
65Y	36	Y-GenXY	29Y	5Y	3	6	1	1	1	3/4	A394	4	1.54	1	Long only	0	0	0	0	0
66P	26	Y-Symmetry	30P	33P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
66Y	26	Y-Gen	30Y	33Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
67P	29	XY-Symmetry	33P	31P	3	6	1	1	1	3/4	A394	4	1.42	1	Long only	0	0	0	0	0
67X	29	X-GenXY	33P	31X	3	6	1	1	1	3/4	A394	4	1.42	1	Long only	0	0	0	0	0
67XY	29	XY-GenXY	33Y	31XY	3	6	1	1	1	3/4	A394	4	1.42	1	Long only	0	0	0	0	0
67Y	29	Y-GenXY	33Y	31Y	3	6	1	1	1	3/4	A394	4	1.42	1	Long only	0	0	0	0	0
68P	26	XY-Symmetry	31P	34P	3	6	1	1	1	3/4	A394	2	1.42	1	Long only	0	0	0	0	0
68X	26	X-GenXY	31X	34X	3	6	1	1	1	3/4	A394	2	1.42	1	Long only	0	0	0	0	0
68XY	26	XY-GenXY	31XY	34XY	3	6	1	1	1	3/4	A394	2	1.42	1	Long only	0	0	0	0	0
68Y	26	Y-GenXY	31Y	34Y	3	6	1	1	1	3/4	A394	2	1.42	1	Long only	0	0	0	0	0
69P	30	XY-Symmetry	31P	35P	3	6	1	1	1	3/4	A394	4	1.23	1	Long only	0	0	0	0	0
69X	30	X-GenXY	31X	35X	3	6	1	1	1	3/4	A394	4	1.23	1	Long only	0	0	0	0	0
69XY	30	XY-GenXY	31XY	35XY	3	6	1	1	1	3/4	A394	4	1.23	1	Long only	0	0	0	0	0
69Y	30	Y-GenXY	31Y	35Y	3	6	1	1	1	3/4	A394	4	1.23	1	Long only	0	0	0	0	0
70P	37	XY-Symmetry	32P	35P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0

70X	37	X-GenXY	32X	35X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
70XY	37	XY-GenXY	32XY	35XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
70Y	37	Y-GenXY	32Y	35Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
71P	38	XY-Symmetry	35P	8P	3	6	1	1	1	3/4	A394	5	1.86	1	Long only	0	0	0	0	0
71X	38	X-GenXY	35X	8X	3	6	1	1	1	3/4	A394	5	1.86	1	Long only	0	0	0	0	0
71XY	38	XY-GenXY	35XY	8XY	3	6	1	1	1	3/4	A394	5	1.86	1	Long only	0	0	0	0	0
71Y	38	Y-GenXY	35Y	8Y	3	6	1	1	1	3/4	A394	5	1.86	1	Long only	0	0	0	0	0
72P	26	Y-Symmetry	36P	39P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
72Y	26	Y-Gen	36Y	39Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
73P	27	XY-Symmetry	39P	37P	3	6	1	1	1	3/4	A394	5	1.5	1	Long only	0	0	0	0	0
73X	27	X-GenXY	39P	37X	3	6	1	1	1	3/4	A394	5	1.5	1	Long only	0	0	0	0	0
73XY	27	XY-GenXY	39Y	37XY	3	6	1	1	1	3/4	A394	5	1.5	1	Long only	0	0	0	0	0
73Y	27	Y-GenXY	39Y	37Y	3	6	1	1	1	3/4	A394	5	1.5	1	Long only	0	0	0	0	0
74P	26	XY-Symmetry	37P	40P	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
74X	26	X-GenXY	37X	40X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
74XY	26	XY-GenXY	37XY	40XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
74Y	26	Y-GenXY	37Y	40Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
75P	27	XY-Symmetry	37P	41P	3	6	1	1	1	3/4	A394	5	1.64	1	Long only	0	0	0	0	0
75X	27	X-GenXY	37X	41X	3	6	1	1	1	3/4	A394	5	1.64	1	Long only	0	0	0	0	0
75XY	27	XY-GenXY	37XY	41XY	3	6	1	1	1	3/4	A394	5	1.64	1	Long only	0	0	0	0	0
75Y	27	Y-GenXY	37Y	41Y	3	6	1	1	1	3/4	A394	5	1.64	1	Long only	0	0	0	0	0
76P	28	XY-Symmetry	38P	41P	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	0
76X	28	X-GenXY	38X	41X	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	0
76XY	28	XY-GenXY	38XY	41XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	0
76Y	28	Y-GenXY	38Y	41Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	0
77P	46	XY-Symmetry	41P	11S	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
77X	46	X-GenXY	41X	11X	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
77XY	46	XY-GenXY	41XY	11XY	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
77Y	46	Y-GenXY	41Y	11Y	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
78P	46	XY-Symmetry	38P	12S	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
78X	46	X-GenXY	38X	12X	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
78XY	46	XY-GenXY	38XY	12XY	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
78Y	46	Y-GenXY	38Y	12Y	2	5	0.5	0.75	0.5	3/4	A394	11	3	1	Long only	0	0	0	0	0
79P	47	XY-Symmetry	2P	3Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
79X	47	X-GenXY	2X	3XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
79XY	47	XY-GenXY	2XY	3X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
79Y	47	Y-GenXY	2Y	3P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
80P	48	XY-Symmetry	3P	4Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
80X	48	X-GenXY	3X	4XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
80XY	48	XY-GenXY	3XY	4X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
80Y	48	Y-GenXY	3Y	4P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
81P	48	XY-Symmetry	4P	5Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
81X	48	X-GenXY	4X	5XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
81XY	48	XY-GenXY	4XY	5X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
81Y	48	Y-GenXY	4Y	5P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
82P	48	XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
82X	48	X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
82XY	48	XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
82Y	48	Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
83P	49	XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
83X	49	X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
83XY	49	XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
83Y	49	Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
84P	49	XY-Symmetry	7P	8Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
84X	49	X-GenXY	7X	8XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
84XY	49	XY-GenXY	7XY	8X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
84Y	49	Y-GenXY	7Y	8P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
85P	49	XY-Symmetry	8P	9Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
85X	49	X-GenXY	8X	9XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
85XY	49	XY-GenXY	8XY	9X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
85Y	49	Y-GenXY	8Y	9P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
86P	50	XY-Symmetry	9P	10Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Long only	0	0	0	0	0
86X	50	X-GenXY	9X	10XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Long only	0	0	0	0	0
86XY	50	XY-GenXY	9XY	10X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Long only	0	0	0	0	0
86Y	50	Y-GenXY	9Y	10S	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Long only	0	0	0	0	0
87P	51	XY-Symmetry	10Y	43S	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
87X	51	X-GenXY	10XY	43X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
87XY	51	XY-GenXY	10X	43X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
87Y	51	Y-GenXY	10S	43S	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0

88P	51	XY-Symmetry	12Y	43S	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
88X	51	X-GenXY	12XY	43X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
88XY	51	XY-GenXY	12X	43X	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
88Y	51	Y-GenXY	12S	43S	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
89P	52	XY-Symmetry	13S	12Y	2	5	0.53	0.77	0.53	3/4	A394	2	1	1	Long only	0	0	0	0	0
89X	52	X-GenXY	13X	12XY	2	5	0.53	0.77	0.53	3/4	A394	2	1	1	Long only	0	0	0	0	0
89XY	52	XY-GenXY	13XY	12X	2	5	0.53	0.77	0.53	3/4	A394	2	1	1	Long only	0	0	0	0	0
89Y	52	Y-GenXY	13Y	12S	2	5	0.53	0.77	0.53	3/4	A394	2	1	1	Long only	0	0	0	0	0
90P	53	XY-Symmetry	13S	44P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
90X	53	X-GenXY	13X	44X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
90XY	53	XY-GenXY	13XY	44X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
90Y	53	Y-GenXY	13Y	44P	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
91P	54	XY-Symmetry	14P	44P	2	5	1	0.333	0.333	3/4	A394	3	1	1	Long only	0	0	0	0	0
91X	54	X-GenXY	14X	44X	2	5	1	0.333	0.333	3/4	A394	3	1	1	Long only	0	0	0	0	0
91XY	54	XY-GenXY	14XY	44X	2	5	1	0.333	0.333	3/4	A394	3	1	1	Long only	0	0	0	0	0
91Y	54	Y-GenXY	14Y	44P	2	5	1	0.333	0.333	3/4	A394	3	1	1	Long only	0	0	0	0	0
92P	55	X-Symmetry	2P	2Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
92X	55	X-Gen	2X	2XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
93P	55	X-Symmetry	3P	3Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
93X	55	X-Gen	3X	3XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
94P	56	X-Symmetry	5P	5Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
94X	56	X-Gen	5X	5XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
95P	55	X-Symmetry	6P	6Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
95X	55	X-Gen	6X	6XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
96P	56	X-Symmetry	8P	8Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
96X	56	X-Gen	8X	8XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
97P	57	X-Symmetry	9P	9Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
97X	57	X-Gen	9X	9XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
98P	58	XY-Symmetry	43S	11S	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
98X	58	X-GenXY	43X	11X	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
98XY	58	XY-GenXY	43X	11XY	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
98Y	58	Y-GenXY	43S	11Y	3	6	1	1	1	3/4	A394	3	1	1	Long only	0	0	0	0	0
99P	59	X-Symmetry	12S	12Y	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
99X	59	X-Gen	12X	12XY	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	0	0	0	0	0
100P	60	X-Symmetry	13S	13Y	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
100X	60	X-Gen	13X	13XY	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	0
101P	61	None	21P	21Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
102P	62	XY-Symmetry	21P	22Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
102X	62	X-GenXY	21P	22XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
102XY	62	XY-GenXY	21Y	22X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
102Y	62	Y-GenXY	21Y	22P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
103P	63	X-Symmetry	22P	22Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
103X	63	X-Gen	22X	22XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
104P	64	XY-Symmetry	22P	23Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
104X	64	X-GenXY	22X	23XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
104XY	64	XY-GenXY	22XY	23X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
104Y	64	Y-GenXY	22Y	23P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
105P	65	X-Symmetry	23P	23Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
105X	65	X-Gen	23X	23XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
106P	66	XY-Symmetry	23P	3Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
106X	66	X-GenXY	23X	3XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
106XY	66	XY-GenXY	23XY	3X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
106Y	66	Y-GenXY	23Y	3P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
107P	67	XY-Symmetry	3P	15Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
107X	67	X-GenXY	3X	15XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
107XY	67	XY-GenXY	3XY	15X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
107Y	67	Y-GenXY	3Y	15P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
108P	68	X-Symmetry	15P	15Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
108X	68	X-Gen	15X	15XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
109P	61	None	27P	27Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
110P	62	XY-Symmetry	27P	28Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
110X	62	X-GenXY	27P	28XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
110XY	62	XY-GenXY	27Y	28X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
110Y	62	Y-GenXY	27Y	28P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
111P	63	X-Symmetry	28P	28Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
111X	63	X-Gen	28X	28XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
112P	64	XY-Symmetry	28P	29Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
112X	64	X-GenXY	28X	29XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
112XY	64	XY-GenXY	28XY	29X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0

112Y	64	Y-GenXY	28Y	29P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
113P	65	X-Symmetry	29P	29Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
113X	65	X-Gen	29X	29XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
114P	66	XY-Symmetry	29P	6Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
114X	66	X-GenXY	29X	6XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
114XY	66	XY-GenXY	29XY	6X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
114Y	66	Y-GenXY	29Y	6P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
115P	67	XY-Symmetry	6P	16Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
115X	67	X-GenXY	6X	16XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
115XY	67	XY-GenXY	6XY	16X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
115Y	67	Y-GenXY	6Y	16P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
116P	68	X-Symmetry	16P	16Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
116X	68	X-Gen	16X	16XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
117P	61	None	33P	33Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
118P	62	XY-Symmetry	33P	34Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
118X	62	X-GenXY	33P	34XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
118XY	62	XY-GenXY	33Y	34X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
118Y	62	Y-GenXY	33Y	34P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
119P	63	X-Symmetry	34P	34Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
119X	63	X-Gen	34X	34XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
120P	64	XY-Symmetry	34P	35Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
120X	64	X-GenXY	34X	35XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
120XY	64	XY-GenXY	34XY	35X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
120Y	64	Y-GenXY	34Y	35P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
121P	65	X-Symmetry	35P	35Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
121X	65	X-Gen	35X	35XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	0	0	0	0	0
122P	66	XY-Symmetry	35P	9Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
122X	66	X-GenXY	35X	9XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
122XY	66	XY-GenXY	35XY	9X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
122Y	66	Y-GenXY	35Y	9P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
123P	67	XY-Symmetry	9P	17Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
123X	67	X-GenXY	9X	17XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
123XY	67	XY-GenXY	9XY	17X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
123Y	67	Y-GenXY	9Y	17P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
124P	68	X-Symmetry	17P	17Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
124X	68	X-Gen	17X	17XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Long only	0	0	0	0	0
125P	69	None	18P	18Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
126AP	70	None	18P	19Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
126BP	70	None	19X	18Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
127P	71	X-Symmetry	19P	19Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
127X	71	X-Gen	19X	19XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
128AP	72	None	19P	20Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
128BP	72	None	20X	19XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
129P	73	X-Symmetry	20P	20Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
129X	73	X-Gen	20X	20XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
130AP	74	None	20P	2Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
130BP	74	None	2X	20XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
131P	69	None	24P	24Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
132AP	70	None	24P	25Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
132BP	70	None	25X	24Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
133P	71	X-Symmetry	25P	25Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
133X	71	X-Gen	25X	25XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
134AP	72	None	25P	26Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
134BP	72	None	26X	25XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
135P	73	X-Symmetry	26P	26Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
135X	73	X-Gen	26X	26XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
136AP	74	None	26P	5Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
136BP	74	None	5X	26XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
137P	69	None	30P	30Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
138AP	70	None	30P	31Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
138BP	70	None	31X	30Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
139P	71	X-Symmetry	31P	31Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
139X	71	X-Gen	31X	31XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
140AP	72	None	31P	32Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
140BP	72	None	32X	31XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
141P	73	X-Symmetry	32P	32Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
141X	73	X-Gen	32X	32XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
142AP	74	None	32P	8Y	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0
142BP	74	None	8X	32XY	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	0

143P	75	None	36P	36Y	3	6	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
144P	76	XY-Symmetry	36P	38Y	2	5	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
144X	76	X-GenXY	36P	38XY	2	5	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
144XY	76	XY-GenXY	36Y	38X	2	5	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
144Y	76	Y-GenXY	36Y	38P	2	5	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
145P	77	X-Symmetry	37P	37Y	3	6	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
145X	77	X-Gen	37X	37XY	3	6	0.75	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
146AP	78	X-Symmetry	38P	45P	3	6	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
146AX	78	X-Gen	38X	45X	3	6	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
146BP	78	X-Symmetry	45P	38Y	3	6	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
146BX	78	X-Gen	45X	38XY	3	6	1	1	1 3/4 A394	3	1	1	Long only	0	0	0	0	0
147P	79	XY-Symmetry	45P	11Y	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
147X	79	X-GenXY	45X	11XY	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
147XY	79	XY-GenXY	45X	11X	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
147Y	79	Y-GenXY	45P	11S	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
148P	80	XY-Symmetry	38P	43S	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
148X	80	X-GenXY	38X	43X	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
148XY	80	XY-GenXY	38XY	43X	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
148Y	80	Y-GenXY	38Y	43S	2	5	0.5	0.75	0.5 3/4 A394	3	1	1	Long only	0	0	0	0	0
149P	81	X-Symmetry	45P	43S	3	6	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
149X	81	X-Gen	45X	43X	3	6	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
150P	82	None	39P	39Y	3	6	1	1	1 3/4 A394	2	1	1	Long only	0	0	0	0	0
151P	83	XY-Symmetry	39P	41Y	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
151X	83	X-GenXY	39P	41XY	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
151XY	83	XY-GenXY	39Y	41X	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
151Y	83	Y-GenXY	39Y	41P	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
152P	84	X-Symmetry	40P	40Y	3	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
152X	84	X-Gen	40X	40XY	3	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
153P	85	X-Symmetry	41P	41Y	3	6	1	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
153X	85	X-Gen	41X	41XY	3	6	1	0.5	0.5 3/4 A394	2	1	1	Long only	0	0	0	0	0
154P	86	XY-Symmetry	41P	12Y	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
154X	86	X-GenXY	41X	12XY	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
154XY	86	XY-GenXY	41XY	12X	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
154Y	86	Y-GenXY	41Y	12S	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
155P	87	None	42S	42Y	2	4	0.75	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
156P	88	XY-Symmetry	42S	13Y	3	4	0.5	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
156X	88	X-GenXY	42S	13XY	3	4	0.5	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
156XY	88	XY-GenXY	42Y	13X	3	4	0.5	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0
156Y	88	Y-GenXY	42Y	13S	3	4	0.5	0.5	0.5 3/4 A394	1	1	1	Long only	0	0	0	0	0

Member Capacities and Overrides:

Member Label	Group	Design Comp. Capacity (kips)	Comp. Control Criterion	Design Tension Capacity (kips)	Tension Control Criterion	L/r Length (ft)	L/r Comp. Capacity (kips)	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity (kips)	Rupture Tension Capacity (kips)	RTE End Dist. Tension Capacity (kips)	RTE Edge Dist. Tension Capacity (kips)	Override Comp. Capacity (kips)	Override Comp. Control Criterion	Override Tension Capacity (kips)	Override Tension Control Criterion	Override Face Member ship	Warnings or Errors
1P	1	17.649	L/r	21.917	Net Sect	118	9.71	17.649	27.200	24.469	21.917	0.000	0.000	0.000	0.000		0.000		Automatic	
1X	1	17.649	L/r	21.917	Net Sect	118	9.71	17.649	27.200	24.469	21.917	0.000	0.000	0.000	0.000		0.000		Automatic	
1XY	1	17.649	L/r	21.917	Net Sect	118	9.71	17.649	27.200	24.469	21.917	0.000	0.000	0.000	0.000		0.000		Automatic	
1Y	1	17.649	L/r	21.917	Net Sect	118	9.71	17.649	27.200	24.469	21.917	0.000	0.000	0.000	0.000		0.000		Automatic	
2P	2	106.517	L/r	100.072	Net Sect	61	5.00	106.517	0.000	0.000	100.072	0.000	0.000	0.000	0.000		0.000		Automatic	
2X	2	106.517	L/r	100.072	Net Sect	61	5.00	106.517	0.000	0.000	100.072	0.000	0.000	0.000	0.000		0.000		Automatic	
2XY	2	106.517	L/r	100.072	Net Sect	61	5.00	106.517	0.000	0.000	100.072	0.000	0.000	0.000	0.000		0.000		Automatic	
2Y	2	106.517	L/r	100.072	Net Sect	61	5.00	106.517	0.000	0.000	100.072	0.000	0.000	0.000	0.000		0.000		Automatic	
3P	3	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
3X	3	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
3XY	3	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
3Y	3	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
4P	4	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
4X	4	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
4XY	4	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
4Y	4	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000	0.000		0.000		Automatic	
5P	5	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	244.687	75.817	0.000	0.000	0.000	0.000		0.000		Automatic	
5X	5	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	244.687	75.817	0.000	0.000	0.000	0.000		0.000		Automatic	

5XY	5	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	244.687	75.817	0.000	0.000	0.000	0.000	0.000	Automatic
5Y	5	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	244.687	75.817	0.000	0.000	0.000	0.000	0.000	Automatic
6P	6	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
6X	6	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
6XY	6	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
6Y	6	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
7P	7	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
7X	7	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
7XY	7	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
7Y	7	245.252	L/r	231.928	Net Sect	38	5.00	245.252	0.000	0.000	231.928	0.000	0.000	0.000	0.000	0.000	Automatic
8P	8	245.252	L/r	198.000	Net Sect	38	5.00	245.252	272.000	326.249	198.000	0.000	0.000	0.000	0.000	0.000	Automatic
8X	8	245.252	L/r	198.000	Net Sect	38	5.00	245.252	272.000	326.249	198.000	0.000	0.000	0.000	0.000	0.000	Automatic
8XY	8	245.252	L/r	198.000	Net Sect	38	5.00	245.252	272.000	326.249	198.000	0.000	0.000	0.000	0.000	0.000	Automatic
8Y	8	245.252	L/r	198.000	Net Sect	38	5.00	245.252	272.000	326.249	198.000	0.000	0.000	0.000	0.000	0.000	Automatic
9P	9	312.662	L/r	355.562	Net Sect	39	5.11	312.662	0.000	0.000	355.562	0.000	0.000	0.000	0.000	0.000	Automatic
9X	9	312.662	L/r	355.562	Net Sect	39	5.11	312.662	0.000	0.000	355.562	0.000	0.000	0.000	0.000	0.000	Automatic
9XY	9	312.662	L/r	355.562	Net Sect	39	5.11	312.662	0.000	0.000	355.562	0.000	0.000	0.000	0.000	0.000	Automatic
9Y	9	312.662	L/r	355.562	Net Sect	39	5.11	312.662	0.000	0.000	355.562	0.000	0.000	0.000	0.000	0.000	Automatic
10P	10	312.662	L/r	300.000	Net Sect	39	5.11	312.662	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
10X	10	312.662	L/r	300.000	Net Sect	39	5.11	312.662	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
10XY	10	312.662	L/r	300.000	Net Sect	39	5.11	312.662	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
10Y	10	312.662	L/r	300.000	Net Sect	39	5.11	312.662	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
11P	11	312.662	L/r	300.000	Net Sect	39	5.11	312.662	0.000	0.000	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
11X	11	312.662	L/r	300.000	Net Sect	39	5.11	312.662	0.000	0.000	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
11XY	11	312.662	L/r	300.000	Net Sect	39	5.11	312.662	0.000	0.000	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
11Y	11	312.662	L/r	300.000	Net Sect	39	5.11	312.662	0.000	0.000	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
12P	12	307.458	L/r	300.000	Net Sect	44	11.57	307.458	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
12X	12	307.458	L/r	300.000	Net Sect	44	11.57	307.458	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
12XY	12	307.458	L/r	300.000	Net Sect	44	11.57	307.458	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
12Y	12	307.458	L/r	300.000	Net Sect	44	11.57	307.458	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
13P	13	305.312	L/r	300.000	Net Sect	46	24.18	305.312	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
13X	13	305.312	L/r	300.000	Net Sect	46	24.18	305.312	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
13XY	13	305.312	L/r	300.000	Net Sect	46	24.18	305.312	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
13Y	13	305.312	L/r	300.000	Net Sect	46	24.18	305.312	380.800	944.999	300.000	0.000	0.000	0.000	0.000	0.000	Automatic
14P	14	16.686	L/r	21.917	Net Sect	125	10.27	16.686	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
14X	14	16.686	L/r	21.917	Net Sect	125	10.27	16.686	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
14XY	14	16.686	L/r	21.917	Net Sect	125	10.27	16.686	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
14Y	14	16.686	L/r	21.917	Net Sect	125	10.27	16.686	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
15P	15	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
15X	15	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
15XY	15	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
15Y	15	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
16P	15	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
16X	15	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
16XY	15	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
16Y	15	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
17P	15	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
17X	15	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
17XY	15	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
17Y	15	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
18P	16	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
18X	16	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
18XY	16	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
18Y	16	27.259	L/r	29.774	Net Sect	122	6.00	27.259	54.400	65.250	29.774	0.000	0.000	0.000	0.000	0.000	Automatic
19P	16	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
19X	16	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
19XY	16	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
19Y	16	32.243	L/r	36.271	Net Sect	91	4.50	32.243	0.000	0.000	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
20P	16	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
20X	16	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
20XY	16	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
20Y	16	27.200	Shear	27.200	Shear	91	4.50	32.243	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
21P	18	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
21X	18	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
21XY	18	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
21Y	18	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
22P	18	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
22X	18	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
22XY	18	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic

22Y	18	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
23P	18	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	48.937	45.859	0.000	0.000	0.000	0.000	0.000	Automatic
23X	18	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	48.937	45.859	0.000	0.000	0.000	0.000	0.000	Automatic
23XY	18	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	48.937	45.859	0.000	0.000	0.000	0.000	0.000	Automatic
23Y	18	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	48.937	45.859	0.000	0.000	0.000	0.000	0.000	Automatic
24P	19	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
24X	19	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
24XY	19	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
24Y	19	43.565	L/r	44.624	Net Sect	91	6.00	43.565	54.400	65.250	44.624	0.000	0.000	0.000	0.000	0.000	Automatic
25P	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
25X	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
25XY	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
25Y	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	0.000	0.000	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
26P	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	65.250	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
26X	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	65.250	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
26XY	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	65.250	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
26Y	19	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	65.250	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
27P	21	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
27X	21	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
27XY	21	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
27Y	21	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
28P	21	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
28X	21	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
28XY	21	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
28Y	21	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
29P	21	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	61.172	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
29X	21	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	61.172	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
29XY	21	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	61.172	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
29Y	21	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	61.172	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
30P	22	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
30X	22	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
30XY	22	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
30Y	22	53.785	L/r	54.400	Shear	91	6.00	53.785	54.400	81.562	55.038	0.000	0.000	0.000	0.000	0.000	Automatic
31P	22	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
31X	22	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
31XY	22	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
31Y	22	58.971	L/r	63.159	Net Sect	68	4.50	58.971	0.000	0.000	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
32P	22	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
32X	22	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
32XY	22	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
32Y	22	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
33P	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
33X	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
33XY	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
33Y	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
34P	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
34X	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
34XY	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
34Y	24	208.793	L/r	217.181	Net Sect	40	5.25	208.793	0.000	0.000	217.181	0.000	0.000	0.000	0.000	0.000	Automatic
35P	24	108.800	Shear	108.800	Shear	40	5.31	208.505	108.800	261.000	191.193	0.000	0.000	0.000	0.000	0.000	Automatic
35X	24	108.800	Shear	108.800	Shear	40	5.31	208.505	108.800	261.000	191.193	0.000	0.000	0.000	0.000	0.000	Automatic
35XY	24	108.800	Shear	108.800	Shear	40	5.31	208.505	108.800	261.000	191.193	0.000	0.000	0.000	0.000	0.000	Automatic
35Y	24	108.800	Shear	108.800	Shear	40	5.31	208.505	108.800	261.000	191.193	0.000	0.000	0.000	0.000	0.000	Automatic
36P	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
36X	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
36XY	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
36Y	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
37P	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
37X	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
37XY	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
37Y	25	148.642	L/r	157.781	Net Sect	53	5.25	148.642	0.000	0.000	157.781	0.000	0.000	0.000	0.000	0.000	Automatic
38P	25	122.400	Shear	122.400	Shear	58	5.72	146.334	122.400	293.625	131.794	0.000	0.000	0.000	0.000	0.000	Automatic
38X	25	122.400	Shear	122.400	Shear	58	5.72	146.334	122.400	293.625	131.794	0.000	0.000	0.000	0.000	0.000	Automatic
38XY	25	122.400	Shear	122.400	Shear	58	5.72	146.334	122.400	293.625	131.794	0.000	0.000	0.000	0.000	0.000	Automatic
38Y	25	122.400	Shear	122.400	Shear	58	5.72	146.334	122.400	293.625	131.794	0.000	0.000	0.000	0.000	0.000	Automatic
39P	17	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	32.625	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
39X	17	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	32.625	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
39XY	17	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	32.625	51.121	0.000	0.000	0.000	0.000	0.000	Automatic
39Y	17	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	32.625	51.121	0.000	0.000	0.000	0.000	0.000	Automatic

40P	20	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	48.937	49.952	0.000	0.000	0.000	0.000	0.000	Automatic
40X	20	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	48.937	49.952	0.000	0.000	0.000	0.000	0.000	Automatic
40XY	20	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	48.937	49.952	0.000	0.000	0.000	0.000	0.000	Automatic
40Y	20	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	48.937	49.952	0.000	0.000	0.000	0.000	0.000	Automatic
41P	23	40.800	Shear	40.800	Shear	106	7.00	50.000	40.800	61.172	61.697	0.000	0.000	0.000	0.000	0.000	Automatic
41X	23	40.800	Shear	40.800	Shear	106	7.00	50.000	40.800	61.172	61.697	0.000	0.000	0.000	0.000	0.000	Automatic
41XY	23	40.800	Shear	40.800	Shear	106	7.00	50.000	40.800	61.172	61.697	0.000	0.000	0.000	0.000	0.000	Automatic
41Y	23	40.800	Shear	40.800	Shear	106	7.00	50.000	40.800	61.172	61.697	0.000	0.000	0.000	0.000	0.000	Automatic
42P	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
42X	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
42XY	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
42Y	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
43P	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
43X	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
43XY	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
43Y	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
44P	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
44X	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
44XY	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
44Y	42	0.072	L/r	6.265	Net Sect	1912	8.60	0.072	27.200	24.469	6.265	0.000	0.000	0.000	0.000	0.000	Automatic
45P	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
45X	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
45XY	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
45Y	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
46P	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
46X	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
46XY	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
46Y	41	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
47P	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
47X	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
47XY	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
47Y	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
48P	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
48X	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
48XY	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
48Y	40	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
49P	39	59.125	L/r	68.000	Shear	108	7.07	59.125	68.000	122.344	68.570	0.000	0.000	0.000	0.000	0.000	Automatic
49X	39	59.125	L/r	68.000	Shear	108	7.07	59.125	68.000	122.344	68.570	0.000	0.000	0.000	0.000	0.000	Automatic
49XY	39	59.125	L/r	68.000	Shear	108	7.07	59.125	68.000	122.344	68.570	0.000	0.000	0.000	0.000	0.000	Automatic
49Y	39	59.125	L/r	68.000	Shear	108	7.07	59.125	68.000	122.344	68.570	0.000	0.000	0.000	0.000	0.000	Automatic
50P	39	59.150	L/r	68.000	Shear	108	7.07	59.150	68.000	122.344	75.197	0.000	0.000	0.000	0.000	0.000	Automatic
50X	39	59.150	L/r	68.000	Shear	108	7.07	59.150	68.000	122.344	75.197	0.000	0.000	0.000	0.000	0.000	Automatic
50XY	39	59.150	L/r	68.000	Shear	108	7.07	59.150	68.000	122.344	75.197	0.000	0.000	0.000	0.000	0.000	Automatic
50Y	39	59.150	L/r	68.000	Shear	108	7.07	59.150	68.000	122.344	75.197	0.000	0.000	0.000	0.000	0.000	Automatic
51P	43	48.988	L/r	54.400	Shear	145	19.91	48.988	54.400	65.250	72.542	0.000	0.000	0.000	0.000	0.000	Automatic
51X	43	48.988	L/r	54.400	Shear	145	19.91	48.988	54.400	65.250	72.542	0.000	0.000	0.000	0.000	0.000	Automatic
51XY	43	48.988	L/r	54.400	Shear	145	19.91	48.988	54.400	65.250	72.542	0.000	0.000	0.000	0.000	0.000	Automatic
51Y	43	48.988	L/r	54.400	Shear	145	19.91	48.988	54.400	65.250	72.542	0.000	0.000	0.000	0.000	0.000	Automatic
52P	44	55.071	L/r	81.600	Shear	189	30.73	55.071	81.600	171.281	121.751	0.000	0.000	0.000	0.000	0.000	Automatic
52X	44	55.071	L/r	81.600	Shear	189	30.73	55.071	81.600	171.281	121.751	0.000	0.000	0.000	0.000	0.000	Automatic
52XY	44	55.071	L/r	81.600	Shear	189	30.73	55.071	81.600	171.281	121.751	0.000	0.000	0.000	0.000	0.000	Automatic
52Y	44	55.071	L/r	81.600	Shear	189	30.73	55.071	81.600	171.281	121.751	0.000	0.000	0.000	0.000	0.000	Automatic
53P	45	12.168	L/r	27.500	Net Sect	173	17.14	12.168	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
53X	45	12.168	L/r	27.500	Net Sect	173	17.14	12.168	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
53XY	45	12.168	L/r	27.500	Net Sect	173	17.14	12.168	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
53Y	45	12.168	L/r	27.500	Net Sect	173	17.14	12.168	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
54P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
54Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
55P	33	15.275	L/r	24.469	Bearing	157	7.81	15.275	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
55X	33	15.275	L/r	24.469	Bearing	157	7.81	15.275	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
55XY	33	15.275	L/r	24.469	Bearing	157	7.81	15.275	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
55Y	33	15.275	L/r	24.469	Bearing	157	7.81	15.275	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
56P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
56X	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
56XY	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
56Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
57P	33	18.584	L/r	24.469	Bearing	135	6.73	18.584	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
57X	33	18.584	L/r	24.469	Bearing	135	6.73	18.584	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
57XY	33	18.584	L/r	24.469	Bearing	135	6.73	18.584	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic

57Y	33	18.584	L/r	24.469	Bearing	135	6.73	18.584	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
58P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
58X	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
58XY	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
58Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
59P	34	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
59X	34	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
59XY	34	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
59Y	34	29.912	L/r	40.800	Shear	137	6.73	29.912	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
60P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
60Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
61P	31	32.946	L/r	40.800	Shear	128	7.81	32.946	40.800	48.937	44.531	0.000	0.000	0.000	0.000	0.000	Automatic
61X	31	32.946	L/r	40.800	Shear	128	7.81	32.946	40.800	48.937	44.531	0.000	0.000	0.000	0.000	0.000	Automatic
61XY	31	32.946	L/r	40.800	Shear	128	7.81	32.946	40.800	48.937	44.531	0.000	0.000	0.000	0.000	0.000	Automatic
61Y	31	32.946	L/r	40.800	Shear	128	7.81	32.946	40.800	48.937	44.531	0.000	0.000	0.000	0.000	0.000	Automatic
62P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
62X	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
62XY	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
62Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
63P	32	33.327	L/r	40.800	Shear	116	6.73	33.327	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
63X	32	33.327	L/r	40.800	Shear	116	6.73	33.327	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
63XY	32	33.327	L/r	40.800	Shear	116	6.73	33.327	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
63Y	32	33.327	L/r	40.800	Shear	116	6.73	33.327	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
64P	35	26.226	L/r	27.200	Shear	114	5.00	26.226	27.200	32.625	32.410	0.000	0.000	0.000	0.000	0.000	Automatic
64X	35	26.226	L/r	27.200	Shear	114	5.00	26.226	27.200	32.625	32.410	0.000	0.000	0.000	0.000	0.000	Automatic
64XY	35	26.226	L/r	27.200	Shear	114	5.00	26.226	27.200	32.625	32.410	0.000	0.000	0.000	0.000	0.000	Automatic
64Y	35	26.226	L/r	27.200	Shear	114	5.00	26.226	27.200	32.625	32.410	0.000	0.000	0.000	0.000	0.000	Automatic
65P	36	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
65X	36	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
65XY	36	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
65Y	36	41.379	L/r	47.613	Net Sect	102	6.73	41.379	54.400	65.250	47.613	0.000	0.000	0.000	0.000	0.000	Automatic
66P	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
66Y	26	10.390	L/r	16.214	Net Sect	152	5.00	10.390	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
67P	29	46.740	L/r	54.400	Shear	118	7.81	46.740	54.400	81.562	59.748	0.000	0.000	0.000	0.000	0.000	Automatic
67X	29	46.740	L/r	54.400	Shear	118	7.81	46.740	54.400	81.562	59.748	0.000	0.000	0.000	0.000	0.000	Automatic
67XY	29	46.740	L/r	54.400	Shear	118	7.81	46.740	54.400	81.562	59.748	0.000	0.000	0.000	0.000	0.000	Automatic
67Y	29	46.740	L/r	54.400	Shear	118	7.81	46.740	54.400	81.562	59.748	0.000	0.000	0.000	0.000	0.000	Automatic
68P	26	10.390	L/r	14.168	Net Sect	152	5.00	10.390	27.200	24.469	14.168	0.000	0.000	0.000	0.000	0.000	Automatic
68X	26	10.390	L/r	14.168	Net Sect	152	5.00	10.390	27.200	24.469	14.168	0.000	0.000	0.000	0.000	0.000	Automatic
68XY	26	10.390	L/r	14.168	Net Sect	152	5.00	10.390	27.200	24.469	14.168	0.000	0.000	0.000	0.000	0.000	Automatic
68Y	26	10.390	L/r	14.168	Net Sect	152	5.00	10.390	27.200	24.469	14.168	0.000	0.000	0.000	0.000	0.000	Automatic
69P	30	41.379	L/r	49.627	Net Sect	102	6.73	41.379	54.400	65.250	49.627	0.000	0.000	0.000	0.000	0.000	Automatic
69X	30	41.379	L/r	49.627	Net Sect	102	6.73	41.379	54.400	65.250	49.627	0.000	0.000	0.000	0.000	0.000	Automatic
69XY	30	41.379	L/r	49.627	Net Sect	102	6.73	41.379	54.400	65.250	49.627	0.000	0.000	0.000	0.000	0.000	Automatic
69Y	30	41.379	L/r	49.627	Net Sect	102	6.73	41.379	54.400	65.250	49.627	0.000	0.000	0.000	0.000	0.000	Automatic
70P	37	38.640	L/r	40.800	Shear	86	5.00	38.640	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
70X	37	38.640	L/r	40.800	Shear	86	5.00	38.640	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
70XY	37	38.640	L/r	40.800	Shear	86	5.00	38.640	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
70Y	37	38.640	L/r	40.800	Shear	86	5.00	38.640	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
71P	38	60.729	L/r	66.816	Net Sect	102	6.73	60.729	68.000	122.344	66.816	0.000	0.000	0.000	0.000	0.000	Automatic
71X	38	60.729	L/r	66.816	Net Sect	102	6.73	60.729	68.000	122.344	66.816	0.000	0.000	0.000	0.000	0.000	Automatic
71XY	38	60.729	L/r	66.816	Net Sect	102	6.73	60.729	68.000	122.344	66.816	0.000	0.000	0.000	0.000	0.000	Automatic
71Y	38	60.729	L/r	66.816	Net Sect	102	6.73	60.729	68.000	122.344	66.816	0.000	0.000	0.000	0.000	0.000	Automatic
72P	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
72Y	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
73P	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	70.324	0.000	0.000	0.000	0.000	0.000	Automatic
73X	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	70.324	0.000	0.000	0.000	0.000	0.000	Automatic
73XY	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	70.324	0.000	0.000	0.000	0.000	0.000	Automatic
73Y	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	70.324	0.000	0.000	0.000	0.000	0.000	Automatic
74P	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
74X	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
74XY	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
74Y	26	10.141	L/r	16.214	Net Sect	155	5.09	10.141	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
75P	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	68.960	0.000	0.000	0.000	0.000	0.000	Automatic
75X	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	68.960	0.000	0.000	0.000	0.000	0.000	Automatic
75XY	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	68.960	0.000	0.000	0.000	0.000	0.000	Automatic
75Y	27	57.974	L/r	68.000	Shear	111	7.31	57.974	68.000	122.344	68.960	0.000	0.000	0.000	0.000	0.000	Automatic
76P	28	54.400	Shear	54.400	Shear	77	5.09	56.998	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
76X	28	54.400	Shear	54.400	Shear	77	5.09	56.998	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic

76XY	28	54.400	Shear	54.400	Shear	77	5.09	56.998	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
76Y	28	54.400	Shear	54.400	Shear	77	5.09	56.998	54.400	81.562	63.159	0.000	0.000	0.000	0.000	0.000	Automatic
77P	46	128.184	L/r	103.105	Net Sect	59	7.35	128.184	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
77X	46	128.184	L/r	103.105	Net Sect	59	7.35	128.184	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
77XY	46	128.184	L/r	103.105	Net Sect	59	7.35	128.184	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
77Y	46	128.184	L/r	103.105	Net Sect	59	7.35	128.184	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
78P	46	126.951	L/r	103.105	Net Sect	62	7.66	126.951	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
78X	46	126.951	L/r	103.105	Net Sect	62	7.66	126.951	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
78XY	46	126.951	L/r	103.105	Net Sect	62	7.66	126.951	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
78Y	46	126.951	L/r	103.105	Net Sect	62	7.66	126.951	149.600	314.015	103.105	0.000	0.000	0.000	0.000	0.000	Automatic
79P	47	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
79X	47	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
79XY	47	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
79Y	47	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
80P	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
80X	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
80XY	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
80Y	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
81P	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
81X	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
81XY	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
81Y	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
82P	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
82X	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
82XY	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
82Y	48	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
83P	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
83X	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
83XY	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
83Y	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
84P	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
84X	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
84XY	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
84Y	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
85P	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
85X	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
85XY	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
85Y	49	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	61.172	44.745	0.000	0.000	0.000	0.000	0.000	Automatic
86P	50	21.099	L/r	27.200	Shear	129	9.41	21.099	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
86X	50	21.099	L/r	27.200	Shear	129	9.41	21.099	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
86XY	50	21.099	L/r	27.200	Shear	129	9.41	21.099	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
86Y	50	21.099	L/r	27.200	Shear	129	9.41	21.099	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
87P	51	18.637	L/r	24.469	Bearing	135	6.71	18.637	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
87X	51	18.637	L/r	24.469	Bearing	135	6.71	18.637	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
87XY	51	18.637	L/r	24.469	Bearing	135	6.71	18.637	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
87Y	51	18.637	L/r	24.469	Bearing	135	6.71	18.637	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
88P	51	14.513	L/r	24.469	Bearing	163	8.11	14.513	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
88X	51	14.513	L/r	24.469	Bearing	163	8.11	14.513	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
88XY	51	14.513	L/r	24.469	Bearing	163	8.11	14.513	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
88Y	51	14.513	L/r	24.469	Bearing	163	8.11	14.513	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
89P	52	3.750	L/r	19.184	Net Sect	289	18.75	3.750	27.200	24.469	19.184	0.000	0.000	0.000	0.000	0.000	Automatic
89X	52	3.750	L/r	19.184	Net Sect	289	18.75	3.750	27.200	24.469	19.184	0.000	0.000	0.000	0.000	0.000	Automatic
89XY	52	3.750	L/r	19.184	Net Sect	289	18.75	3.750	27.200	24.469	19.184	0.000	0.000	0.000	0.000	0.000	Automatic
89Y	52	3.750	L/r	19.184	Net Sect	289	18.75	3.750	27.200	24.469	19.184	0.000	0.000	0.000	0.000	0.000	Automatic
90P	53	6.868	L/r	28.846	Net Sect	287	10.40	6.868	40.800	48.937	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
90X	53	6.868	L/r	28.846	Net Sect	287	10.40	6.868	40.800	48.937	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
90XY	53	6.868	L/r	28.846	Net Sect	287	10.40	6.868	40.800	48.937	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
90Y	53	6.868	L/r	28.846	Net Sect	287	10.40	6.868	40.800	48.937	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
91P	54	5.252	L/r	27.500	Net Sect	282	22.09	5.252	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
91X	54	5.252	L/r	27.500	Net Sect	282	22.09	5.252	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
91XY	54	5.252	L/r	27.500	Net Sect	282	22.09	5.252	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
91Y	54	5.252	L/r	27.500	Net Sect	282	22.09	5.252	40.800	36.703	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
92P	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
92X	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
93P	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
93X	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
94P	**56**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**

KL/R value of 213.20 exceeds maximum of 200.00 for member "94P" ??

94X	**56**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**

KL/R value of 213.20 exceeds maximum of 200.00 for member "94X" ??																	
95P	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
95X	55	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
96P	**56**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
KL/R value of 213.20 exceeds maximum of 200.00 for member "96P" ??																	
96X	**56**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
KL/R value of 213.20 exceeds maximum of 200.00 for member "96X" ??																	
97P	57	39.830	L/r	40.800	Shear	122	7.00	39.830	40.800	61.172	53.952	0.000	0.000	0.000	0.000	0.000	Automatic
97X	57	39.830	L/r	40.800	Shear	122	7.00	39.830	40.800	61.172	53.952	0.000	0.000	0.000	0.000	0.000	Automatic
98P	58	33.037	L/r	39.835	Net Sect	103	5.41	33.037	40.800	48.937	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
98X	58	33.037	L/r	39.835	Net Sect	103	5.41	33.037	40.800	48.937	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
98XY	58	33.037	L/r	39.835	Net Sect	103	5.41	33.037	40.800	48.937	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
98Y	58	33.037	L/r	39.835	Net Sect	103	5.41	33.037	40.800	48.937	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
99P	59	25.022	L/r	27.200	Shear	138	12.74	25.022	27.200	32.625	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
99X	59	25.022	L/r	27.200	Shear	138	12.74	25.022	27.200	32.625	39.835	0.000	0.000	0.000	0.000	0.000	Automatic
100P	60	16.369	L/r	40.800	Shear	188	17.08	16.369	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
100X	60	16.369	L/r	40.800	Shear	188	17.08	16.369	40.800	48.937	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
101P	**61**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
KL/R value of 213.20 exceeds maximum of 200.00 for member "101P" ??																	
102P	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
102X	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
102XY	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
102Y	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
103P	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
103X	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
104P	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
104X	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
104XY	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
104Y	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
105P	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
105X	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
106P	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
106X	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
106XY	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
106Y	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
107P	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
107X	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
107XY	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
107Y	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
108P	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
108X	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
109P	**61**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
KL/R value of 213.20 exceeds maximum of 200.00 for member "109P" ??																	
110P	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
110X	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
110XY	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
110Y	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
111P	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
111X	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
112P	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
112X	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
112XY	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
112Y	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
113P	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
113X	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
114P	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
114X	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
114XY	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
114Y	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
115P	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
115X	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
115XY	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
115Y	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
116P	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
116X	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
117P	**61**	**4.471**	**L/r**	**12.234**	**Bearing**	**213**	**7.00**	**4.471**	**13.600**	**12.234**	**16.214**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
KL/R value of 213.20 exceeds maximum of 200.00 for member "117P" ??																	
118P	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
118X	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic

118XY	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
118Y	62	10.309	L/r	12.234	Bearing	140	9.22	10.309	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
119P	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
119X	63	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	32.625	28.846	0.000	0.000	0.000	0.000	0.000	Automatic
120P	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
120X	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
120XY	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
120Y	64	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
121P	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
121X	65	11.388	L/r	21.917	Net Sect	170	7.00	11.388	27.200	24.469	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
122P	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
122X	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
122XY	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
122Y	66	13.600	Shear	13.600	Shear	128	8.32	16.440	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
123P	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
123X	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
123XY	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
123Y	67	11.659	L/r	13.600	Shear	152	9.90	11.659	13.600	16.312	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
124P	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
124X	68	13.600	Shear	13.600	Shear	77	7.00	36.936	13.600	16.312	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
125P	69	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "125P" ??																			
126AP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "126AP" ??																			
126BP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "126BP" ??																			
127P	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "127P" ??																			
127X	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "127X" ??																			
128AP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "128AP" ??																			
128BP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "128BP" ??																			
129P	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "129P" ??																			
129X	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "129X" ??																			
130AP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "130AP" ??																			
130BP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "130BP" ??																			
131P	69	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "131P" ??																			
132AP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "132AP" ??																			
132BP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "132BP" ??																			
133P	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "133P" ??																			
133X	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "133X" ??																			
134AP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "134AP" ??																			
134BP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "134BP" ??																			
135P	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "135P" ??																			
135X	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "135X" ??																			
136AP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "136AP" ??																			
136BP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "136BP" ??																			
137P	69	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "137P" ??																			
138AP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "138AP" ??																			

138BP	70	5.168	L/r	12.234	Bearing	224	9.22	5.168	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 223.50 exceeds maximum of 200.00 for member "138BP" ??																		
139P	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "139P" ??																		
139X	71	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "139X" ??																		
140AP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "140AP" ??																		
140BP	72	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "140BP" ??																		
141P	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "141P" ??																		
141X	73	4.471	L/r	12.234	Bearing	213	7.00	4.471	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 213.20 exceeds maximum of 200.00 for member "141X" ??																		
142AP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "142AP" ??																		
142BP	74	6.344	L/r	12.234	Bearing	202	8.32	6.344	13.600	12.234	21.917	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 201.74 exceeds maximum of 200.00 for member "142BP" ??																		
143P	75	18.774	L/r	27.200	Shear	186	10.75	18.774	27.200	32.625	43.696	0.000	0.000	0.000	0.000	0.000	Automatic
144P	76	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 202.97 exceeds maximum of 200.00 for member "144P" ??																		
144X	76	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 202.97 exceeds maximum of 200.00 for member "144X" ??																		
144XY	76	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 202.97 exceeds maximum of 200.00 for member "144XY" ??																		
144Y	76	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 202.97 exceeds maximum of 200.00 for member "144Y" ??																		
145P	77	9.420	L/r	16.214	Net Sect	164	10.75	9.420	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
145X	77	9.420	L/r	16.214	Net Sect	164	10.75	9.420	27.200	24.469	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
146AP	78	29.570	L/r	36.271	Net Sect	109	5.38	29.570	40.800	48.937	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
146AX	78	29.570	L/r	36.271	Net Sect	109	5.38	29.570	40.800	48.937	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
146BP	78	29.570	L/r	36.271	Net Sect	109	5.38	29.570	40.800	48.937	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
146BX	78	29.570	L/r	36.271	Net Sect	109	5.38	29.570	40.800	48.937	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
147P	79	11.348	L/r	21.421	Net Sect	165	7.59	11.348	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
147X	79	11.348	L/r	21.421	Net Sect	165	7.59	11.348	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
147XY	79	11.348	L/r	21.421	Net Sect	165	7.59	11.348	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
147Y	79	11.348	L/r	21.421	Net Sect	165	7.59	11.348	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
148P	80	11.417	L/r	21.421	Net Sect	164	7.56	11.417	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
148X	80	11.417	L/r	21.421	Net Sect	164	7.56	11.417	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
148XY	80	11.417	L/r	21.421	Net Sect	164	7.56	11.417	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
148Y	80	11.417	L/r	21.421	Net Sect	164	7.56	11.417	40.800	48.937	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
149P	81	12.534	L/r	21.421	Net Sect	163	5.31	12.534	27.200	32.625	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
149X	81	12.534	L/r	21.421	Net Sect	163	5.31	12.534	27.200	32.625	21.421	0.000	0.000	0.000	0.000	0.000	Automatic
150P	82	7.568	L/r	24.469	Bearing	255	12.67	7.568	27.200	24.469	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 203.04 exceeds maximum of 200.00 for member "150P" ??																		
151P	83	3.237	L/r	12.234	Bearing	251	16.45	3.237	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 250.54 exceeds maximum of 200.00 for member "151P" ??																		
151X	83	3.237	L/r	12.234	Bearing	251	16.45	3.237	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 250.54 exceeds maximum of 200.00 for member "151X" ??																		
151XY	83	3.237	L/r	12.234	Bearing	251	16.45	3.237	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 250.54 exceeds maximum of 200.00 for member "151XY" ??																		
151Y	83	3.237	L/r	12.234	Bearing	251	16.45	3.237	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 250.54 exceeds maximum of 200.00 for member "151Y" ??																		
152P	84	5.462	L/r	12.234	Bearing	193	12.67	5.462	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
152X	84	5.462	L/r	12.234	Bearing	193	12.67	5.462	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
153P	85	19.149	L/r	27.200	Shear	163	12.67	19.149	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
153X	85	19.149	L/r	27.200	Shear	163	12.67	19.149	27.200	32.625	36.271	0.000	0.000	0.000	0.000	0.000	Automatic
154P	86	4.513	L/r	12.234	Bearing	212	13.93	4.513	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 212.19 exceeds maximum of 200.00 for member "154P" ??																		
154X	86	4.513	L/r	12.234	Bearing	212	13.93	4.513	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 212.19 exceeds maximum of 200.00 for member "154X" ??																		
154XY	86	4.513	L/r	12.234	Bearing	212	13.93	4.513	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 212.19 exceeds maximum of 200.00 for member "154XY" ??																		
154Y	86	4.513	L/r	12.234	Bearing	212	13.93	4.513	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 212.19 exceeds maximum of 200.00 for member "154Y" ??																		
155P	87	10.549	L/r	12.234	Bearing	172	17.08	10.549	13.600	12.234	27.500	0.000	0.000	0.000	0.000	0.000	Automatic
156P	88	1.496	L/r	12.234	Bearing	369	24.20	1.496	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 368.56 exceeds maximum of 200.00 for member "156P" ??																		

156X	88	1.496	L/r 12.234	Bearing 369	24.20	1.496	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 368.56 exceeds maximum of 200.00 for member "156X" ??															
156XY	88	1.496	L/r 12.234	Bearing 369	24.20	1.496	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 368.56 exceeds maximum of 200.00 for member "156XY" ??															
156Y	88	1.496	L/r 12.234	Bearing 369	24.20	1.496	13.600	12.234	16.214	0.000	0.000	0.000	0.000	0.000	Automatic
KL/R value of 368.56 exceeds maximum of 200.00 for member "156Y" ??															

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	0.0613	3.898	4.024
2P	0.104	4.522	4.535
3P	0.164	5.708	5.592
4P	0.138	4.807	5.125
5P	0.148	5.713	5.709
6P	0.218	6.729	6.576
7P	0.229	6.826	7.151
8P	0.25	7.171	7.317
9P	0.28	7.361	7.605
14P	0.661	15.209	14.806
15P	0.0615	2.467	2.021
16P	0.0615	2.467	2.021
17P	0.0671	2.467	2.021
18P	0.0582	2.542	1.729
19P	0.0801	4.015	2.979
20P	0.0652	3.016	2.735
21P	0.0955	4.869	3.417
22P	0.0707	2.604	2.313
23P	0.119	4.814	4.188
24P	0.0684	3.042	1.729
25P	0.106	4.918	3.292
26P	0.0828	3.435	2.562
27P	0.125	6.020	3.833
28P	0.0796	3.042	2.312
29P	0.142	6.098	4.917
30P	0.078	3.042	1.729
31P	0.125	5.058	3.396
32P	0.0949	3.819	2.875
33P	0.15	6.020	3.833
34P	0.088	3.042	2.312
35P	0.178	6.389	5.140
36P	0.213	5.667	3.784
37P	0.23	6.333	3.017
38P	0.299	9.167	5.324
39P	0.244	7.208	5.815
40P	0.125	3.042	1.480
41P	0.29	8.265	6.887
44P	0.125	5.937	8.109
45P	0.059	1.550	2.472
1X	0.0613	3.898	4.024
2X	0.117	4.991	5.264
2XY	0.104	4.522	4.535
2Y	0.117	4.991	5.264
3X	0.164	5.708	5.592
3XY	0.164	5.708	5.592
3Y	0.164	5.708	5.592
4X	0.138	4.807	5.125
4XY	0.138	4.807	5.125
4Y	0.138	4.807	5.125
5X	0.161	6.182	6.438
5XY	0.148	5.713	5.709
5Y	0.161	6.182	6.438
6X	0.218	6.729	6.576
6XY	0.218	6.729	6.576
6Y	0.218	6.729	6.576
7X	0.229	6.826	7.151

7XY	0.229	6.826	7.151
7Y	0.229	6.826	7.151
8X	0.263	7.640	8.046
8XY	0.25	7.171	7.317
8Y	0.263	7.640	8.046
9X	0.28	7.361	7.605
9XY	0.28	7.361	7.605
9Y	0.28	7.361	7.605
14X	0.661	15.209	14.806
14XY	0.661	15.209	14.806
14Y	0.661	15.209	14.806
15X	0.0615	2.467	2.021
15XY	0.0615	2.467	2.021
15Y	0.0615	2.467	2.021
16X	0.0615	2.467	2.021
16XY	0.0615	2.467	2.021
16Y	0.0615	2.467	2.021
17X	0.0671	2.467	2.021
17XY	0.0671	2.467	2.021
17Y	0.0671	2.467	2.021
18Y	0.0582	2.542	1.729
19X	0.0815	4.171	2.979
19XY	0.0801	4.015	2.979
19Y	0.0815	4.171	2.979
20X	0.0652	3.016	2.735
20XY	0.0652	3.016	2.735
20Y	0.0652	3.016	2.735
21Y	0.0955	4.869	3.417
22X	0.0707	2.604	2.313
22XY	0.0707	2.604	2.313
22Y	0.0707	2.604	2.313
23X	0.119	4.814	4.188
23XY	0.119	4.814	4.188
23Y	0.119	4.814	4.188
24Y	0.0684	3.042	1.729
25X	0.107	5.074	3.292
25XY	0.106	4.918	3.292
25Y	0.107	5.074	3.292
26X	0.0828	3.435	2.562
26XY	0.0828	3.435	2.562
26Y	0.0828	3.435	2.562
27Y	0.125	6.020	3.833
28X	0.0796	3.042	2.312
28XY	0.0796	3.042	2.312
28Y	0.0796	3.042	2.312
29X	0.142	6.098	4.917
29XY	0.142	6.098	4.917
29Y	0.142	6.098	4.917
30Y	0.078	3.042	1.729
31X	0.126	5.215	3.396
31XY	0.125	5.058	3.396
31Y	0.126	5.215	3.396
32X	0.0949	3.819	2.875
32XY	0.0949	3.819	2.875
32Y	0.0949	3.819	2.875
33Y	0.15	6.020	3.833
34X	0.088	3.042	2.312
34XY	0.088	3.042	2.312
34Y	0.088	3.042	2.312
35X	0.178	6.389	5.140
35XY	0.178	6.389	5.140
35Y	0.178	6.389	5.140
36Y	0.213	5.667	3.784
37X	0.23	6.333	3.017
37XY	0.23	6.333	3.017
37Y	0.23	6.333	3.017
38X	0.299	9.167	5.324
38XY	0.299	9.167	5.324
38Y	0.299	9.167	5.324

39Y	0.244	7.208	5.815
40X	0.125	3.042	1.480
40XY	0.125	3.042	1.480
40Y	0.125	3.042	1.480
41X	0.29	8.265	6.887
41XY	0.29	8.265	6.887
41Y	0.29	8.265	6.887
44X	0.125	5.937	8.109
45X	0.059	1.550	2.472
10S	0.236	6.829	6.906
11S	0.29	7.798	6.243
12S	0.537	14.282	14.602
13S	0.63	17.204	19.043
42S	0.972	23.048	16.380
43S	0.117	4.058	6.398
10X	0.236	6.829	6.906
10XY	0.236	6.829	6.906
10Y	0.236	6.829	6.906
11X	0.29	7.798	6.243
11XY	0.29	7.798	6.243
11Y	0.29	7.798	6.243
12X	0.537	14.282	14.602
12XY	0.537	14.282	14.602
12Y	0.537	14.282	14.602
13X	0.63	17.204	19.043
13XY	0.63	17.204	19.043
13Y	0.63	17.204	19.043
42Y	0.972	23.048	16.380
43X	0.117	4.058	6.398
Total	29.8	936.018	822.886

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)
TOWER	29.815	936.018	822.886	377.563	200.865
Total	29.815	936.018	822.886	377.563	200.865

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)
TOWER	29.815	31.305	4555.386	4783.155
Total	29.815	31.305	4555.386	4783.155

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)
TOWER	94.000	0.000	154	517	0.00	26.15	1105.150	28.00	38.15	3119.650

*** 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)
C1	1P	C-EX1	No Limit
C2	1X	C-EX1	No Limit
C3	15P	C-EX1	No Limit
C4	15X	C-EX1	No Limit
C5	15XY	C-EX1	No Limit
C6	15Y	C-EX1	No Limit
C7	16P	C-EX1	No Limit
C8	16X	C-EX1	No Limit
C9	16XY	C-EX1	No Limit
C10	16Y	C-EX1	No Limit
C11	17P	C-EX1	No Limit
C12	17X	C-EX1	No Limit
C13	17XY	C-EX1	No Limit
C14	17Y	C-EX1	No Limit
C15	22P	C-EX1	No Limit
C16	22X	C-EX1	No Limit
C17	22XY	C-EX1	No Limit
C18	22Y	C-EX1	No Limit
C19	28P	C-EX1	No Limit
C20	28X	C-EX1	No Limit
C21	28XY	C-EX1	No Limit
C22	28Y	C-EX1	No Limit
C23	34P	C-EX1	No Limit
C24	34X	C-EX1	No Limit
C25	34XY	C-EX1	No Limit
C26	34Y	C-EX1	No Limit
C27	3XY	C-EX1	No Limit
C28	5XY	C-EX1	No Limit
C29	7XY	C-EX1	No Limit
C30	9XY	C-EX1	No Limit
C31	11XY	C-EX1	No Limit
C32	13XY	C-EX1	No Limit
C33	14XY	C-EX1	No Limit
C34	3Y	C-EX1	No Limit
C35	5Y	C-EX1	No Limit
C36	7Y	C-EX1	No Limit
C37	9Y	C-EX1	No Limit
C38	11Y	C-EX1	No Limit
C39	13Y	C-EX1	No Limit
C40	14Y	C-EX1	No Limit
C41	3X	C-EX1	No Limit
C42	3P	C-EX1	No Limit
C43	7X	C-EX1	No Limit
C44	7P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\0817400.wi - hpc-t-mobile\co05 - ct11356-cl&p tower - rte 123\engineering\structural\rev (1)\calcs\pls-tower\norwalk1102.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)	94.00 (ft)	
Structure height	94.00 (ft)	
Structure height above ground	94.00 (ft)	

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	46 loads	Wind on All	4	0	0.500	56.000	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	46 loads	Wind on All	31.9	0	0.000	0.000	
NESC Broken Wire	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	46 loads	Wind on All	4	0	0.500	56.000	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	1234	3810	0	0.438 Comp Shield Wire
1P	1603	5652	0	OPGW-120 Shield Wire
15P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
15X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
15XY	1462	3309	0	TERN 795 Conductor Wire (Back)
15Y	1462	3309	0	TERN 795 Conductor Wire (Back)
22P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
22X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
22XY	1462	3309	0	TERN 795 Conductor Wire (Back)
22Y	1462	3309	0	TERN 795 Conductor Wire (Back)
16P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
16X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
16XY	1462	3309	0	TERN 795 Conductor Wire (Back)
16Y	1462	3309	0	TERN 795 Conductor Wire (Back)
28P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
28X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
28XY	1462	3309	0	TERN 795 Conductor Wire (Back)
28Y	1462	3309	0	TERN 795 Conductor Wire (Back)
17P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
17X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
17XY	1462	3309	0	TERN 795 Conductor Wire (Back)
17Y	1462	3309	0	TERN 795 Conductor Wire (Back)
34P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
34X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
34XY	1462	3309	0	TERN 795 Conductor Wire (Back)
34Y	1462	3309	0	TERN 795 Conductor Wire (Back)
3XY	344	124	0	Coax Cable
5XY	344	124	0	Coax Cable
7XY	344	124	0	Coax Cable
9XY	344	124	0	Coax Cable
11XY	516	187	0	Coax Cable
13XY	688	249	0	Coax Cable

3Y	344	124	0	
5Y	344	124	0	Coax Cable
7Y	344	124	0	Coax Cable
9Y	344	124	0	Coax Cable
11Y	516	187	0	Coax Cable
13Y	688	249	0	Coax Cable
3X	3132	980	0	Coax Cable
3XY	3132	980	0	Existing Mast Top Connection
7X	555.5	-360	0	Existing Mast Top Connection
7XY	555.5	-360	0	Existing Mast Bottom Connection
3P	3397	1121.5	0	Existing Mast Bottom Connection
3Y	3397	1121.5	0	Proposed Mast Top Connection
7P	555.5	-419	0	Proposed Mast Top Connection
7Y	555.5	-419	0	Proposed Mast Bottom Connection
			0	Proposed Mast Bottom Connection

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)
TOWER	94.00	0.00	47.00	10.00	10.00	1.600	17190.9	0.00	1.600	0.0	12161	59119

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	339	2270	0	0.438 Comp Shield Wire
1P	430	4939	0	OPGW-120 Shield Wire
15P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
15X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
15XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
15Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
22P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
22X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
22XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
22Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
16P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
16X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
16XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
16Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
28P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
28X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
28XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
28Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
17P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
17X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
17XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
17Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
34P	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
34X	571.5	2743	0	TERN 795 Conductor Wire (Ahead)
34XY	571.5	2743	0	TERN 795 Conductor Wire (Back)
34Y	571.5	2743	0	TERN 795 Conductor Wire (Back)
3XY	79	358	0	Coax Cable
5XY	79	358	0	Coax Cable
7XY	79	358	0	Coax Cable
9XY	79	358	0	Coax Cable
11XY	119	538	0	Coax Cable
13XY	158	717	0	Coax Cable
3Y	87	358	0	Coax Cable
5Y	87	358	0	Coax Cable
7Y	87	358	0	Coax Cable
9Y	87	358	0	Coax Cable
11Y	130	538	0	Coax Cable
13Y	173	717	0	Coax Cable

3X	1608	3562.5	0	Existing Mast Top Connection
3XY	1608	3562.5	0	Existing Mast Top Connection
7X	327.5	-1385.5	0	Existing Mast Bottom Connection
7XY	327.5	-1385.5	0	Existing Mast Bottom Connection
3P	1714	4063	0	Proposed Mast Top Connection
3Y	1714	4063	0	Proposed Mast Top Connection
7P	327.5	-1597.5	0	Proposed Mast Bottom Connection
7Y	327.5	-1597.5	0	Proposed Mast Bottom Connection

Section Load Case Information (Standard) 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 Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
TOWER	94.00	0.00	47.00	31.90	31.90	1.600	42000.0	0.00	1.600	0.0	0	31305

Point Loads for Load Case "NESC Broken Wire":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	1234	3810	0	0.438 Comp Shield Wire (Broken)
1P	1603	5652	0	OPGW-120 Shield Wire
15P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
15X	0	0	0	TERN 795 Conductor Wire (Ahead-Broken)
15XY	1462	3309	11252	TERN 795 Conductor Wire (Back)
15Y	1462	3309	0	TERN 795 Conductor Wire (Back)
22P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
22X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
22XY	1462	3309	0	TERN 795 Conductor Wire (Back)
22Y	1462	3309	0	TERN 795 Conductor Wire (Back)
16P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
16X	1462	3309	0	TERN 795 Conductor Wire (Ahead-Broken)
16XY	1462	3309	0	TERN 795 Conductor Wire (Back)
16Y	1462	3309	0	TERN 795 Conductor Wire (Back)
28P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
28X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
28XY	1462	3309	0	TERN 795 Conductor Wire (Back)
28Y	1462	3309	0	TERN 795 Conductor Wire (Back)
17P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
17X	1462	3309	0	TERN 795 Conductor Wire (Ahead-Broken)
17XY	1462	3309	0	TERN 795 Conductor Wire (Back)
17Y	1462	3309	0	TERN 795 Conductor Wire (Back)
34P	1462	3309	0	TERN 795 Conductor Wire (Ahead)
34X	1462	3309	0	TERN 795 Conductor Wire (Ahead)
34XY	1462	3309	0	TERN 795 Conductor Wire (Back)
34Y	1462	3309	0	TERN 795 Conductor Wire (Back)
3XY	344	124	0	Coax Cable
5XY	344	124	0	Coax Cable
7XY	344	124	0	Coax Cable
9XY	344	124	0	Coax Cable
11XY	516	187	0	Coax Cable
13XY	688	249	0	Coax Cable
3Y	344	124	0	Coax Cable
5Y	344	124	0	Coax Cable
7Y	344	124	0	Coax Cable
9Y	344	124	0	Coax Cable
11Y	516	187	0	Coax Cable
13Y	688	249	0	Coax Cable
3X	3132	980	0	Existing Mast Top Connection
3XY	3132	980	0	Existing Mast Top Connection
7X	555.5	-360	0	Existing Mast Bottom Connection
7XY	555.5	-360	0	Existing Mast Bottom Connection
3P	3397	1121.5	0	Proposed Mast Top Connection
3Y	3397	1121.5	0	Proposed Mast Top Connection

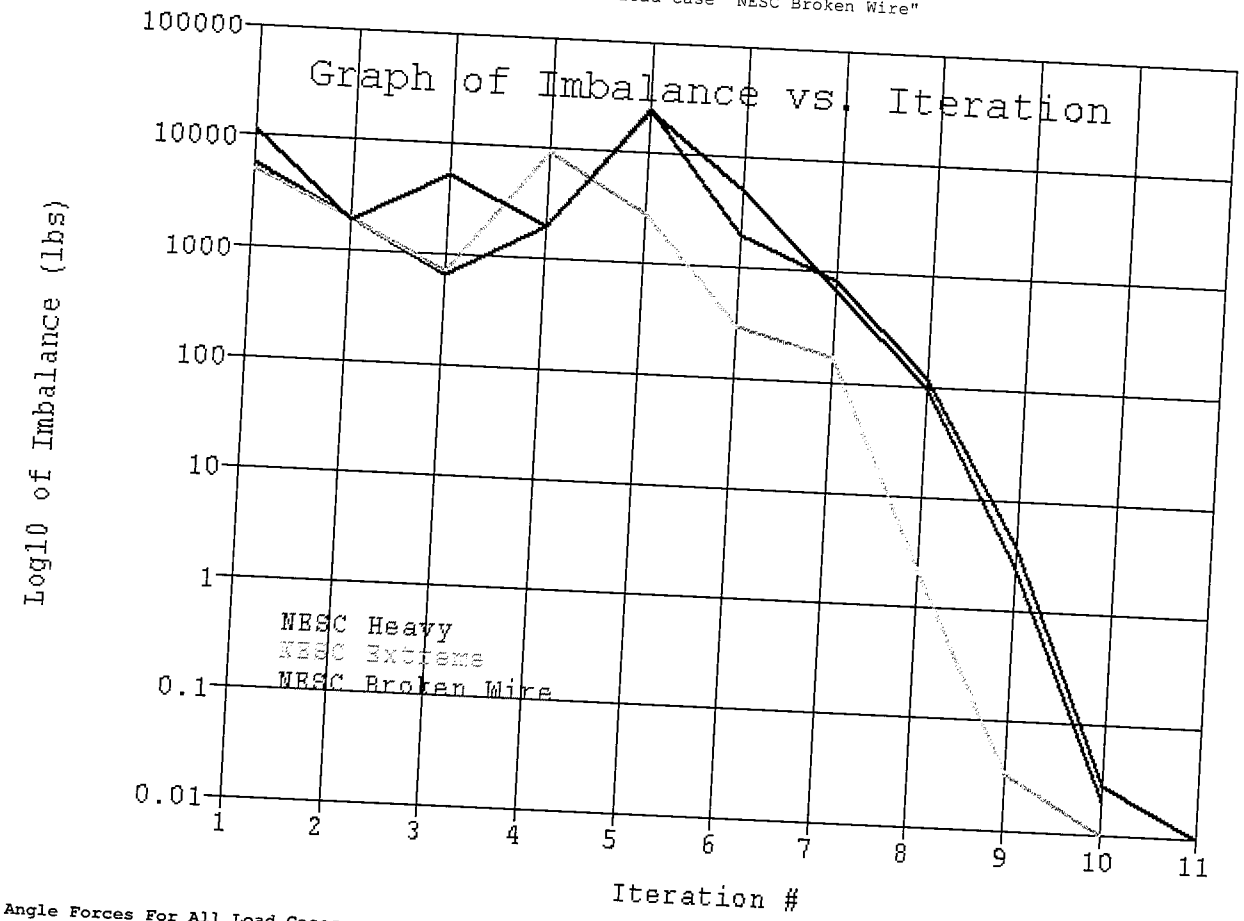
7P	555.5	-419	0	Proposed Mast Bottom Connection
7Y	555.5	-419	0	Proposed Mast Bottom Connection

Section Load Case Information (Standard) for "NESC 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)
TOWER	94.00	0.00	47.00	10.00	10.00	1.600	17190.9	0.00	1.600	0.0	12161	59119

*** Analysis Results:

Maximum element usage is 92.14% for Angle "156XY" in load case "NESC Broken Wire"
Maximum insulator usage is 23.70% for Clamp "C5" in load case "NESC 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)
1	1P	38.22	0.000	-6.745	-6.745	-5.566	-6.725
1	1X	17.56	3.849	0.000	3.756	2.649	3.849
1	1XY	16.07	3.523	0.000	3.523	2.362	3.430
1	1Y	40.35	0.000	-7.122	-7.102	-5.934	-7.122
2	2P	5.48	5.483	0.000	1.250	5.483	0.834
2	2X	9.24	0.000	-9.846	-9.846	-9.528	-8.576
2	2XY	9.36	0.000	-9.974	-9.974	-9.720	-7.362
2	2Y	5.44	5.446	0.000	1.178	5.446	0.928

3	3P	4.10	3.394	-3.374	-2.645	3.394	-3.374
3	3X	14.96	0.000	-15.940	-13.195	-10.996	-15.940
3	3XY	12.86	0.000	-13.695	-13.695	-11.328	-7.349
3	3Y	4.03	3.333	-3.230	-3.033	3.333	-3.230
4	4P	28.78	0.000	-30.659	-26.701	-23.727	-30.659
4	4X	19.33	15.993	0.000	8.118	15.993	2.316
4	4XY	19.28	15.953	0.000	7.885	15.953	12.637
4	4Y	25.33	0.000	-26.985	-26.985	-23.667	-21.652
5	5P	13.94	0.000	-14.848	-11.664	-5.176	-14.848
5	5X	24.75	0.000	-26.358	-11.973	-4.766	-26.358
5	5XY	11.87	3.112	-12.641	-12.641	-4.899	3.112
5	5Y	11.50	0.000	-12.246	-12.246	-5.272	-8.869
6	6P	6.51	0.000	-15.967	-12.848	-5.943	-15.967
6	6X	14.46	0.000	-35.453	-12.621	-4.878	-35.453
6	6XY	5.45	10.500	-13.374	-13.374	-5.198	10.500
6	6Y	5.44	0.000	-13.347	-13.347	-5.855	-10.376
7	7P	23.49	0.000	-57.613	-52.618	-48.272	-57.613
7	7X	14.96	34.688	-7.197	22.510	34.688	-7.197
7	7XY	21.20	49.175	0.000	21.361	34.123	49.175
7	7Y	21.85	0.000	-53.592	-53.592	-48.286	-44.832
8	8P	15.09	0.000	-37.010	-33.435	-26.689	-37.010
8	8X	16.11	11.335	-39.514	-1.193	11.335	-39.514
8	8XY	17.99	35.614	-2.513	-2.513	10.369	35.614
8	8Y	13.93	0.000	-34.173	-34.173	-26.269	-28.262
9	9P	12.37	0.000	-38.683	-36.103	-28.727	-38.683
9	9X	14.14	11.982	-44.203	-1.600	11.982	-44.203
9	9XY	10.93	38.870	-3.255	-3.255	10.695	38.870
9	9Y	11.82	0.000	-36.949	-36.949	-28.093	-32.439
10	10P	27.07	0.000	-84.643	-81.883	-75.339	-84.643
10	10X	18.65	55.965	0.000	39.047	55.965	1.228
10	10XY	24.02	72.048	0.000	37.709	54.682	72.048
10	10Y	26.33	0.000	-82.339	-82.339	-74.497	-74.459
11	11P	25.31	0.000	-79.126	-76.118	-68.987	-79.126
11	11X	16.20	48.614	-4.113	31.903	48.614	-4.113
11	11XY	21.05	63.140	0.000	30.159	47.357	63.140
11	11Y	24.65	0.000	-77.085	-77.085	-68.393	-69.450
12	12P	30.88	0.000	-94.943	-90.293	-84.885	-94.943
12	12X	21.82	65.467	0.000	46.380	65.467	15.195
12	12XY	24.16	72.472	0.000	45.101	64.337	72.472
12	12Y	29.55	0.000	-90.849	-90.849	-84.207	-84.840
13	13P	31.58	0.000	-96.407	-94.614	-90.086	-96.407
13	13X	20.28	60.848	0.000	42.512	60.848	12.666
13	13XY	22.29	66.855	0.000	40.789	59.352	66.855
13	13Y	31.26	0.000	-95.434	-95.434	-89.209	-88.276
14	14P	28.07	6.153	0.000	6.153	5.618	6.109
14	14X	29.19	0.000	-4.871	-4.753	-3.029	-4.871
14	14XY	27.00	0.000	-4.506	-4.506	-2.725	-4.387
14	14Y	29.98	6.571	0.000	6.528	6.005	6.571
15	15P	10.76	0.724	-2.932	-0.390	0.724	-2.932
15	15X	6.40	0.825	-1.745	-0.338	0.825	-1.745
15	15XY	3.38	1.007	-0.243	-0.189	1.007	-0.243
15	15Y	3.16	0.942	-0.210	-0.210	0.942	0.872
15	16P	40.52	14.697	0.000	13.913	14.450	14.697
15	16X	46.99	0.000	-15.152	-10.701	-11.266	-15.152
15	16XY	34.50	0.000	-11.125	-10.587	-11.125	-6.883
15	16Y	40.54	14.705	0.000	14.124	14.705	11.721
15	17P	45.15	12.281	0.000	11.640	12.281	11.595
15	17X	46.22	0.000	-12.573	-9.015	-10.087	-12.573
15	17XY	36.79	0.000	-10.007	-8.954	-10.007	-6.094
15	17Y	46.05	12.527	0.000	11.840	12.527	10.273
16	18P	36.85	0.000	-10.046	-6.321	-6.834	-10.046
16	18X	23.45	6.981	0.000	6.686	6.981	5.905
16	18XY	28.10	8.367	0.000	6.630	6.883	8.367
16	18Y	25.20	0.000	-6.868	-6.385	-6.868	-1.234
16	19P	36.68	0.000	-11.826	-9.748	-9.804	-11.826
16	19X	27.80	10.082	0.000	10.082	9.942	7.702
16	19XY	37.08	13.449	0.000	10.029	9.782	13.449
16	19Y	30.45	0.000	-9.817	-9.817	-9.776	-6.279
16	20P	20.75	5.643	0.000	2.087	5.643	1.382

16	20X	40.98	0.000	-11.146	-5.941	-6.840	-11.146
16	20XY	26.32	4.073	-7.159	-6.060	-7.159	4.073
16	20Y	21.92	5.963	0.000	2.211	5.963	2.951
18	21P	4.83	0.000	-2.104	-0.491	-0.609	-2.104
18	21X	1.72	0.000	-0.750	-0.450	-0.555	-0.750
18	21XY	1.57	0.000	-0.686	-0.603	-0.686	-0.364
18	21Y	2.16	0.966	-0.739	-0.584	-0.739	0.966
18	22P	64.41	32.930	0.000	29.607	32.750	32.930
18	22X	67.40	0.000	-32.168	-26.349	-32.168	-31.255
18	22XY	68.27	0.000	-32.583	-26.580	-32.583	-17.970
18	22Y	64.36	32.903	0.000	29.590	32.903	23.092
18	23P	49.07	20.021	0.000	18.540	20.021	19.185
18	23X	47.66	0.000	-19.445	-16.229	-19.445	-17.709
18	23XY	48.25	0.000	-19.688	-16.372	-19.688	-13.495
18	23Y	49.62	20.245	0.000	18.655	20.245	15.815
19	24P	41.00	0.000	-17.861	-14.962	-17.555	-17.861
19	24X	39.43	17.597	0.000	15.150	17.597	17.518
19	24XY	39.63	17.684	0.000	15.171	17.684	10.517
19	24Y	40.39	0.000	-17.597	-14.968	-17.597	-10.679
19	25P	44.02	0.000	-21.009	-18.700	-21.009	-20.094
19	25X	41.18	21.053	0.000	18.892	21.053	19.750
19	25XY	41.05	20.985	0.000	18.923	20.985	15.700
19	25Y	43.78	0.000	-20.895	-18.718	-20.895	-15.865
19	26P	1.86	0.949	-0.233	0.397	0.949	-0.233
19	26X	8.38	0.000	-3.998	-3.998	-2.321	-2.852
19	26XY	11.30	0.000	-5.392	-3.964	-2.247	-5.392
19	26Y	2.21	1.132	0.000	0.444	0.936	1.132
21	27P	2.00	0.000	-1.075	-0.423	-0.134	-1.075
21	27X	0.72	0.000	-0.388	-0.388	-0.072	-0.041
21	27XY	3.23	0.000	-1.737	-0.400	-0.049	-1.737
21	27Y	1.31	0.000	-0.706	-0.366	-0.078	-0.706
21	28P	70.67	44.635	0.000	41.723	43.317	44.635
21	28X	70.66	0.000	-41.667	-38.165	-41.667	-41.121
21	28XY	71.18	0.000	-41.976	-38.249	-41.976	-32.768
21	28Y	69.19	43.697	0.000	41.846	43.697	34.937
21	29P	63.52	25.916	0.000	24.851	25.275	25.916
21	29X	59.21	0.000	-24.160	-22.089	-24.160	-23.052
21	29XY	59.52	0.000	-24.284	-22.129	-24.284	-20.158
21	29Y	62.55	25.519	0.000	24.994	25.519	21.584
22	30P	51.27	0.000	-27.578	-23.604	-24.203	-27.578
22	30X	41.29	22.461	0.000	20.019	22.461	19.943
22	30XY	41.39	22.519	0.000	19.905	22.519	18.038
22	30Y	45.18	0.000	-24.299	-23.713	-24.299	-18.136
22	31P	50.85	0.000	-29.987	-27.060	-27.269	-29.987
22	31X	40.37	25.497	0.000	23.400	25.497	22.288
22	31XY	40.23	25.407	0.000	23.290	25.407	22.434
22	31Y	46.15	0.000	-27.217	-27.177	-27.217	-22.616
22	32P	10.95	0.000	-5.954	-4.680	-3.553	-5.954
22	32X	5.06	1.140	-2.755	-1.122	1.140	-2.755
22	32XY	2.44	0.845	-1.330	-1.330	0.845	-0.069
22	32Y	8.58	0.000	-4.668	-4.668	-3.323	-2.940
24	33P	1.48	0.000	-3.080	-2.145	-1.370	-3.080
24	33X	0.76	0.000	-1.592	-1.592	-0.716	-1.066
24	33XY	0.91	0.000	-1.907	-1.636	-0.751	-1.907
24	33Y	1.04	0.000	-2.181	-2.181	-1.357	-0.971
24	34P	14.26	30.967	0.000	28.315	30.126	30.967
24	34X	15.23	0.000	-31.806	-28.742	-30.424	-31.806
24	34XY	14.77	0.000	-30.846	-28.923	-30.846	-23.759
24	34Y	14.05	30.525	0.000	28.415	30.525	24.187
24	35P	7.23	7.862	0.000	7.735	7.862	7.848
24	35X	6.46	0.000	-7.027	-5.683	-7.027	-3.304
24	35XY	7.03	0.000	-7.654	-5.735	-7.334	-7.654
24	35Y	7.53	8.196	0.000	7.893	8.196	7.333
25	36P	8.12	0.000	-12.068	-7.879	-12.068	-6.394
25	36X	16.95	26.751	0.000	21.477	19.369	26.751
25	36XY	13.79	21.762	0.000	21.762	19.586	15.420
25	36Y	8.19	0.000	-12.171	-7.707	-12.171	-8.437
25	37P	8.17	0.000	-12.144	-7.915	-12.144	-6.430
25	37X	16.98	26.786	0.000	21.512	19.445	26.786

25	37XY	13.82	21.798	0.000	21.798	19.662	15.455
25	37Y	8.24	0.000	-12.246	-7.743	-12.246	-8.473
25	38P	18.50	0.000	-22.645	-18.067	-22.645	-18.455
25	38X	30.95	37.889	0.000	29.013	28.249	37.889
25	38XY	24.07	29.460	0.000	29.460	28.748	18.996
25	38Y	18.79	0.000	-23.002	-17.934	-23.002	-15.947
17	39P	6.98	1.900	0.000	1.131	1.900	1.110
17	39X	18.91	0.000	-5.144	-5.054	-3.457	-5.144
17	39XY	18.57	0.770	-5.051	-5.051	-3.454	0.770
17	39Y	6.99	1.902	0.000	1.134	1.902	1.139
20	40P	4.27	1.743	0.000	0.996	1.743	0.970
20	40X	12.27	0.000	-4.974	-4.974	-3.325	-4.954
20	40XY	12.34	0.000	-5.002	-4.970	-3.322	-5.002
20	40Y	4.28	1.747	0.000	1.000	1.747	1.006
23	41P	4.65	1.899	0.000	1.218	1.899	1.213
23	41X	12.11	0.000	-4.941	-4.941	-3.377	-4.912
23	41XY	12.19	0.000	-4.974	-4.938	-3.373	-4.974
23	41Y	4.66	1.900	0.000	1.222	1.900	1.220
42	42P	43.57	2.730	0.000	2.730	1.118	2.730
42	42X	42.39	2.656	0.000	2.656	1.025	0.160
42	42XY	42.39	2.656	0.000	2.656	1.025	2.649
42	42Y	43.58	2.730	0.000	2.730	1.119	2.727
42	43P	44.07	2.761	0.000	2.761	1.158	2.759
42	43X	41.38	2.593	0.000	2.593	0.966	2.568
42	43XY	41.97	2.629	0.000	2.592	0.966	2.629
42	43Y	44.06	2.760	0.000	2.760	1.157	2.756
42	44P	43.40	2.719	0.000	2.719	1.102	2.718
42	44X	42.42	2.658	0.000	2.658	1.038	2.626
42	44XY	42.96	2.692	0.000	2.657	1.037	2.692
42	44Y	43.42	2.720	0.000	2.719	1.103	2.720
41	45P	65.19	0.000	-19.498	-16.832	-18.895	-19.498
41	45X	46.62	19.022	0.000	15.143	19.022	18.683
41	45XY	47.26	19.282	0.000	15.343	19.282	8.353
41	45Y	63.03	0.000	-18.854	-16.767	-18.854	-12.682
41	46P	46.42	18.939	0.000	16.364	18.759	18.939
41	46X	63.18	0.000	-18.898	-15.066	-18.898	-18.716
41	46XY	64.03	0.000	-19.153	-15.258	-19.153	-8.152
41	46Y	45.96	18.752	0.000	16.317	18.752	12.317
40	47P	74.06	0.000	-30.644	-28.300	-30.644	-30.438
40	47X	60.81	28.951	0.000	25.574	28.951	26.348
40	47XY	60.44	28.779	0.000	25.485	28.779	22.566
40	47Y	74.02	0.000	-30.627	-28.394	-30.627	-23.654
40	48P	56.03	26.678	0.000	24.971	26.609	26.678
40	48X	62.89	0.000	-26.024	-23.980	-26.024	-25.833
40	48XY	63.61	0.000	-26.323	-24.111	-26.323	-19.967
40	48Y	56.69	26.994	0.000	25.158	26.994	21.042
39	49P	61.78	0.000	-36.528	-34.229	-34.552	-36.528
39	49X	47.89	32.563	0.000	30.081	32.563	31.477
39	49XY	48.00	32.638	0.000	30.079	32.638	26.455
39	49Y	58.48	0.000	-34.577	-34.232	-34.577	-30.099
39	50P	48.49	32.975	0.000	30.909	32.054	32.975
39	50X	54.75	0.000	-32.382	-29.380	-31.229	-32.382
39	50XY	53.04	0.000	-31.372	-29.442	-31.372	-24.307
39	50Y	47.32	32.180	0.000	30.931	32.180	27.087
43	51P	47.97	26.095	0.000	20.734	26.095	21.343
43	51X	79.38	0.000	-38.885	-30.683	-31.308	-38.885
43	51XY	65.03	0.000	-31.858	-31.129	-31.858	-21.335
43	51Y	48.74	26.514	0.000	20.643	26.514	18.480
44	52P	84.52	0.000	-46.546	-39.876	-43.201	-46.546
44	52X	46.56	37.990	0.000	30.081	37.990	31.141
44	52XY	47.99	39.158	0.000	30.304	39.158	27.185
44	52Y	80.74	0.000	-44.465	-40.496	-44.465	-31.734
45	53P	3.80	1.045	-0.098	0.371	1.045	-0.098
45	53X	5.29	0.440	-0.643	-0.192	-0.643	0.440
45	53XY	9.75	0.000	-1.187	-0.423	-1.187	-1.077
45	53Y	5.64	1.552	0.000	0.490	1.552	1.185
26	54P	1.31	0.000	-0.137	-0.137	-0.070	-0.127
26	54Y	1.44	0.000	-0.150	-0.138	-0.072	-0.150
33	55P	51.92	12.703	0.000	9.599	9.946	12.703

33	55X	79.53	0.000	-12.148	-9.015	-9.659	-12.148
33	55XY	63.25	0.000	-9.661	-9.015	-9.661	-5.549
33	55Y	40.67	9.951	0.000	9.601	9.951	6.166
26	56P	9.62	1.560	0.000	1.557	0.591	1.560
26	56X	10.09	1.637	0.000	1.620	0.665	1.637
26	56XY	9.99	1.620	0.000	1.620	0.665	1.593
26	56Y	9.60	1.556	0.000	1.556	0.590	1.553
33	57P	70.87	0.000	-13.170	-10.487	-9.359	-13.170
33	57X	32.33	7.911	0.000	5.263	7.239	7.911
33	57XY	29.61	7.246	0.000	5.270	7.246	2.359
33	57Y	56.43	0.000	-10.487	-10.487	-9.359	-7.524
26	58P	30.96	5.020	0.000	5.020	4.615	4.974
26	58X	40.77	0.000	-4.236	-4.162	-2.579	-4.236
26	58XY	38.00	0.000	-3.948	-3.948	-2.316	-3.901
26	58Y	33.29	5.398	0.000	5.340	4.945	5.398
34	59P	51.70	0.000	-15.465	-12.644	-15.465	-12.575
34	59X	40.82	16.655	0.000	15.694	15.266	16.655
34	59XY	38.23	15.599	0.000	15.599	15.165	11.510
34	59Y	53.04	0.000	-15.866	-13.008	-15.866	-11.957
26	60P	1.51	0.000	-0.157	-0.157	-0.071	-0.150
26	60Y	1.61	0.000	-0.167	-0.156	-0.070	-0.167
31	61P	63.53	25.918	0.000	21.500	24.734	25.918
31	61X	76.47	0.000	-25.193	-20.758	-24.376	-25.193
31	61XY	74.60	0.000	-24.577	-20.769	-24.577	-13.744
31	61Y	61.11	24.934	0.000	21.508	24.934	14.499
26	62P	9.18	1.489	0.000	1.489	0.517	1.482
26	62X	10.44	1.693	0.000	1.673	0.733	1.693
26	62XY	10.33	1.674	0.000	1.674	0.735	1.644
26	62Y	9.29	1.506	0.000	1.490	0.517	1.506
32	63P	72.86	0.000	-24.283	-20.517	-21.807	-24.283
32	63X	47.90	19.545	0.000	15.057	19.545	18.802
32	63XY	48.32	19.715	0.000	15.066	19.715	9.146
32	63Y	65.95	0.000	-21.980	-20.529	-21.980	-14.576
35	64P	48.71	13.249	0.000	11.400	13.178	13.249
35	64X	52.16	0.000	-13.679	-10.958	-13.679	-13.615
35	64XY	52.88	0.000	-13.867	-11.098	-13.867	-5.923
35	64Y	48.42	13.171	0.000	11.365	13.171	8.515
36	65P	63.17	0.000	-26.138	-22.468	-26.138	-23.315
36	65X	57.90	27.570	0.000	25.333	27.570	25.868
36	65XY	57.71	27.476	0.000	25.421	27.476	21.583
36	65Y	62.68	0.000	-25.936	-22.502	-25.936	-19.909
26	66P	1.59	0.000	-0.165	-0.165	-0.081	-0.155
26	66Y	1.65	0.000	-0.171	-0.165	-0.081	-0.171
29	67P	62.04	33.749	0.000	30.538	32.323	33.749
29	67X	70.50	0.000	-32.949	-29.709	-31.898	-32.949
29	67XY	68.70	0.000	-32.109	-29.702	-32.109	-24.013
29	67Y	59.81	32.534	0.000	30.530	32.534	24.854
26	68P	10.19	1.443	0.000	1.443	0.473	1.439
26	68X	12.47	1.766	0.000	1.733	0.784	1.766
26	68XY	12.24	1.735	0.000	1.735	0.786	1.695
26	68Y	10.33	1.463	0.000	1.443	0.472	1.463
30	69P	74.75	0.000	-30.931	-28.187	-28.226	-30.931
30	69X	52.13	25.869	0.000	22.554	25.869	25.258
30	69XY	52.48	26.045	0.000	22.548	26.045	17.767
30	69Y	68.64	0.000	-28.401	-28.182	-28.401	-23.378
37	70P	46.25	18.871	0.000	17.607	18.871	18.825
37	70X	49.02	0.000	-18.940	-17.534	-18.940	-18.841
37	70XY	49.58	0.000	-19.158	-17.628	-19.158	-14.646
37	70Y	46.93	19.147	0.000	17.742	19.147	14.806
38	71P	48.34	0.000	-29.356	-27.143	-29.356	-28.227
38	71X	45.17	30.178	0.000	29.558	30.178	29.859
38	71XY	45.44	30.358	0.000	29.685	30.358	27.143
38	71Y	48.70	0.000	-29.572	-27.333	-29.572	-24.283
26	72P	5.20	0.000	-0.527	-0.452	-0.234	-0.527
26	72Y	4.51	0.000	-0.457	-0.457	-0.235	-0.382
27	73P	35.77	24.321	0.000	21.703	22.723	24.321
27	73X	39.22	0.000	-22.736	-20.249	-21.955	-22.736
27	73XY	38.34	0.000	-22.229	-20.342	-22.229	-16.511
27	73Y	33.82	23.000	0.000	21.805	23.000	17.848

26	74P	0.85	0.138	0.000	0.138	0.043	0.114
26	74X	1.72	0.279	0.000	0.254	0.165	0.279
26	74XY	1.58	0.256	0.000	0.256	0.169	0.226
26	74Y	0.95	0.153	0.000	0.138	0.040	0.153
27	75P	40.02	0.000	-23.199	-20.818	-21.366	-23.199
27	75X	29.66	20.169	0.000	17.658	19.638	20.169
27	75XY	29.27	19.901	0.000	17.755	19.901	14.016
27	75Y	37.31	0.000	-21.627	-20.907	-21.627	-17.289
28	76P	40.12	21.826	0.000	20.437	20.894	21.826
28	76X	35.93	0.000	-19.548	-17.573	-19.548	-17.710
28	76XY	36.02	0.000	-19.596	-17.540	-19.596	-16.150
28	76Y	38.54	20.963	0.000	20.503	20.963	17.867
46	77P	6.21	0.000	-7.965	-7.492	-7.965	-7.076
46	77X	8.34	8.602	0.000	8.123	8.602	5.657
46	77XY	9.58	9.878	0.000	7.966	8.391	9.878
46	77Y	6.08	0.000	-7.792	-7.499	-7.792	-7.336
46	78P	0.92	0.000	-1.168	-1.038	-0.187	-1.168
46	78X	5.21	0.000	-6.619	-3.662	-2.085	-6.619
46	78XY	2.98	0.000	-3.782	-3.782	-2.153	-0.573
46	78Y	0.89	0.000	-1.128	-1.128	-0.175	-0.843
47	79P	6.37	1.033	0.000	0.368	0.401	1.033
47	79X	9.98	0.000	-1.226	-0.419	-0.324	-1.226
47	79XY	3.21	0.272	-0.395	-0.395	-0.297	0.272
47	79Y	5.02	0.374	-0.617	0.343	0.374	-0.617
48	80P	3.28	0.892	0.000	0.731	0.892	0.314
48	80X	25.10	6.826	-0.978	-0.762	-0.978	6.826
48	80XY	30.65	0.000	-7.926	-0.738	-0.896	-7.926
48	80Y	4.66	1.267	0.000	0.711	0.815	1.267
48	81P	5.36	0.000	-1.386	-0.804	-0.899	-1.386
48	81X	29.54	8.034	0.000	0.767	0.943	8.034
48	81XY	26.76	1.017	-6.921	0.786	1.017	-6.921
48	81Y	3.74	0.000	-0.968	-0.818	-0.968	-0.417
48	82P	2.77	0.000	-0.717	-0.717	-0.272	-0.523
48	82X	20.56	5.593	-0.727	-0.727	-0.350	5.593
48	82XY	28.23	0.000	-7.301	-0.654	-0.257	-7.301
48	82Y	5.45	0.000	-1.411	-0.789	-0.362	-1.411
49	83P	2.16	0.882	0.000	0.763	0.882	0.052
49	83X	17.74	7.238	-0.798	-0.599	-0.798	7.238
49	83XY	19.84	0.000	-8.097	-0.527	-0.571	-8.097
49	83Y	3.76	1.533	0.000	0.691	0.657	1.533
49	84P	3.76	0.000	-1.535	-0.695	-0.699	-1.535
49	84X	20.33	8.296	0.000	0.695	0.685	8.296
49	84XY	17.63	0.908	-7.194	0.768	0.908	-7.194
49	84Y	2.24	0.000	-0.915	-0.753	-0.915	-0.109
49	85P	5.75	0.000	-2.346	-1.964	-1.380	-2.346
49	85X	14.74	6.016	-0.395	-0.395	0.349	6.016
49	85XY	17.36	0.603	-7.081	-0.288	0.603	-7.081
49	85Y	5.19	0.000	-2.118	-2.118	-1.652	-2.044
50	86P	5.40	0.768	-1.139	0.706	0.768	-1.139
50	86X	8.24	0.000	-1.738	-0.863	-0.968	-1.738
50	86XY	5.00	0.000	-1.056	-1.056	-0.838	-0.088
50	86Y	10.08	2.742	0.000	0.404	0.526	2.742
51	87P	13.43	0.000	-2.502	-2.502	-2.275	-0.673
51	87X	11.63	2.846	0.000	1.202	1.816	2.846
51	87XY	7.02	1.719	-0.314	1.441	1.719	-0.314
51	87Y	23.74	0.000	-4.424	-2.173	-2.035	-4.424
51	88P	28.57	0.000	-4.146	-2.880	-2.589	-4.146
51	88X	8.03	1.964	-0.422	1.485	1.964	-0.422
51	88XY	12.22	2.990	0.000	1.214	2.064	2.990
51	88Y	22.37	0.000	-3.247	-3.247	-2.846	-2.497
52	89P	84.39	0.538	-3.165	-3.118	-3.165	0.538
52	89X	11.57	2.220	0.000	0.653	1.119	2.220
52	89XY	21.57	1.001	-0.809	0.858	1.001	-0.809
52	89Y	77.86	0.000	-2.920	-2.807	-2.920	0.000
53	90P	15.56	4.488	0.000	2.042	4.488	0.977
53	90X	27.56	7.949	0.000	5.207	7.949	4.594
53	90XY	28.35	8.177	0.000	4.986	8.177	5.431
53	90Y	14.21	4.099	0.000	1.617	4.099	2.640
54	91P	9.69	2.665	0.000	0.818	2.665	2.252

54	91X	21.13	5.810	0.000	3.294	5.810	3.966
54	91XY	19.98	5.494	0.000	3.600	5.494	2.809
54	91Y	11.66	3.205	-0.054	1.408	3.205	-0.054
55	92P	9.54	2.090	0.000	2.090	1.640	1.551
55	92X	13.16	0.000	-1.498	-0.926	-0.587	-1.498
55	93P	13.59	0.000	-1.547	-1.035	-1.547	-0.977
55	93X	8.63	1.891	0.000	1.891	1.849	1.701
56	94P	10.14	1.240	0.000	1.240	0.992	0.769
56	94X	11.97	0.000	-0.535	-0.065	-0.535	-0.506
55	95P	5.75	0.000	-0.655	-0.251	-0.655	-0.166
55	95X	7.54	1.653	0.000	1.640	1.217	1.653
56	96P	14.66	1.794	0.000	1.794	1.547	1.482
56	96X	21.13	0.000	-0.945	-0.416	-0.945	-0.651
57	97P	8.07	0.000	-3.216	-3.216	-2.643	-3.165
57	97X	3.63	1.483	0.000	0.522	1.483	0.565
58	98P	3.69	1.469	0.000	1.459	1.340	1.469
58	98X	1.56	0.000	-0.516	-0.132	-0.516	-0.036
58	98XY	1.56	0.000	-0.515	-0.186	-0.515	-0.267
58	98Y	3.49	1.391	0.000	1.391	1.304	1.213
59	99P	14.74	4.010	0.000	4.009	4.010	1.667
59	99X	9.88	0.000	-2.472	-1.936	-2.472	-1.856
60	100P	13.24	0.000	-2.167	-0.015	-2.167	-2.089
60	100X	46.39	0.000	-7.594	-5.085	-7.594	-4.994
61	101P	3.12	0.000	-0.139	-0.024	-0.007	-0.139
62	102P	23.11	0.000	-2.383	-1.038	-1.087	-2.383
62	102X	20.93	2.561	0.000	1.069	1.095	2.561
62	102XY	9.39	1.149	-0.309	1.065	1.149	-0.309
62	102Y	11.07	0.494	-1.141	-1.033	-1.141	0.494
63	103P	6.81	1.854	0.000	1.734	1.854	1.600
63	103X	12.66	0.000	-1.881	-1.840	-1.881	-1.880
64	104P	17.17	0.000	-2.336	-1.127	-1.172	-2.336
64	104X	18.58	2.527	0.000	1.225	1.200	2.527
64	104XY	9.17	1.248	-0.092	1.222	1.248	-0.092
64	104Y	8.98	0.239	-1.222	-1.124	-1.222	0.239
65	105P	3.18	0.697	0.000	0.697	0.417	0.631
65	105X	6.56	0.000	-0.747	-0.493	-0.362	-0.747
66	106P	7.43	0.713	-1.010	0.282	0.713	-1.010
66	106X	7.16	0.974	-0.817	-0.632	-0.817	0.974
66	106XY	11.92	0.000	-1.621	-0.628	-0.758	-1.621
66	106Y	11.63	1.581	0.000	0.290	0.669	1.581
67	107P	0.36	0.049	-0.003	0.002	0.049	-0.003
67	107X	75.78	0.000	-8.835	-0.657	-0.321	-8.835
67	107XY	51.69	7.029	-0.654	-0.654	-0.316	7.029
67	107Y	0.39	0.054	0.000	0.007	0.054	0.036
68	108P	0.26	0.000	-0.036	-0.002	-0.036	-0.010
68	108X	36.70	0.464	-4.991	0.464	0.226	-4.991
61	109P	0.32	0.016	-0.014	-0.014	-0.006	0.016
62	110P	29.76	0.000	-3.068	-1.864	-2.126	-3.068
62	110X	24.79	3.033	0.000	1.880	2.131	3.033
62	110XY	18.55	2.270	0.000	1.872	2.270	0.443
62	110Y	21.94	0.000	-2.262	-1.852	-2.262	-0.458
63	111P	11.37	3.092	0.000	2.705	3.092	2.590
63	111X	20.84	0.000	-3.096	-2.732	-3.096	-2.549
64	112P	19.44	0.000	-2.643	-1.537	-1.626	-2.643
64	112X	19.32	2.627	0.000	1.555	1.632	2.627
64	112XY	12.90	1.754	0.000	1.546	1.754	0.287
64	112Y	12.89	0.000	-1.753	-1.530	-1.753	-0.323
65	113P	5.13	1.124	0.000	0.979	1.124	0.924
65	113X	10.01	0.000	-1.140	-0.992	-1.140	-0.926
66	114P	6.36	0.367	-0.865	0.320	0.367	-0.865
66	114X	6.39	0.869	-0.372	-0.333	-0.372	0.869
66	114XY	11.05	0.000	-1.503	-0.318	-0.218	-1.503
66	114Y	11.40	1.550	0.000	0.336	0.246	1.550
67	115P	1.65	0.225	0.000	0.157	0.225	0.152
67	115X	6.00	0.000	-0.700	-0.700	-0.441	-0.697
67	115XY	5.97	0.000	-0.695	-0.695	-0.435	-0.695
67	115Y	1.69	0.229	0.000	0.162	0.229	0.201
68	116P	1.13	0.000	-0.154	-0.105	-0.154	-0.117
68	116X	3.59	0.489	0.000	0.489	0.305	0.488

61	117P	1.75	0.214	0.000	0.205	0.095	0.214
62	118P	29.78	0.000	-3.070	-2.249	-2.269	-3.070
62	118X	22.67	2.774	0.000	1.970	2.138	2.774
62	118XY	18.55	2.269	0.000	1.967	2.269	0.974
62	118Y	23.26	0.000	-2.398	-2.241	-2.398	-1.257
63	119P	14.48	3.938	0.000	3.837	3.938	3.715
63	119X	25.13	0.000	-3.734	-3.443	-3.734	-3.295
64	120P	24.10	0.000	-3.278	-2.527	-2.508	-3.278
64	120X	22.48	3.057	0.000	2.337	2.408	3.057
64	120XY	18.56	2.524	0.000	2.332	2.524	1.431
64	120Y	19.32	0.000	-2.628	-2.523	-2.628	-1.631
65	121P	13.06	0.000	-1.488	-1.333	-1.488	-1.304
65	121X	7.71	1.689	0.000	1.689	1.610	1.639
66	122P	20.75	0.000	-2.822	-1.540	-1.300	-2.822
66	122X	13.02	1.771	0.000	0.553	0.862	1.771
66	122XY	7.53	1.024	-0.706	0.577	1.024	-0.706
66	122Y	11.30	0.000	-1.537	-1.537	-1.426	-0.166
67	123P	0.93	0.070	-0.108	-0.108	0.070	-0.108
67	123X	7.04	0.000	-0.821	-0.821	-0.450	-0.809
67	123XY	7.04	0.000	-0.821	-0.817	-0.445	-0.821
67	123Y	0.88	0.074	-0.103	-0.103	0.074	-0.095
68	124P	0.78	0.106	-0.018	0.106	-0.018	0.102
68	124X	4.05	0.551	0.000	0.551	0.288	0.550
69	125P	30.01	0.000	-1.342	-0.017	-0.020	-1.342
70	126AP	14.40	1.762	0.000	0.017	0.020	1.762
70	126BP	14.52	1.776	0.000	0.030	0.036	1.776
71	127P	30.36	0.000	-1.357	-0.032	-0.033	-1.357
71	127X	30.04	0.000	-1.343	-0.014	-0.019	-1.343
72	128AP	13.11	1.603	0.000	0.031	0.035	1.603
72	128BP	13.06	1.598	0.000	0.020	0.021	1.598
73	129P	79.28	0.000	-3.545	-2.229	-2.056	-3.545
73	129X	13.01	1.592	0.000	1.592	1.007	0.305
74	130AP	14.30	1.750	0.000	0.186	0.194	1.750
74	130BP	11.53	1.410	-0.098	-0.078	-0.098	1.410
69	131P	34.97	0.000	-1.564	-0.034	0.000	-1.564
70	132AP	16.50	2.019	-0.053	-0.000	-0.053	2.019
70	132BP	17.21	2.105	0.000	0.091	0.053	2.105
71	133P	35.28	0.000	-1.577	-0.051	-0.019	-1.577
71	133X	35.45	0.000	-1.585	-0.040	-0.007	-1.585
72	134AP	15.65	1.915	0.000	0.116	0.090	1.915
72	134BP	15.07	1.844	-0.034	0.009	-0.034	1.844
73	135P	34.95	0.000	-1.563	-0.077	-0.052	-1.563
73	135X	34.96	0.007	-1.563	-0.023	0.007	-1.563
74	136AP	14.90	1.823	0.000	0.069	0.031	1.823
74	136BP	15.52	1.899	0.000	0.065	0.031	1.899
69	137P	26.90	0.000	-1.203	-0.040	-0.019	-1.203
70	138AP	12.49	1.528	-0.041	-0.008	-0.041	1.528
70	138BP	13.46	1.646	0.000	0.115	0.091	1.646
71	139P	27.00	0.000	-1.207	-0.050	-0.028	-1.207
71	139X	27.67	0.000	-1.237	-0.062	-0.040	-1.237
72	140AP	12.31	1.506	0.000	0.148	0.132	1.506
72	140BP	11.52	1.409	-0.012	0.013	-0.012	1.409
73	141P	28.48	0.000	-1.273	-0.170	-0.158	-1.273
73	141X	25.29	0.052	-1.131	0.032	0.052	-1.131
74	142AP	11.56	1.414	0.000	0.121	0.093	1.414
74	142BP	11.82	1.446	0.000	0.067	0.040	1.446
75	143P	7.15	1.944	0.000	1.944	1.230	1.932
76	144P	17.61	0.189	-0.868	-0.868	-0.425	0.189
76	144X	52.13	0.000	-2.571	-1.537	-1.084	-2.571
76	144XY	31.06	0.000	-1.532	-1.532	-1.050	-0.467
76	144Y	39.11	0.000	-1.929	-0.875	-0.461	-1.929
77	145P	7.22	0.000	-0.680	-0.680	-0.433	-0.680
77	145X	7.92	0.000	-0.746	-0.746	-0.462	-0.745
78	146AP	7.41	2.688	0.000	2.336	1.409	2.688
78	146AX	7.44	2.698	0.000	2.698	1.787	2.272
78	146BP	6.46	2.341	0.000	2.341	1.399	2.007
78	146BX	8.60	3.118	0.000	2.708	1.807	3.118
79	147P	11.89	0.000	-1.350	-1.350	-0.997	-0.871
79	147X	15.10	0.000	-1.714	-1.125	-0.572	-1.714

79	147XY	9.79	0.000	-1.110	-1.110	-0.544	-0.529
79	147Y	16.08	0.000	-1.825	-1.342	-1.011	-1.825
80	148P	10.67	0.000	-1.218	-1.218	-0.678	-0.561
80	148X	16.20	0.000	-1.850	-1.275	-0.904	-1.850
80	148XY	11.17	0.000	-1.276	-1.276	-0.886	-0.706
80	148Y	16.50	0.000	-1.884	-1.220	-0.688	-1.884
81	149P	8.57	1.836	0.000	1.833	1.281	1.836
81	149X	7.59	1.627	0.000	1.622	0.909	1.627
82	150P	5.48	0.000	-0.414	-0.391	-0.202	-0.414
83	151P	19.31	0.000	-0.625	-0.492	-0.625	-0.383
83	151X	7.38	0.902	0.000	0.902	0.838	0.815
83	151XY	7.77	0.951	0.000	0.923	0.896	0.951
83	151Y	21.14	0.000	-0.684	-0.512	-0.684	-0.519
84	152P	1.21	0.000	-0.066	-0.066	-0.040	-0.035
84	152X	0.93	0.000	-0.051	-0.051	-0.024	-0.051
85	153P	1.20	0.024	-0.230	-0.230	-0.030	0.024
85	153X	3.57	0.000	-0.685	-0.685	-0.516	-0.671
86	154P	2.81	0.344	-0.001	0.344	0.302	-0.001
86	154X	0.76	0.092	-0.006	0.092	-0.006	0.090
86	154XY	0.96	0.117	0.000	0.112	0.046	0.117
86	154Y	2.69	0.329	-0.075	0.329	0.253	-0.075
87	155P	2.87	0.351	-0.010	-0.010	0.351	0.088
88	156P	53.96	0.373	-0.807	0.179	0.373	-0.807
88	156X	77.08	0.153	-1.153	-0.675	-1.153	0.153
88	156XY	92.14	0.000	-1.378	-0.594	-0.921	-1.378
88	156Y	6.16	0.754	0.000	0.096	0.137	0.754

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.001829	0.1834	-0.01886	0.0000	0.0000	0.0000	-0.001829	14.18	93.98
2P	-0.0009175	0.1521	-0.01924	-0.0817	0.0055	-0.0131	3.499	15.15	84.98
3P	-0.001112	0.1448	-0.01929	-0.1089	-0.0052	-0.0069	3.499	15.14	79.98
4P	-0.0002981	0.1314	-0.01915	-0.2026	-0.0062	-0.0108	3.5	15.13	74.98
5P	-0.0003351	0.1137	-0.01784	-0.1482	0.0039	-0.0148	3.5	15.11	69.98
6P	-0.0003946	0.1048	-0.01728	-0.1631	-0.0064	-0.0157	3.5	15.1	64.98
7P	0.0002041	0.08773	-0.01696	-0.2309	-0.0054	-0.0235	3.5	15.09	59.98
8P	0.0002825	0.06824	-0.01575	-0.1674	0.0054	-0.0313	3.5	15.07	54.98
9P	-6.725e-005	0.05788	-0.015	-0.1356	-0.0071	-0.0435	3.5	15.06	49.98
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	-0.000785	0.1449	-0.03292	-0.1128	-0.0052	-0.0006	3.499	22.14	79.97
16P	-0.0002249	0.1049	-0.03386	-0.1221	-0.0063	0.0058	3.5	22.1	64.97
17P	0.0002031	0.05798	-0.03378	-0.1627	-0.0069	0.0184	3.5	22.06	49.97
18P	-0.002783	0.1494	-0.009437	-0.0060	-0.0021	-0.0028	3.497	0.1494	84.99
19P	-0.00269	0.1493	-0.009028	0.0271	0.0009	0.0003	3.497	6.149	84.99
20P	-0.002361	0.1508	-0.009068	-0.0837	0.0032	-0.0137	3.498	10.65	84.99
21P	-0.001369	0.1465	-0.009403	0.0024	-0.0043	-0.0038	3.499	0.1465	79.99
22P	-0.001029	0.1456	-0.009404	0.0096	-0.0047	-0.0025	3.499	6.146	79.99
23P	-0.0009974	0.1446	-0.01028	-0.0696	-0.0049	0.0031	3.499	10.64	79.99
24P	-0.003302	0.1099	-0.008082	0.0147	-0.0014	0.0001	3.497	0.1099	69.99
25P	-0.003275	0.1099	-0.005423	0.0473	0.0007	-0.0105	3.497	6.11	69.99
26P	-0.001756	0.1122	-0.004701	-0.0932	0.0023	-0.0217	3.498	10.61	70
27P	-0.0006722	0.1079	-0.008043	0.0261	-0.0026	-0.0045	3.499	0.1079	64.99
28P	-0.0002716	0.1063	-0.005782	0.0250	-0.0041	-0.0025	3.5	6.106	64.99
29P	-0.0003239	0.1048	-0.006196	-0.0752	-0.0052	0.0057	3.5	10.6	64.99
30P	-0.003056	0.064	-0.00611	0.0159	0.0005	0.0008	3.497	0.064	54.99
31P	-0.003041	0.06396	-0.003086	0.0536	0.0025	-0.0125	3.497	6.064	55
32P	-0.001371	0.06666	-0.001943	-0.0923	0.0040	-0.0208	3.499	10.57	55
33P	-2.03e-005	0.06198	-0.006069	0.0280	-0.0039	-0.0067	3.5	0.06198	49.99
34P	0.0004092	0.05995	-0.003434	0.0307	-0.0051	0.0001	3.5	6.06	50
35P	-0.0001081	0.0582	-0.003732	-0.0841	-0.0060	0.0153	3.5	10.56	50
36P	0.0003503	0.02917	-0.005951	-0.0177	0.0016	-0.0020	5.375	0.02917	39.99
37P	9.264e-006	0.02912	-0.00693	0.0022	0.0024	0.0152	5.375	5.279	39.99
38P	-0.001463	0.02978	-0.007354	-0.0386	0.0033	-0.0003	5.374	10.53	39.99
39P	9.033e-005	0.02548	-0.005886	-0.0109	-0.0011	-0.0006	6.333	0.02548	34.99
40P	0.0001968	0.02523	-0.006927	-0.0115	-0.0035	-0.0006	6.333	5.275	34.99
41P	0.0002324	0.02498	-0.008549	-0.0305	-0.0058	-0.0018	6.333	10.52	34.99
44P	0.0003482	0.3381	0.02527	0.0000	0.0000	0.0000	0.0003482	17.97	17.78
45P	0.0002406	0.03254	-0.1541	0.0000	0.0000	0.0000	0.0002406	10.53	39.85
1X	-0.002736	0.1783	0.0008852	0.0000	0.0000	0.0000	-0.002736	-13.82	94
2X	-0.002222	0.1516	0.002594	-0.0682	-0.0099	-0.0018	3.498	-14.85	85
2XY	-0.001974	0.1517	0.002177	-0.0668	0.0030	0.0057	-3.502	-14.85	85
2Y	-0.001477	0.1523	-0.01956	-0.0823	-0.0109	0.0000	-3.501	15.15	84.98
3X	-0.001544	0.1451	0.003068	-0.1084	-0.0035	-0.0008	3.498	-14.85	80
3XY	-0.00205	0.1454	0.002658	-0.1076	-0.0033	0.0015	-3.502	-14.85	80
3Y	-0.0008348	0.145	-0.01962	-0.1099	0.0001	-0.0017	-3.501	15.14	79.98
4X	-0.001533	0.1302	0.003721	-0.2126	-0.0001	0.0003	3.498	-14.87	75
4XY	-0.001485	0.1305	0.003334	-0.2132	-0.0065	0.0044	-3.501	-14.87	75
4Y	-0.001211	0.1315	-0.01945	-0.2031	0.0014	-0.0023	-3.501	15.13	74.98
5X	-0.001245	0.1134	0.003361	-0.1303	-0.0068	0.0015	3.499	-14.89	70
5XY	-0.001223	0.1136	0.002986	-0.1309	0.0006	0.0071	-3.501	-14.89	70
5Y	-0.0007568	0.1138	-0.01813	-0.1478	-0.0086	-0.0029	-3.501	15.11	69.98
6X	-0.0007474	0.1051	0.00394	-0.1845	0.0010	-0.0070	3.499	-14.89	65
6XY	-0.001186	0.1052	0.003597	-0.1854	-0.0068	0.0098	-3.501	-14.89	65
6Y	-0.0003274	0.105	-0.01754	-0.1623	0.0023	0.0073	-3.5	15.1	64.98
7X	-0.0008487	0.08612	0.004257	-0.2362	-0.0007	-0.0126	3.499	-14.91	60
7XY	-0.0005924	0.08618	0.00393	-0.2366	-0.0048	0.0167	-3.501	-14.91	60
7Y	-0.000577	0.08792	-0.01721	-0.2314	0.0015	0.0138	-3.501	15.09	59.98
8X	-0.0005598	0.06795	0.003789	-0.1442	-0.0045	-0.0183	3.499	-14.93	55
8XY	-0.0004186	0.06802	0.003488	-0.1436	-0.0008	0.0237	-3.5	-14.93	55

8Y	-0.0003272	0.06833	-0.01598	-0.1682	-0.0091	0.0203
9X	-0.0002437	0.05883	0.003824	-0.1380	-0.0011	-0.0338
9XY	-0.000304	0.05895	0.003552	-0.1380	-0.0027	0.0358
9Y	0.0003042	0.05796	-0.01521	-0.1358	0.0047	0.0378
14X	0	0	0	0.0000	0.0000	0.0000
14XY	0	0	0	0.0000	0.0000	0.0000
14Y	0	0	0	0.0000	0.0000	0.0000
15X	-0.001974	0.1458	0.007077	0.0048	-0.0035	-0.0049
15XY	-0.002051	0.146	0.006526	0.0061	-0.0033	-0.0008
15Y	-0.0007847	0.1451	-0.0333	-0.1131	0.0001	0.0002
16X	-0.001059	0.1057	0.01059	0.0103	0.0010	-0.0003
16XY	-0.001141	0.1059	0.01025	0.0107	-0.0068	-0.0043
16Y	-0.0002072	0.1051	-0.0341	-0.1223	0.0022	-0.0051
17X	-0.0003471	0.05934	0.01224	-0.0345	-0.0011	0.0155
17XY	-0.0004395	0.05946	0.01187	-0.0334	-0.0028	-0.0194
17Y	0.0001854	0.05805	-0.03402	-0.1630	0.0045	-0.0174
18Y	-0.002777	0.1495	-0.00964	-0.0059	-0.0040	0.0017
19X	-0.002859	0.1494	-0.009428	0.0087	-0.0052	0.0059
19XY	-0.002854	0.1496	-0.009692	0.0088	-0.0012	-0.0016
19Y	-0.002679	0.1495	-0.009225	0.0282	-0.0068	-0.0101
20X	-0.002194	0.1506	-0.007514	-0.0998	-0.0075	0.0050
20XY	-0.002736	0.1507	-0.007787	-0.0987	0.0009	0.0074
20Y	-0.001603	0.151	-0.009199	-0.0850	-0.0088	-0.0089
21Y	-0.001361	0.1467	-0.009606	0.0027	-0.0016	0.0007
22X	-0.001719	0.1456	-0.00982	-0.0074	-0.0040	-0.0021
22XY	-0.001346	0.1458	-0.01008	-0.0067	-0.0023	-0.0008
22Y	-0.001381	0.1458	-0.009602	0.0098	-0.0009	-0.0009
23X	-0.001728	0.1445	-0.0065	-0.0940	-0.0037	0.0024
23XY	-0.001596	0.1447	-0.006824	-0.0930	-0.0028	-0.0069
23Y	-0.001184	0.1448	-0.01049	-0.0705	-0.0004	-0.0046
24Y	-0.00329	0.11	-0.00847	0.0149	-0.0040	0.0002
25X	-0.003304	0.11	-0.01037	0.0362	-0.0035	0.0091
25XY	-0.00329	0.1101	-0.01078	0.0366	-0.0021	0.0095
25Y	-0.003258	0.11	-0.005764	0.0477	-0.0059	-0.0111
26X	-0.002016	0.1121	-0.00991	-0.1074	-0.0051	0.0170
26XY	-0.002008	0.1122	-0.01034	-0.1076	-0.0008	0.0156
26Y	-0.00173	0.1123	-0.005013	-0.0929	-0.0073	-0.0203
27Y	-0.0006674	0.108	-0.008431	0.0263	-0.0023	0.0021
28X	-0.001069	0.1063	-0.01078	0.0137	-0.0011	-0.0024
28XY	-0.0005148	0.1064	-0.01118	0.0139	-0.0042	0.0004
28Y	-0.0008203	0.1064	-0.006124	0.0255	-0.0005	-0.0003
29X	-0.001015	0.1048	-0.008462	-0.0978	-0.0000	0.0054
29XY	-0.0007493	0.1049	-0.008873	-0.0982	-0.0055	-0.0089
29Y	-0.0005858	0.1049	-0.006503	-0.0748	0.0008	-0.0064
30Y	-0.003043	0.06406	-0.006331	0.0160	-0.0051	-0.0003
31X	-0.003016	0.06403	-0.008823	0.0476	-0.0014	0.0099
31XY	-0.002995	0.0641	-0.009072	0.0481	-0.0034	0.0127
31Y	-0.003024	0.06403	-0.003283	0.0539	-0.0069	-0.0107
32X	-0.001446	0.0665	-0.009489	-0.0961	-0.0029	0.0254
32XY	-0.001457	0.06657	-0.009783	-0.0959	-0.0021	0.0155
32Y	-0.001313	0.06673	-0.002124	-0.0925	-0.0081	-0.0280
33Y	-8.992e-005	0.06207	-0.00629	0.0282	0.0007	0.0052
34X	-0.0004866	0.06026	-0.009242	0.0238	-0.0027	0.0012
34XY	0.0002117	0.06036	-0.009491	0.0243	-0.0008	-0.0025
34Y	-0.000369	0.06003	-0.003631	0.0308	0.0022	-0.0018
35X	2.125e-005	0.05875	-0.007694	-0.0960	-0.0018	0.0104
35XY	-0.0004307	0.05885	-0.007979	-0.0960	-0.0018	-0.0131
35Y	0.0002486	0.05827	-0.003926	-0.0842	0.0033	-0.0153
36Y	-7.612e-005	0.02928	-0.00625	-0.0175	-0.0032	0.0009
37X	-0.0001075	0.02921	-0.004618	-0.0062	0.0007	-0.0109
37XY	0.0002819	0.02932	-0.004931	-0.0062	-0.0025	0.0098
37Y	0.0003641	0.02923	-0.007209	0.0025	-0.0039	-0.0163
38X	-0.001049	0.02988	-0.003046	-0.0539	-0.0002	0.0004
38XY	0.001119	0.02999	-0.003352	-0.0540	-0.0017	-0.0016
38Y	0.001937	0.02989	-0.007601	-0.0384	-0.0046	-0.0008
39Y	0.0002469	0.0256	-0.006196	-0.0108	0.0004	-0.0004
40X	0.0001073	0.0248	-0.004639	-0.0198	0.0012	0.0001
40XY	0.0001387	0.02492	-0.004966	-0.0196	-0.0020	-0.0011
40Y	0.0002374	0.02536	-0.007218	-0.0113	0.0028	-0.0005

-3.5	15.07	54.98
3.5	-14.94	50
-3.5	-14.94	50
-3.5	15.06	49.98
13.07	-19.07	0
-13.07	-19.07	0
-13.07	19.07	0
3.498	-21.85	80.01
-3.502	-21.85	80.01
-3.501	22.15	79.97
3.499	-21.89	65.01
-3.501	-21.89	65.01
-3.5	22.11	64.97
3.5	-21.94	50.01
-3.5	-21.94	50.01
-3.5	22.06	49.97
-3.503	0.1495	84.99
3.497	-5.851	84.99
-3.503	-5.85	84.99
-3.503	6.149	84.99
3.498	-10.35	84.99
-3.503	-10.35	84.99
-3.502	10.65	84.99
-3.501	0.1467	79.99
3.498	-5.854	79.99
-3.501	-5.854	79.99
-3.501	6.146	79.99
3.498	-10.36	79.99
-3.502	-10.36	79.99
-3.501	10.64	79.99
-3.503	0.11	69.99
3.497	-5.89	69.99
-3.503	-5.89	69.99
-3.503	6.11	69.99
3.498	-10.39	69.99
-3.502	-10.39	69.99
-3.502	10.61	69.99
-3.501	0.108	64.99
3.499	-5.894	64.99
-3.501	-5.894	64.99
-3.501	6.106	64.99
3.499	-10.4	64.99
-3.501	-10.4	64.99
-3.501	10.6	64.99
-3.503	0.06406	54.99
3.497	-5.936	54.99
-3.503	-5.936	54.99
-3.503	6.064	55
3.499	-10.43	54.99
-3.501	-10.43	54.99
-3.501	10.57	55
-3.5	0.06207	49.99
3.5	-5.94	49.99
-3.5	-5.94	49.99
-3.5	6.06	50
3.5	-10.44	49.99
-3.5	-10.44	49.99
-3.5	10.56	50
-5.375	0.02928	39.99
5.375	-5.221	40
-5.375	-5.221	40
-5.375	5.279	39.99
5.374	-10.47	40
-5.374	-10.47	40
-5.373	10.53	39.99
-6.333	0.0256	34.99
6.333	-5.225	35
-6.333	-5.225	35
-6.333	5.275	34.99

41X	-2.222e-005	0.02413	-0.001537	-0.0527	0.0035	-0.0036	6.333	-10.48	35	
41XY	0.0001854	0.02423	-0.001864	-0.0530	-0.0045	0.0028	-6.333	-10.48	35	
41Y	0.0003023	0.02512	-0.008813	-0.0302	0.0053	0.0007	-6.333	10.53	34.99	
44X	0.0001809	0.1584	-0.01061	0.0000	0.0000	0.0000	0.0001809	-17.47	17.74	
45X	3.913e-005	0.02801	-0.1272	0.0000	0.0000	0.0000	3.913e-005	-10.47	39.87	
10S	0.001257	0.04203	-0.01518	-0.1690	-0.0028	-0.0468	4.459	15.45	44.98	
11S	0.0004637	0.02995	-0.0144	-0.0889	0.0034	-0.0282	5.415	15.84	39.99	
12S	0.0008895	0.02435	-0.013	-0.0518	-0.0085	-0.0132	6.373	16.25	34.99	
13S	0.0003433	0.01061	-0.009468	-0.0592	0.0007	-0.0121	8.541	17.16	23.66	
42S	0.0002536	0.01041	-0.001127	-0.0051	0.0019	-0.0000	8.541	0.01041	23.67	
43S	0.0002892	0.03107	-0.01457	-0.0890	-0.0016	-0.0005	0.0002892	15.85	39.99	
10X	-0.0004858	0.04183	0.005229	-0.1808	-0.0027	-0.0229	4.457	-15.37	45.01	
10XY	0.0002131	0.04191	0.004947	-0.1808	-0.0001	0.0235	-4.457	-15.37	45	
10Y	-0.0008341	0.04213	-0.0154	-0.1696	0.0012	0.0432	-4.458	15.45	44.98	
11X	-3.568e-005	0.03003	0.005384	-0.1014	-0.0002	0.0110	5.415	-15.78	40.01	
11XY	2.541e-006	0.03014	0.005084	-0.1015	-0.0019	-0.0118	-5.415	-15.78	40.01	
11Y	0.0001228	0.03006	-0.01464	-0.0890	-0.0046	0.0265	-5.414	15.84	39.99	
12X	-0.0002296	0.02313	0.005173	-0.0704	0.0064	0.0042	6.372	-16.2	35.01	
12XY	0.0003158	0.02323	0.004892	-0.0706	-0.0075	-0.0050	-6.372	-16.2	35	
12Y	-0.0002398	0.0245	-0.01323	-0.0516	0.0082	0.0119	-6.372	16.25	34.99	
13X	-0.0007507	0.01051	0.003669	-0.0521	0.0031	0.0013	8.54	-17.13	23.67	
13XY	0.001022	0.01076	0.003407	-0.0518	-0.0034	-0.0021	-8.54	-17.13	23.67	
13Y	0.0003485	0.0108	-0.009676	-0.0594	0.0001	0.0114	-8.541	17.16	23.66	
42Y	0.0002592	0.01053	-0.001273	-0.0050	-0.0016	-0.0006	-8.541	0.01053	23.67	
43X	-1.981e-005	0.02935	0.005435	-0.1014	-0.0019	-0.0007	-1.981e-005	-15.79	40.01	

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
14P	-23.13	0.0	-32.46	0.0	123.91	0.0	0.0	130.16	0.0	0.13	0.0	0.2	0.0	0.04	0.0	0.0
14X	14.36	0.0	-22.60	0.0	-66.21	0.0	0.0	71.42	0.0	0.31	0.0	0.0	0.0	-0.01	0.0	0.0
14XY	-14.25	0.0	-22.63	0.0	-64.94	0.0	0.0	70.23	0.0	0.34	0.0	-0.1	0.0	0.01	0.0	0.0
14Y	23.02	0.0	-32.89	0.0	124.72	0.0	0.0	131.02	0.0	0.15	0.0	-0.2	0.0	-0.05	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	5.7421	-1.7446	0.0000	-5.7421	1.7446	-0.0018	0.1834	-0.0189
2P	0.0000	0.0994	-0.2208	-0.0000	-0.0994	0.2208	-0.0009	0.1521	-0.0192
3P	0.0000	1.2431	-3.7360	-0.0000	-1.2431	3.7360	-0.0011	0.1448	-0.0193
4P	0.0000	0.1068	-0.2751	-0.0000	-0.1068	0.2751	-0.0003	0.1314	-0.0192
5P	0.0000	0.1208	-0.3039	-0.0000	-0.1208	0.3039	-0.0003	0.1137	-0.0178
6P	0.0000	0.1373	-0.4363	-0.0000	-0.1373	0.4363	-0.0004	0.1048	-0.0173
7P	0.0000	-0.2798	-0.9943	-0.0000	0.2798	0.9943	0.0002	0.0877	-0.0170
8P	0.0000	0.1465	-0.4796	-0.0000	-0.1465	0.4796	0.0003	0.0682	-0.0158
9P	0.0000	0.1544	-0.5437	0.0000	-0.1544	0.5437	-0.0001	0.0579	-0.0150
14P	0.0000	0.2837	-1.2171	23.1254	32.1809	-122.6948	0.0000	0.0000	0.0000
15P	0.0000	3.3540	-1.5943	0.0000	-3.3540	1.5943	-0.0008	0.1449	-0.0329
16P	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0002	0.1049	-0.0339
17P	0.0000	3.3540	-1.6031	0.0000	-3.3540	1.6031	0.0002	0.0580	-0.0338
18P	0.0000	0.0403	-0.1290	0.0000	-0.0403	0.1290	-0.0028	0.1494	-0.0094
19P	0.0000	0.0670	-0.1797	0.0000	-0.0670	0.1797	-0.0027	0.1493	-0.0090
20P	0.0000	0.0629	-0.1467	0.0000	-0.0629	0.1467	-0.0024	0.1508	-0.0091
21P	0.0000	0.0787	-0.2152	0.0000	-0.0787	0.2152	-0.0014	0.1465	-0.0094
22P	0.0000	3.3633	-1.6160	0.0000	-3.3633	1.6160	-0.0010	0.1456	-0.0094
23P	0.0000	0.0943	-0.2539	0.0000	-0.0943	0.2539	-0.0010	0.1446	-0.0103
24P	0.0000	0.0403	-0.1498	0.0000	-0.0403	0.1498	-0.0033	0.1099	-0.0081
25P	0.0000	0.0720	-0.2278	0.0000	-0.0720	0.2278	-0.0033	0.1099	-0.0054
26P	0.0000	0.0570	-0.1766	0.0000	-0.0570	0.1766	-0.0018	0.1122	-0.0047
27P	0.0000	0.0853	-0.2711	0.0000	-0.0853	0.2711	-0.0007	0.1079	-0.0080
28P	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	-0.0003	0.1063	-0.0058
29P	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	-0.0003	0.1048	-0.0062

30P	0.0000	0.0403	-0.1649	0.0000	-0.0403	0.1649	-0.0031	0.0640	-0.0061
31P	0.0000	0.0737	-0.2597	0.0000	-0.0737	0.2597	-0.0030	0.0640	-0.0031
32P	0.0000	0.0620	-0.1998	-0.0000	-0.0620	0.1998	-0.0014	0.0667	-0.0019
33P	0.0000	0.0853	-0.3124	0.0000	-0.0853	0.3124	-0.0000	0.0620	-0.0061
34P	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	0.0004	0.0599	-0.0034
35P	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	-0.0001	0.0582	-0.0037
36P	0.0000	0.0854	-0.4182	0.0000	-0.0854	0.4182	0.0004	0.0292	-0.0060
37P	0.0000	0.0656	-0.4356	-0.0000	-0.0656	0.4356	0.0000	0.0291	-0.0069
38P	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	-0.0015	0.0298	-0.0074
39P	0.0000	0.1286	-0.4881	0.0000	-0.1286	0.4881	0.0001	0.0255	-0.0059
40P	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	0.0002	0.0252	-0.0069
41P	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	0.0002	0.0250	-0.0085
44P	0.0000	0.1730	-0.2780	-0.0000	-0.1730	0.2780	0.0003	0.3381	0.0253
45P	0.0000	0.0539	-0.1262	0.0000	-0.0539	0.1262	0.0002	0.0325	-0.1541
1X	0.0000	3.9001	-1.3756	-0.0000	-3.9001	1.3756	-0.0027	0.1783	0.0009
2X	0.0000	0.1157	-0.2503	-0.0000	-0.1157	0.2503	-0.0022	0.1516	0.0026
2XY	0.0000	0.0994	-0.2208	-0.0000	-0.0994	0.2208	-0.0020	0.1517	0.0022
2Y	0.0000	0.1157	-0.2503	-0.0000	-0.1157	0.2503	-0.0015	0.1523	-0.0196
3X	0.0000	1.1016	-3.4710	-0.0000	-1.1016	3.4710	-0.0015	0.1451	0.0031
3XY	0.0000	1.2256	-3.8150	-0.0000	-1.2256	3.8150	-0.0020	0.1454	0.0027
3Y	0.0000	1.3671	-4.0800	-0.0000	-1.3671	4.0800	-0.0008	0.1450	-0.0196
4X	0.0000	0.1068	-0.2751	-0.0000	-0.1068	0.2751	-0.0015	0.1302	0.0037
4XY	0.0000	0.1068	-0.2751	0.0000	-0.1068	0.2751	-0.0015	0.1305	0.0033
4Y	0.0000	0.1068	-0.2751	-0.0000	-0.1068	0.2751	-0.0012	0.1315	-0.0195
5X	0.0000	0.1371	-0.3334	0.0000	-0.1371	0.3334	-0.0012	0.1134	0.0034
5XY	0.0000	0.2448	-0.6479	-0.0000	-0.2448	0.6479	-0.0012	0.1136	0.0030
5Y	0.0000	0.2611	-0.6774	-0.0000	-0.2611	0.6774	-0.0008	0.1138	-0.0181
6X	0.0000	0.1373	-0.4363	0.0000	-0.1373	0.4363	-0.0007	0.1051	0.0039
6XY	0.0000	0.1373	-0.4363	-0.0000	-0.1373	0.4363	-0.0012	0.1052	0.0036
6Y	0.0000	0.1373	-0.4363	0.0000	-0.1373	0.4363	-0.0003	0.1050	-0.0175
7X	0.0000	-0.2208	-0.9943	-0.0000	0.2208	0.9943	-0.0008	0.0861	0.0043
7XY	0.0000	-0.0968	-1.3383	0.0000	0.0968	1.3383	-0.0006	0.0862	0.0039
7Y	0.0000	-0.1558	-1.3383	0.0000	0.1558	1.3383	-0.0006	0.0879	-0.0172
8X	0.0000	0.1629	-0.5091	0.0000	-0.1629	0.5091	-0.0006	0.0679	0.0038
8XY	0.0000	0.1465	-0.4796	-0.0000	-0.1465	0.4796	-0.0004	0.0680	0.0035
8Y	0.0000	0.1629	-0.5091	0.0000	-0.1629	0.5091	-0.0003	0.0683	-0.0160
9X	0.0000	0.1544	-0.5437	0.0000	-0.1544	0.5437	-0.0002	0.0588	0.0038
9XY	0.0000	0.2784	-0.8877	-0.0000	-0.2784	0.8877	-0.0003	0.0590	0.0036
9Y	0.0000	0.2784	-0.8877	-0.0000	-0.2784	0.8877	0.0003	0.0580	-0.0152
14X	0.0000	0.2837	-1.2171	-14.3562	22.3172	67.4250	0.0000	0.0000	0.0000
14XY	0.0000	0.2837	-1.2171	14.2513	22.3435	66.1546	0.0000	0.0000	0.0000
14Y	0.0000	0.2837	-1.2171	-23.0205	32.6015	-123.5007	0.0000	0.0000	0.0000
15X	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0020	0.1458	0.0071
15XY	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0021	0.1460	0.0065
15Y	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0008	0.1451	-0.0333
16X	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0011	0.1057	0.0106
16XY	0.0000	3.3540	-1.5943	0.0000	-3.3540	1.5943	-0.0011	0.1059	0.0102
16Y	0.0000	3.3540	-1.5943	0.0000	-3.3540	1.5943	-0.0002	0.1051	-0.0341
17X	0.0000	3.3540	-1.6031	-0.0000	-3.3540	1.6031	-0.0003	0.0593	0.0122
17XY	0.0000	3.3540	-1.6031	0.0000	-3.3540	1.6031	-0.0004	0.0595	0.0119
17Y	0.0000	3.3540	-1.6031	-0.0000	-3.3540	1.6031	0.0002	0.0581	-0.0340
18Y	0.0000	0.0403	-0.1290	0.0000	-0.0403	0.1290	-0.0028	0.1495	-0.0096
19X	0.0000	0.0670	-0.1829	0.0000	-0.0670	0.1829	-0.0029	0.1494	-0.0094
19XY	0.0000	0.0670	-0.1797	0.0000	-0.0670	0.1797	-0.0029	0.1496	-0.0097
19Y	0.0000	0.0670	-0.1829	0.0000	-0.0670	0.1829	-0.0027	0.1495	-0.0092
20X	0.0000	0.0629	-0.1467	-0.0000	-0.0629	0.1467	-0.0022	0.1506	-0.0075
20XY	0.0000	0.0629	-0.1467	-0.0000	-0.0629	0.1467	-0.0027	0.1507	-0.0078
20Y	0.0000	0.0629	-0.1467	0.0000	-0.0629	0.1467	-0.0016	0.1510	-0.0092
21Y	0.0000	0.0787	-0.2152	0.0000	-0.0787	0.2152	-0.0014	0.1467	-0.0096
22X	0.0000	3.3633	-1.6160	0.0000	-3.3633	1.6160	-0.0017	0.1456	-0.0098
22XY	0.0000	3.3633	-1.6160	0.0000	-3.3633	1.6160	-0.0013	0.1458	-0.0101
22Y	0.0000	3.3633	-1.6160	0.0000	-3.3633	1.6160	-0.0014	0.1458	-0.0096
23X	0.0000	0.0943	-0.2539	-0.0000	-0.0943	0.2539	-0.0017	0.1445	-0.0065
23XY	0.0000	0.0943	-0.2539	-0.0000	-0.0943	0.2539	-0.0016	0.1447	-0.0068
23Y	0.0000	0.0943	-0.2539	0.0000	-0.0943	0.2539	-0.0012	0.1448	-0.0105
24Y	0.0000	0.0403	-0.1498	0.0000	-0.0403	0.1498	-0.0033	0.1100	-0.0085
25X	0.0000	0.0720	-0.2310	0.0000	-0.0720	0.2310	-0.0033	0.1100	-0.0104
25XY	0.0000	0.0720	-0.2278	0.0000	-0.0720	0.2278	-0.0033	0.1101	-0.0108
25Y	0.0000	0.0720	-0.2310	0.0000	-0.0720	0.2310	-0.0033	0.1100	-0.0058

26X	0.0000	0.0570	-0.1766	-0.0000	-0.0570	0.1766	-0.0020	0.1121	-0.0099
26XY	0.0000	0.0570	-0.1766	0.0000	-0.0570	0.1766	-0.0020	0.1122	-0.0103
26Y	0.0000	0.0570	-0.1766	0.0000	-0.0570	0.1766	-0.0017	0.1123	-0.0050
27Y	0.0000	0.0853	-0.2711	0.0000	-0.0853	0.2711	-0.0007	0.1080	-0.0084
28X	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	-0.0011	0.1063	-0.0108
28XY	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	-0.0005	0.1064	-0.0112
28Y	0.0000	3.3633	-1.6342	-0.0000	-3.3633	1.6342	-0.0008	0.1064	-0.0061
29X	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	-0.0010	0.1048	-0.0085
29XY	0.0000	0.1060	-0.3019	-0.0000	-0.1060	0.3019	-0.0007	0.1049	-0.0089
29Y	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	-0.0006	0.1049	-0.0065
30Y	0.0000	0.0403	-0.1649	0.0000	-0.0403	0.1649	-0.0030	0.0641	-0.0063
31X	0.0000	0.0737	-0.2629	-0.0000	-0.0737	0.2629	-0.0030	0.0640	-0.0088
31XY	0.0000	0.0737	-0.2597	0.0000	-0.0737	0.2597	-0.0030	0.0641	-0.0091
31Y	0.0000	0.0737	-0.2629	0.0000	-0.0737	0.2629	-0.0030	0.0640	-0.0033
32X	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	-0.0014	0.0665	-0.0095
32XY	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	-0.0015	0.0666	-0.0098
32Y	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	-0.0013	0.0667	-0.0021
33Y	0.0000	0.0853	-0.3124	-0.0000	-0.0853	0.3124	-0.0001	0.0621	-0.0063
34X	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	-0.0005	0.0603	-0.0092
34XY	0.0000	3.3633	-1.6474	-0.0000	-3.3633	1.6474	0.0002	0.0604	-0.0095
34Y	0.0000	3.3633	-1.6474	-0.0000	-3.3633	1.6474	-0.0004	0.0600	-0.0036
35X	0.0000	0.1096	-0.3625	-0.0000	-0.1096	0.3625	0.0000	0.0587	-0.0077
35XY	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	-0.0004	0.0589	-0.0080
35Y	0.0000	0.1096	-0.3625	-0.0000	-0.1096	0.3625	0.0002	0.0583	-0.0039
36Y	0.0000	0.0854	-0.4182	-0.0000	-0.0854	0.4182	-0.0001	0.0293	-0.0063
37X	0.0000	0.0656	-0.4356	-0.0000	-0.0656	0.4356	-0.0001	0.0292	-0.0046
37XY	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0003	0.0293	-0.0049
37Y	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0004	0.0292	-0.0072
38X	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	-0.0010	0.0299	-0.0030
38XY	0.0000	0.1097	-0.5719	-0.0000	-0.1097	0.5719	0.0011	0.0300	-0.0034
38Y	0.0000	0.1097	-0.5719	-0.0000	-0.1097	0.5719	0.0019	0.0299	-0.0076
39Y	0.0000	0.1286	-0.4881	-0.0000	-0.1286	0.4881	0.0002	0.0256	-0.0062
40X	0.0000	0.0355	-0.2388	-0.0000	-0.0355	0.2388	0.0001	0.0248	-0.0046
40XY	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	0.0001	0.0249	-0.0050
40Y	0.0000	0.0355	-0.2388	-0.0000	-0.0355	0.2388	0.0002	0.0254	-0.0072
41X	0.0000	0.1458	-0.5677	-0.0000	-0.1458	0.5677	-0.0000	0.0241	-0.0015
41XY	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	0.0002	0.0242	-0.0019
41Y	0.0000	0.1458	-0.5677	-0.0000	-0.1458	0.5677	0.0003	0.0251	-0.0088
44X	0.0000	0.1730	-0.2780	0.0000	-0.1730	0.2780	0.0002	0.1584	-0.0106
45X	0.0000	0.0539	-0.1262	0.0000	-0.0539	0.1262	0.0000	0.0280	-0.1272
10S	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	0.0013	0.0420	-0.0152
11S	0.0000	0.1173	-0.5387	0.0000	-0.1173	0.5387	0.0005	0.0299	-0.0144
12S	0.0000	0.2907	-1.0330	-0.0000	-0.2907	1.0330	0.0009	0.0244	-0.0130
13S	0.0000	0.3706	-1.2107	-0.0000	-0.3706	1.2107	0.0003	0.0106	-0.0095
42S	0.0000	0.3438	-1.8597	-0.0000	-0.3438	1.8597	0.0003	0.0104	-0.0011
43S	0.0000	0.1365	-0.2574	-0.0000	-0.1365	0.2574	0.0003	0.0311	-0.0146
10X	0.0000	0.1348	-0.4484	-0.0000	-0.1348	0.4484	-0.0005	0.0418	0.0052
10XY	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	0.0002	0.0419	0.0049
10Y	0.0000	0.1348	-0.4484	-0.0000	-0.1348	0.4484	-0.0008	0.0421	-0.0154
11X	0.0000	0.1173	-0.5387	-0.0000	-0.1173	0.5387	-0.0000	0.0300	0.0054
11XY	0.0000	0.3043	-1.0547	0.0000	-0.3043	1.0547	0.0000	0.0301	0.0051
11Y	0.0000	0.3043	-1.0547	-0.0000	-0.3043	1.0547	0.0001	0.0301	-0.0146
12X	0.0000	0.2907	-1.0330	0.0000	-0.2907	1.0330	-0.0002	0.0231	0.0052
12XY	0.0000	0.2907	-1.0330	-0.0000	-0.2907	1.0330	0.0003	0.0232	0.0049
12Y	0.0000	0.2907	-1.0330	0.0000	-0.2907	1.0330	-0.0002	0.0245	-0.0132
13X	0.0000	0.3706	-1.2107	-0.0000	-0.3706	1.2107	-0.0008	0.0105	0.0037
13XY	0.0000	0.6196	-1.8987	0.0000	-0.6196	1.8987	0.0010	0.0108	0.0034
13Y	0.0000	0.6196	-1.8987	0.0000	-0.6196	1.8987	0.0003	0.0108	-0.0097
42Y	0.0000	0.3438	-1.8597	0.0000	-0.3438	1.8597	0.0003	0.0105	-0.0013
43X	0.0000	0.1365	-0.2574	0.0000	-0.1365	0.2574	-0.0000	0.0293	0.0054

Moments for Angles Modeled as Beams:

Angle Label	Torsion (ft-lbs)	Origin X Moment (ft-lbs)	Origin Y Moment (ft-lbs)	End X Moment (ft-lbs)	End Y Moment (ft-lbs)	X Shear (lbs)	Y Shear (lbs)
2P	-29.47	272.46	1.72	608.82	134.17	176.25	27.19
2X	-4.77	289.48	-1.72	786.02	-80.13	215.12	-16.37

2XY	19.84	286.27	1.57	789.65	79.56	215.20	16.22
2Y	7.92	281.67	-1.57	622.48	-137.06	180.83	-27.73
3P	18.74	-488.13	-134.36	668.40	-121.60	36.05	-51.20
3X	-5.27	-1025.17	80.30	262.61	37.84	-152.53	23.63
3XY	-13.37	-1031.47	-79.95	273.22	-40.33	-151.67	-24.06
3Y	3.10	-501.38	137.44	648.95	120.83	29.51	51.65
4P	18.75	-668.39	121.62	-1340.11	-3.66	-401.80	23.62
4X	-5.27	-262.61	-37.84	-1279.82	45.11	-308.46	1.45
4XY	-13.37	-273.22	40.33	-1290.21	-47.06	-312.66	-1.36
4Y	3.10	-648.95	-120.83	-1331.90	2.76	-396.27	-23.62
5P	4.51	1861.01	6.48	2045.29	133.77	781.35	28.05
5X	40.02	1926.79	-47.96	2596.19	-144.19	904.70	-38.51
5XY	-12.38	1940.48	49.68	2614.14	140.83	911.03	38.13
5Y	-48.50	1853.77	-5.31	2032.69	-139.46	777.39	-28.88
6P	203.61	-2071.66	-135.67	2545.20	-199.93	94.71	-67.19
6X	148.28	-3159.75	146.36	362.66	262.32	-559.44	81.73
6XY	-183.03	-3179.94	-143.45	310.08	-281.55	-574.00	-85.00
6Y	-170.35	-2054.20	141.79	2653.82	190.84	119.93	66.59
7P	203.78	-2545.18	200.03	-6870.14	-537.40	-1883.52	-67.30
7X	148.21	-362.67	-262.35	-6629.15	0.05	-1398.22	-52.32
7XY	-182.95	-310.09	281.58	-6645.98	9.50	-1391.08	58.05
7Y	-170.52	-2653.80	-190.93	-6958.76	535.45	-1922.98	68.76
8P	319.64	7435.37	540.10	5271.12	1389.24	2541.74	385.70
8X	405.59	7323.53	-3.66	6904.43	-236.21	2845.59	-48.35
8XY	-315.35	7346.83	-6.15	6963.87	129.02	2862.17	24.87
8Y	-457.96	7524.19	-537.82	5322.00	-1474.58	2569.72	-402.22
9P	-70.60	578.45	5003.37	-556.75	3063.96	4.22	1579.88
9X	-474.15	-2484.48	6486.82	-1272.99	4103.58	-736.00	2073.60
9XY	507.44	-2605.97	-6492.98	-1324.71	-4156.77	-769.94	-2085.23
9Y	19.82	519.22	-5095.49	-576.92	-3082.46	-11.31	-1601.56
10P	-70.29	556.81	-3063.95	2267.82	2155.60	553.26	-177.91
10X	-474.19	1273.46	-4103.43	-947.40	1063.39	63.77	-595.22
10XY	507.42	1325.23	4156.61	-852.54	-1042.70	92.47	609.68
10Y	19.49	576.93	3082.46	2330.38	-2133.49	569.47	185.88
11P	-221.36	-2493.19	-2767.66	-794.17	-636.58	-643.89	-666.82
11X	306.21	1304.35	-1744.95	90.61	-140.34	273.10	-369.10
11XY	-307.16	1211.21	1722.58	62.06	106.48	249.28	358.10
11Y	212.49	-2564.30	2751.44	-808.09	629.50	-660.54	662.26
12P	-19.45	767.58	701.55	433.06	615.98	103.79	113.90
12X	73.39	19.82	-71.90	-102.69	431.87	-7.16	31.10
12XY	-75.08	51.01	120.16	-55.75	-408.25	-0.41	-24.89
12Y	15.68	776.98	-699.64	469.22	-584.80	107.73	-111.03
13P	-4.40	-424.40	-599.26	-89.42	182.66	-21.26	-17.24
13X	61.16	97.49	-409.76	-149.24	264.68	-2.14	-6.00
13XY	-65.28	47.29	387.11	-193.98	-282.22	-6.06	4.34
13Y	-0.10	-465.61	565.65	-139.65	-221.76	-25.04	14.23
15P	1.72	4.62	-3.69	52.98	0.84	9.60	-0.47
15X	1.72	4.62	3.69	-16.90	16.36	-2.05	3.34
15XY	-1.57	6.47	5.72	-14.97	0.89	-1.42	1.10
15Y	-1.57	6.47	-5.72	56.16	-22.95	10.44	-4.78
16P	1.72	-52.98	-0.84	-268.55	-28.23	-71.43	-6.46
16X	1.73	16.90	-16.36	227.98	-18.03	54.43	-7.65
16XY	-1.57	14.97	-0.89	224.19	16.60	53.16	3.49
16Y	-1.56	-56.16	22.95	-276.44	25.32	-73.89	10.72
17P	1.72	268.55	28.22	272.45	29.49	120.19	12.82
17X	1.73	-227.98	18.03	-289.48	4.76	-115.02	5.07
17XY	-1.57	-224.19	-16.61	-286.27	-19.83	-113.46	-8.10
17Y	-1.56	276.44	-25.32	281.67	-7.94	123.99	-7.39
18P	-0.19	21.03	-0.48	31.56	1.37	8.77	0.15
18X	-0.19	21.03	0.48	35.36	2.92	9.40	0.57
18XY	0.38	21.78	0.13	35.51	-2.05	9.55	-0.32
18Y	0.38	21.78	-0.13	32.08	-2.38	8.98	-0.42
19P	-0.19	-31.56	-1.37	-185.66	9.60	-48.28	1.83
19X	-0.19	-35.36	-2.92	133.22	5.86	21.74	0.65
19XY	0.38	-35.51	2.05	132.41	-9.74	21.53	-1.71
19Y	0.38	-32.08	2.38	-188.27	-4.84	-48.98	-0.55
20P	-0.20	185.66	-9.60	109.07	-29.03	65.49	-8.58
20X	-0.18	-133.22	-5.86	-105.32	-12.02	-53.02	-3.97
20XY	0.37	-132.41	9.74	-104.14	26.13	-52.57	7.97

20Y	0.38	188.27	4.84	111.61	10.50	66.64	3.41
21P	2.84	0.73	-33.27	116.52	-71.20	19.54	-17.41
21X	2.84	0.73	33.27	-75.66	65.27	-12.49	16.42
21XY	-2.59	-0.67	34.39	-77.62	67.57	-13.05	16.99
21Y	-2.58	-0.67	-34.39	115.97	-74.29	19.22	-18.11
22P	2.90	-116.52	71.20	-781.45	18.36	-199.44	19.90
22X	2.89	75.66	-65.27	755.42	-28.12	184.77	-20.77
22XY	-2.53	77.62	-67.57	760.31	-38.88	186.30	-23.66
22Y	-2.53	-115.97	74.29	-781.80	30.71	-199.40	23.32
23P	2.86	781.45	-18.37	520.90	14.27	289.32	-0.91
23X	2.90	-755.42	28.13	-646.97	-45.34	-311.73	-3.82
23XY	-2.56	-760.31	38.87	-650.27	-0.94	-313.55	8.43
23Y	-2.52	781.80	-30.70	521.87	51.55	289.61	4.63
24P	-2.02	43.57	-0.03	39.81	6.80	13.90	1.13
24X	-2.02	43.57	0.03	87.65	7.35	21.86	1.23
24XY	2.49	42.45	1.25	86.68	-4.76	21.52	-0.59
24Y	2.49	42.45	-1.25	39.42	-9.71	13.65	-1.83
25P	-2.02	-39.81	-6.80	-514.55	32.26	-123.23	5.66
25X	-2.02	-87.65	-7.35	440.02	29.52	78.28	4.93
25XY	2.49	-86.68	4.76	444.01	-39.39	79.38	-7.70
25Y	2.49	-39.42	9.71	-514.29	-19.51	-123.09	-2.18
26P	-2.10	514.55	-32.25	98.45	-133.70	136.22	-36.88
26X	-1.97	-440.02	-29.52	-29.39	-88.04	-104.32	-26.13
26XY	2.42	-444.01	39.40	-31.02	127.80	-105.57	37.16
26Y	2.54	514.29	19.51	100.10	84.30	136.53	23.07
27P	3.17	-6.30	-44.49	156.66	-102.17	25.06	-24.44
27X	3.17	-6.30	44.49	-143.23	83.91	-24.92	21.40
27XY	-2.92	-6.51	45.79	-145.37	101.70	-25.31	24.58
27Y	-2.92	-6.51	-45.79	157.30	-91.01	25.13	-22.80
28P	3.25	-156.66	102.17	-997.84	54.52	-256.40	34.81
28X	3.24	143.23	-83.91	971.51	5.43	247.86	-17.45
28XY	-2.84	145.37	-101.70	975.81	-85.14	249.29	-41.54
28Y	-2.84	-157.31	91.01	-1001.51	-8.39	-257.36	18.35
29P	3.08	997.84	-54.53	565.22	-115.46	347.22	-37.76
29X	3.41	-971.51	-5.42	-694.37	-257.36	-370.32	-58.41
29XY	-3.00	-975.81	85.13	-700.85	132.32	-372.71	48.34
29Y	-2.65	1001.51	8.40	565.44	286.97	348.08	65.62
30P	-1.96	47.58	-4.48	59.14	25.02	17.79	3.42
30X	-1.96	47.58	4.48	65.82	38.53	18.89	7.17
30XY	2.45	47.18	-2.96	64.12	-36.53	18.54	-6.58
30Y	2.45	47.18	2.96	58.59	-27.37	17.63	-4.07
31P	-1.99	-59.14	-25.02	-720.70	62.45	-173.36	8.32
31X	-1.94	-65.82	-38.53	624.87	14.56	124.19	-5.32
31XY	2.43	-64.12	36.54	629.00	-24.33	125.49	2.71
31Y	2.47	-58.59	27.37	-721.73	-50.54	-173.47	-5.15
32P	-2.23	720.69	-62.45	423.65	-401.33	254.32	-103.07
32X	-1.80	-624.87	-14.56	-382.77	-268.94	-223.92	-63.00
32XY	2.27	-629.00	24.34	-386.77	306.01	-225.73	73.41
32Y	2.69	721.73	50.54	424.01	356.55	254.63	90.47
33P	21.69	-103.94	-20.10	1189.56	1093.37	206.79	204.43
33X	21.70	-103.94	20.10	-849.75	-561.94	-181.66	-103.21
33XY	-18.13	-101.44	-19.70	-838.33	560.97	-179.01	103.10
33Y	-18.11	-101.44	19.70	1201.39	-1095.10	209.52	-204.84
34P	21.54	-1189.57	-1093.37	-3836.41	-2095.81	-957.21	-607.37
34X	21.60	849.75	561.94	3943.48	1299.32	913.12	354.56
34XY	-18.02	838.33	-560.98	3942.66	-1305.36	910.79	-355.53
34Y	-17.97	-1201.40	1095.10	-3854.89	2100.45	-962.98	608.59
35P	-6.90	3836.47	2095.80	611.46	307.51	836.88	452.18
35X	-7.58	-3943.54	-1299.31	-900.06	-624.41	-911.37	-361.97
35XY	11.13	-3942.68	1305.35	-905.67	657.23	-912.27	369.28
35Y	10.60	3854.92	-2100.44	612.33	-348.62	840.51	-460.79
36P	-23.77	18.52	43.46	3.61	44.89	4.22	16.83
36X	-23.77	18.52	-43.46	253.48	-23.52	51.80	-12.75
36XY	24.94	18.79	42.60	254.35	24.43	52.02	12.76
36Y	24.94	18.79	-42.59	5.33	-45.50	4.59	-16.78
37P	-23.77	-3.61	-44.89	-509.75	-77.07	-97.79	-23.24
37X	-23.77	-253.48	23.51	623.31	-77.15	70.44	-10.21
37XY	24.94	-254.35	-24.42	635.52	80.11	72.60	10.60
37Y	24.95	-5.33	45.50	-508.77	77.22	-97.93	23.38

38P	-27.26	509.57	77.08	-10.04	-201.82	87.31	-21.80
38X	-28.04	-623.13	77.14	-190.89	267.83	-142.24	60.27
38XY	29.30	-635.34	-80.09	-205.22	-270.16	-146.87	-61.20
38Y	28.43	508.58	-77.24	-14.02	197.82	86.44	21.08
39P	0.00	11.62	-19.14	-0.00	0.00	1.66	-2.73
39X	-0.00	344.47	12.51	0.00	0.00	49.21	1.79
39XY	0.00	345.96	7.10	0.00	0.00	49.43	1.01
39Y	0.00	9.49	-5.73	-0.00	-0.00	1.36	-0.82
40P	0.00	-124.82	-65.45	-0.00	0.00	-17.83	-9.35
40X	-0.00	592.95	-20.22	0.00	-0.00	84.71	-2.89
40XY	0.00	596.82	42.86	0.00	0.00	85.27	6.12
40Y	0.00	-121.60	37.60	-0.00	-0.00	-17.37	5.37
41P	0.00	100.30	-229.36	-0.00	-0.00	14.33	-32.76
41X	-0.00	383.75	-182.68	0.00	0.00	54.82	-26.10
41XY	0.00	387.65	204.59	0.00	-0.00	55.38	29.23
41Y	-0.00	100.57	204.36	-0.00	0.00	14.37	29.19
53P	-0.19	5.61	-4.44	-15.69	-9.20	-0.59	-0.80
53X	-0.19	5.61	4.44	24.13	4.97	1.73	0.55
53XY	0.27	5.84	-4.34	24.28	-4.92	1.76	-0.54
53Y	0.27	5.84	4.34	-15.61	9.07	-0.57	0.78
98P	0.02	-13.94	11.16	-26.51	-35.68	-7.47	-4.53
98X	0.01	13.63	-20.29	9.57	-0.57	4.28	-3.85
98XY	0.01	13.63	20.29	13.70	1.58	5.05	4.04
98Y	0.02	-13.94	-11.16	-21.31	34.55	-6.51	4.32
99P	-0.08	-6.14	-9.00	11.54	9.06	0.42	0.00
99X	0.08	9.59	3.34	-5.08	-3.22	0.35	0.01
100P	0.08	2.95	-9.02	2.48	10.38	0.32	0.08
100X	-0.11	4.53	2.49	-0.87	-0.34	0.21	0.13

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	6.001	50.00	50.00	12.00
C2	4.136	50.00	50.00	8.27
C3	3.714	50.00	50.00	7.43
C4	3.714	50.00	50.00	7.43
C5	3.714	50.00	50.00	7.43
C6	3.714	50.00	50.00	7.43
C7	3.714	50.00	50.00	7.43
C8	3.714	50.00	50.00	7.43
C9	3.714	50.00	50.00	7.43
C10	3.714	50.00	50.00	7.43
C11	3.717	50.00	50.00	7.43
C12	3.717	50.00	50.00	7.43
C13	3.717	50.00	50.00	7.43
C14	3.717	50.00	50.00	7.43
C15	3.731	50.00	50.00	7.46
C16	3.731	50.00	50.00	7.46
C17	3.731	50.00	50.00	7.46
C18	3.731	50.00	50.00	7.46
C19	3.739	50.00	50.00	7.48
C20	3.739	50.00	50.00	7.48
C21	3.739	50.00	50.00	7.48
C22	3.739	50.00	50.00	7.48
C23	3.745	50.00	50.00	7.49
C24	3.745	50.00	50.00	7.49
C25	3.745	50.00	50.00	7.49
C26	3.745	50.00	50.00	7.49
C27	4.007	50.00	50.00	8.01
C28	0.693	50.00	50.00	1.39
C29	1.342	50.00	50.00	2.68
C30	0.930	50.00	50.00	1.86
C31	1.098	50.00	50.00	2.20

C32 1.997	50.00	50.00	3.99
C33 1.250	50.00	50.00	2.50
C34 4.303	50.00	50.00	8.61
C35 0.726	50.00	50.00	1.45
C36 1.347	50.00	50.00	2.69
C37 0.930	50.00	50.00	1.86
C38 1.098	50.00	50.00	2.20
C39 1.997	50.00	50.00	3.99
C40 1.250	50.00	50.00	2.50
C41 3.642	50.00	50.00	7.28
C42 3.937	50.00	50.00	7.87
C43 1.019	50.00	50.00	2.04
C44 1.033	50.00	50.00	2.07

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.000449	0.1998	-0.01504	0.0000	0.0000	0.0000	0.000449	14.2	93.98
2P	0.0009214	0.1678	-0.01613	-0.0818	0.0081	-0.0148	3.501	15.17	84.98
3P	0.0004815	0.1603	-0.01638	-0.1223	-0.0020	-0.0092	3.5	15.16	79.98
4P	0.001022	0.1443	-0.01652	-0.2360	-0.0038	-0.0129	3.501	15.14	74.98
5P	0.0008174	0.1245	-0.01535	-0.1619	0.0060	-0.0167	3.501	15.12	69.98
6P	0.0005386	0.1146	-0.01509	-0.1921	-0.0040	-0.0175	3.501	15.11	64.98
7P	0.0009317	0.09486	-0.01492	-0.2545	-0.0029	-0.0255	3.501	15.09	59.99
8P	0.0008239	0.07429	-0.0138	-0.1725	0.0065	-0.0334	3.501	15.07	54.99
9P	0.0003745	0.0635	-0.0132	-0.1453	-0.0042	-0.0462	3.5	15.06	49.99
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	0.001198	0.1605	-0.02788	-0.0800	-0.0020	-0.0042	3.501	22.16	79.97
16P	0.00103	0.1148	-0.03044	-0.0926	-0.0040	0.0027	3.501	22.11	64.97
17P	0.0008329	0.06367	-0.03013	-0.1353	-0.0041	0.0174	3.501	22.06	49.97
18P	-0.001713	0.1649	-0.003975	-0.0067	0.0002	-0.0064	3.498	0.1649	85
19P	-0.001241	0.165	-0.004004	0.0192	0.0034	-0.0036	3.499	6.165	85
20P	-0.000632	0.1665	-0.004954	-0.0999	0.0058	-0.0161	3.499	10.67	85
21P	-0.0003111	0.1617	-0.003956	0.0005	-0.0012	-0.0063	3.5	0.1617	80
22P	0.0002705	0.1607	-0.004145	0.0024	-0.0015	-0.0044	3.5	6.161	80
23P	0.0004349	0.1597	-0.00607	-0.0868	-0.0017	0.0014	3.5	10.66	79.99
24P	-0.002996	0.1204	-0.004182	0.0181	0.0001	-0.0026	3.497	0.1204	70
25P	-0.0027	0.1203	-0.001039	0.0526	0.0024	-0.0145	3.497	6.12	70
26P	-0.0008081	0.1229	-0.0004469	-0.1090	0.0042	-0.0257	3.499	10.62	70
27P	-0.0001728	0.1181	-0.004164	0.0316	-0.0006	-0.0067	3.5	0.1181	65
28P	0.0004527	0.1162	-0.001162	0.0265	-0.0019	-0.0046	3.5	6.116	65
29P	0.0005312	0.1146	-0.002174	-0.0916	-0.0029	0.0047	3.501	10.61	65
30P	-0.00305	0.06989	-0.003045	0.0151	0.0008	-0.0014	3.497	0.06989	55
31P	-0.002813	0.06988	-0.000102	0.0534	0.0031	-0.0153	3.497	6.07	55
32P	-0.0009215	0.07268	0.0008366	-0.1008	0.0049	-0.0226	3.499	10.57	55
33P	-3.361e-006	0.06759	-0.003024	0.0281	-0.0010	-0.0083	3.5	0.06759	50
34P	0.0005924	0.06551	-0.0002139	0.0285	-0.0022	-0.0011	3.501	6.066	50
35P	0.0001587	0.06374	-0.00108	-0.0946	-0.0031	0.0138	3.5	10.56	50
36P	0.0001641	0.03272	-0.00315	-0.0196	0.0003	-0.0032	5.375	0.03272	40
37P	6.018e-005	0.03268	-0.00437	-0.0011	0.0014	0.0099	5.375	5.283	40
38P	-0.0009257	0.03339	-0.005239	-0.0459	0.0025	-0.0012	5.374	10.53	39.99
39P	-4.622e-006	0.02869	-0.003122	-0.0124	0.0010	-0.0016	6.333	0.02869	35
40P	0.0001621	0.02831	-0.004359	-0.0153	-0.0014	-0.0013	6.333	5.278	35
41P	0.0003055	0.02793	-0.006556	-0.0392	-0.0038	-0.0033	6.333	10.53	34.99
44P	0.0003191	0.3765	0.02921	0.0000	0.0000	0.0000	0.0003191	18	17.78
45P	0.0003209	0.03555	-0.1291	0.0000	0.0000	0.0000	0.0003209	10.54	39.87
1X	-0.001837	0.1909	0.006044	0.0000	0.0000	0.0000	-0.001837	-13.81	94.01
2X	-0.001574	0.167	0.007768	-0.0692	-0.0077	-0.0021	3.498	-14.83	85.01
2XY	-0.001417	0.1674	0.007572	-0.0670	0.0047	0.0030	-3.501	-14.83	85.01
2Y	0.0004825	0.1683	-0.01612	-0.0819	-0.0081	-0.0032	-3.5	15.17	84.98
3X	-0.001105	0.1604	0.008227	-0.1138	-0.0004	-0.0027	3.499	-14.84	80.01
3XY	-0.0016	0.1609	0.008041	-0.1126	-0.0029	-0.0005	-3.502	-14.84	80.01
3Y	0.0008956	0.1608	-0.01637	-0.1234	0.0024	-0.0044	-3.499	15.16	79.98
4X	-0.001368	0.1445	0.008778	-0.2389	0.0021	-0.0015	3.499	-14.86	75.01
4XY	-0.00106	0.1451	0.008607	-0.2395	-0.0054	0.0035	-3.501	-14.85	75.01
4Y	0.0003144	0.1447	-0.01651	-0.2366	0.0044	-0.0051	-3.5	15.14	74.98
5X	-0.001174	0.1246	0.008054	-0.1595	-0.0059	-0.0002	3.499	-14.88	70.01
5XY	-0.0009922	0.125	0.007885	-0.1608	0.0031	0.0074	-3.501	-14.87	70.01
5Y	0.0004802	0.1249	-0.01534	-0.1615	-0.0058	-0.0057	-3.5	15.12	69.98
6X	-0.0007888	0.1148	0.008291	-0.2030	0.0026	-0.0092	3.499	-14.89	65.01
6XY	-0.001115	0.1152	0.008129	-0.2032	-0.0057	0.0094	-3.501	-14.88	65.01
6Y	0.0007138	0.115	-0.01508	-0.1913	0.0047	0.0054	-3.499	15.12	64.98
7X	-0.00104	0.09409	0.008442	-0.2566	0.0012	-0.0149	3.499	-14.91	60.01
7XY	-0.0005936	0.09447	0.008287	-0.2574	-0.0043	0.0169	-3.501	-14.91	60.01
7Y	0.000254	0.09531	-0.01491	-0.2553	0.0037	0.0124	-3.5	15.1	59.99
8X	-0.0008495	0.07418	0.00771	-0.1615	-0.0053	-0.0206	3.499	-14.93	55.01
8XY	-0.0005283	0.07448	0.007568	-0.1618	0.0024	0.0244	-3.501	-14.93	55.01

8Y	0.0002981	0.07461	-0.01379	-0.1734	-0.0059	0.0194	-3.5	15.07	54.99
9X	-0.0004841	0.06395	0.007468	-0.1462	0.0017	-0.0365	3.5	-14.94	50.01
9XY	-0.0006554	0.06427	0.007348	-0.1464	-0.0039	0.0365	-3.501	-14.94	50.01
9Y	0.0006797	0.0638	-0.01319	-0.1461	0.0051	0.0379	-3.499	15.06	49.99
14X	0	0	0	0.0000	0.0000	0.0000	13.07	-19.07	0
14XY	0	0	0	0.0000	0.0000	0.0000	-13.07	-19.07	0
14Y	0	0	0	0.0000	0.0000	0.0000	-13.07	19.07	0
15X	-0.001877	0.1608	0.01509	-0.0275	-0.0004	-0.0081	3.498	-21.84	80.02
15XY	-0.001915	0.1614	0.01468	-0.0254	-0.0029	-0.0036	-3.502	-21.84	80.01
15Y	0.001204	0.161	-0.02789	-0.0797	0.0024	-0.0016	-3.499	22.16	79.97
16X	-0.001327	0.1152	0.01992	-0.0415	0.0026	-0.0020	3.499	-21.88	65.02
16XY	-0.001378	0.1156	0.01984	-0.0425	-0.0058	-0.0079	-3.501	-21.88	65.02
16Y	0.001056	0.1152	-0.03044	-0.0931	0.0046	-0.0069	-3.499	22.12	64.97
17X	-0.0008609	0.0643	0.02015	-0.0827	0.0018	0.0135	3.499	-21.94	50.02
17XY	-0.0009091	0.06462	0.01998	-0.0820	-0.0040	-0.0213	-3.501	-21.94	50.02
17Y	0.000836	0.06398	-0.03014	-0.1350	0.0050	-0.0208	-3.499	22.06	49.97
18Y	-0.001706	0.1653	-0.003873	-0.0064	-0.0018	-0.0029	-3.502	0.1653	85
19X	-0.002167	0.1647	-0.004066	0.0093	-0.0029	0.0028	3.498	-5.835	85
19XY	-0.002161	0.1651	-0.004045	0.0096	0.0008	-0.0022	-3.502	-5.835	85
19Y	-0.00123	0.1654	-0.00389	0.0206	-0.0044	-0.0129	-3.501	6.165	85
20X	-0.001638	0.1659	-0.002186	-0.0979	-0.0053	0.0055	3.498	-10.33	85
20XY	-0.00198	0.1663	-0.002191	-0.0964	0.0027	0.0069	-3.502	-10.33	85
20Y	6.712e-005	0.167	-0.004754	-0.1013	-0.0062	-0.0123	-3.5	10.67	85
21Y	-0.0003088	0.1622	-0.003855	0.0008	-0.0003	-0.0013	-3.5	0.1622	80
22X	-0.0009012	0.1607	-0.004226	-0.0020	-0.0009	-0.0041	3.499	-5.839	80
22XY	-0.0005197	0.1612	-0.004205	-0.0010	-0.0013	-0.0033	-3.501	-5.839	80
22Y	-0.0001054	0.1612	-0.004031	0.0027	0.0008	-0.0035	-3.5	6.161	80
23X	-0.001073	0.1596	-0.001556	-0.0899	-0.0006	-0.0003	3.499	-10.34	80
23XY	-0.0009758	0.1602	-0.001624	-0.0885	-0.0021	-0.0093	-3.501	-10.34	80
23Y	0.0003233	0.1602	-0.00595	-0.0876	0.0016	-0.0076	-3.5	10.66	79.99
24Y	-0.002997	0.1208	-0.00433	0.0185	-0.0014	-0.0026	-3.503	0.1208	70
25X	-0.003267	0.1204	-0.007056	0.0479	-0.0023	0.0088	3.497	-5.88	69.99
25XY	-0.003265	0.1208	-0.007243	0.0486	0.0004	0.0088	-3.503	-5.879	69.99
25Y	-0.002693	0.1207	-0.001114	0.0534	-0.0033	-0.0149	-3.503	6.121	70
26X	-0.001893	0.123	-0.007185	-0.1162	-0.0041	0.0178	3.498	-10.38	69.99
26XY	-0.001895	0.1234	-0.007419	-0.1162	0.0017	0.0176	-3.502	-10.38	69.99
26Y	-0.0007906	0.1233	-0.0004674	-0.1085	-0.0045	-0.0251	-3.501	10.62	70
27Y	-0.0001708	0.1185	-0.004311	0.0321	-0.0007	0.0009	-3.5	0.1185	65
28X	-0.0007941	0.1162	-0.007232	0.0209	0.0007	-0.0042	3.499	-5.884	64.99
28XY	-0.000166	0.1166	-0.007419	0.0214	-0.0027	-0.0014	-3.5	-5.883	64.99
28Y	-0.0001745	0.1166	-0.001237	0.0273	0.0014	-0.0019	-3.5	6.117	65
29X	-0.0008712	0.1146	-0.005377	-0.1027	0.0017	0.0033	3.499	-10.39	64.99
29XY	-0.0005662	0.115	-0.005587	-0.1030	-0.0043	-0.0110	-3.501	-10.39	64.99
29Y	0.0002304	0.115	-0.002194	-0.0911	0.0030	-0.0093	-3.5	10.61	65
30Y	-0.003044	0.07017	-0.003087	0.0154	-0.0020	-0.0025	-3.503	0.07017	55
31X	-0.00323	0.0699	-0.005851	0.0513	-0.0015	0.0090	3.497	-5.93	54.99
31XY	-0.003217	0.07017	-0.005961	0.0525	-0.0002	0.0114	-3.503	-5.93	54.99
31Y	-0.002804	0.07016	-8.378e-005	0.0545	-0.0037	-0.0132	-3.503	6.07	55
32X	-0.001664	0.07259	-0.006649	-0.1018	-0.0033	0.0255	3.498	-10.43	54.99
32XY	-0.001682	0.07288	-0.006833	-0.1017	0.0010	0.0167	-3.502	-10.43	54.99
32Y	-0.0008678	0.07298	0.0009243	-0.1009	-0.0049	-0.0310	-3.501	10.57	55
33Y	-3.559e-005	0.06789	-0.003066	0.0286	0.0003	0.0042	-3.5	0.06789	50
34X	-0.0006116	0.06566	-0.006039	0.0259	0.0002	-0.0002	3.499	-5.934	49.99
34XY	0.0001457	0.06595	-0.006149	0.0268	-0.0015	-0.0036	-3.5	-5.934	49.99
34Y	-0.0002063	0.0658	-0.0001957	0.0293	0.0021	-0.0034	-3.5	6.066	50
35X	-0.000186	0.06401	-0.004709	-0.0987	0.0010	0.0103	3.5	-10.44	50
35XY	-0.0006169	0.06431	-0.004871	-0.0988	-0.0028	-0.0157	-3.501	-10.44	50
35Y	0.0005567	0.06404	-0.001021	-0.0948	0.0035	-0.0170	-3.499	10.56	50
36Y	-0.0001057	0.03303	-0.003222	-0.0192	-0.0007	0.0001	-5.375	0.03303	40
37X	-0.0002339	0.03273	-0.001757	-0.0050	-0.0008	-0.0066	5.375	-5.217	40
37XY	7.174e-006	0.03305	-0.001869	-0.0046	0.0001	0.0034	-5.375	-5.217	40
37Y	0.0002862	0.033	-0.004401	-0.0006	-0.0014	-0.0131	-5.375	5.283	40
38X	-0.0007728	0.03344	-0.0003258	-0.0542	-0.0019	-0.0009	5.374	-10.47	40
38XY	0.000243	0.03377	-0.0004628	-0.0542	0.0008	-0.0026	-5.375	-10.47	40
38Y	0.001569	0.03371	-0.005234	-0.0458	-0.0021	-0.0021	-5.373	10.53	39.99
39Y	7.637e-005	0.02907	-0.003196	-0.0120	-0.0011	-0.0014	-6.333	0.02907	35
40X	-0.0001089	0.02809	-0.001773	-0.0198	0.0034	-0.0011	6.333	-5.222	35
40XY	-9.408e-005	0.02845	-0.00189	-0.0193	-0.0038	-0.0019	-6.333	-5.222	35
40Y	0.000187	0.02868	-0.00439	-0.0148	0.0016	-0.0017	-6.333	5.279	35

41X	-0.0003138	0.02747	0.001222	-0.0509	0.0058	-0.0043		6.333	-10.47	35	
41XY	-0.0001574	0.02783	0.001077	-0.0510	-0.0066	0.0015		-6.333	-10.47	35	
41Y	0.0003146	0.0283	-0.006552	-0.0391	0.0043	0.0004		-6.333	10.53	34.99	
44X	-0.0001869	0.214	-0.01381	0.0000	0.0000	0.0000	-0.0001869	-17.41	17.74		
45X	-0.0002625	0.03273	-0.08953	0.0000	0.0000	0.0000	-0.0002625	-10.47	39.91		
10S	0.001405	0.04635	-0.0137	-0.1819	-0.0007	-0.0463		4.459	15.45	44.99	
11S	0.0006396	0.03356	-0.01312	-0.0981	0.0027	-0.0234		5.415	15.85	39.99	
12S	0.001019	0.02715	-0.01197	-0.0607	-0.0067	-0.0116		6.373	16.25	34.99	
13S	-1.534e-005	0.01264	-0.008874	-0.0629	0.0023	-0.0108		8.541	17.16	23.66	
42S	0.0001527	0.01208	-0.0005972	-0.0050	0.0032	-0.0005		8.541	0.01208	23.67	
43S	0.0004794	0.03454	-0.01324	-0.0983	-0.0003	-0.0017	0.0004794	15.85	39.99		
10X	-0.001118	0.04639	0.008531	-0.1883	-0.0008	-0.0292		4.456	-15.36	45.01	
10XY	0.0001378	0.04667	0.008413	-0.1886	-0.0009	0.0278		-4.457	-15.36	45.01	
10Y	-0.0003995	0.04663	-0.0137	-0.1831	0.0017	0.0403		-4.458	15.45	44.99	
11X	-0.0004834	0.03362	0.008409	-0.1066	-0.0021	0.0016		5.414	-15.78	40.01	
11XY	-0.0003599	0.03395	0.008291	-0.1068	0.0006	-0.0046		-5.415	-15.78	40.01	
11Y	0.0003233	0.03389	-0.01314	-0.0984	-0.0019	0.0195		-5.414	15.85	39.99	
12X	-0.0007219	0.02651	0.00782	-0.0709	0.0087	-0.0005		6.371	-16.2	35.01	
12XY	-2.568e-005	0.02685	0.007712	-0.0709	-0.0099	-0.0023		-6.372	-16.2	35.01	
12Y	-0.0001112	0.0275	-0.01198	-0.0607	0.0076	0.0084		-6.372	16.25	34.99	
13X	-0.001583	0.01243	0.005367	-0.0599	0.0040	-0.0031		8.54	-17.13	23.68	
13XY	0.001064	0.01308	0.005249	-0.0597	-0.0055	0.0009		-8.54	-17.13	23.68	
13Y	0.0007399	0.01328	-0.008865	-0.0629	-0.0007	0.0085		-8.54	17.16	23.66	
42Y	-3.688e-005	0.01244	-0.0006311	-0.0047	-0.0031	-0.0015		-8.541	0.01244	23.67	
43X	-0.0004216	0.03345	0.008491	-0.1067	-0.0006	-0.0019	-0.0004216	-15.78	40.01		

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
14P	-21.67	0.0	-34.55	0.0	120.03	0.0	0.0	126.77	0.0	0.29	0.0	0.2	0.0	0.07	0.0	0.0
14X	20.45	0.0	-29.66	0.0	-92.79	0.0	0.0	99.54	0.0	0.36	0.0	0.1	0.0	0.01	0.0	0.0
14XY	-20.16	0.0	-30.25	0.0	-91.97	0.0	0.0	98.89	0.0	0.44	0.0	-0.1	0.0	-0.02	0.0	0.0
14Y	21.37	0.0	-35.25	0.0	119.71	0.0	0.0	126.61	0.0	0.36	0.0	-0.3	0.0	-0.07	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	5.1444	-0.4944	-0.0000	-5.1444	0.4944	0.0004	0.1998	-0.0150
2P	0.0000	0.2315	-0.1091	-0.0000	-0.2315	0.1091	0.0009	0.1678	-0.0161
3P	0.0000	4.3484	-1.8857	-0.0000	-4.3484	1.8857	0.0005	0.1603	-0.0164
4P	0.0000	0.2616	-0.1447	0.0000	-0.2616	0.1447	0.0010	0.1443	-0.0165
5P	0.0000	0.2914	-0.1553	-0.0000	-0.2914	0.1553	0.0008	0.1245	-0.0153
6P	0.0000	0.3356	-0.2293	-0.0000	-0.3356	0.2293	0.0005	0.1146	-0.0151
7P	0.0000	-1.2325	-0.5678	0.0000	1.2325	0.5678	0.0009	0.0949	-0.0149
8P	0.0000	0.3735	-0.2624	-0.0000	-0.3735	0.2624	0.0008	0.0743	-0.0138
9P	0.0000	0.3882	-0.2944	-0.0000	-0.3882	0.2944	0.0004	0.0635	-0.0132
14P	0.0000	0.7557	-0.6944	21.6702	33.7980	-119.3383	0.0000	0.0000	0.0000
15P	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	0.0012	0.1605	-0.0279
16P	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	0.0010	0.1148	-0.0304
17P	0.0000	2.8461	-0.6420	-0.0000	-2.8461	0.6420	0.0008	0.0637	-0.0301
18P	0.0000	0.0883	-0.0611	-0.0000	-0.0883	0.0611	-0.0017	0.1649	-0.0040
19P	0.0000	0.1521	-0.0841	-0.0000	-0.1521	0.0841	-0.0012	0.1650	-0.0040
20P	0.0000	0.1396	-0.0685	0.0000	-0.1396	0.0685	-0.0006	0.1665	-0.0050
21P	0.0000	0.1744	-0.1003	0.0000	-0.1744	0.1003	-0.0003	0.1617	-0.0040
22P	0.0000	2.8610	-0.6457	0.0000	-2.8610	0.6457	0.0003	0.1607	-0.0041
23P	0.0000	0.2137	-0.1249	0.0000	-0.2137	0.1249	0.0004	0.1597	-0.0061
24P	0.0000	0.0883	-0.0718	-0.0000	-0.0883	0.0718	-0.0030	0.1204	-0.0042
25P	0.0000	0.1680	-0.1111	-0.0000	-0.1680	0.1111	-0.0027	0.1203	-0.0010
26P	0.0000	0.1308	-0.0869	0.0000	-0.1308	0.0869	-0.0008	0.1229	-0.0004
27P	0.0000	0.1957	-0.1314	-0.0000	-0.1957	0.1314	-0.0002	0.1181	-0.0042
28P	0.0000	2.8610	-0.6551	-0.0000	-2.8610	0.6551	0.0005	0.1162	-0.0012
29P	0.0000	0.2509	-0.1493	-0.0000	-0.2509	0.1493	0.0005	0.1146	-0.0022

30P	0.0000	0.0883	-0.0819	-0.0000	-0.0883	0.0819	-0.0031	0.0699	-0.0030
31P	0.0000	0.1733	-0.1309	-0.0000	-0.1733	0.1309	-0.0028	0.0699	-0.0001
32P	0.0000	0.1467	-0.0997	0.0000	-0.1467	0.0997	-0.0009	0.0727	0.0008
33P	0.0000	0.1957	-0.1579	-0.0000	-0.1957	0.1579	-0.0000	0.0676	-0.0030
34P	0.0000	2.8610	-0.6639	0.0000	-2.8610	0.6639	0.0006	0.0655	-0.0002
35P	0.0000	0.2624	-0.1874	-0.0000	-0.2624	0.1874	0.0002	0.0637	-0.0011
36P	0.0000	0.1931	-0.2233	0.0000	-0.1931	0.2233	0.0002	0.0327	-0.0031
37P	0.0000	0.1540	-0.2411	0.0000	-0.1540	0.2411	0.0001	0.0327	-0.0044
38P	0.0000	0.2717	-0.3140	-0.0000	-0.2717	0.3140	-0.0009	0.0334	-0.0052
39P	0.0000	0.2968	-0.2566	-0.0000	-0.2968	0.2566	-0.0000	0.0287	-0.0031
40P	0.0000	0.0755	-0.1308	-0.0000	-0.0755	0.1308	0.0002	0.0283	-0.0044
41P	0.0000	0.3515	-0.3050	-0.0000	-0.3515	0.3050	0.0003	0.0279	-0.0066
44P	0.0000	0.4139	-0.1308	0.0000	-0.4139	0.1308	0.0003	0.3765	0.0292
45P	0.0000	0.1262	-0.0620	-0.0000	-0.1262	0.0620	0.0003	0.0355	-0.1291
1X	0.0000	2.4754	-0.4034	-0.0000	-2.4754	0.4034	-0.0018	0.1909	0.0060
2X	0.0000	0.2687	-0.1225	0.0000	-0.2687	0.1225	-0.0016	0.1670	0.0078
2XY	0.0000	0.2315	-0.1091	-0.0000	-0.2315	0.1091	-0.0014	0.1674	0.0076
2Y	0.0000	0.2687	-0.1225	-0.0000	-0.2687	0.1225	0.0005	0.1683	-0.0161
3X	0.0000	3.8479	-1.7797	0.0000	-3.8479	1.7797	-0.0011	0.1604	0.0082
3XY	0.0000	4.2059	-1.8587	-0.0000	-4.2059	1.8587	-0.0016	0.1609	0.0080
3Y	0.0000	4.7064	-1.9727	0.0000	-4.7064	1.9727	0.0009	0.1608	-0.0164
4X	0.0000	0.2616	-0.1447	-0.0000	-0.2616	0.1447	-0.0014	0.1445	0.0088
4XY	0.0000	0.2616	-0.1447	0.0000	-0.2616	0.1447	-0.0011	0.1451	0.0086
4Y	0.0000	0.2616	-0.1447	-0.0000	-0.2616	0.1447	0.0003	0.1447	-0.0165
5X	0.0000	0.3286	-0.1687	0.0000	-0.3286	0.1687	-0.0012	0.1246	0.0081
5XY	0.0000	0.6494	-0.2343	-0.0000	-0.6494	0.2343	-0.0010	0.1250	0.0079
5Y	0.0000	0.6866	-0.2557	0.0000	-0.6866	0.2557	0.0005	0.1249	-0.0153
6X	0.0000	0.3356	-0.2293	0.0000	-0.3356	0.2293	-0.0008	0.1148	0.0083
6XY	0.0000	0.3356	-0.2293	-0.0000	-0.3356	0.2293	-0.0011	0.1152	0.0081
6Y	0.0000	0.3356	-0.2293	0.0000	-0.3356	0.2293	0.0007	0.1150	-0.0151
7X	0.0000	-1.0205	-0.5678	-0.0000	1.0205	0.5678	-0.0010	0.0941	0.0084
7XY	0.0000	-0.6625	-0.6468	0.0000	0.6625	0.6468	-0.0006	0.0945	0.0083
7Y	0.0000	-0.8745	-0.6548	-0.0000	0.8745	0.6548	0.0003	0.0953	-0.0149
8X	0.0000	0.4107	-0.2758	0.0000	-0.4107	0.2758	-0.0008	0.0742	0.0077
8XY	0.0000	0.3735	-0.2624	-0.0000	-0.3735	0.2624	-0.0005	0.0745	0.0076
8Y	0.0000	0.4107	-0.2758	0.0000	-0.4107	0.2758	0.0003	0.0746	-0.0138
9X	0.0000	0.3882	-0.2944	0.0000	-0.3882	0.2944	-0.0005	0.0640	0.0075
9XY	0.0000	0.7462	-0.3734	-0.0000	-0.7462	0.3734	-0.0007	0.0643	0.0073
9Y	0.0000	0.7462	-0.3814	0.0000	-0.7462	0.3814	0.0007	0.0638	-0.0132
14X	0.0000	0.7557	-0.6944	-20.4548	28.8999	93.4827	0.0000	0.0000	0.0000
14XY	0.0000	0.7557	-0.6944	20.1564	29.4895	92.6631	0.0000	0.0000	0.0000
14Y	0.0000	0.7557	-0.6944	-21.3718	34.4899	-119.0184	0.0000	0.0000	0.0000
15X	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	-0.0019	0.1608	0.0151
15XY	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	-0.0019	0.1614	0.0147
15Y	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	0.0012	0.1610	-0.0279
16X	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	-0.0013	0.1152	0.0199
16XY	0.0000	2.8461	-0.6361	-0.0000	-2.8461	0.6361	-0.0014	0.1156	0.0198
16Y	0.0000	2.8461	-0.6361	0.0000	-2.8461	0.6361	0.0011	0.1152	-0.0304
17X	0.0000	2.8461	-0.6420	0.0000	-2.8461	0.6420	-0.0009	0.0643	0.0201
17XY	0.0000	2.8461	-0.6420	-0.0000	-2.8461	0.6420	-0.0009	0.0646	0.0200
17Y	0.0000	2.8461	-0.6420	0.0000	-2.8461	0.6420	0.0008	0.0640	-0.0301
18Y	0.0000	0.0883	-0.0611	0.0000	-0.0883	0.0611	-0.0017	0.1653	-0.0039
19X	0.0000	0.1521	-0.0856	0.0000	-0.1521	0.0856	-0.0022	0.1647	-0.0041
19XY	0.0000	0.1521	-0.0841	0.0000	-0.1521	0.0841	-0.0022	0.1651	-0.0040
19Y	0.0000	0.1521	-0.0856	0.0000	-0.1521	0.0856	-0.0012	0.1654	-0.0039
20X	0.0000	0.1396	-0.0685	-0.0000	-0.1396	0.0685	-0.0016	0.1659	-0.0022
20XY	0.0000	0.1396	-0.0685	-0.0000	-0.1396	0.0685	-0.0020	0.1663	-0.0022
20Y	0.0000	0.1396	-0.0685	0.0000	-0.1396	0.0685	0.0001	0.1670	-0.0048
21Y	0.0000	0.1744	-0.1003	0.0000	-0.1744	0.1003	-0.0003	0.1622	-0.0039
22X	0.0000	2.8610	-0.6457	0.0000	-2.8610	0.6457	-0.0009	0.1607	-0.0042
22XY	0.0000	2.8610	-0.6457	0.0000	-2.8610	0.6457	-0.0005	0.1612	-0.0042
22Y	0.0000	2.8610	-0.6457	0.0000	-2.8610	0.6457	-0.0001	0.1612	-0.0040
23X	0.0000	0.2137	-0.1249	-0.0000	-0.2137	0.1249	-0.0011	0.1596	-0.0016
23XY	0.0000	0.2137	-0.1249	-0.0000	-0.2137	0.1249	-0.0010	0.1602	-0.0016
23Y	0.0000	0.2137	-0.1249	0.0000	-0.2137	0.1249	0.0003	0.1602	-0.0060
24Y	0.0000	0.0883	-0.0718	-0.0000	-0.0883	0.0718	-0.0030	0.1208	-0.0043
25X	0.0000	0.1680	-0.1125	-0.0000	-0.1680	0.1125	-0.0033	0.1204	-0.0071
25XY	0.0000	0.1680	-0.1111	0.0000	-0.1680	0.1111	-0.0033	0.1208	-0.0072
25Y	0.0000	0.1680	-0.1125	-0.0000	-0.1680	0.1125	-0.0027	0.1207	-0.0011

26X	0.0000	0.1308	-0.0869	-0.0000	-0.1308	0.0869	-0.0019	0.1230	-0.0072
26XY	0.0000	0.1308	-0.0869	-0.0000	-0.1308	0.0869	-0.0019	0.1234	-0.0074
26Y	0.0000	0.1308	-0.0869	0.0000	-0.1308	0.0869	-0.0008	0.1233	-0.0005
27Y	0.0000	0.1957	-0.1314	0.0000	-0.1957	0.1314	-0.0002	0.1185	-0.0043
28X	0.0000	2.8610	-0.6551	-0.0000	-2.8610	0.6551	-0.0008	0.1162	-0.0072
28XY	0.0000	2.8610	-0.6551	0.0000	-2.8610	0.6551	-0.0002	0.1166	-0.0074
28Y	0.0000	2.8610	-0.6551	-0.0000	-2.8610	0.6551	-0.0002	0.1166	-0.0012
29X	0.0000	0.2509	-0.1493	0.0000	-0.2509	0.1493	-0.0009	0.1146	-0.0054
29XY	0.0000	0.2509	-0.1493	-0.0000	-0.2509	0.1493	-0.0006	0.1150	-0.0056
29Y	0.0000	0.2509	-0.1493	0.0000	-0.2509	0.1493	0.0002	0.1150	-0.0022
30Y	0.0000	0.0883	-0.0819	-0.0000	-0.0883	0.0819	-0.0030	0.0702	-0.0031
31X	0.0000	0.1733	-0.1324	0.0000	-0.1733	0.1324	-0.0032	0.0699	-0.0059
31XY	0.0000	0.1733	-0.1309	-0.0000	-0.1733	0.1309	-0.0032	0.0702	-0.0060
31Y	0.0000	0.1733	-0.1324	0.0000	-0.1733	0.1324	-0.0028	0.0702	-0.0001
32X	0.0000	0.1467	-0.0997	-0.0000	-0.1467	0.0997	-0.0017	0.0726	-0.0066
32XY	0.0000	0.1467	-0.0997	0.0000	-0.1467	0.0997	-0.0017	0.0729	-0.0068
32Y	0.0000	0.1467	-0.0997	-0.0000	-0.1467	0.0997	-0.0009	0.0730	0.0009
33Y	0.0000	0.1957	-0.1579	0.0000	-0.1957	0.1579	-0.0000	0.0679	-0.0031
34X	0.0000	2.8610	-0.6639	-0.0000	-2.8610	0.6639	-0.0006	0.0657	-0.0060
34XY	0.0000	2.8610	-0.6639	0.0000	-2.8610	0.6639	0.0001	0.0660	-0.0061
34Y	0.0000	2.8610	-0.6639	-0.0000	-2.8610	0.6639	-0.0002	0.0658	-0.0002
35X	0.0000	0.2624	-0.1874	0.0000	-0.2624	0.1874	-0.0002	0.0640	-0.0047
35XY	0.0000	0.2624	-0.1874	-0.0000	-0.2624	0.1874	-0.0006	0.0643	-0.0049
35Y	0.0000	0.2624	-0.1874	0.0000	-0.2624	0.1874	0.0006	0.0640	-0.0010
36Y	0.0000	0.1931	-0.2233	-0.0000	-0.1931	0.2233	-0.0001	0.0330	-0.0032
37X	0.0000	0.1540	-0.2411	-0.0000	-0.1540	0.2411	-0.0002	0.0327	-0.0018
37XY	0.0000	0.1540	-0.2411	0.0000	-0.1540	0.2411	0.0000	0.0330	-0.0019
37Y	0.0000	0.1540	-0.2411	-0.0000	-0.1540	0.2411	0.0003	0.0330	-0.0044
38X	0.0000	0.2717	-0.3140	-0.0000	-0.2717	0.3140	-0.0008	0.0334	-0.0003
38XY	0.0000	0.2717	-0.3140	0.0000	-0.2717	0.3140	0.0002	0.0338	-0.0005
38Y	0.0000	0.2717	-0.3140	0.0000	-0.2717	0.3140	0.0016	0.0337	-0.0052
39Y	0.0000	0.2968	-0.2566	0.0000	-0.2968	0.2566	0.0001	0.0291	-0.0032
40X	0.0000	0.0755	-0.1308	-0.0000	-0.0755	0.1308	-0.0001	0.0281	-0.0018
40XY	0.0000	0.0755	-0.1308	0.0000	-0.0755	0.1308	-0.0001	0.0284	-0.0019
40Y	0.0000	0.0755	-0.1308	0.0000	-0.0755	0.1308	0.0002	0.0287	-0.0044
41X	0.0000	0.3515	-0.3050	0.0000	-0.3515	0.3050	-0.0003	0.0275	0.0012
41XY	0.0000	0.3515	-0.3050	-0.0000	-0.3515	0.3050	-0.0002	0.0278	0.0011
41Y	0.0000	0.3515	-0.3050	0.0000	-0.3515	0.3050	0.0003	0.0283	-0.0066
44X	0.0000	0.4139	-0.1308	-0.0000	-0.4139	0.1308	-0.0002	0.2140	-0.0138
45X	0.0000	0.1262	-0.0620	0.0000	-0.1262	0.0620	-0.0003	0.0327	-0.0895
10S	0.0000	0.3525	-0.2476	0.0000	-0.3525	0.2476	0.0014	0.0464	-0.0137
11S	0.0000	0.3187	-0.3043	0.0000	-0.3187	0.3043	0.0006	0.0336	-0.0131
12S	0.0000	0.7453	-0.5633	-0.0000	-0.7453	0.5633	0.0010	0.0271	-0.0120
13S	0.0000	0.9720	-0.6614	-0.0000	-0.9720	0.6614	-0.0000	0.0126	-0.0089
42S	0.0000	0.8360	-1.0203	-0.0000	-0.8360	1.0203	0.0002	0.0121	-0.0006
43S	0.0000	0.3266	-0.1227	0.0000	-0.3266	0.1227	0.0005	0.0345	-0.0132
10X	0.0000	0.3525	-0.2476	-0.0000	-0.3525	0.2476	-0.0011	0.0464	0.0085
10XY	0.0000	0.3525	-0.2476	0.0000	-0.3525	0.2476	0.0001	0.0467	0.0084
10Y	0.0000	0.3525	-0.2476	-0.0000	-0.3525	0.2476	-0.0004	0.0466	-0.0137
11X	0.0000	0.3187	-0.3043	-0.0000	-0.3187	0.3043	-0.0005	0.0336	0.0084
11XY	0.0000	0.8567	-0.4233	0.0000	-0.8567	0.4233	-0.0004	0.0340	0.0083
11Y	0.0000	0.8567	-0.4343	-0.0000	-0.8567	0.4343	0.0003	0.0339	-0.0131
12X	0.0000	0.7453	-0.5633	0.0000	-0.7453	0.5633	-0.0007	0.0265	0.0078
12XY	0.0000	0.7453	-0.5633	-0.0000	-0.7453	0.5633	-0.0000	0.0268	0.0077
12Y	0.0000	0.7453	-0.5633	0.0000	-0.7453	0.5633	-0.0001	0.0275	-0.0120
13X	0.0000	0.9720	-0.6614	0.0000	-0.9720	0.6614	-0.0016	0.0124	0.0054
13XY	0.0000	1.6890	-0.8194	-0.0000	-1.6890	0.8194	0.0011	0.0131	0.0052
13Y	0.0000	1.6890	-0.8344	0.0000	-1.6890	0.8344	0.0007	0.0133	-0.0089
42Y	0.0000	0.8360	-1.0203	0.0000	-0.8360	1.0203	-0.0000	0.0124	-0.0006
43X	0.0000	0.3266	-0.1227	0.0000	-0.3266	0.1227	-0.0004	0.0335	0.0085

Moments for Angles Modeled as Beams:

Angle Label	Torsion (ft-lbs)	Origin X Moment (ft-lbs)	Origin Y Moment (ft-lbs)	End X Moment (ft-lbs)	End Y Moment (ft-lbs)	X Shear (lbs)	Y Shear (lbs)
2P	-26.59	314.61	1.77	814.78	127.49	225.86	25.87
2X	2.50	277.93	-1.77	829.36	-92.19	221.48	-18.79

2XY	16.64	275.00	1.45	837.36	94.16	222.49	19.11
2Y	5.54	325.86	-1.45	838.76	-131.00	232.91	-26.49
3P	17.89	-823.25	-127.67	581.47	-105.96	-48.35	-46.73
3X	-5.69	-984.05	92.36	560.99	61.68	-84.62	30.81
3XY	-18.93	-995.73	-94.76	572.85	-63.33	-84.58	-31.61
3Y	3.34	-849.43	131.59	548.45	106.65	-60.19	47.65
4P	17.89	-581.47	105.97	-1496.77	-15.04	-415.74	18.21
4X	-5.69	-560.99	-61.68	-1541.88	37.17	-420.51	-4.91
4XY	-18.93	-572.85	63.31	-1546.11	-41.16	-423.73	4.41
4Y	3.33	-548.45	-106.65	-1475.62	19.24	-404.91	-17.48
5P	3.94	2128.56	18.16	2501.05	142.44	925.97	32.11
5X	42.44	2225.24	-40.35	2762.44	-145.90	997.58	-37.34
5XY	-9.25	2229.37	43.73	2753.26	152.52	996.57	39.27
5Y	-52.91	2107.98	-21.74	2475.27	-151.38	916.70	-34.53
6P	207.06	-2725.68	-144.13	1525.30	-217.05	-240.09	-72.28
6X	149.48	-3195.10	147.86	455.79	245.94	-547.87	78.75
6XY	-196.57	-3177.99	-155.51	512.43	-257.23	-533.12	-82.54
6Y	-183.57	-2692.41	154.05	1667.55	220.50	-204.98	74.95
7P	207.18	-1525.28	217.08	-7108.75	-430.09	-1727.19	-42.41
7X	149.41	-455.80	-245.96	-6932.68	192.42	-1477.46	-10.57
7XY	-196.48	-512.45	257.26	-7018.91	-191.92	-1506.04	12.88
7Y	-183.69	-1667.53	-220.54	-7245.58	434.77	-1783.02	42.68
8P	336.62	7747.00	433.33	5892.35	1163.86	2728.25	319.21
8X	416.79	7632.27	-196.68	6593.12	-671.66	2844.90	-174.02
8XY	-318.27	7724.80	195.33	6675.14	624.23	2879.83	164.19
8Y	-483.17	7889.44	-437.07	6029.60	-1187.41	2784.21	-324.55
9P	-167.63	1077.08	5592.35	-92.93	3482.25	192.65	1777.09
9X	-378.90	-1890.43	6216.76	-637.81	3851.44	-495.21	1971.28
9XY	416.38	-1963.79	-6263.84	-678.02	-3928.32	-517.48	-1995.56
9Y	109.49	1109.04	-5745.09	-66.43	-3574.48	204.12	-1825.06
10P	-167.36	93.09	-3482.26	2069.12	1946.34	423.47	-300.80
10X	-379.00	638.17	-3851.37	-1413.48	1507.78	-151.85	-458.85
10XY	416.44	678.43	3928.25	-1359.20	-1459.33	-133.35	483.39
10Y	109.23	66.53	3574.48	2053.63	-1887.88	415.25	330.33
11P	-134.66	-2332.79	-2608.03	-780.77	-440.01	-609.83	-597.02
11X	203.21	1735.05	-2177.87	141.81	-332.51	367.41	-491.45
11XY	-209.40	1695.06	2127.82	115.94	268.97	354.52	469.21
11Y	115.83	-2330.28	2555.67	-763.74	383.39	-606.01	575.67
12P	-5.43	731.35	438.63	461.35	486.39	103.10	79.96
12X	56.29	-54.18	193.56	-53.90	521.33	-9.33	61.76
12XY	-63.22	-16.56	-113.05	-29.14	-440.75	-3.94	-47.84
12Y	-3.30	703.13	-370.45	454.83	-405.68	100.10	-67.09
13P	5.72	-451.10	-467.54	-73.77	349.26	-21.72	-4.89
13X	46.02	46.72	-498.08	-231.52	292.48	-7.64	-8.50
13XY	-58.13	23.89	415.67	-233.31	-373.99	-8.66	1.72
13Y	-18.66	-448.44	384.27	-92.77	-434.35	-22.39	-2.07
15P	1.77	9.72	-4.26	47.48	-0.13	9.53	-0.73
15X	1.77	9.72	4.26	-13.53	17.69	-0.63	3.66
15XY	-1.45	11.86	7.35	-11.45	8.45	0.07	2.63
15Y	-1.45	11.86	-7.35	51.20	-21.96	10.51	-4.88
16P	1.78	-47.48	0.13	-279.31	-24.13	-72.60	-5.33
16X	1.78	13.53	-17.69	222.06	-12.36	52.37	-6.68
16XY	-1.44	11.45	-8.45	217.75	9.10	50.95	0.15
16Y	-1.43	-51.20	21.96	-288.20	23.21	-75.40	10.03
17P	1.77	279.31	24.12	314.61	26.61	131.94	11.27
17X	1.78	-222.06	12.36	-277.93	-2.51	-111.13	2.19
17XY	-1.44	-217.75	-9.10	-275.00	-16.63	-109.53	-5.72
17Y	-1.43	288.20	-23.21	325.85	-5.56	136.42	-6.39
18P	-0.18	12.72	-0.42	15.53	2.31	4.71	0.31
18X	-0.18	12.72	0.42	16.34	3.63	4.84	0.67
18XY	0.59	13.62	0.27	16.29	-2.76	4.98	-0.41
18Y	0.59	13.62	-0.27	16.35	-3.53	5.00	-0.63
19P	-0.18	-15.53	-2.31	-189.12	8.92	-45.49	1.47
19X	-0.18	-16.34	-3.63	154.68	3.77	30.73	0.03
19XY	0.59	-16.29	2.76	153.92	-8.91	30.58	-1.37
19Y	0.59	-16.35	3.53	-192.04	-4.44	-46.32	-0.20
20P	-0.19	189.12	-8.92	120.11	-29.39	68.71	-8.51
20X	-0.18	-154.68	-3.77	-108.12	-8.45	-58.41	-2.72
20XY	0.58	-153.92	8.91	-107.08	26.12	-58.01	7.79

20Y	0.59	192.04	4.44	122.35	10.65	69.85	3.35	
21P	3.15	-5.43	-39.51	117.13	-81.70	18.62	-20.20	
21X	3.15	-5.43	39.51	-111.45	80.10	-19.48	19.94	
21XY	-2.53	-6.86	39.72	-113.73	80.16	-20.10	19.98	
21Y	-2.53	-6.86	-39.72	116.98	-83.41	18.35	-20.52	
22P	3.23	-117.13	81.70	-882.24	28.55	-221.95	24.49	
22X	3.23	111.45	-80.10	888.47	-37.33	222.33	-26.12	
22XY	-2.46	113.73	-80.16	894.13	-38.53	224.10	-26.39	
22Y	-2.45	-116.98	83.41	-883.46	35.28	-222.19	26.36	
23P	3.18	882.24	-28.56	631.79	13.99	336.33	-3.24	
23X	3.23	-888.47	37.34	-683.35	-48.17	-349.42	-2.40	
23XY	-2.50	-894.13	38.52	-683.26	-9.63	-350.65	6.42	
23Y	-2.45	883.46	-35.27	632.36	56.19	336.73	4.65	
24P	-1.81	13.05	-0.48	-5.08	7.25	1.33	1.13	
24X	-1.81	13.05	0.48	51.09	9.69	10.69	1.70	
24XY	2.86	12.02	0.89	50.07	-7.27	10.35	-1.06	
24Y	2.86	12.02	-0.89	-4.90	-10.94	1.19	-1.97	
25P	-1.82	5.08	-7.25	-554.03	36.41	-122.03	6.48	
25X	-1.81	-51.09	-9.70	533.97	25.77	107.27	3.57	
25XY	2.86	-50.07	7.28	538.71	-38.01	108.54	-6.83	
25Y	2.87	4.90	10.93	-555.95	-23.98	-122.50	-2.90	
26P	-1.90	554.03	-36.41	78.16	-141.51	140.49	-39.54	
26X	-1.76	-533.97	-25.77	-58.85	-85.17	-131.74	-24.65	
26XY	2.77	-538.71	38.02	-64.25	134.60	-134.00	38.36	
26Y	2.92	555.95	23.97	81.70	93.44	141.70	26.09	
27P	3.77	-3.99	-48.32	161.90	-108.34	26.32	-26.11	
27X	3.77	-3.99	48.32	-160.83	93.38	-27.47	23.62	
27XY	-2.91	-3.62	48.30	-163.70	108.55	-27.89	26.14	
27Y	-2.91	-3.62	-48.30	165.27	-94.47	26.94	-23.79	
28P	3.86	-161.90	108.34	-1051.27	66.45	-269.43	38.82	
28X	3.86	160.83	-93.38	1043.70	1.86	267.83	-20.36	
28XY	-2.82	163.70	-108.55	1052.45	-77.91	270.42	-41.46	
28Y	-2.82	-165.27	94.47	-1061.41	-8.19	-272.43	19.16	
29P	3.66	1051.27	-66.46	638.24	-129.07	375.31	-43.44	
29X	4.04	-1043.70	-1.85	-699.59	-267.54	-387.53	-59.88	
29XY	-3.00	-1052.45	77.90	-705.89	121.91	-390.88	44.41	
29Y	-2.61	1061.41	8.21	643.86	299.10	378.81	68.27	
30P	-1.95	18.01	-2.48	19.77	28.71	6.30	4.37	
30X	-1.95	18.01	2.48	27.59	37.19	7.60	6.61	
30XY	3.00	18.16	-1.21	26.01	-35.29	7.36	-6.08	
30Y	3.00	18.16	1.21	20.96	-31.69	6.52	-5.08	
31P	-1.98	-19.77	-28.71	-729.81	56.82	-166.64	6.25	
31X	-1.93	-27.59	-37.20	690.87	23.50	147.34	-3.04	
31XY	2.98	-26.01	35.29	698.17	-34.44	149.31	0.19	
31Y	3.03	-20.96	31.69	-736.01	-46.75	-168.28	-3.34	
32P	-2.22	729.81	-56.82	437.99	-402.75	259.53	-102.13	
32X	-1.76	-690.88	-23.50	-417.05	-293.17	-246.20	-70.37	
32XY	2.78	-698.17	34.45	-423.88	335.79	-249.34	82.28	
32Y	3.25	736.01	46.74	440.22	362.79	261.40	91.01	
33P	26.97	-55.86	-11.36	1147.04	833.30	207.85	156.56	
33X	26.97	-55.86	11.36	-1003.62	-212.10	-201.81	-38.23	
33XY	-17.80	-54.96	-13.62	-1001.58	204.97	-201.25	36.45	
33Y	-17.79	-54.96	13.62	1151.23	-837.40	208.82	-156.91	
34P	26.83	-1147.05	-833.29	-4052.23	-1550.80	-990.21	-454.04	
34X	26.94	1003.63	212.10	4195.13	585.08	990.38	151.85	
34XY	-17.77	1001.58	-204.97	4220.60	-596.83	994.84	-152.73	
34Y	-17.65	-1151.23	837.40	-4081.22	1551.08	-996.53	454.88	
35P	-3.27	4052.33	1550.79	705.49	131.25	895.18	316.47	
35X	-4.17	-4195.22	-585.07	-838.60	-426.45	-947.17	-190.33	
35XY	13.52	-4220.62	596.83	-851.17	468.16	-954.32	200.39	
35Y	12.65	4081.24	-1551.08	709.01	-170.13	901.28	-323.84	
36P	-24.50	10.65	23.21	-65.11	31.27	-10.37	10.38	
36X	-24.50	10.65	-23.21	206.83	-8.32	41.42	-6.00	
36XY	27.86	10.72	22.62	205.99	8.66	41.27	5.95	
36Y	27.86	10.72	-22.62	-63.65	-30.89	-10.08	-10.19	
37P	-24.50	65.11	-31.26	-571.21	-83.63	-96.41	-21.89	
37X	-24.49	-206.83	8.31	620.51	-78.55	78.79	-13.37	
37XY	27.85	-205.99	-8.65	638.47	82.39	82.37	14.04	
37Y	27.86	63.65	30.89	-585.32	88.23	-99.37	22.70	

38P	-28.40	571.03	83.64	44.98	-118.96	107.67	-6.17
38X	-28.74	-620.33	78.54	-132.10	171.23	-131.48	43.64
38XY	32.22	-638.27	-82.38	-152.20	-174.54	-138.12	-44.89
38Y	31.85	585.12	-88.25	57.91	106.65	112.39	3.22
39P	0.00	-128.58	-15.04	-0.00	-0.00	-18.37	-2.15
39X	-0.00	262.82	16.60	-0.00	0.00	37.55	2.37
39XY	0.00	265.45	9.50	-0.00	-0.00	37.92	1.36
39Y	0.00	-133.02	-8.50	-0.00	-0.00	-19.00	-1.21
40P	-0.00	-302.79	-61.67	-0.00	-0.00	-43.25	-8.81
40X	-0.00	491.52	-21.85	0.00	0.00	70.22	-3.12
40XY	0.00	488.97	52.70	0.00	-0.00	69.86	7.53
40Y	0.00	-298.83	37.26	0.00	0.00	-42.69	5.32
41P	-0.00	-36.82	-235.86	0.00	-0.00	-5.26	-33.69
41X	-0.00	235.61	-185.41	0.00	0.00	33.66	-26.49
41XY	0.00	238.56	214.26	0.00	-0.00	34.08	30.61
41Y	0.00	-41.00	217.31	0.00	0.00	-5.86	31.04
53P	-0.13	3.97	-5.27	-18.86	-9.34	-0.87	-0.85
53X	-0.13	3.97	5.27	25.60	4.22	1.72	0.55
53XY	0.37	4.01	-5.19	25.66	-4.23	1.73	-0.55
53Y	0.37	4.01	5.19	-18.90	9.14	-0.87	0.84
98P	0.12	-14.47	7.47	-21.95	-29.19	-6.73	-4.01
98X	0.08	14.28	-12.62	18.05	-6.68	5.97	-3.56
98XY	0.08	14.28	12.62	17.24	8.02	5.82	3.81
98Y	0.12	-14.47	-7.47	-18.68	28.35	-6.12	3.86
99P	0.00	-5.98	-7.16	9.12	7.23	0.25	0.01
99X	0.02	9.51	0.93	-10.15	-0.35	-0.05	0.05
100P	-0.01	3.23	-5.53	0.71	10.38	0.23	0.28
100X	-0.07	3.03	1.06	-4.86	4.39	-0.11	0.32

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	5.168	50.00	50.00	10.34
C2	2.508	50.00	50.00	5.02
C3	2.916	50.00	50.00	5.83
C4	2.916	50.00	50.00	5.83
C5	2.916	50.00	50.00	5.83
C6	2.916	50.00	50.00	5.83
C7	2.916	50.00	50.00	5.83
C8	2.916	50.00	50.00	5.83
C9	2.916	50.00	50.00	5.83
C10	2.916	50.00	50.00	5.83
C11	2.918	50.00	50.00	5.84
C12	2.918	50.00	50.00	5.84
C13	2.918	50.00	50.00	5.84
C14	2.918	50.00	50.00	5.84
C15	2.933	50.00	50.00	5.87
C16	2.933	50.00	50.00	5.87
C17	2.933	50.00	50.00	5.87
C18	2.933	50.00	50.00	5.87
C19	2.935	50.00	50.00	5.87
C20	2.935	50.00	50.00	5.87
C21	2.935	50.00	50.00	5.87
C22	2.935	50.00	50.00	5.87
C23	2.937	50.00	50.00	5.87
C24	2.937	50.00	50.00	5.87
C25	2.937	50.00	50.00	5.87
C26	2.937	50.00	50.00	5.87
C27	4.598	50.00	50.00	9.20
C28	0.690	50.00	50.00	1.38
C29	0.926	50.00	50.00	1.85
C30	0.834	50.00	50.00	1.67
C31	0.956	50.00	50.00	1.91

C32	1.877	50.00	50.00	3.75
C33	1.026	50.00	50.00	2.05
C34	5.103	50.00	50.00	10.21
C35	0.733	50.00	50.00	1.47
C36	1.093	50.00	50.00	2.19
C37	0.838	50.00	50.00	1.68
C38	0.960	50.00	50.00	1.92
C39	1.884	50.00	50.00	3.77
C40	1.026	50.00	50.00	2.05
C41	4.240	50.00	50.00	8.48
C42	4.740	50.00	50.00	9.48
C43	1.168	50.00	50.00	2.34
C44	1.357	50.00	50.00	2.71

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

Equilibrium Joint Positions and Rotations for Load Case "NESC 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	0.02006	0.1763	-0.01854	0.0000	0.0000	0.0000	0.02006	14.18	93.98
2P	0.01373	0.1539	-0.02077	-0.0812	0.0428	0.1151	3.514	15.15	84.98
3P	0.01047	0.1467	-0.0208	-0.1088	0.0275	0.1120	3.51	15.15	79.98
4P	0.00876	0.1331	-0.02062	-0.2110	0.0224	0.0922	3.509	15.13	74.98
5P	0.006243	0.1145	-0.01912	-0.1534	0.0336	0.0723	3.506	15.11	69.98
6P	0.003884	0.1057	-0.01841	-0.1608	0.0173	0.0467	3.504	15.11	64.98
7P	0.002539	0.08859	-0.01802	-0.2366	0.0163	0.0285	3.503	15.09	59.98
8P	0.0007803	0.06835	-0.0167	-0.1734	0.0269	0.0102	3.501	15.07	54.98
9P	-0.001223	0.0578	-0.01586	-0.1380	0.0071	-0.0142	3.499	15.06	49.98
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	-0.004524	0.1468	-0.03439	-0.1125	0.0275	0.1280	3.495	22.15	79.97
16P	-0.005545	0.1058	-0.03494	-0.1227	0.0174	0.0923	3.494	22.11	64.97
17P	-0.004518	0.0579	-0.03499	-0.1658	0.0072	0.0474	3.495	22.06	49.97
18P	0.04937	0.1516	-0.01438	0.0124	0.0729	0.1419	3.549	0.1516	84.99
19P	0.03443	0.1511	-0.01162	0.0459	0.0611	0.1431	3.534	6.151	84.99
20P	0.02345	0.1527	-0.01073	-0.0786	0.0518	0.1331	3.523	10.65	84.99
21P	0.04277	0.1493	-0.01434	0.0214	0.0801	0.1285	3.543	0.1493	79.99
22P	0.02964	0.1479	-0.012	0.0284	0.0592	0.1228	3.53	6.148	79.99
23P	0.02001	0.1466	-0.01193	-0.0642	0.0433	0.1244	3.52	10.65	79.99
24P	0.02722	0.1106	-0.0127	0.0322	0.0845	0.0892	3.527	0.1106	69.99
25P	0.01791	0.1103	-0.007894	0.0696	0.0643	0.0806	3.518	6.11	69.99
26P	0.0121	0.113	-0.005775	-0.0862	0.0489	0.0731	3.512	10.61	69.99
27P	0.02345	0.1093	-0.01266	0.0455	0.0707	0.0748	3.523	0.1093	64.99
28P	0.01568	0.1074	-0.008253	0.0443	0.0495	0.0734	3.516	6.107	64.99
29P	0.009705	0.1058	-0.007513	-0.0679	0.0335	0.0825	3.51	10.61	64.99
30P	0.009296	0.06391	-0.00878	0.0278	0.0645	0.0431	3.509	0.06391	54.99
31P	0.004807	0.06382	-0.004381	0.0665	0.0496	0.0325	3.505	6.064	55
32P	0.002788	0.0667	-0.002543	-0.0907	0.0383	0.0277	3.503	10.57	55
33P	0.006416	0.06252	-0.008742	0.0407	0.0406	0.0282	3.506	0.06252	49.99
34P	0.003381	0.06014	-0.004729	0.0421	0.0273	0.0316	3.503	6.06	50
35P	0.0006095	0.0582	-0.004455	-0.0822	0.0173	0.0395	3.501	10.56	50
36P	0.002122	0.0295	-0.009109	-0.0101	0.0274	0.0178	5.377	0.0295	39.99
37P	5.436e-006	0.02942	-0.009342	0.0120	0.0244	0.0343	5.375	5.279	39.99
38P	-0.003134	0.03015	-0.008848	-0.0310	0.0215	0.0164	5.372	10.53	39.99
39P	0.0007001	0.02647	-0.009247	-0.0024	0.0114	0.0153	6.334	0.02647	34.99
40P	-0.0006566	0.02627	-0.009496	-0.0023	0.0064	0.0152	6.332	5.276	34.99
41P	-0.002145	0.02607	-0.01028	-0.0227	0.0014	0.0173	6.331	10.53	34.99
44P	-0.001362	0.3415	0.02547	0.0000	0.0000	0.0000	-0.001362	17.97	17.78
45P	-0.001535	0.03163	-0.1534	0.0000	0.0000	0.0000	-0.001535	10.53	39.85
1X	0.1061	0.1725	0.0007794	0.0000	0.0000	0.0000	0.1061	-13.83	94
2X	0.08957	0.1549	-0.005209	-0.0587	0.1026	0.1576	3.59	-14.85	84.99
2XY	0.09001	0.137	0.009708	-0.0912	0.1163	0.1639	-3.41	-14.86	85.01
2Y	0.01333	0.1379	-0.01725	-0.0724	0.0283	0.1311	-3.487	15.14	84.98
3X	0.07977	0.1489	-0.004787	-0.1172	0.1321	0.1593	3.58	-14.85	80
3XY	0.07936	0.1291	0.01008	-0.1016	0.1341	0.1626	-3.421	-14.87	80.01
3Y	0.01075	0.1316	-0.01729	-0.0959	0.0345	0.1187	-3.489	15.13	79.98
4X	0.06686	0.1323	-0.003981	-0.2309	0.1532	0.1308	3.567	-14.87	75
4XY	0.06689	0.1174	0.01046	-0.1622	0.1456	0.1334	-3.433	-14.88	75.01
4Y	0.007802	0.1199	-0.01712	-0.1756	0.0280	0.1031	-3.492	15.12	74.98
5X	0.05438	0.1146	-0.004045	-0.1316	0.1347	0.1019	3.554	-14.89	70
5XY	0.05458	0.1039	0.009888	-0.1109	0.1415	0.1040	-3.445	-14.9	70.01
5Y	0.005989	0.1045	-0.01606	-0.1310	0.0211	0.0875	-3.494	15.1	69.98
6X	0.04328	0.1061	-0.002766	-0.2042	0.1233	0.0582	3.543	-14.89	65
6XY	0.04285	0.09669	0.009758	-0.1452	0.1167	0.0729	-3.457	-14.9	65.01
6Y	0.003935	0.09627	-0.01563	-0.1496	0.0267	0.0704	-3.496	15.1	64.98
7X	0.03283	0.08552	-0.001924	-0.2419	0.1145	0.0416	3.533	-14.91	60
7XY	0.03306	0.08115	0.009558	-0.2095	0.1094	0.0683	-3.467	-14.92	60.01
7Y	0.001756	0.08081	-0.01538	-0.2055	0.0221	0.0662	-3.498	15.08	59.98
8X	0.0235	0.06809	-0.001725	-0.1293	0.1015	0.0247	3.523	-14.93	55
8XY	0.02373	0.06364	0.008503	-0.1485	0.1050	0.0635	-3.476	-14.94	55.01

8Y	0.0002785	0.06361	-0.01435	-0.1479	0.0122	0.0619
9X	0.0156	0.05956	-0.0008326	-0.1491	0.0733	-0.0039
9XY	0.01554	0.05456	0.007726	-0.1183	0.0726	0.0624
9Y	-0.0008558	0.05432	-0.01371	-0.1223	0.0209	0.0653
14X	0	0	0	0.0000	0.0000	0.0000
14XY	0	0	0	0.0000	0.0000	0.0000
14Y	0	0	0	0.0000	0.0000	0.0000
15X	0.1034	0.1496	0.002014	-0.0257	0.1325	0.2097
15XY	0.1042	0.1291	0.01724	-0.0380	0.1344	0.2239
15Y	-0.004504	0.1317	-0.02967	-0.1042	0.0345	0.1279
16X	0.05251	0.1067	0.003508	0.0244	0.1236	0.0840
16XY	0.05244	0.09732	0.01553	0.0013	0.1169	0.0811
16Y	-0.005518	0.09637	-0.03114	-0.1157	0.0268	0.0808
17X	0.02061	0.06006	0.005962	-0.0092	0.0735	0.0632
17XY	0.02053	0.05507	0.01685	-0.0530	0.0726	0.0300
17Y	-0.004533	0.05442	-0.03089	-0.1497	0.0208	0.0125
18Y	0.04985	0.1355	-0.005668	-0.0249	0.0724	0.1464
19X	0.06464	0.1518	-0.01605	0.0295	0.0849	0.1549
19XY	0.06513	0.1356	-0.003728	-0.0198	0.0900	0.1480
19Y	0.03491	0.1356	-0.007406	0.0121	0.0549	0.1320
20X	0.07721	0.1535	-0.0156	-0.0967	0.0935	0.1599
20XY	0.07715	0.1363	6.695e-005	-0.1012	0.1030	0.1595
20Y	0.02468	0.1369	-0.007828	-0.0791	0.0415	0.1402
21Y	0.04285	0.1321	-0.005626	-0.0170	0.0845	0.1326
22X	0.05662	0.1485	-0.01644	0.0114	0.1010	0.1365
22XY	0.05704	0.131	-0.004106	-0.0331	0.1043	0.1383
22Y	0.02934	0.132	-0.007779	-0.0061	0.0646	0.1247
23X	0.06771	0.1477	-0.01455	-0.0856	0.1165	0.1469
23XY	0.06795	0.1295	0.001027	-0.1024	0.1191	0.1376
23Y	0.01985	0.1313	-0.009133	-0.0656	0.0495	0.1166
24Y	0.02776	0.1013	-0.003456	-0.0066	0.0815	0.0892
25X	0.03672	0.1106	-0.01689	0.0582	0.1048	0.1020
25XY	0.03728	0.1014	-0.003339	0.0055	0.1056	0.1031
25Y	0.01845	0.1014	-0.003393	0.0183	0.0574	0.0794
26X	0.04553	0.1132	-0.01784	-0.1047	0.1196	0.1175
26XY	0.04609	0.1028	-0.00122	-0.1004	0.1235	0.1131
26Y	0.01264	0.1032	-0.004263	-0.0928	0.0392	0.0773
27Y	0.02346	0.09861	-0.003413	0.0015	0.0719	0.0810
28X	0.03124	0.1074	-0.0173	0.0318	0.0919	0.0739
28XY	0.03178	0.09749	-0.003734	-0.0090	0.0899	0.0766
28Y	0.01516	0.09747	-0.003756	0.0013	0.0539	0.0756
29X	0.03723	0.1058	-0.01604	-0.0961	0.1076	0.0816
29XY	0.0375	0.09624	-0.0004283	-0.0906	0.1033	0.0681
29Y	0.009465	0.09619	-0.005377	-0.0765	0.0403	0.0707
30Y	0.009708	0.06004	-0.003836	0.0023	0.0586	0.0420
31X	0.01379	0.06392	-0.01285	0.0648	0.0796	0.0528
31XY	0.01422	0.06019	-0.004835	0.0248	0.0773	0.0561
31Y	0.005219	0.05998	-0.002352	0.0368	0.0400	0.0337
32X	0.01884	0.06658	-0.01474	-0.0901	0.0906	0.0731
32XY	0.01924	0.06231	-0.004113	-0.0966	0.0911	0.0607
32Y	0.003222	0.06224	-0.001994	-0.0867	0.0260	0.0233
33Y	0.006347	0.05755	-0.003793	0.0126	0.0467	0.0397
34X	0.009705	0.0608	-0.01327	0.0398	0.0538	0.0372
34XY	0.01038	0.05599	-0.005244	0.0044	0.0570	0.0336
34Y	0.002629	0.05598	-0.002705	0.0176	0.0363	0.0298
35X	0.01306	0.05936	-0.01281	-0.0914	0.0636	0.0477
35XY	0.01263	0.05454	-0.002608	-0.0953	0.0647	0.0252
35Y	0.0009594	0.05452	-0.003498	-0.0789	0.0285	0.0096
36Y	0.001701	0.02721	-0.003005	-0.0242	0.0199	0.0206
37X	0.003478	0.02952	-0.008449	-0.0001	0.0303	0.0084
37XY	0.003869	0.02726	-0.001074	-0.0123	0.0253	0.0293
37Y	0.0003617	0.02719	-0.004659	-0.0075	0.0145	0.0030
38X	0.004201	0.03026	-0.007262	-0.0514	0.0332	0.0171
38XY	0.006392	0.02782	0.0008309	-0.0536	0.0306	0.0152
38Y	0.000231	0.02776	-0.005942	-0.0433	0.0091	0.0161
39Y	0.0008683	0.02309	-0.002747	-0.0188	0.0102	0.0153
40X	0.002137	0.02563	-0.008774	-0.0118	0.0164	0.0151
40XY	0.002171	0.0226	-0.0008032	-0.0267	0.0114	0.0138
40Y	-0.0006338	0.02282	-0.004505	-0.0195	0.0089	0.0169

-3.5	15.06	54.99
3.516	-14.94	50
-3.484	-14.95	50.01
-3.501	15.05	49.99
13.07	-19.07	0
-13.07	-19.07	0
-13.07	19.07	0
3.603	-21.85	80
-3.396	-21.87	80.02
-3.505	22.13	79.97
3.553	-21.89	65
-3.448	-21.9	65.02
-3.506	22.1	64.97
3.521	-21.94	50.01
-3.479	-21.94	50.02
-3.505	22.05	49.97
-3.45	0.1355	84.99
3.565	-5.848	84.98
-3.435	-5.864	85
-3.465	6.136	84.99
3.577	-10.35	84.98
-3.423	-10.36	85
-3.475	10.64	84.99
-3.457	0.1321	79.99
3.557	-5.852	79.98
-3.443	-5.869	80
-3.471	6.132	79.99
3.568	-10.35	79.99
-3.432	-10.37	80
-3.48	10.63	79.99
-3.472	0.1013	70
3.537	-5.889	69.98
-3.463	-5.899	70
-3.482	6.101	70
3.546	-10.39	69.98
-3.454	-10.4	70
-3.487	10.6	70
-3.477	0.09861	65
3.531	-5.893	64.98
-3.468	-5.903	65
-3.485	6.097	65
3.537	-10.39	64.98
-3.462	-10.4	65
-3.491	10.6	64.99
-3.49	0.06004	55
3.514	-5.936	54.99
-3.486	-5.94	55
-3.495	6.06	55
3.519	-10.43	54.99
-3.481	-10.44	55
-3.497	10.56	55
-3.494	0.05755	50
3.51	-5.939	49.99
-3.49	-5.944	49.99
-3.497	6.056	50
3.513	-10.44	49.99
-3.487	-10.45	50
-3.499	10.55	50
-5.373	0.02721	40
5.378	-5.22	39.99
-5.371	-5.223	40
-5.375	5.277	40
5.379	-10.47	39.99
-5.369	-10.47	40
-5.375	10.53	39.99
-6.332	0.02309	35
6.335	-5.224	34.99
-6.331	-5.227	35
-6.334	5.273	35

41X	0.003265	0.02479	-0.006119	-0.0532	0.0213	0.0083	6.336	-10.48	34.99
41XY	0.003472	0.02212	0.002598	-0.0497	0.0126	0.0147	-6.33	-10.48	35
41Y	-0.002151	0.02255	-0.006814	-0.0367	0.0077	0.0160	-6.335	10.52	34.99
44X	-0.0006836	0.1606	-0.01087	0.0000	0.0000	0.0000	-0.0006836	-17.47	17.74
45X	0.005258	0.0271	-0.1276	0.0000	0.0000	0.0000	0.005258	-10.47	39.87
10S	-0.0008911	0.04204	-0.01616	-0.1717	0.0048	-0.0244	4.456	15.45	44.98
11S	-0.002718	0.03032	-0.01549	-0.0854	0.0176	-0.0105	5.412	15.84	39.98
12S	-0.003511	0.02544	-0.0142	-0.0486	-0.0043	0.0051	6.368	16.25	34.99
13S	-0.001529	0.0115	-0.009951	-0.0650	-0.0167	-0.0033	8.54	17.16	23.66
42S	1.216e-005	0.01156	-0.001846	0.0031	-0.0014	0.0027	8.541	0.01156	23.67
43S	-0.002894	0.03017	-0.01407	-0.0863	0.0148	0.0113	-0.002894	15.84	39.99
10X	0.01042	0.04124	0.0007303	-0.1904	0.0476	0.0000	4.468	-15.37	45
10XY	0.01108	0.03991	0.008894	-0.1596	0.0497	0.0438	-4.446	-15.37	45.01
10Y	-0.003123	0.03959	-0.0137	-0.1551	0.0093	0.0632	-4.46	15.45	44.99
11X	0.006731	0.03037	0.000895	-0.0968	0.0371	0.0283	5.421	-15.78	40
11XY	0.00677	0.028	0.009033	-0.0998	0.0354	0.0050	-5.408	-15.79	40.01
11Y	-0.003038	0.0279	-0.01293	-0.0871	0.0043	0.0424	-5.418	15.84	39.99
12X	0.004181	0.0235	0.001067	-0.0757	0.0272	0.0164	6.376	-16.2	35
12XY	0.004706	0.02146	0.0085	-0.0613	0.0138	0.0071	-6.367	-16.2	35.01
12Y	-0.003979	0.02199	-0.01162	-0.0522	0.0066	0.0240	-6.376	16.24	34.99
13X	0.0002316	0.01132	0.0005114	-0.0524	0.0139	0.0101	8.541	-17.13	23.67
13XY	0.001973	0.00935	0.006205	-0.0482	0.0075	0.0065	-8.539	-17.14	23.68
13Y	-0.0008005	0.009405	-0.008782	-0.0504	-0.0145	0.0165	-8.542	17.15	23.66
42Y	-3.524e-005	0.008765	-0.0005395	-0.0129	-0.0035	0.0012	-8.541	0.008765	23.67
43X	0.006737	0.02844	0.005161	-0.0983	0.0464	0.0106	0.006737	-15.79	40.01

Joint Support Reactions for Load Case "NESC Broken Wire":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
14P	-23.62	0.0	-36.67	0.0	129.65	0.0	0.0	136.79	0.0	0.17	0.0	0.1	0.0	-0.01	0.0	0.0
14X	9.33	0.0	-20.93	0.0	-38.34	0.0	0.0	44.67	0.0	0.44	0.0	0.1	0.0	-0.04	0.0	0.0
14XY	-18.20	0.0	-22.71	0.0	-87.42	0.0	0.0	92.14	0.0	0.20	0.0	0.0	0.0	-0.03	0.0	0.0
14Y	21.23	0.0	-26.96	0.0	112.14	0.0	0.0	117.27	0.0	0.11	0.0	-0.3	0.0	-0.09	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	5.7421	-1.7446	-0.0000	-5.7421	1.7446	0.0201	0.1763	-0.0185
2P	0.0000	0.0994	-0.2208	0.0000	-0.0994	0.2208	0.0137	0.1539	-0.0208
3P	0.0000	1.2431	-3.7360	0.0000	-1.2431	3.7360	0.0105	0.1467	-0.0208
4P	0.0000	0.1068	-0.2751	0.0000	-0.1068	0.2751	0.0088	0.1331	-0.0206
5P	0.0000	0.1208	-0.3039	-0.0000	-0.1208	0.3039	0.0062	0.1145	-0.0191
6P	0.0000	0.1373	-0.4363	-0.0000	-0.1373	0.4363	0.0039	0.1057	-0.0184
7P	0.0000	-0.2798	-0.9943	0.0000	0.2798	0.9943	0.0025	0.0886	-0.0180
8P	0.0000	0.1465	-0.4796	-0.0000	-0.1465	0.4796	0.0008	0.0684	-0.0167
9P	0.0000	0.1544	-0.5437	0.0000	-0.1544	0.5437	-0.0012	0.0578	-0.0159
14P	0.0000	0.2837	-1.2171	23.6178	36.3859	-128.4309	0.0000	0.0000	0.0000
15P	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0045	0.1468	-0.0344
16P	0.0000	3.3540	-1.5943	0.0000	-3.3540	1.5943	-0.0055	0.1058	-0.0349
17P	0.0000	3.3540	-1.6031	0.0000	-3.3540	1.6031	-0.0045	0.0579	-0.0350
18P	0.0000	0.0403	-0.1290	-0.0000	-0.0403	0.1290	0.0494	0.1516	-0.0144
19P	0.0000	0.0670	-0.1797	-0.0000	-0.0670	0.1797	0.0344	0.1511	-0.0116
20P	0.0000	0.0629	-0.1467	-0.0000	-0.0629	0.1467	0.0235	0.1527	-0.0107
21P	0.0000	0.0787	-0.2152	-0.0000	-0.0787	0.2152	0.0428	0.1493	-0.0143
22P	0.0000	3.3633	-1.6160	-0.0000	-3.3633	1.6160	0.0296	0.1479	-0.0120
23P	0.0000	0.0943	-0.2539	-0.0000	-0.0943	0.2539	0.0200	0.1466	-0.0119
24P	0.0000	0.0403	-0.1498	-0.0000	-0.0403	0.1498	0.0272	0.1106	-0.0127
25P	0.0000	0.0720	-0.2278	-0.0000	-0.0720	0.2278	0.0179	0.1103	-0.0079
26P	0.0000	0.0570	-0.1766	-0.0000	-0.0570	0.1766	0.0121	0.1130	-0.0058
27P	0.0000	0.0853	-0.2711	0.0000	-0.0853	0.2711	0.0235	0.1093	-0.0127
28P	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	0.0157	0.1074	-0.0083
29P	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	0.0097	0.1058	-0.0075

30P	0.0000	0.0403	-0.1649	0.0000	-0.0403	0.1649	0.0093	0.0639	-0.0088
31P	0.0000	0.0737	-0.2597	0.0000	-0.0737	0.2597	0.0048	0.0638	-0.0044
32P	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	0.0028	0.0667	-0.0025
33P	0.0000	0.0853	-0.3124	0.0000	-0.0853	0.3124	0.0064	0.0625	-0.0087
34P	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	0.0034	0.0601	-0.0047
35P	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	0.0006	0.0582	-0.0045
36P	0.0000	0.0854	-0.4182	0.0000	-0.0854	0.4182	0.0021	0.0295	-0.0091
37P	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0000	0.0294	-0.0093
38P	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	-0.0031	0.0301	-0.0088
39P	0.0000	0.1286	-0.4881	0.0000	-0.1286	0.4881	0.0007	0.0265	-0.0092
40P	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	-0.0007	0.0263	-0.0095
41P	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	-0.0021	0.0261	-0.0103
44P	0.0000	0.1730	-0.2780	0.0000	-0.1730	0.2780	-0.0014	0.3415	0.0255
45P	0.0000	0.0539	-0.1262	0.0000	-0.0539	0.1262	-0.0015	0.0316	-0.1534
1X	0.0000	3.9001	-1.3756	-0.0000	-3.9001	1.3756	0.1061	0.1725	0.0008
2X	0.0000	0.1157	-0.2503	0.0000	-0.1157	0.2503	0.0896	0.1549	-0.0052
2XY	0.0000	0.0994	-0.2208	-0.0000	-0.0994	0.2208	0.0900	0.1370	0.0097
2Y	0.0000	0.1157	-0.2503	0.0000	-0.1157	0.2503	0.0133	0.1379	-0.0173
3X	0.0000	1.1016	-3.4710	0.0000	-1.1016	3.4710	0.0798	0.1489	-0.0048
3XY	0.0000	1.2256	-3.8150	-0.0000	-1.2256	3.8150	0.0794	0.1291	0.0101
3Y	0.0000	1.3671	-4.0800	0.0000	-1.3671	4.0800	0.0108	0.1316	-0.0173
4X	0.0000	0.1068	-0.2751	-0.0000	-0.1068	0.2751	0.0669	0.1323	-0.0040
4XY	0.0000	0.1068	-0.2751	-0.0000	-0.1068	0.2751	0.0669	0.1174	0.0105
4Y	0.0000	0.1068	-0.2751	0.0000	-0.1068	0.2751	0.0078	0.1199	-0.0171
5X	0.0000	0.1371	-0.3334	-0.0000	-0.1371	0.3334	0.0544	0.1146	-0.0040
5XY	0.0000	0.2448	-0.6479	-0.0000	-0.2448	0.6479	0.0546	0.1039	0.0099
5Y	0.0000	0.2611	-0.6774	-0.0000	-0.2611	0.6774	0.0060	0.1045	-0.0161
6X	0.0000	0.1373	-0.4363	0.0000	-0.1373	0.4363	0.0433	0.1061	-0.0028
6XY	0.0000	0.1373	-0.4363	-0.0000	-0.1373	0.4363	0.0429	0.0967	0.0098
6Y	0.0000	0.1373	-0.4363	0.0000	-0.1373	0.4363	0.0039	0.0963	-0.0156
7X	0.0000	-0.2208	-0.9943	-0.0000	0.2208	0.9943	0.0328	0.0855	-0.0019
7XY	0.0000	-0.0968	-1.3383	0.0000	0.0968	1.3383	0.0331	0.0812	0.0096
7Y	0.0000	-0.1558	-1.3383	0.0000	0.1558	1.3383	0.0018	0.0808	-0.0154
8X	0.0000	0.1629	-0.5091	-0.0000	-0.1629	0.5091	0.0235	0.0681	-0.0017
8XY	0.0000	0.1465	-0.4796	-0.0000	-0.1465	0.4796	0.0237	0.0636	0.0085
8Y	0.0000	0.1629	-0.5091	-0.0000	-0.1629	0.5091	0.0003	0.0636	-0.0144
9X	0.0000	0.1544	-0.5437	0.0000	-0.1544	0.5437	0.0156	0.0596	-0.0008
9XY	0.0000	0.2784	-0.8877	-0.0000	-0.2784	0.8877	0.0155	0.0546	0.0077
9Y	0.0000	0.2784	-0.8877	0.0000	-0.2784	0.8877	-0.0009	0.0543	-0.0137
14X	0.0000	0.2837	-1.2171	-9.3301	20.6447	39.5575	0.0000	0.0000	0.0000
14XY	0.0000	0.2837	-1.2171	18.1965	22.4240	88.6415	0.0000	0.0000	0.0000
14Y	0.0000	0.2837	-1.2171	-21.2322	26.6795	-110.9219	0.0000	0.0000	0.0000
15X	0.0000	0.0450	-0.1323	-0.0000	-0.0450	0.1323	0.1034	0.1496	0.0020
15XY	11.2520	3.3540	-1.5943	-11.2520	-3.3540	1.5943	0.1042	0.1291	0.0172
15Y	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	-0.0045	0.1317	-0.0297
16X	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	0.0525	0.1067	0.0035
16XY	0.0000	3.3540	-1.5943	-0.0000	-3.3540	1.5943	0.0524	0.0973	0.0155
16Y	0.0000	3.3540	-1.5943	0.0000	-3.3540	1.5943	-0.0055	0.0964	-0.0311
17X	0.0000	3.3540	-1.6031	-0.0000	-3.3540	1.6031	0.0206	0.0601	0.0060
17XY	0.0000	3.3540	-1.6031	-0.0000	-3.3540	1.6031	0.0205	0.0551	0.0168
17Y	0.0000	3.3540	-1.6031	0.0000	-3.3540	1.6031	-0.0045	0.0544	-0.0309
18Y	0.0000	0.0403	-0.1290	-0.0000	-0.0403	0.1290	0.0499	0.1355	-0.0057
19X	0.0000	0.0670	-0.1829	-0.0000	-0.0670	0.1829	0.0646	0.1518	-0.0160
19XY	0.0000	0.0670	-0.1797	-0.0000	-0.0670	0.1797	0.0651	0.1356	-0.0037
19Y	0.0000	0.0670	-0.1829	-0.0000	-0.0670	0.1829	0.0349	0.1356	-0.0074
20X	0.0000	0.0629	-0.1467	0.0000	-0.0629	0.1467	0.0772	0.1535	-0.0156
20XY	0.0000	0.0629	-0.1467	0.0000	-0.0629	0.1467	0.0771	0.1363	0.0001
20Y	0.0000	0.0629	-0.1467	-0.0000	-0.0629	0.1467	0.0247	0.1369	-0.0078
21Y	0.0000	0.0787	-0.2152	-0.0000	-0.0787	0.2152	0.0428	0.1321	-0.0056
22X	0.0000	3.3633	-1.6160	-0.0000	-3.3633	1.6160	0.0566	0.1485	-0.0164
22XY	0.0000	3.3633	-1.6160	-0.0000	-3.3633	1.6160	0.0570	0.1310	-0.0041
22Y	0.0000	3.3633	-1.6160	-0.0000	-3.3633	1.6160	0.0293	0.1320	-0.0078
23X	0.0000	0.0943	-0.2539	0.0000	-0.0943	0.2539	0.0677	0.1477	-0.0146
23XY	0.0000	0.0943	-0.2539	0.0000	-0.0943	0.2539	0.0679	0.1295	0.0010
23Y	0.0000	0.0943	-0.2539	-0.0000	-0.0943	0.2539	0.0199	0.1313	-0.0091
24Y	0.0000	0.0403	-0.1498	0.0000	-0.0403	0.1498	0.0278	0.1013	-0.0035
25X	0.0000	0.0720	-0.2310	-0.0000	-0.0720	0.2310	0.0367	0.1106	-0.0169
25XY	0.0000	0.0720	-0.2278	0.0000	-0.0720	0.2278	0.0373	0.1014	-0.0033
25Y	0.0000	0.0720	-0.2310	-0.0000	-0.0720	0.2310	0.0185	0.1014	-0.0034

26X	0.0000	0.0570	-0.1766	0.0000	-0.0570	0.1766	0.0455	0.1132	-0.0178
26XY	0.0000	0.0570	-0.1766	0.0000	-0.0570	0.1766	0.0461	0.1028	-0.0012
26Y	0.0000	0.0570	-0.1766	-0.0000	-0.0570	0.1766	0.0126	0.1032	-0.0043
27Y	0.0000	0.0853	-0.2711	0.0000	-0.0853	0.2711	0.0235	0.0986	-0.0034
28X	0.0000	3.3633	-1.6342	-0.0000	-3.3633	1.6342	0.0312	0.1074	-0.0173
28XY	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	0.0318	0.0975	-0.0037
28Y	0.0000	3.3633	-1.6342	0.0000	-3.3633	1.6342	0.0152	0.0975	-0.0038
29X	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	0.0372	0.1058	-0.0160
29XY	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	0.0375	0.0962	-0.0004
29Y	0.0000	0.1060	-0.3019	0.0000	-0.1060	0.3019	0.0095	0.0962	-0.0054
30Y	0.0000	0.0403	-0.1649	0.0000	-0.0403	0.1649	0.0097	0.0600	-0.0038
31X	0.0000	0.0737	-0.2629	0.0000	-0.0737	0.2629	0.0138	0.0639	-0.0128
31XY	0.0000	0.0737	-0.2597	0.0000	-0.0737	0.2597	0.0142	0.0602	-0.0048
31Y	0.0000	0.0737	-0.2629	0.0000	-0.0737	0.2629	0.0052	0.0600	-0.0024
32X	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	0.0188	0.0666	-0.0147
32XY	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	0.0192	0.0623	-0.0041
32Y	0.0000	0.0620	-0.1998	0.0000	-0.0620	0.1998	0.0032	0.0622	-0.0020
33Y	0.0000	0.0853	-0.3124	0.0000	-0.0853	0.3124	0.0063	0.0575	-0.0038
34X	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	0.0097	0.0608	-0.0133
34XY	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	0.0104	0.0560	-0.0052
34Y	0.0000	3.3633	-1.6474	0.0000	-3.3633	1.6474	0.0026	0.0560	-0.0027
35X	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	0.0131	0.0594	-0.0128
35XY	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	0.0126	0.0545	-0.0026
35Y	0.0000	0.1096	-0.3625	0.0000	-0.1096	0.3625	0.0010	0.0545	-0.0035
36Y	0.0000	0.0854	-0.4182	0.0000	-0.0854	0.4182	0.0017	0.0272	-0.0030
37X	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0035	0.0295	-0.0084
37XY	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0039	0.0273	-0.0011
37Y	0.0000	0.0656	-0.4356	0.0000	-0.0656	0.4356	0.0004	0.0272	-0.0047
38X	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	0.0042	0.0303	-0.0073
38XY	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	0.0064	0.0278	0.0008
38Y	0.0000	0.1097	-0.5719	0.0000	-0.1097	0.5719	0.0002	0.0278	-0.0059
39Y	0.0000	0.1286	-0.4881	0.0000	-0.1286	0.4881	0.0009	0.0231	-0.0027
40X	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	0.0021	0.0256	-0.0088
40XY	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	0.0022	0.0226	-0.0008
40Y	0.0000	0.0355	-0.2388	0.0000	-0.0355	0.2388	-0.0006	0.0228	-0.0045
41X	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	0.0033	0.0248	-0.0061
41XY	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	0.0035	0.0221	0.0026
41Y	0.0000	0.1458	-0.5677	0.0000	-0.1458	0.5677	-0.0022	0.0226	-0.0068
44X	0.0000	0.1730	-0.2780	0.0000	-0.1730	0.2780	-0.0007	0.1606	-0.0109
45X	0.0000	0.0539	-0.1262	0.0000	-0.0539	0.1262	0.0053	0.0271	-0.1276
10S	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	-0.0009	0.0420	-0.0162
11S	0.0000	0.1173	-0.5387	0.0000	-0.1173	0.5387	-0.0027	0.0303	-0.0155
12S	0.0000	0.2907	-1.0330	0.0000	-0.2907	1.0330	-0.0035	0.0254	-0.0142
13S	0.0000	0.3706	-1.2107	-0.0000	-0.3706	1.2107	-0.0015	0.0115	-0.0100
42S	0.0000	0.3438	-1.8597	-0.0000	-0.3438	1.8597	0.0000	0.0116	-0.0018
43S	0.0000	0.1365	-0.2574	0.0000	-0.1365	0.2574	-0.0029	0.0302	-0.0141
10X	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	0.0104	0.0412	0.0007
10XY	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	0.0111	0.0399	0.0089
10Y	0.0000	0.1348	-0.4484	0.0000	-0.1348	0.4484	-0.0031	0.0396	-0.0137
11X	0.0000	0.1173	-0.5387	-0.0000	-0.1173	0.5387	0.0067	0.0304	0.0009
11XY	0.0000	0.3043	-1.0547	0.0000	-0.3043	1.0547	0.0068	0.0280	0.0090
11Y	0.0000	0.3043	-1.0547	-0.0000	-0.3043	1.0547	-0.0030	0.0279	-0.0129
12X	0.0000	0.2907	-1.0330	0.0000	-0.2907	1.0330	0.0042	0.0235	0.0011
12XY	0.0000	0.2907	-1.0330	-0.0000	-0.2907	1.0330	0.0047	0.0215	0.0085
12Y	0.0000	0.2907	-1.0330	0.0000	-0.2907	1.0330	-0.0040	0.0220	-0.0116
13X	0.0000	0.3706	-1.2107	-0.0000	-0.3706	1.2107	0.0002	0.0113	0.0005
13XY	0.0000	0.6196	-1.8987	-0.0000	-0.6196	1.8987	0.0020	0.0094	0.0062
13Y	0.0000	0.6196	-1.8987	0.0000	-0.6196	1.8987	-0.0008	0.0094	-0.0088
42Y	0.0000	0.3438	-1.8597	0.0000	-0.3438	1.8597	-0.0000	0.0088	-0.0005
43X	0.0000	0.1365	-0.2574	0.0000	-0.1365	0.2574	0.0067	0.0284	0.0052

Moments for Angles Modeled as Beams:

Angle Label	Torsion (ft-lbs)	Origin X Moment (ft-lbs)	Origin Y Moment (ft-lbs)	End X Moment (ft-lbs)	End Y Moment (ft-lbs)	X Shear (lbs)	Y Shear (lbs)
2P	15.11	275.51	-6.70	616.68	180.97	178.44	34.85
2X	-7.40	355.13	6.71	1077.05	-360.11	286.46	-70.68

2XY	6.24	166.75	9.88	295.45	-210.97	92.44	-40.22
2Y	59.05	262.96	-9.88	552.51	-87.88	163.09	-19.57
3P	94.32	-494.76	-192.62	768.04	-131.10	54.65	-64.80
3X	136.24	-1249.72	372.03	153.29	107.86	-219.31	95.98
3XY	139.19	-408.46	222.23	339.05	78.87	-13.87	60.19
3Y	74.26	-422.20	76.78	562.24	155.43	28.02	46.41
4P	94.32	-768.03	131.19	-1479.57	-6.81	-449.65	24.99
4X	136.25	-153.30	-107.83	-1379.62	123.32	-306.56	3.24
4XY	139.21	-339.06	-78.82	-972.90	-27.58	-262.36	-21.18
4Y	74.25	-562.26	-155.37	-1113.13	-69.19	-335.15	-44.86
5P	121.54	2021.21	-21.09	2112.57	180.58	826.89	31.71
5X	208.56	2127.02	-95.91	3024.62	44.30	1030.60	-10.79
5XY	148.05	1455.00	60.35	1879.85	366.06	666.99	85.08
5Y	81.36	1559.55	36.13	1789.43	-33.56	669.85	0.41
6P	477.64	-2107.70	-209.12	3057.51	-148.28	189.97	-71.68
6X	438.36	-3708.60	-14.68	-1140.86	581.82	-970.01	113.51
6XY	124.97	-2286.77	-341.24	2093.42	151.97	-38.66	-37.89
6Y	111.44	-1819.73	9.11	1987.94	320.52	33.65	65.90
7P	477.80	-3057.47	148.58	-7364.11	-567.86	-2084.89	-83.41
7X	438.25	1140.76	-582.10	-6528.68	304.32	-1077.60	-55.18
7XY	124.83	-2093.43	-151.92	-6250.34	149.99	-1668.39	-0.28
7Y	111.28	-1987.95	-320.48	-5909.06	356.42	-1579.71	7.28
8P	639.81	7944.44	541.84	5534.97	1891.32	2696.49	486.24
8X	749.77	7372.60	-280.28	8722.52	1643.50	3219.75	271.82
8XY	28.79	6752.46	-119.12	4702.01	2090.32	2290.54	394.16
8Y	-88.72	6413.15	-387.44	4667.64	-980.04	2216.45	-273.47
9P	89.85	195.29	5478.68	-544.25	3257.90	-68.30	1710.98
9X	-240.03	-4959.30	7626.84	-2304.92	5856.32	-1422.85	2640.54
9XY	714.22	110.74	-4992.92	-214.36	-2181.49	-20.49	-1404.53
9Y	186.64	754.20	-4283.80	-813.29	-2636.94	-11.64	-1355.30
10P	90.22	544.17	-3257.90	2010.09	2441.31	500.36	-159.98
10X	-238.72	2305.28	-5856.23	510.32	417.58	551.30	-1064.90
10XY	714.71	214.70	2181.30	-2227.36	-1567.71	-394.11	120.32
10Y	186.47	813.42	2636.91	2273.92	-1858.15	604.67	152.48
11P	-259.71	-2362.86	-3108.19	-58.28	-1240.82	-474.20	-851.87
11X	419.70	3.68	-1317.83	61.95	39.15	12.85	-250.38
11XY	-192.67	2389.50	1999.59	60.15	266.62	479.51	443.62
11Y	297.26	-2326.82	2370.11	-1272.76	79.88	-705.03	479.92
12P	47.41	-4.80	1396.78	143.57	771.11	12.00	187.41
12X	131.23	65.80	-341.86	157.51	389.30	19.30	4.10
12XY	-15.54	19.66	-139.28	-301.39	-418.71	-24.34	-48.20
12Y	61.61	1276.98	-43.75	725.72	-373.39	173.12	-36.07
13P	55.70	-182.24	-727.53	-40.61	196.58	-9.22	-21.97
13X	112.86	-184.72	-369.31	-293.41	341.35	-19.77	-1.15
13XY	-11.30	315.50	396.65	-47.48	-193.76	11.08	8.39
13Y	42.30	-677.48	381.81	-211.20	-226.97	-36.77	6.41
15P	-6.71	-10.80	-1.86	38.08	-0.03	4.55	-0.31
15X	-6.71	-10.80	1.86	-35.73	20.91	-7.76	3.79
15XY	-9.88	18.71	4.71	11.34	7.12	5.01	1.97
15Y	-9.88	18.71	-4.71	72.71	-25.57	15.24	-5.04
16P	-6.70	-38.08	0.03	-280.46	-19.81	-70.76	-4.40
16X	-6.69	35.73	-20.91	281.29	-11.66	70.48	-7.23
16XY	-9.88	-11.34	-7.13	147.13	14.91	30.18	1.74
16Y	-9.87	-72.71	25.57	-250.09	41.37	-71.71	14.86
17P	-6.73	280.46	19.82	275.51	-15.09	123.51	1.06
17X	-6.70	-281.29	11.65	-355.12	7.34	-141.47	4.21
17XY	-9.89	-147.12	-14.92	-166.74	-6.25	-69.76	-4.72
17Y	-9.89	250.09	-41.36	262.96	-59.06	113.99	-22.30
18P	-11.74	6.91	5.01	17.21	-3.30	4.02	0.29
18X	-11.74	6.91	-5.01	21.42	6.56	4.72	0.26
18XY	-11.18	32.52	-4.32	56.08	3.86	14.76	-0.07
18Y	-11.18	32.52	4.32	48.44	-7.21	13.49	-0.48
19P	-11.74	-17.21	3.30	-197.37	6.13	-47.70	2.09
19X	-11.74	-21.42	-6.57	167.30	13.33	32.41	1.51
19XY	-11.18	-56.07	-3.87	78.75	-5.43	5.04	-2.06
19Y	-11.17	-48.44	7.21	-164.10	-8.62	-47.24	-0.32
20P	-11.75	197.37	-6.11	110.62	-30.29	68.44	-8.08
20X	-11.75	-167.29	-13.35	-105.57	10.53	-60.65	-0.63
20XY	-11.19	-78.75	5.42	-80.21	54.03	-35.32	13.21

20Y	-11.17	164.10	8.64	105.06	12.61	59.81	4.73
21P	-27.68	-11.01	-27.83	121.87	-58.49	18.48	-14.38
21X	-27.69	-11.01	27.83	-103.14	73.35	-19.03	16.86
21XY	-32.94	12.96	31.22	-29.91	80.74	-2.83	18.66
21Y	-32.94	12.96	-31.22	101.43	-66.02	19.07	-16.20
22P	-27.63	-121.88	58.50	-859.87	22.68	-218.04	17.98
22X	-27.61	103.15	-73.36	874.58	-1.80	217.39	-16.66
22XY	-32.89	29.93	-80.76	531.40	-34.66	124.78	-25.62
22Y	-32.90	-101.44	66.03	-627.29	55.53	-161.88	26.96
23P	-27.70	859.87	-22.59	541.64	-27.13	311.34	-11.01
23X	-27.62	-874.58	1.71	-747.45	-72.02	-360.56	-15.67
23XY	-32.92	-531.41	34.60	-482.12	-8.60	-225.28	5.74
23Y	-32.92	627.29	-55.45	446.42	-7.12	238.54	-13.87
24P	-28.96	33.19	-0.09	29.12	-5.03	10.39	-0.85
24X	-28.96	33.19	0.09	81.72	-3.14	19.15	-0.50
24XY	-24.58	51.29	0.94	88.47	-14.67	23.29	-2.28
24Y	-24.58	51.29	-0.94	50.82	-20.25	17.02	-3.53
25P	-28.96	-29.12	5.04	-560.65	47.70	-131.11	11.69
25X	-28.96	-81.72	3.11	523.89	38.36	98.22	9.24
25XY	-24.58	-88.47	14.65	297.81	-26.35	46.51	-2.58
25Y	-24.57	-50.82	20.25	-419.25	-3.24	-104.49	3.76
26P	-29.10	560.65	-47.62	120.83	-217.43	151.45	-58.89
26X	-28.87	-523.89	-38.44	-11.96	-150.19	-119.07	-41.92
26XY	-24.60	-297.81	26.31	-39.09	48.67	-74.88	16.66
26Y	-24.58	419.25	3.29	72.95	1.64	109.37	1.10
27P	-24.94	-16.92	-42.90	150.53	-88.49	22.27	-21.89
27X	-24.95	-16.92	42.90	-176.82	84.99	-32.29	21.31
27XY	-30.98	-4.24	46.70	-101.36	107.85	-17.61	25.75
27Y	-30.98	-4.24	-46.70	145.00	-82.56	23.46	-21.54
28P	-24.87	-150.54	88.49	-1056.92	60.04	-268.15	32.94
28X	-24.86	176.83	-85.00	1069.71	30.64	277.17	-12.04
28XY	-30.91	101.37	-107.86	801.27	-82.31	200.69	-42.24
28Y	-30.92	-145.01	82.56	-857.11	22.51	-222.58	23.29
29P	-25.09	1056.92	-59.95	580.31	-161.26	363.70	-49.11
29X	-24.66	-1069.71	-30.73	-844.12	-310.00	-425.42	-75.78
29XY	-31.03	-801.27	82.23	-502.12	97.35	-289.73	39.89
29Y	-30.80	857.12	-22.42	504.11	199.81	302.39	39.43
30P	-22.03	36.39	3.73	42.36	18.57	13.13	3.72
30X	-22.03	36.39	-3.72	40.35	35.28	12.78	5.26
30XY	-17.23	50.19	-11.15	85.75	-37.44	22.65	-8.09
30Y	-17.23	50.19	11.15	71.49	-31.61	20.29	-3.41
31P	-22.05	-42.36	-18.56	-758.75	26.67	-178.10	1.78
31X	-22.01	-40.35	-35.30	715.90	24.26	150.07	-2.43
31XY	-17.25	-85.75	37.43	488.91	-11.58	89.56	5.76
31Y	-17.20	-71.50	31.62	-627.22	-84.76	-155.32	-11.83
32P	-22.28	758.74	-26.62	436.97	-336.41	265.75	-80.66
32X	-21.81	-715.90	-24.31	-383.63	-321.68	-244.34	-76.91
32XY	-17.34	-488.90	11.55	-355.84	225.60	-187.73	52.69
32Y	-17.01	627.23	84.80	376.72	405.47	223.10	108.96
33P	-73.31	-66.28	8.44	1366.19	1075.92	247.60	206.56
33X	-73.29	-66.29	-8.45	-713.47	-618.54	-148.52	-119.44
33XY	-134.81	-135.67	-46.69	-909.81	522.08	-199.15	90.54
33Y	-134.79	-135.69	46.68	950.43	-1088.63	155.21	-198.45
34P	-73.42	-1366.18	-1075.93	-4157.05	-2231.79	-1051.88	-630.00
34X	-73.44	713.46	618.54	4041.32	1183.40	905.79	343.31
34XY	-134.75	909.82	-522.08	3587.23	-1441.87	856.70	-374.06
34Y	-134.65	-950.46	1088.62	-3272.26	1936.04	-804.28	576.00
35P	-104.22	4156.33	2231.91	673.42	503.05	908.71	514.59
35X	-103.36	-4040.63	-1183.52	-1135.33	-471.45	-973.90	-311.41
35XY	-108.24	-3588.19	1441.72	-623.08	789.46	-792.41	419.82
35Y	-110.41	3273.25	-1935.91	461.18	-252.55	702.64	-411.75
36P	-50.99	26.78	35.20	30.80	30.58	10.97	12.53
36X	-50.98	26.78	-35.20	276.88	-42.29	57.83	-14.75
36XY	-12.67	12.94	45.42	222.68	6.42	44.88	9.87
36Y	-12.67	12.94	-45.42	-4.92	-2.73	1.53	-9.17
37P	-50.99	-30.80	-30.57	-573.74	26.43	-115.16	-0.80
37X	-50.99	-276.88	42.26	824.73	-137.90	104.34	-18.20
37XY	-12.67	-222.68	-6.42	391.44	16.05	32.14	1.84
37Y	-12.67	4.92	2.73	-454.44	-21.29	-85.63	-3.54

38P	-54.93	573.38	-26.40	-59.10	-323.86	89.89	-61.22
38X	-56.65	-824.37	137.86	-274.00	335.31	-191.92	82.67
38XY	-9.99	-391.51	-16.05	-107.73	-201.48	-87.24	-38.01
38Y	-9.56	454.51	21.30	76.23	218.26	92.76	41.87
39P	0.00	11.31	-48.86	-0.00	-0.00	1.62	-6.98
39X	-0.00	278.28	-154.22	0.00	-0.00	39.76	-22.03
39XY	-0.00	193.25	-187.02	0.00	-0.00	27.61	-26.72
39Y	0.00	25.24	-27.87	-0.00	-0.00	3.61	-3.98
40P	0.00	-115.93	-138.76	-0.00	-0.00	-16.56	-19.82
40X	-0.00	695.88	-79.97	0.00	-0.00	99.42	-11.43
40XY	-0.00	445.95	-25.75	0.00	-0.00	63.71	-3.68
40Y	0.00	-103.25	-31.70	-0.00	-0.00	-14.75	-4.53
41P	0.00	102.86	-228.46	-0.00	0.00	14.69	-32.64
41X	-0.00	518.23	-249.32	0.00	-0.00	74.04	-35.62
41XY	-0.00	242.18	119.68	0.00	-0.00	34.60	17.10
41Y	0.00	101.40	195.62	-0.00	-0.00	14.49	27.95
53P	-2.32	8.87	-5.25	-17.96	-7.62	-0.53	-0.75
53X	-2.32	8.87	5.25	30.74	8.16	2.31	0.78
53XY	-1.67	2.53	-4.41	16.46	-2.33	1.11	-0.39
53Y	-1.67	2.52	4.41	-12.27	10.42	-0.57	0.86
98P	0.69	-5.18	11.88	-12.34	-25.04	-3.23	-2.43
98X	1.21	13.18	-20.00	36.54	9.89	9.18	-1.87
98XY	1.21	13.18	20.00	-14.41	10.51	-0.23	5.63
98Y	0.69	-5.18	-11.88	-31.56	40.70	-6.78	5.32
99P	1.23	-38.87	-8.85	-27.40	4.76	-5.20	-0.32
99X	-4.93	-33.85	8.79	-48.08	2.08	-6.43	0.85
100P	-4.62	-49.27	-9.36	-47.47	6.97	-5.66	-0.14
100X	-1.32	-18.17	5.66	-23.46	2.67	-2.44	0.49

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	6.001	50.00	50.00	12.00
C2	4.136	50.00	50.00	8.27
C3	3.714	50.00	50.00	7.43
C4	0.140	50.00	50.00	0.28
C5	11.849	50.00	50.00	23.70
C6	3.714	50.00	50.00	7.43
C7	3.714	50.00	50.00	7.43
C8	3.714	50.00	50.00	7.43
C9	3.714	50.00	50.00	7.43
C10	3.714	50.00	50.00	7.43
C11	3.717	50.00	50.00	7.43
C12	3.717	50.00	50.00	7.43
C13	3.717	50.00	50.00	7.43
C14	3.717	50.00	50.00	7.43
C15	3.731	50.00	50.00	7.46
C16	3.731	50.00	50.00	7.46
C17	3.731	50.00	50.00	7.46
C18	3.731	50.00	50.00	7.46
C19	3.739	50.00	50.00	7.48
C20	3.739	50.00	50.00	7.48
C21	3.739	50.00	50.00	7.48
C22	3.739	50.00	50.00	7.48
C23	3.745	50.00	50.00	7.49
C24	3.745	50.00	50.00	7.49
C25	3.745	50.00	50.00	7.49
C26	3.745	50.00	50.00	7.49
C27	4.007	50.00	50.00	8.01
C28	0.693	50.00	50.00	1.39
C29	1.342	50.00	50.00	2.68
C30	0.930	50.00	50.00	1.86
C31	1.098	50.00	50.00	2.20

C32	1.997	50.00	50.00	3.99
C33	1.250	50.00	50.00	2.50
C34	4.303	50.00	50.00	8.61
C35	0.726	50.00	50.00	1.45
C36	1.347	50.00	50.00	2.69
C37	0.930	50.00	50.00	1.86
C38	1.098	50.00	50.00	2.20
C39	1.997	50.00	50.00	3.99
C40	1.250	50.00	50.00	2.50
C41	3.642	50.00	50.00	7.28
C42	3.937	50.00	50.00	7.87
C43	1.019	50.00	50.00	2.04
C44	1.033	50.00	50.00	2.07

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each loadcase.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Conn. Shear Capacity (kips)	Comp. Conn. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R Comp.	Length Member (ft)	Curve No.	No. Of Bolts Comp.
1	L1	SAE	2.5X2.5X0.1875	33.0	40.35	40.35	1Y	-7.122	NESC Broke	17.649	27.200	24.469	0.500	0.500	0.500	117.68	9.708	3	2
2	L2	SAE	5X5X0.375	33.0	9.36	9.36	2XY	-9.974	NESC Heavy	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
3	L3	SAE	5X5X0.375	33.0	14.96	14.96	3X	-15.940	NESC Broke	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
4	L4	SAE	5X5X0.375	33.0	28.78	28.78	4P	-30.659	NESC Broke	106.517	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	0
5	L5	SAE	5X5X0.375	33.0	24.75	24.75	5X	-26.358	NESC Broke	106.517	136.000	244.687	1.000	1.000	1.000	60.61	5.000	1	0
6	L6	SAE	8X8X0.5	33.0	14.46	14.46	6X	-35.453	NESC Broke	245.252	0.000	0.000	1.000	1.000	1.000	60.61	5.000	1	10
7	L7	SAE	8X8X0.5	33.0	23.49	23.49	7P	-57.613	NESC Broke	245.252	0.000	0.000	1.000	1.000	1.000	37.74	5.000	1	0
8	L8	SAE	8X8X0.5	33.0	17.99	16.11	8X	-39.514	NESC Broke	245.252	272.000	326.249	1.000	1.000	1.000	37.74	5.000	1	0
9	L9	SAE	8X8X0.5	50.0	14.14	14.14	9X	-44.203	NESC Broke	312.662	0.000	0.000	1.000	1.000	1.000	37.74	5.000	1	10
10	L10	SAE	8X8X0.5	50.0	27.07	27.07	10P	-84.643	NESC Broke	312.662	380.800	944.999	1.000	1.000	1.000	38.54	5.107	1	0
11	L11	SAE	8X8X0.5	50.0	25.31	25.31	11P	-79.126	NESC Broke	312.662	0.000	0.000	1.000	1.000	1.000	38.54	5.107	1	28
12	L12	SAE	8X8X0.5	50.0	30.88	30.88	12P	-94.943	NESC Broke	307.458	380.800	944.999	0.500	0.500	0.500	43.67	11.573	1	0
13	L13	SAE	8X8X0.5	50.0	31.58	31.58	13P	-96.407	NESC Broke	305.312	380.800	944.999	0.250	0.250	0.250	45.62	24.177	1	28
14	PEAK	SAE	2.5X2.5X0.1875	33.0	29.98	29.19	14X	-4.871	NESC Broke	16.686	27.200	24.469	0.500	0.500	0.500	124.50	10.271	1	28
15	TTTC	SAE	3X3X0.25	33.0	46.99	46.99	16X	-15.152	NESC Broke	32.243	0.000	0.000	1.000	1.000	1.000	91.22	4.500	5	2
16	TTBC	SAE	3X3X0.25	33.0	40.98	40.98	20X	-11.146	NESC Broke	32.243	27.200	32.625	1.000	1.000	1.000	91.22	4.500	3	0
17	ARMTT	SAE	4X4X0.25	33.0	18.91	18.91	39X	-5.144	NESC Broke	40.528	27.200	32.625	1.000	1.000	1.000	105.66	7.000	3	2
18	MTTC	SAE	4X4X0.25	33.0	68.27	68.27	22XY	-32.583	NESC Extre	47.728	0.000	0.000	1.000	1.000	1.000	67.92	4.500	3	2
19	MTBC	SAE	4X4X0.25	33.0	44.02	44.02	25P	-21.009	NESC Extre	47.728	0.000	0.000	1.000	1.000	1.000	67.92	4.500	3	0
20	ARMMT	SAE	4X4X0.25	33.0	12.34	12.34	40XY	-5.002	NESC Broke	40.528	40.800	48.937	1.000	1.000	1.000	105.66	7.000	3	3
21	BTTC	SAE	4X4X0.3125	33.0	71.18	71.18	28XY	-41.976	NESC Extre	58.971	0.000	0.000	1.000	1.000	1.000	68.27	4.500	3	0
22	BTBC	SAE	4X4X0.3125	33.0	51.27	51.27	30P	-27.578	NESC Broke	53.785	54.400	81.562	1.000	1.000	1.000	91.02	6.000	3	4
23	ARMBT	SAE	4X4X0.3125	33.0	12.19	12.19	41XY	-4.974	NESC Broke	50.000	40.800	61.172	1.000	1.000	1.000	106.19	7.000	3	3
24	BBTTC	SAE	8X8X0.5	33.0	15.23	15.23	34X	-31.806	NESC Broke	208.793	0.000	0.000	1.000	1.000	1.000	39.62	5.250	3	0
25	BBTBC	SAE	6X6X0.5	33.0	30.95	18.79	38Y	-23.002	NESC Extre	146.334	122.400	293.625	1.000	1.000	1.000	58.19	5.722	3	9
26	W1	SAE	2X2X0.1875	33.0	40.77	40.77	58X	-4.236	NESC Broke	10.390	27.200	24.469	1.000	1.000	1.000	152.28	5.000	6	2
27	W2	SAE	4X4X0.375	33.0	40.02	40.02	75P	-23.199	NESC Broke	57.974	68.000	122.344	1.000	1.000	1.000	111.37	7.313	3	5
28	W3	SAE	4X4X0.3125	33.0	40.12	36.02	76XY	-19.596	NESC Extre	56.998	54.400	81.562	1.000	1.000	1.000	77.23	5.091	3	4
29	W4	SAE	4X4X0.3125	33.0	70.50	70.50	67X	-32.949	NESC Broke	46.740	54.400	81.562	1.000	1.000	1.000	118.49	7.810	3	4
30	W5	SAE	4X4X0.25	33.0	74.75	74.75	69P	-30.931	NESC Broke	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
31	W6	SAU	4X3.5X0.25	33.0	76.47	76.47	61X	-25.193	NESC Broke	32.946	40.800	48.937	1.000	1.000	1.000	127.69	7.810	6	3
32	W7	SAE	3.5X3.5X0.25	33.0	72.86	72.86	63P	-24.283	NESC Broke	33.327	40.800	48.937	1.000	1.000	1.000	116.31	6.727	3	3
33	W8	SAE	3X3X0.1875	33.0	79.53	79.53	55X	-12.148	NESC Broke	15.275	27.200	24.469	1.000	1.000	1.000	157.25	7.810	6	2
34	W9	SAE	3X3X0.3125	33.0	53.04	53.04	59Y	-15.866	NESC Extre	29.912	40.800	61.172	1.000	1.000	1.000	137.05	6.727	6	3
35	W10	SAU	3X2.5X0.25	33.0	52.88	52.88	64XY	-13.867	NESC Extre	26.226	27.200	32.625	1.000	1.000	1.000	113.64	5.000	3	2
36	W11	SAE	4X4X0.25	33.0	63.17	63.17	65P	-26.138	NESC Extre	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
37	W12	SAE	3.5X3.5X0.25	33.0	49.58	49.58	70XY	-19.158	NESC Extre	38.640	40.800	48.937	1.000	1.000	1.000	86.46	5.000	3	3
38	W13	SAE	4X4X0.375	33.0	48.70	48.70	71Y	-29.572	NESC Extre	60.729	68.000	122.344	1.000	1.000	1.000	102.44	6.727	3	5
39	KB1	SAE	4X4X0.375	33.0	61.78	61.78	49P	-36.528	NESC Broke	59.125	68.000	122.344	1.000	1.000	1.000	107.68	7.071	3	5
40	KB2	SAE	4X4X0.25	33.0	74.06	74.06	47P	-30.644	NESC Extre	41.379	54.400	65.250	1.000	1.000	1.000	101.54	6.727	3	4
41	KB3	SAE	3X3X0.3125	33.0	65.19	65.19	45P	-19.498	NESC Broke	29.912	40.800	61.172	1.000	1.000	1.000	137.05	6.727	6	3
42	B1	BAR	2 x 0.1875	33.0	44.07	0.00	44Y	0.000		0.072	27.200	24.469	1.000	1.000	1.000	1911.63	8.602	6	2
43	DB1	DAS	3.5X3X0.25	33.0	79.38	79.38	51X	-38.885	NESC Broke	48.988	54.400	65.250	0.540	1.000	0.540	144.77	19.905	6	2
44	DB2	DAS	4X3X0.4375	33.0	84.52	84.52	52P	-46.546	NESC Broke	55.071	81.600	171.281	0.250	1.000	0.250	189.13	30.734	5	3
45	HB1	SAE	3X3X0.1875	33.0	9.75	9.75	53XY	-1.187	NESC Extre	12.168	40.800	36.703	0.500	0.500	0.500	172.60	17.145	5	3
46	X1	SAU	7X4X0.4375	33.0	9.58	6.21	77P	-7.965	NESC Extre	128.184	149.600	314.015	0.500	0.750	0.500	59.10	7.354	2	11
47	X2	SAE	2X2X0.1875	33.0	9.98	9.98	79X	-1.226	NESC Broke	12.292	27.200	24.469	0.750	0.500	0.500	131.00	8.602	5	2
48	X3	SAE	2.5X2.5X0.25	33.0	30.65	30.65	80XY	-7.926	NESC Broke	25.861	27.200	32.625	0.750	0.500	0.500	105.12	8.602	2	2
49	X4	SAE	3X3X0.3125	33.0	20.33	19.84	83XY	-8.097	NESC Broke	43.226	40.800	61.172	0.750	0.500	0.500	87.63	8.602	2	3
50	X5	SAE	2.5X2.5X0.25	33.0	10.08	8.24	86X	-1.738	NESC Broke	21.099	27.200	32.625	0.780	0.560	0.560	128.74	9.407	5	2
51	D1	SAE	3X3X0.1875	33.0	28.57	28.57	88P	-4.146	NESC Broke	14.513	27.200	24.469	1.000	1.000	1.000	163.28	8.110	6	2
52	X14	SAU	2.5X2X0.1875	33.0	84.39	84.39	89P	-3.165	NESC Extre	3.750	27.200	24.469	0.530	0.770	0.530	288.77	18.752	5	2
53	DB3	SAU	3X2X0.25	33.0	28.35	0.00	90Y	0.000		6.868	40.800	48.937	1.000	1.000	1.000	286.99	10.403	6	3
54	DB4	SAE	3X3X0.1875	33.0	21.13	1.04	91Y	-0.054	NESC Broke	5.252	40.800	36.703	1.000	0.333	0.333	282.33	22.092	5	3
55	H1	SAE	2.5X2.5X0.1875	33.0	13.59	13.59	93P	-1.547	NESC Extre	11.388	27.200	24.469	1.000	1.000	1.000	169.70	7.000	6	2
56	H2	SAE	2X2X0.1875	33.0	21.13	21.13	96X	-0.945	NESC Extre	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1

57	H3	SAE	3.5X3.5X0.3125	33.0	8.07	8.07	97P	-3.216NESC	Heavy	39.830	40.800	61.172	1.000	1.000	1.000	121.74	7.000	6	3
58	H16	SAU	3.5X3X0.25	33.0	3.69	1.56	98X	-0.516NESC	Extre	33.037	40.800	48.937	1.000	1.000	1.000	102.97	5.415	3	3
59	H17	SAU	3.5X3X0.25	33.0	14.74	9.88	99X	-2.472NESC	Extre	25.022	27.200	32.625	1.000	0.500	0.500	137.77	12.744	5	2
60	H18	SAE	3.5X3.5X0.25	33.0	46.39	46.39	100X	-7.594NESC	Extre	16.369	40.800	48.937	1.000	0.500	0.500	188.06	17.082	5	3
61	H2	SAE	2X2X0.1875	33.0	3.12	3.12	101P	-0.139NESC	Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
62	X7	SAE	2X2X0.1875	33.0	29.78	29.78	118P	-3.070NESC	Broke	10.309	13.600	12.234	0.750	0.500	0.500	140.40	9.220	4	1
63	H5	SAE	2.5X2.5X0.25	33.0	25.13	25.13	119X	-3.734NESC	Extre	14.856	27.200	32.625	1.000	1.000	1.000	171.08	7.000	6	2
64	X8	SAE	2X2X0.25	33.0	24.10	24.10	120P	-3.278NESC	Broke	16.440	13.600	16.312	0.750	0.500	0.500	127.70	8.322	4	1
65	H1	SAE	2.5X2.5X0.1875	33.0	13.06	13.06	121P	-1.488NESC	Extre	11.388	27.200	24.469	1.000	1.000	1.000	169.70	7.000	6	2
66	X8	SAE	2X2X0.25	33.0	20.75	20.75	122P	-2.822NESC	Broke	16.440	13.600	16.312	0.750	0.500	0.500	127.70	8.322	4	1
67	X6	SAE	2X2X0.25	33.0	75.78	75.78	107X	-8.835NESC	Broke	11.659	13.600	16.312	0.750	0.500	0.500	151.91	9.899	4	1
68	H4	SAU	3.5X2.5X0.25	33.0	36.70	36.70	108X	-4.991NESC	Broke	36.936	13.600	16.312	0.750	0.500	0.500	77.21	7.000	2	1
69	H2	SAE	2X2X0.1875	33.0	34.97	34.97	131P	-1.564NESC	Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
70	D2	SAE	2.5X2.5X0.1875	33.0	17.21	1.03	132AP	-0.053NESC	Extre	5.168	13.600	12.234	1.000	1.000	1.000	223.50	9.220	4	1
71	H2	SAE	2X2X0.1875	33.0	35.45	35.45	133X	-1.585NESC	Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
72	D2	SAE	2.5X2.5X0.1875	33.0	15.65	0.53	134BP	-0.034NESC	Extre	6.344	13.600	12.234	1.000	1.000	1.000	201.74	8.322	4	1
73	H2	SAE	2X2X0.1875	33.0	79.28	79.28	129P	-3.545NESC	Broke	4.471	13.600	12.234	1.000	1.000	1.000	213.20	7.000	4	1
74	D2	SAE	2.5X2.5X0.1875	33.0	15.52	1.55	130BP	-0.098NESC	Extre	6.344	13.600	12.234	1.000	1.000	1.000	201.74	8.322	4	1
75	H10	SAE	3.5X3.5X0.25	33.0	7.15	0.00	143P	0.000		18.774	27.200	32.625	1.000	1.000	1.000	185.88	10.750	6	2
76	X10	SAE	2X2X0.1875	33.0	52.13	52.13	144X	-2.571NESC	Broke	4.933	27.200	24.469	0.750	0.500	0.500	228.84	15.027	5	2
77	H9	SAE	2X2X0.1875	33.0	7.92	7.92	145X	-0.746NESC	Heavy	9.420	27.200	24.469	0.750	0.500	0.500	163.71	10.750	6	2
78	H13	SAE	3X3X0.25	33.0	8.60	0.00	146BX	0.000		29.570	40.800	48.937	1.000	1.000	1.000	108.95	5.375	3	3
79	X9	SAU	2.5X1.5X0.25	33.0	16.08	16.08	147Y	-1.825NESC	Broke	11.348	40.800	48.937	0.500	0.750	0.500	164.54	7.587	5	3
80	X9	SAU	2.5X1.5X0.25	33.0	16.50	16.50	148Y	-1.884NESC	Broke	11.417	40.800	48.937	0.500	0.750	0.500	163.93	7.559	5	3
81	H8	SAE	2X2X0.25	33.0	8.57	0.00	149X	0.000		12.534	27.200	32.625	1.000	1.000	1.000	163.11	5.315	6	2
82	H15	SAE	3X3X0.1875	33.0	5.48	5.48	150P	-0.414NESC	Broke	7.568	27.200	24.469	1.000	1.000	1.000	255.02	12.666	6	2
83	X12	SAE	2X2X0.1875	33.0	21.14	21.14	151Y	-0.684NESC	Extre	3.237	13.600	12.234	0.750	0.500	0.500	250.54	16.452	4	1
84	H14	SAE	2X2X0.1875	33.0	1.21	1.21	152P	-0.066NESC	Heavy	5.462	13.600	12.234	0.750	0.500	0.500	192.88	12.666	4	1
85	H13	SAE	3X3X0.25	33.0	3.57	3.57	153X	-0.685NESC	Heavy	19.149	27.200	32.625	1.000	0.500	0.500	163.43	12.666	6	2
86	X11	SAE	2X2X0.1875	33.0	2.81	1.67	154Y	-0.075NESC	Broke	4.513	13.600	12.234	0.750	0.500	0.500	212.19	13.934	4	1
87	H19	SAE	3X3X0.1875	33.0	2.87	0.10	155P	-0.010NESC	Heavy	10.549	13.600	12.234	0.750	0.500	0.500	171.97	17.082	4	1
88	X13	SAE	2X2X0.1875	33.0	92.14	92.14	156XY	-1.378NESC	Broke	1.496	13.600	12.234	0.500	0.500	0.500	368.56	24.202	4	1

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Tens. Section Capacity (kips)	Conn. Shear Capacity (kips)	Conn. Bearing Capacity (kips)	Tens. Conn. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
1	L1	SAE	2.5X2.5X0.1875	33.0	40.35	17.56	1X	3.849	NESC Broke	21.917	27.200	24.469	0.000	9.708	2	1.000	0.875
2	L2	SAE	5X5X0.375	33.0	9.36	5.48	2P	5.483	NESC Extre	100.072	0.000	0.000	0.000	5.000	0	1.760	0.875
3	L3	SAE	5X5X0.375	33.0	14.96	4.10	3P	3.394	NESC Extre	82.747	0.000	0.000	0.000	5.000	0	3.360	0.875
4	L4	SAE	5X5X0.375	33.0	28.78	19.33	4X	15.993	NESC Extre	82.747	0.000	0.000	0.000	5.000	0	3.360	0.875
5	L5	SAE	5X5X0.375	33.0	24.75	4.10	5XY	3.112	NESC Broke	75.817	136.000	244.687	0.000	5.000	10	4.000	0.875
6	L6	SAE	8X8X0.5	33.0	14.46	4.53	6XY	10.500	NESC Broke	231.928	0.000	0.000	0.000	5.000	0	1.650	0.875
7	L7	SAE	8X8X0.5	33.0	23.49	21.20	7XY	49.175	NESC Broke	231.928	0.000	0.000	0.000	5.000	0	1.650	0.875
8	L8	SAE	8X8X0.5	33.0	17.99	17.99	8XY	35.614	NESC Broke	198.000	272.000	326.249	0.000	5.000	10	4.000	0.875
9	L9	SAE	8X8X0.5	50.0	14.14	10.93	9XY	38.870	NESC Broke	355.562	0.000	0.000	0.000	5.107	0	1.460	0.875
10	L10	SAE	8X8X0.5	50.0	27.07	24.02	10XY	72.048	NESC Broke	300.000	380.800	944.999	0.000	5.107	28	4.000	0.875
11	L11	SAE	8X8X0.5	50.0	25.31	21.05	11XY	63.140	NESC Broke	300.000	0.000	0.000	0.000	5.107	0	4.000	0.875
12	L12	SAE	8X8X0.5	50.0	30.88	24.16	12XY	72.472	NESC Broke	300.000	380.800	944.999	0.000	11.573	28	4.000	0.875
13	L13	SAE	8X8X0.5	50.0	31.58	22.29	13XY	66.855	NESC Broke	300.000	380.800	944.999	0.000	24.177	28	4.000	0.875
14	PEAK	SAE	2.5X2.5X0.1875	33.0	29.98	29.98	14Y	6.571	NESC Broke	21.917	27.200	24.469	0.000	10.271	2	1.000	0.875
15	TTTC	SAE	3X3X0.25	33.0	46.99	46.05	17Y	12.527	NESC Extre	36.271	27.200	32.625	0.000	4.500	2	1.000	0.875
16	TTBC	SAE	3X3X0.25	33.0	40.98	37.08	19XY	13.449	NESC Broke	36.271	0.000	0.000	0.000	4.500	0	1.000	0.875
17	ARMTT	SAE	4X4X0.25	33.0	18.91	6.99	39Y	1.902	NESC Extre	51.121	27.200	32.625	0.000	7.000	2	1.000	0.875
18	MTTC	SAE	4X4X0.25	33.0	68.27	64.41	22P	32.930	NESC Broke	51.121	0.000	0.000	0.000	4.500	0	1.000	0.875
19	MTBC	SAE	4X4X0.25	33.0	44.02	41.18	25X	21.053	NESC Extre	51.121	0.000	0.000	0.000	4.500	0	1.000	0.875
20	ARMMT	SAE	4X4X0.25	33.0	12.34	4.28	40Y	1.747	NESC Extre	49.952	40.800	48.937	0.000	7.000	3	1.180	0.875
21	BTTC	SAE	4X4X0.3125	33.0	71.18	70.67	28P	44.635	NESC Broke	63.159	0.000	0.000	0.000	4.500	0	1.000	0.875
22	BTBC	SAE	4X4X0.3125	33.0	51.27	41.39	30XY	22.519	NESC Extre	55.038	54.400	81.562	0.000	6.000	4	2.000	0.875
23	ARMBT	SAE	4X4X0.3125	33.0	12.19	4.66	41Y	1.900	NESC Extre	61.697	40.800	61.172	0.000	7.000	3	1.180	0.875
24	BBTTC	SAE	8X8X0.5	33.0	15.23	14.26	34P	30.967	NESC Broke	217.181	0.000	0.000	0.000	5.250	0	1.000	0.875
25	BBTBC	SAE	6X6X0.5	33.0	30.95	30.95	38X	37.889	NESC Broke	131.794	122.400	293.625	0.000	5.722	9	3.000	0.875
26	W1	SAE	2X2X0.1875	33.0	40.77	33.29	58Y	5.398	NESC Broke	16.214	27.200	24.469	0.000	5.000	2	1.000	0.875
27	W2	SAE	4X4X0.375	33.0	40.02	35.77	73P	24.321	NESC Broke	70.324	68.000	122.344	0.000	7.313	5	1.500	0.875
28	W3	SAE	4X4X0.3125	33.0	40.12	40.12	76P	21.826	NESC Broke	63.159	54.400	81.562	0.000	5.091	4	1.000	0.875

29	W4	SAE	4X4X0.3125	33.0	70.50	62.04	67P	33.749NESC	Broke	59.748	54.400	81.562	0.000	7.810	4	1.420	0.875
30	W5	SAE	4X4X0.25	33.0	74.75	52.48	69XY	26.045NESC	Extre	49.627	54.400	65.250	0.000	6.727	4	1.230	0.875
31	W6	SAU	4X3.5X0.25	33.0	76.47	63.53	61P	25.918NESC	Broke	44.531	40.800	48.937	0.000	7.810	3	1.420	0.875
32	W7	SAE	3.5X3.5X0.25	33.0	72.86	48.32	63XY	19.715NESC	Extre	43.696	40.800	48.937	0.000	6.727	3	1.000	0.875
33	W8	SAE	3X3X0.1875	33.0	79.53	51.92	55P	12.703NESC	Broke	27.500	27.200	24.469	0.000	7.810	2	1.000	0.875
34	W9	SAE	3X3X0.3125	33.0	53.04	40.82	59X	16.655NESC	Broke	44.745	40.800	61.172	0.000	6.727	3	1.000	0.875
35	W10	SAU	3X2.5X0.25	33.0	52.88	48.71	64P	13.249NESC	Broke	32.410	27.200	32.625	0.000	5.000	2	1.000	0.875
36	W11	SAE	4X4X0.25	33.0	63.17	57.90	65X	27.570NESC	Extre	47.613	54.400	65.250	0.000	6.727	4	1.540	0.875
37	W12	SAE	3.5X3.5X0.25	33.0	49.58	46.93	70Y	19.147NESC	Extre	43.696	40.800	48.937	0.000	5.000	3	1.000	0.875
38	W13	SAE	4X4X0.375	33.0	48.70	45.44	71XY	30.358NESC	Extre	66.816	68.000	122.344	0.000	6.727	5	1.860	0.875
39	KB1	SAE	4X4X0.375	33.0	61.78	48.49	50P	32.975NESC	Broke	75.197	68.000	122.344	0.000	7.066	5	1.000	0.875
40	KB2	SAE	4X4X0.25	33.0	74.06	60.81	47X	28.951NESC	Extre	47.613	54.400	65.250	0.000	6.727	4	1.540	0.875
41	KB3	SAE	3X3X0.3125	33.0	65.19	47.26	45XY	19.282NESC	Extre	44.745	40.800	61.172	0.000	6.727	3	1.000	0.875
42	B1	BAR	2 x 0.1875	33.0	44.07	44.07	43P	2.761NESC	Heavy	6.265	27.200	24.469	0.000	8.602	2	1.000	0.875
43	DB1	DAS	3.5X3X0.25	33.0	79.38	48.74	51Y	26.514NESC	Extre	72.542	54.400	65.250	0.000	19.905	2	2.000	0.875
44	DB2	DAS	4X3X0.4375	33.0	84.52	47.99	52XY	39.158NESC	Extre	121.751	81.600	171.281	0.000	30.734	3	2.000	0.875
45	HB1	SAE	3X3X0.1875	33.0	9.75	5.64	53Y	1.552NESC	Extre	27.500	40.800	36.703	0.000	17.145	3	1.000	0.875
46	X1	SAU	7X4X0.4375	33.0	9.58	9.58	77XY	9.878NESC	Broke	103.105	149.600	314.015	0.000	7.354	11	3.000	0.875
47	X2	SAE	2X2X0.1875	33.0	9.98	6.37	79P	1.033NESC	Broke	16.214	27.200	24.469	0.000	8.602	2	1.000	0.875
48	X3	SAE	2.5X2.5X0.25	33.0	30.65	29.54	81X	8.034NESC	Broke	28.846	27.200	32.625	0.000	8.602	2	1.000	0.875
49	X4	SAE	3X3X0.3125	33.0	20.33	20.33	84X	8.296NESC	Broke	44.745	40.800	61.172	0.000	8.602	3	1.000	0.875
50	X5	SAE	2.5X2.5X0.25	33.0	10.08	10.08	86Y	2.742NESC	Broke	28.846	27.200	32.625	0.000	9.407	2	1.000	0.875
51	D1	SAE	3X3X0.1875	33.0	28.57	12.22	88XY	2.990NESC	Broke	27.500	27.200	24.469	0.000	8.110	2	1.000	0.875
52	X14	SAU	2.5X2X0.1875	33.0	84.39	11.57	89X	2.220NESC	Broke	19.184	27.200	24.469	0.000	18.752	2	1.000	0.875
53	DB3	SAU	3X2X0.25	33.0	28.35	28.35	90XY	8.177NESC	Extre	28.846	40.800	48.937	0.000	10.403	3	1.000	0.875
54	DB4	SAE	3X3X0.1875	33.0	21.13	21.13	91X	5.810NESC	Extre	27.500	40.800	36.703	0.000	22.092	3	1.000	0.875
55	H1	SAE	2.5X2.5X0.1875	33.0	13.59	9.54	92P	2.090NESC	Heavy	21.917	27.200	24.469	0.000	7.000	2	1.000	0.875
56	H2	SAE	2X2X0.1875	33.0	21.13	14.66	96P	1.794NESC	Heavy	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
57	H3	SAE	3.5X3.5X0.3125	33.0	8.07	3.63	97X	1.483NESC	Extre	53.952	40.800	61.172	0.000	7.000	3	1.000	0.875
58	H16	SAU	3.5X3X0.25	33.0	3.69	3.69	98P	1.469NESC	Broke	39.835	40.800	48.937	0.000	5.415	3	1.000	0.875
59	H17	SAU	3.5X3X0.25	33.0	14.74	14.74	99P	4.010NESC	Extre	39.835	27.200	32.625	0.000	12.744	2	1.000	0.875
60	H18	SAE	3.5X3.5X0.25	33.0	46.39	0.00	100X	0.000		43.696	40.800	48.937	0.000	17.082	3	1.000	0.875
61	H2	SAE	2X2X0.1875	33.0	3.12	1.75	117P	0.214NESC	Broke	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
62	X7	SAE	2X2X0.1875	33.0	29.78	24.79	110X	3.033NESC	Broke	16.214	13.600	12.234	0.000	9.220	1	1.000	0.875
63	H5	SAE	2.5X2.5X0.25	33.0	25.13	14.48	119P	3.938NESC	Extre	28.846	27.200	32.625	0.000	7.000	2	1.000	0.875
64	X8	SAE	2X2X0.25	33.0	24.10	22.48	120X	3.057NESC	Broke	21.421	13.600	16.312	0.000	8.322	1	1.000	0.875
65	H1	SAE	2.5X2.5X0.1875	33.0	13.06	7.71	121X	1.689NESC	Heavy	21.917	27.200	24.469	0.000	7.000	2	1.000	0.875
66	X8	SAE	2X2X0.25	33.0	20.75	13.02	122X	1.771NESC	Broke	21.421	13.600	16.312	0.000	8.322	1	1.000	0.875
67	X6	SAE	2X2X0.25	33.0	75.78	51.69	107XY	7.029NESC	Broke	21.421	13.600	16.312	0.000	9.899	1	1.000	0.875
68	H4	SAU	3.5X2.5X0.25	33.0	36.70	4.05	124X	0.551NESC	Heavy	36.271	13.600	16.312	0.000	7.000	1	1.000	0.875
69	H2	SAE	2X2X0.1875	33.0	34.97	0.00	131P	0.000NESC	Extre	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
70	D2	SAE	2.5X2.5X0.1875	33.0	17.21	17.21	132BP	2.105NESC	Broke	21.917	13.600	12.234	0.000	9.220	1	1.000	0.875
71	H2	SAE	2X2X0.1875	33.0	35.45	0.00	139X	0.000		16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
72	D2	SAE	2.5X2.5X0.1875	33.0	15.65	15.65	134AP	1.915NESC	Broke	21.917	13.600	12.234	0.000	8.322	1	1.000	0.875
73	H2	SAE	2X2X0.1875	33.0	79.28	13.01	129X	1.592NESC	Heavy	16.214	13.600	12.234	0.000	7.000	1	1.000	0.875
74	D2	SAE	2.5X2.5X0.1875	33.0	15.52	15.52	136BP	1.899NESC	Broke	21.917	13.600	12.234	0.000	8.322	1	1.000	0.875
75	H10	SAE	3.5X3.5X0.25	33.0	7.15	7.15	143P	1.944NESC	Heavy	43.696	27.200	32.625	0.000	10.750	2	1.000	0.875
76	X10	SAE	2X2X0.1875	33.0	52.13	1.16	144P	0.189NESC	Broke	16.214	27.200	24.469	0.000	15.027	2	1.000	0.875
77	H9	SAE	2X2X0.1875	33.0	7.92	0.00	145X	0.000		16.214	27.200	24.469	0.000	10.750	2	1.000	0.875
78	H13	SAE	3X3X0.25	33.0	8.60	8.60	146BX	3.118NESC	Broke	36.271	40.800	48.937	0.000	5.375	3	1.000	0.875
79	X9	SAU	2.5X1.5X0.25	33.0	16.08	0.00	147Y	0.000		21.421	40.800	48.937	0.000	7.587	3	1.000	0.875
80	X9	SAU	2.5X1.5X0.25	33.0	16.50	0.00	148Y	0.000		21.421	40.800	48.937	0.000	7.559	3	1.000	0.875
81	H8	SAE	2X2X0.25	33.0	8.57	8.57	149P	1.836NESC	Broke	21.421	27.200	32.625	0.000	5.315	2	1.000	0.875
82	H15	SAE	3X3X0.1875	33.0	5.48	0.00	150P	0.000		27.500	27.200	24.469	0.000	12.666	2	1.000	0.875
83	X12	SAE	2X2X0.1875	33.0	21.14	7.77	151XY	0.951NESC	Broke	16.214	13.600	12.234	0.000	16.452	1	1.000	0.875
84	H14	SAE	2X2X0.1875	33.0	1.21	0.00	152X	0.000		16.214	13.600	12.234	0.000	12.666	1	1.000	0.875
85	H13	SAE	3X3X0.25	33.0	3.57	0.09	153P	0.024NESC	Broke	36.271	27.200	32.625	0.000	12.666	2	1.000	0.875
86	X11	SAE	2X2X0.1875	33.0	2.81	2.81	154P	0.344NESC	Heavy	16.214	13.600	12.234	0.000	13.934	1	1.000	0.875
87	H19	SAE	3X3X0.1875	33.0	2.87	2.87	155P	0.351NESC	Extre	27.500	13.600	12.234	0.000	17.082	1	1.000	0.875
88	X13	SAE	2X2X0.1875	33.0	92.14	6.16	156Y	0.754NESC	Broke	16.214	13.600	12.234	0.000	24.202	1	1.000	0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case Maximum Element Element

	Usage %	Label	Type
NESC Heavy	83.15	89P	Angle
NESC Extreme	84.39	89P	Angle
NESC Broken Wire	92.14	156XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	12.00	NESC Heavy	0.0
C2	Clamp	8.27	NESC Heavy	0.0
C3	Clamp	7.43	NESC Heavy	0.0
C4	Clamp	7.43	NESC Heavy	0.0
C5	Clamp	23.70	NESC Broken Wire	0.0
C6	Clamp	7.43	NESC Heavy	0.0
C7	Clamp	7.43	NESC Heavy	0.0
C8	Clamp	7.43	NESC Heavy	0.0
C9	Clamp	7.43	NESC Heavy	0.0
C10	Clamp	7.43	NESC Heavy	0.0
C11	Clamp	7.43	NESC Heavy	0.0
C12	Clamp	7.43	NESC Heavy	0.0
C13	Clamp	7.43	NESC Heavy	0.0
C14	Clamp	7.43	NESC Heavy	0.0
C15	Clamp	7.46	NESC Heavy	0.0
C16	Clamp	7.46	NESC Heavy	0.0
C17	Clamp	7.46	NESC Heavy	0.0
C18	Clamp	7.46	NESC Heavy	0.0
C19	Clamp	7.48	NESC Heavy	0.0
C20	Clamp	7.48	NESC Heavy	0.0
C21	Clamp	7.48	NESC Heavy	0.0
C22	Clamp	7.48	NESC Heavy	0.0
C23	Clamp	7.49	NESC Heavy	0.0
C24	Clamp	7.49	NESC Heavy	0.0
C25	Clamp	7.49	NESC Heavy	0.0
C26	Clamp	7.49	NESC Heavy	0.0
C27	Clamp	9.20	NESC Extreme	0.0
C28	Clamp	1.39	NESC Heavy	0.0
C29	Clamp	2.68	NESC Heavy	0.0
C30	Clamp	1.86	NESC Heavy	0.0
C31	Clamp	2.20	NESC Heavy	0.0
C32	Clamp	3.99	NESC Heavy	0.0
C33	Clamp	2.50	NESC Heavy	0.0
C34	Clamp	10.21	NESC Extreme	0.0
C35	Clamp	1.47	NESC Extreme	0.0
C36	Clamp	2.69	NESC Heavy	0.0
C37	Clamp	1.86	NESC Heavy	0.0
C38	Clamp	2.20	NESC Heavy	0.0
C39	Clamp	3.99	NESC Heavy	0.0
C40	Clamp	2.50	NESC Heavy	0.0
C41	Clamp	8.48	NESC Extreme	0.0
C42	Clamp	9.48	NESC Extreme	0.0
C43	Clamp	2.34	NESC Extreme	0.0
C44	Clamp	2.71	NESC Extreme	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	C1	Clamp	1P	0.000	5.742	1.745	6.001
NESC Heavy	C2	Clamp	1X	0.000	3.900	1.376	4.136
NESC Heavy	C3	Clamp	15P	0.000	3.354	1.594	3.714
NESC Heavy	C4	Clamp	15X	0.000	3.354	1.594	3.714

NESC Heavy	C5	Clamp	15XY	0.000	3.354	1.594	3.714
NESC Heavy	C6	Clamp	15Y	0.000	3.354	1.594	3.714
NESC Heavy	C7	Clamp	16P	0.000	3.354	1.594	3.714
NESC Heavy	C8	Clamp	16X	0.000	3.354	1.594	3.714
NESC Heavy	C9	Clamp	16XY	0.000	3.354	1.594	3.714
NESC Heavy	C10	Clamp	16Y	0.000	3.354	1.594	3.714
NESC Heavy	C11	Clamp	17P	0.000	3.354	1.603	3.717
NESC Heavy	C12	Clamp	17X	0.000	3.354	1.603	3.717
NESC Heavy	C13	Clamp	17XY	0.000	3.354	1.603	3.717
NESC Heavy	C14	Clamp	17Y	0.000	3.354	1.603	3.717
NESC Heavy	C15	Clamp	22P	0.000	3.363	1.616	3.731
NESC Heavy	C16	Clamp	22X	0.000	3.363	1.616	3.731
NESC Heavy	C17	Clamp	22XY	0.000	3.363	1.616	3.731
NESC Heavy	C18	Clamp	22Y	0.000	3.363	1.616	3.731
NESC Heavy	C19	Clamp	28P	0.000	3.363	1.634	3.739
NESC Heavy	C20	Clamp	28X	0.000	3.363	1.634	3.739
NESC Heavy	C21	Clamp	28XY	0.000	3.363	1.634	3.739
NESC Heavy	C22	Clamp	28Y	0.000	3.363	1.634	3.739
NESC Heavy	C23	Clamp	34P	0.000	3.363	1.647	3.745
NESC Heavy	C24	Clamp	34X	0.000	3.363	1.647	3.745
NESC Heavy	C25	Clamp	34XY	0.000	3.363	1.647	3.745
NESC Heavy	C26	Clamp	34Y	0.000	3.363	1.647	3.745
NESC Heavy	C27	Clamp	3XY	0.000	1.226	3.815	4.007
NESC Heavy	C28	Clamp	5XY	0.000	0.245	0.648	0.693
NESC Heavy	C29	Clamp	7XY	0.000	-0.097	1.338	1.342
NESC Heavy	C30	Clamp	9XY	0.000	0.278	0.888	0.930
NESC Heavy	C31	Clamp	11XY	0.000	0.304	1.055	1.098
NESC Heavy	C32	Clamp	13XY	0.000	0.620	1.899	1.997
NESC Heavy	C33	Clamp	14XY	0.000	0.284	1.217	1.250
NESC Heavy	C34	Clamp	3Y	0.000	1.367	4.080	4.303
NESC Heavy	C35	Clamp	5Y	0.000	0.261	0.677	0.726
NESC Heavy	C36	Clamp	7Y	0.000	-0.156	1.338	1.347
NESC Heavy	C37	Clamp	9Y	0.000	0.278	0.888	0.930
NESC Heavy	C38	Clamp	11Y	0.000	0.304	1.055	1.098
NESC Heavy	C39	Clamp	13Y	0.000	0.620	1.899	1.997
NESC Heavy	C40	Clamp	14Y	0.000	0.284	1.217	1.250
NESC Heavy	C41	Clamp	3X	0.000	1.102	3.471	3.642
NESC Heavy	C42	Clamp	3P	0.000	1.243	3.736	3.937
NESC Heavy	C43	Clamp	7X	0.000	-0.221	0.994	1.019
NESC Heavy	C44	Clamp	7P	0.000	-0.280	0.994	1.033
NESC Extreme	C1	Clamp	1P	0.000	5.144	0.494	5.168
NESC Extreme	C2	Clamp	1X	0.000	2.475	0.403	2.508
NESC Extreme	C3	Clamp	15P	0.000	2.846	0.636	2.916
NESC Extreme	C4	Clamp	15X	0.000	2.846	0.636	2.916
NESC Extreme	C5	Clamp	15XY	0.000	2.846	0.636	2.916
NESC Extreme	C6	Clamp	15Y	0.000	2.846	0.636	2.916
NESC Extreme	C7	Clamp	16P	0.000	2.846	0.636	2.916
NESC Extreme	C8	Clamp	16X	0.000	2.846	0.636	2.916
NESC Extreme	C9	Clamp	16XY	0.000	2.846	0.636	2.916
NESC Extreme	C10	Clamp	16Y	0.000	2.846	0.636	2.916
NESC Extreme	C11	Clamp	17P	0.000	2.846	0.642	2.918
NESC Extreme	C12	Clamp	17X	0.000	2.846	0.642	2.918
NESC Extreme	C13	Clamp	17XY	0.000	2.846	0.642	2.918
NESC Extreme	C14	Clamp	17Y	0.000	2.846	0.642	2.918
NESC Extreme	C15	Clamp	22P	0.000	2.861	0.646	2.933
NESC Extreme	C16	Clamp	22X	0.000	2.861	0.646	2.933
NESC Extreme	C17	Clamp	22XY	0.000	2.861	0.646	2.933
NESC Extreme	C18	Clamp	22Y	0.000	2.861	0.646	2.933
NESC Extreme	C19	Clamp	28P	0.000	2.861	0.655	2.935
NESC Extreme	C20	Clamp	28X	0.000	2.861	0.655	2.935
NESC Extreme	C21	Clamp	28XY	0.000	2.861	0.655	2.935
NESC Extreme	C22	Clamp	28Y	0.000	2.861	0.655	2.935
NESC Extreme	C23	Clamp	34P	0.000	2.861	0.664	2.937
NESC Extreme	C24	Clamp	34X	0.000	2.861	0.664	2.937
NESC Extreme	C25	Clamp	34XY	0.000	2.861	0.664	2.937
NESC Extreme	C26	Clamp	34Y	0.000	2.861	0.664	2.937
NESC Extreme	C27	Clamp	3XY	0.000	4.206	1.859	4.598
NESC Extreme	C28	Clamp	5XY	0.000	0.649	0.234	0.690
NESC Extreme	C29	Clamp	7XY	0.000	-0.663	0.647	0.926

NESC Extreme	C30	Clamp	9XY	0.000	0.746	0.373	0.834
NESC Extreme	C31	Clamp	11XY	0.000	0.857	0.423	0.956
NESC Extreme	C32	Clamp	13XY	0.000	1.689	0.819	1.877
NESC Extreme	C33	Clamp	14XY	0.000	0.756	0.694	1.026
NESC Extreme	C34	Clamp	3Y	0.000	4.706	1.973	5.103
NESC Extreme	C35	Clamp	5Y	0.000	0.687	0.256	0.733
NESC Extreme	C36	Clamp	7Y	0.000	-0.875	0.655	1.093
NESC Extreme	C37	Clamp	9Y	0.000	0.746	0.381	0.838
NESC Extreme	C38	Clamp	11Y	0.000	0.857	0.434	0.960
NESC Extreme	C39	Clamp	13Y	0.000	1.689	0.834	1.884
NESC Extreme	C40	Clamp	14Y	0.000	0.756	0.694	1.026
NESC Extreme	C41	Clamp	3X	0.000	3.848	1.780	4.240
NESC Extreme	C42	Clamp	3P	0.000	4.348	1.886	4.740
NESC Extreme	C43	Clamp	7X	0.000	-1.021	0.568	1.168
NESC Extreme	C44	Clamp	7P	0.000	-1.233	0.568	1.357
NESC Broken Wire	C1	Clamp	1P	0.000	5.742	1.745	6.001
NESC Broken Wire	C2	Clamp	1X	0.000	3.900	1.376	4.136
NESC Broken Wire	C3	Clamp	15P	0.000	3.354	1.594	3.714
NESC Broken Wire	C4	Clamp	15X	0.000	0.045	0.132	0.140
NESC Broken Wire	C5	Clamp	15XY	11.252	3.354	1.594	11.849
NESC Broken Wire	C6	Clamp	15Y	0.000	3.354	1.594	3.714
NESC Broken Wire	C7	Clamp	16P	0.000	3.354	1.594	3.714
NESC Broken Wire	C8	Clamp	16X	0.000	3.354	1.594	3.714
NESC Broken Wire	C9	Clamp	16XY	0.000	3.354	1.594	3.714
NESC Broken Wire	C10	Clamp	16Y	0.000	3.354	1.594	3.714
NESC Broken Wire	C11	Clamp	17P	0.000	3.354	1.603	3.717
NESC Broken Wire	C12	Clamp	17X	0.000	3.354	1.603	3.717
NESC Broken Wire	C13	Clamp	17XY	0.000	3.354	1.603	3.717
NESC Broken Wire	C14	Clamp	17Y	0.000	3.354	1.603	3.717
NESC Broken Wire	C15	Clamp	22P	0.000	3.363	1.616	3.731
NESC Broken Wire	C16	Clamp	22X	0.000	3.363	1.616	3.731
NESC Broken Wire	C17	Clamp	22XY	0.000	3.363	1.616	3.731
NESC Broken Wire	C18	Clamp	22Y	0.000	3.363	1.616	3.731
NESC Broken Wire	C19	Clamp	28P	0.000	3.363	1.634	3.739
NESC Broken Wire	C20	Clamp	28X	0.000	3.363	1.634	3.739
NESC Broken Wire	C21	Clamp	28XY	0.000	3.363	1.634	3.739
NESC Broken Wire	C22	Clamp	28Y	0.000	3.363	1.634	3.739
NESC Broken Wire	C23	Clamp	34P	0.000	3.363	1.647	3.745
NESC Broken Wire	C24	Clamp	34X	0.000	3.363	1.647	3.745
NESC Broken Wire	C25	Clamp	34XY	0.000	3.363	1.647	3.745
NESC Broken Wire	C26	Clamp	34Y	0.000	3.363	1.647	3.745
NESC Broken Wire	C27	Clamp	3XY	0.000	1.226	3.815	4.007
NESC Broken Wire	C28	Clamp	5XY	0.000	0.245	0.648	0.693
NESC Broken Wire	C29	Clamp	7XY	0.000	-0.097	1.338	1.342
NESC Broken Wire	C30	Clamp	9XY	0.000	0.278	0.888	0.930
NESC Broken Wire	C31	Clamp	11XY	0.000	0.304	1.055	1.098
NESC Broken Wire	C32	Clamp	13XY	0.000	0.620	1.899	1.997
NESC Broken Wire	C33	Clamp	14XY	0.000	0.284	1.217	1.250
NESC Broken Wire	C34	Clamp	3Y	0.000	1.367	4.080	4.303
NESC Broken Wire	C35	Clamp	5Y	0.000	0.261	0.677	0.726
NESC Broken Wire	C36	Clamp	7Y	0.000	-0.156	1.338	1.347
NESC Broken Wire	C37	Clamp	9Y	0.000	0.278	0.888	0.930
NESC Broken Wire	C38	Clamp	11Y	0.000	0.304	1.055	1.098
NESC Broken Wire	C39	Clamp	13Y	0.000	0.620	1.899	1.997
NESC Broken Wire	C40	Clamp	14Y	0.000	0.284	1.217	1.250
NESC Broken Wire	C41	Clamp	3X	0.000	1.102	3.471	3.642
NESC Broken Wire	C42	Clamp	3P	0.000	1.243	3.736	3.937
NESC Broken Wire	C43	Clamp	7X	0.000	-0.221	0.994	1.019
NESC Broken Wire	C44	Clamp	7P	0.000	-0.280	0.994	1.033

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0.

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)

NESC Heavy	93.387	0.000	58.365	6398.572	-26.972
NESC Extreme	87.700	0.000	23.683	6087.354	-6.499
NESC Broken Wire	90.078	11.252	56.903	6166.016	868.071

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 31305.4
Total: 31305.4

*** End of Report

NATCOMM INC
CONSULTING ENGINEERS
63-2 N. Branford Rd., Branford, CT 06405

Subject:		Foundation Analysis CL&P Tower # 1102
Location:		Norwalk, CT
Rev. 1: 7/8/09		Prepared by: T.J.L. Checked by: C.F.C. Job No. 08174.CO5

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear (Compression Leg) =	$Shear_{cl} := 43.62 \cdot kips$	(User Input)
Shear (Uplift Leg) =	$Shear_{ul} := 22.91 \cdot kips$	(User Input)
Compression =	$Comp := 129.65 \cdot kips$	(User Input)
Uplift =	$Uplift := 92.79 \cdot kips$	(User Input)

Tower Properties:

Tower Height =	$H_t := 94 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 9.5 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 3 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 6 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 11 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 3 \cdot ft$	(User Input)
Depth to Neglect =	$n := 1 \cdot ft$	(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 =	$\gamma s := 90 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 3500 \cdot psf$	(User Input)

Calculated Data:

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

Passive Pressure = $P_{pn} := K_p \cdot \gamma s \cdot n = 0.27 \cdot ksf$

$P_{pt} := K_p \cdot \gamma s \cdot (P_H) = 2.565 \cdot ksf$

$P_{top} := if[n < (P_H), P_{pt}, P_{pn}] = 2.565 \cdot ksf$

$P_{bot} := K_p \cdot \gamma s \cdot (P_H + Pd_t) = 3.375 \cdot ksf$

$P_{ave.pad} := \frac{P_{top} + P_{bot}}{2} = 2.97 \cdot ksf$

$T_p := if[n < (P_H), Pd_t, (P_H + Pd_t - n)] = 3\,ft$

Pad Area = $A_{pad} := Pd_w \cdot T_p = 33 ft^2$

Ultimate Shear Pad = $S_{u.pad} := P_{ave.pad} \cdot A_{pad} = 98.01 \cdot kip$

$P_{ave.pier} := \frac{P_{pn} + P_{pt}}{2} = 1.418 \cdot ksf$

Pier Area = $A_{pier} := P_{w1} \cdot (P_H - n) = 25.5 ft^2$

Ultimate Shear Pier = $S_{u.pier} := P_{ave.pier} \cdot A_{pier} = 36.146 \cdot kip$

Cross Sectional Area of Pad = $A_{pier} := Pd_w^2 = 121 ft^2$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 121 ft^2$

Resisting Pyramid Base 2 = $B_2 := [Pd_w + 2 \cdot \tan(\psi) \cdot (P_H - P_P)]^2 = 457.6 ft^2$

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 363 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{P_H}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 199.5 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 562.5 \cdot ft^3$

Volume of Soil = $V_{Soil} := \left[\frac{(P_H - P_P)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] - V_{pier} = 2242.3 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 84.4 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{Soil} \cdot \gamma s = 201.8 \cdot kips$

Total Mass = $Mass_{Tot} := Mass_{Soil} + Mass_{Conc} = 286.2 \cdot kips$

Check Uplift:

Required Factor of Safety =

$F_S := 1.5$

$ActualFS := \frac{Mass_{Tot}}{Uplift} = 3.1$

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

$Uplift\_Check = "OK"$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pier}} = 1.77 \cdot ksf$

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

$Bearing\_Check = "OK"$

Check Overturning (Compression Legs):

Overturning Moment =

$OM := \left(Shear_{cl} + Shear_{ul}\right) \cdot \left(P_H + Pd_t\right) = 831.63 \cdot kip \cdot ft$

Resisting Moment =

$RM := \left[\left(Comp + Mass_{Conc}\right) \cdot \frac{Pd_w}{2}\right] + S_{u.pad} \cdot \frac{Pd_t}{3} + \left(S_{u.pier}\right) \cdot \left[Pd_t + \frac{\left(P_H - n\right)}{3}\right] = 1486 \cdot kip \cdot ft$

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

$Overturning\_Check = "OK"$

From: "Fiedler, Hans" <Hans.Fiedler@T-Mobile.com>
To: "Tim Lynn" <TLynn@nat-eng.com>, <grayrd@nu.com>, <Tim.Burks@SAI-Comm.com>
Date: 7/1/2009 9:58:17 AM
Subject: RE: CL&P structure #1102, T-Mobile CT11356, AT&T 5046

Tim L,

Please find attached a revised RFDS for CT11356.

We have changed the Antenna model and have confirmed line size.

Additional comments have been modified for we are no longer making any modifications to our 2G equipment.

Please call with any clarification questions needed.

Thanks.

Hans Fiedler
Development Manager CT
·T· · ·Mobile·
35 Griffin Road
Bloomfield, CT 06002
Office 860-692-7123
Mobile: 860-436-0333

-----Original Message-----
From: Tim Lynn [mailto:TLynn@nat-eng.com]
Sent: Monday, June 29, 2009 1:27 PM
To: grayrd@nu.com; Tim.Burks@SAI-Comm.com; Fiedler, Hans
Subject: CL&P structure #1102, T-Mobile CT11356, AT&T 5046

Gentlemen,

Along with verifying the new antenna locations please verify that none of the inventory has changed.
We have the following for the tower.

T-Mobile:
(3) RFS APX16PV-16PVL @114'
(3) RFS APXV18-206516s-A20 @114' on proposed mast
(12) 1-1/4" dia. coax cables
(6) 1-1/4" dia. coax cables - Proposed

AT&T:
(3) Powerwave 7770 panel antennas @ 104'
(6) Powerwave LGP21401 TMAs
(6) Powewave LGP21901 Diplexers

(6) 1-1/4" dia. coax cables

Timothy J. Lynn, EIT
Structural Engineer

Natcomm. Inc,
63-2 North Branford Road
Branford, CT 06405
(t) 203.488.0580 ext.149
(f) 203.488.8587
email: t.lynn@nat-eng.com

UMTS RFDS v2.0

T-Mobile

Site ID	CT11356C	Site Type	Co-Location.
Address	2 Willruss Street Pole #1102 Line # 1880, Norwalk, CT, 6850	Latitude	41.12576
		Longitude	-73.4327

TMO UMTS Engineer	M Lucey

GSM Impacted?	
Alpha	X
Beta	X
Gamma	X
Delta	

History (approvals)	Date
RFDS	07/01/09
GSM RF Acceptance	

RFDS Revision	4

Site Leasing/Zoning	Preliminary Leasing	Preliminary Zoning
* # of Sectors		---
* # of Antennas	6	not specified
Antenna Model	EMS DB65-18-02DPLQ	---
Antenna Size	---	not specified
* # of TMA	not specified	---
* # of Feeders	not specified	not specified
Feeder Diameter	1 5/8	NA
Leased area (sq ft)	not specified	not specified
* # of Cabinets	3	
Cabinet Model	S8000	---
Site Comments	Cabinet reduction, all coax run to primary cabinet. UMTS overlay.	

* Legend: Config under threshold | Config meets threshold | Config above threshold | Text / Not checked

GSM Information

Existing Configuration					Proposed Configuration				
Alpha	Beta	Gamma	Delta		Alpha	Beta	Gamma	Delta
114	114	114		Ant. Height (ft)	114	114	114	
YES	YES	YES		RET deployed	YES	YES	YES	
1 1/4"	1 1/4"	1 1/4"		Feeder Type	1 1/4"	1 1/4"	1 1/4"	
130	130	130		Feeder Length (ft)	130	130	130	
3	3	2		# Current TRX	3	3	2	
4	3	2		# Forec. TRX	4	3	2	
				# of Nortel HePA				
S12000 outdoor				Cabinet Type	S12000 outdoor			
2				Cabinet #	1			

UMTS Information

Existing Configuration					Proposed Configuration			
Alpha	Beta	Gamma	Delta		Alpha	Beta	Gamma	Delta
---	---	---	---	Ant. Height (ft)	114	114	114	
---	---	---	---	RET deployed	YES	YES	YES	
---	---	---	---	Feeder Type	1 1/4"	1 1/4"	1 1/4"	
---	---	---	---	Feeder Length (ft)	130	130	130	
---				Cabinet Type	RBS 3106			
---				Cabinet #	1			

UMTS RFDS v2.0

T-Mobile

Site ID	CT11356C	Site Type	Co-Location.
Address	2 Willruss Street Pole #1102 Line # 1880, Norwalk, CT, 6850	Latitude	41.12576
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GSM Impacted?

Alpha	X
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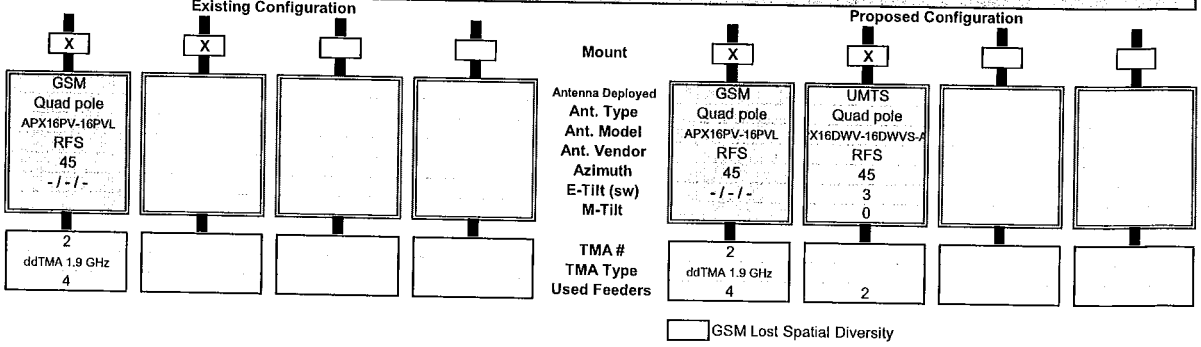
Gamma	X
Delta	

History (approvals)	Date
RFDS	07/01/09
GSM RF Acceptance	

RFDS Revision	4

ALPHA

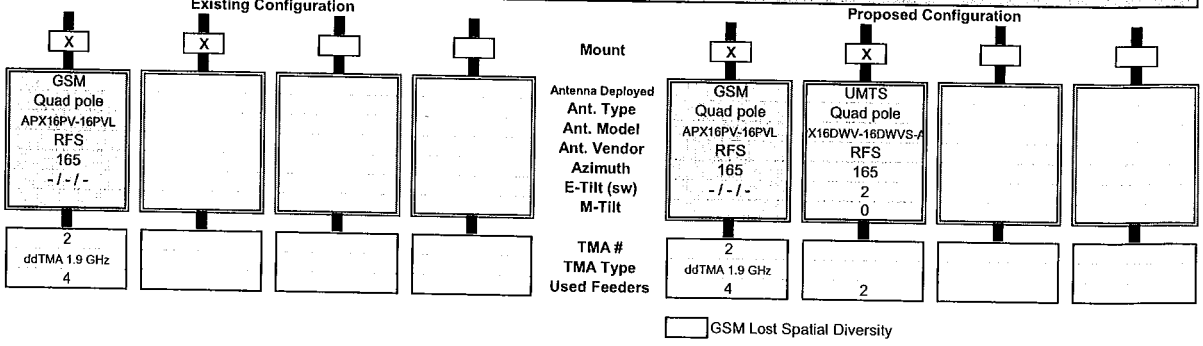


Req	OK	
X		Add new Mount
		Relocate GSM antenna
		Swap GSM antenna
		Consolidate GSM feeders
		Add Twin TMA
		Swap single TMA with twin TMA
		Add Booster
X		Add two new feeders for UMTS
		Reuse GSM feeders for UMTS

Comments

Add new antenna and 2 coax on new mount opposite existing 2G antenna. We will go above AT&T's location with a new mount and replace AT&Ts equipment. No UMTS TMA, leave 2G TMA as is unless needed to move to the one remaining cabinet. Tie in RET system for 3G only, leave existing 2G as is since we will not touch that system

BETA



Req	OK	
X		Add new Mount
		Relocate GSM antenna
		Swap GSM antenna
		Consolidate GSM feeders
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		Swap single TMA with twin TMA
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X		Add two new feeders for UMTS
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Comments

Add new antenna and 2 coax on new mount opposite existing 2G antenna. We will go above AT&T's location with a new mount and replace AT&Ts equipment. No UMTS TMA, leave 2G TMA as is unless needed to move to the one remaining cabinet. Tie in RET system for 3G only, leave existing 2G as is since we will not touch that system

UMTS RFDS v2.0

T-Mobile

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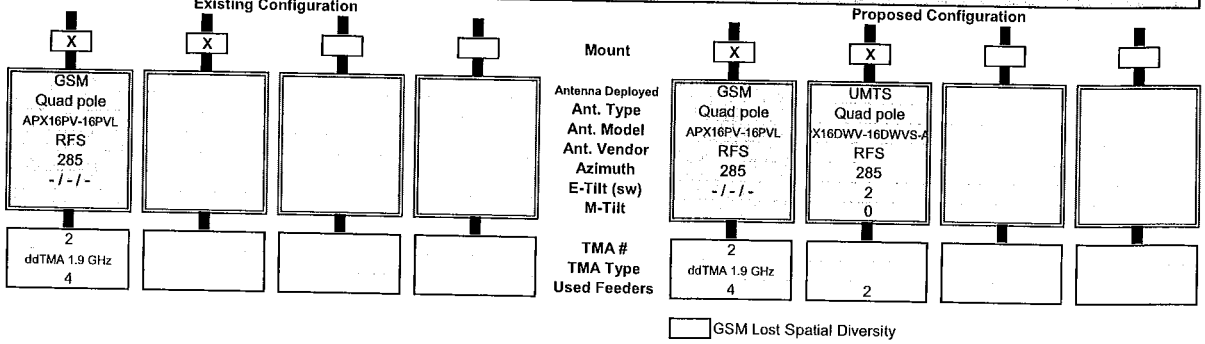
TMO UMTS Engineer	M Lucey

GSM Impacted?	
Alpha	X
Beta	X
Gamma	X
Delta	

History (approvals)	Date
RFDS	07/01/09
GSM RF Acceptance	

RFDS Revision	4

GAMMA



GSM Lost Spatial Diversity

Req	OK	
X		Add new Mount
		Relocate GSM antenna
		Swap GSM antenna
		Consolidate GSM feeders
		Add Twin TMA
		Swap single TMA with twin TMA
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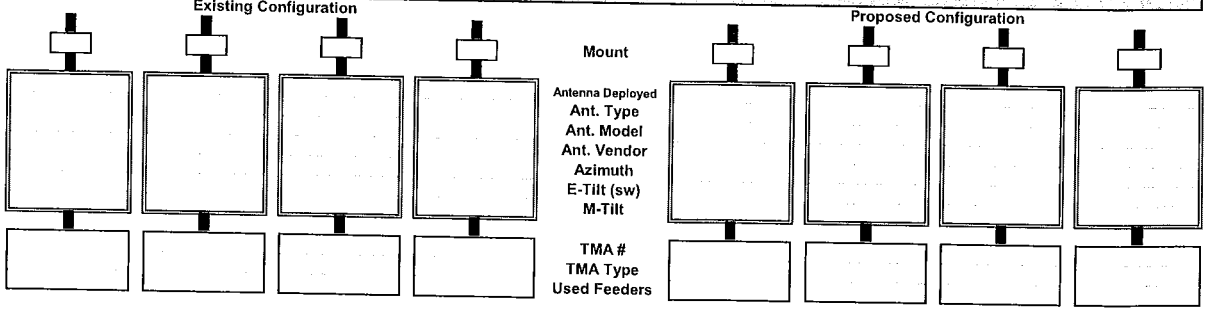
Comments

Add new antenna and 2 coax on new mount opposite existing 2G antenna. We will go above AT&T's location with a new mount and replace AT&Ts equipment. No UMTS TMA, leave 2G TMA as is unless needed to move to the one remaining cabinet. Tie in RET system for 3G only, leave existing 2G as is since we will not touch that system

DELTA



GSM Lost Spatial Diversity

Req	OK	
		Add new Mount
		Relocate GSM antenna
		Swap GSM antenna
		Consolidate GSM feeders
		Add Twin TMA
		Swap single TMA with twin TMA
		Add Booster
		Add two new feeders for UMTS
		Reuse GSM feeders for UMTS

Comments

From: "BURKS, TIM (ATTCINW)" <TB7635@att.com>
To: "Tim Lynn" <TLynn@nat-eng.com>
Date: 7/1/2009 2:42:59 PM
Subject: RE: CL&P structure #1102, T-Mobile CT11356, AT&T 5046

On second thought, let's just stay with the original plan for ATT. RF Data Sheet attached.

3 Powerwave 7770 antennas
6 Powerwave LGP 21401 TMAs
No Diplexers
6 1-1/4" coax
3 1/2" RET cables

Tim Burks
AT&T Mobility
500 Enterprise Drive, Suite 3A, Rocky Hill, CT 06067
(860) 513-7218 desk (860) 513-7190 fax (860) 989-0001 mobile

-----Original Message-----
From: Tim Lynn [mailto:TLynn@nat-eng.com]
Sent: Wednesday, July 01, 2009 11:40 AM
To: Tim Burks
Subject: RE: CL&P structure #1102, T-Mobile CT11356, AT&T 5046

Tim,

What do you want to use to mount the 6 antennas, 6 tma's, 6 diplexers to meet your RF requirements for standoff/separation.

Timothy J. Lynn, EIT
Structural Engineer

Natcomm. Inc,
63-2 North Branford Road
Branford, CT 06405
(t) 203.488.0580 ext.149
(f) 203.488.8587
email: t.lynn@nat-eng.com

>>> "Tim Burks" <Tim.Burks@SAI-Comm.com> 6/30/2009 9:32 PM >>>
Would it be possible for ATT to get 6 antennas, 6 TMAs, 6 Diplexers, 12
coax?

-----Original Message-----
From: Tim Lynn [mailto:TLynn@nat-eng.com]
Sent: Monday, June 29, 2009 1:27 PM
To: grayrd@nu.com; Tim Burks; Hans.Fiedler@T-Mobile.com
Subject: CL&P structure #1102, T-Mobile CT11356, AT&T 5046

Gentlemen,

Along with verifying the new antenna locations please verify that none

of the inventory has changed.
We have the following for the tower.

T-Mobile:
(3) RFS APX16PV-16PVL @114'
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AT&T:
(3) Powerwave 7770 panel antennas @ 104'
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at&t

AT&T Mobility

New England Market

RF Configuration Data Sheet (Pre-Install)

Site No.: 5046

Site Name: Norwalk

Address: WILL RUSS COURT, Norwalk, CT 06850

Latitude (DMS): 41° 7' 36.1"

Longitude (DMS): -73° 25' 58.1"

Latitude: 41.126692 N

Longitude: -73.432799 W

UMTS Polygon: BRPT U850 Overlay

IP Address:

Updated on: 03/18/08

Sector	1	2	3
Number of existing antennas	1	1	1
Number of antennas to be replaced	1	1	1
Existing antenna model	7262.02	7262.02	7262.02
Existing antenna azimuth	0	120	240
Existing antenna center line (ft)	104	104	104
Existing number of feeders	2	2	2
Existing feeder manufacturer	Andrew	Andrew	Andrew
Existing feeder diameter	1 1/4"	1 1/4"	1 1/4"
Existing feeder length (ft)	145	145	145
Replace existing feeder	No	No	No
Sectorization required	N/A	N/A	N/A
New antenna center line (ft)	104	104	104
New antenna model	7770 (85° / 4.6ft)	7770 (85° / 4.6ft)	7770 (85° / 4.6ft)
New antenna vendor	Powerwave	Powerwave	Powerwave
Number of new antennas	1	1	1
New antenna dimensions LxWxD (inch)	55 x 11 x 5	55 x 11 x 5	55 x 11 x 5
New antenna weight (lb)	35	35	35
New mechanical tilt (degree)	0	0	0
New electrical tilt - 850 MHz band (degree)	TBD	TBD	TBD
New electrical tilt - 1900 MHz band (degree)	2 (ANT1)	2 (ANT1)	0 (ANT1)
New antenna azimuth	0	0	0
Total number of feeder runs	2	2	2
Number of new feeders	0	0	0
New feeder diameter	N/A	N/A	N/A
New feeder length (ft)	N/A	N/A	N/A
New feeder vendor	N/A	N/A	N/A
Number of jumper cable A	4	4	4
Number of jumper cable B	2	2	2
Number of jumper cable C	2	2	2
Number of jumper cable D	4	4	4
Jumper cable A & B vendor / model	Andrew / LDF4-50A (1/2")	Andrew / LDF4-50A (1/2")	Andrew / LDF4-50A (1/2")
Jumper cable C & D vendor / model	Andrew / LDF4-50A (1/2")	Andrew / LDF4-50A (1/2")	Andrew / LDF4-50A (1/2")
Total number of jumper cable	12	12	12
Total number of TMA	2	2	2
Number of new TMA	2	2	2
TMA vendor / model	Powerwave / LGP 21401 (Dual Band - 850 Bypass)	Powerwave / LGP 21401 (Dual Band - 850 Bypass)	Powerwave / LGP 21401 (Dual Band - 850 Bypass)
No. of new Bias-T/CIN (for TMA / Surge Arrestor)	2	2	2
Bias-T/CIN vendor / model (for TMA / S. Arrestor)	Polyphaser / 1000860	Polyphaser / 1000860	Polyphaser / 1000860
Number of PDU for TMA	1		
Model of PDU for TMA	LGP 12104		
Number of new diplexer at BTS end	2	2	2
Number of new diplexer at antenna end	0	0	0
Diplexer vendor / model	Powerwave / LGP 21901	Powerwave / LGP 21901	Powerwave / LGP 21901
Number of new duplexer at BTS	N/A	N/A	N/A
Duplexer vendor / model	N/A	N/A	N/A
Number of attenuators	N/A	N/A	N/A
Total number of RCU/RET	1	1	1
RCU/RET vendor / model	Powerwave / 7020 (DB)	Powerwave / 7020 (DB)	Powerwave / 7020 (DB)
Number of new Bias-T/CILOC (for RCU/RET)	0	0	0
Bias-T/CILOC vendor / model (for RCU/RET)	N/A	N/A	N/A
Number of RCU/RET cable at antenna end	0	0	0
Number of RCU/RET cable at BTS end	1	1	1
Number of RCS splitters	N/A	N/A	N/A
RC feeder cable model	N/A	N/A	N/A
Number of RC feeder cable	N/A	N/A	N/A
Number of LPD (Kathrein 860-10030)	N/A	N/A	N/A
Number of CCU/MCU for RCU/RET	1		
Model of CCU/MCU for RCU/RET	Powerwave / 7070		
Node B/BTS type	Ericsson RBS 3000 series	Ericsson RBS 3000 series	Ericsson RBS 3000 series
Sector comment			
Site comment	Existing 1900 RXAIT		
Plumbing Diagram Template			

AT&T RF Engineer: Francis Malabanan

Cingular PM Manager: Walt Saddig

Date Issued: 03/03/08

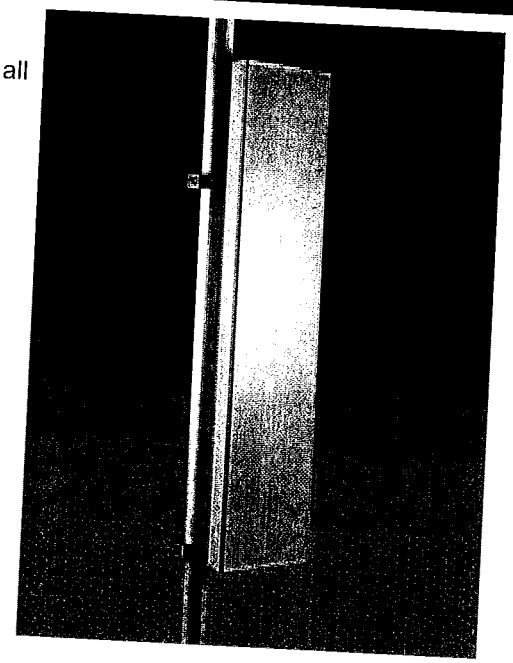
Version: 2008-01

Technical Data Sheet APX16PV-16PVL-C

Optimizer® Panel Dual Polarized Antenna

Product Description

Gathering two X-Polarised antennas in a sigle radome this pair of variable tilt antenna provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features a wide downtilt range with optional remote tilt.



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).**
- **Optional remote tilt - can be retrofitted.**
- **Two X-Polarised panels in a single radome.**
- **Dual polarization.**
- **Low profile for low visual impact.**
- **Broadband design.**

Technical Features

Frequency Band	PCS 1900 (1850-1990 MHz)
Horizontal Pattern	Directional
Antenna Type	Panel Dual Polarized
Electrical Down Tilt Option	Variable
Gain, dBi (dBd)	17.8 (15.8) , 17.8 (15.8)
Frequency Range, MHz	1850-1990 , 1850-1990

Technical Data Sheet **APX16PV-16PVL-C (Cont.)**

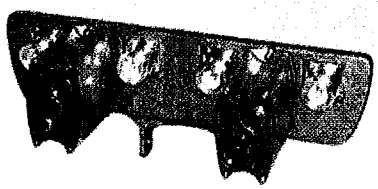
Optimizer® Panel Dual Polarized Antenna

Connector Type	(4) 7-16 DIN Female
Connector Location	Bottom
Mount Type	Downtilt
Electrical Downtilt, deg	0-10 , 0-10
Horizontal Beamwidth, deg	66 , 66
Mounting Hardware	APM40-2
Rated Wind Speed, km/h (mph)	160 (100)
VSWR	< 1.5:1
Vertical Beamwidth, deg	6.6
1st Upper Sidelobe Suppression, dB	> 17 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Polarization	Dual pol +/-45°
Front-To-Back Ratio, dB	> 25
Maximum Power Input, W	300
Isolation between Ports, dB	> 30
Lightning protection	Direct Ground
3rd Order IMP @ 2 x 38 dBm, dBc	> 160
Overall Length, m (ft)	1.35 (4.42)
Dimensions - HxWxD, mm (in)	1349 x 330 x 80 (53 x 12.9 x 3.1)
Weight w/o Mtg. Hardware, kg (lb)	18.0 (39.6)
Radiating Element Material	Brass
Radome Material	Fiberglass
Reflector Material	Aluminum
Max Wind Loading Area, m^2 (ft^2)	0.64 (6.6)
Maximum Thrust @ Rated Wind, N (lbf)	787 (177)
Shipping Weight, kg (lb)	23.8 (52)
Packing Dimensions, HxWxD, mm (in)	1550 x 420 x 210 (61 x 16.5 x 8.3)
Survival Wind Speed, km/h (mph)	200 (125)

Technical Data Sheet APX16DWV-16DWVS-C-A20

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 Features

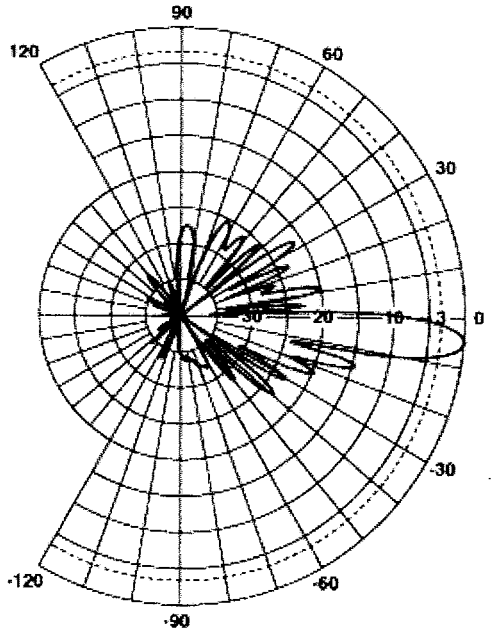
Frequency Band	3G/UMTS (Single, Broad, Dual and Triple-Band)
Horizontal Pattern	Directional
Antenna Type	Panel Dual Polarized - Side by Side
Electrical Down Tilt Option	Variable
Gain, dBi (dBd)	18.4 (16.3)
Frequency Range, MHz	1710-2200
Connector Type	(4) 7-16 DIN Female
Connector Location	Bottom
Mount Type	Downtilt
Electrical Downtilt, deg	0-10, 0-10
Horizontal Beamwidth, deg	65
Mounting Hardware	APM40-2
Rated Wind Speed, km/h (mph)	160 (100)
VSWR	< 1.5:1
Vertical Beamwidth, deg	5.9 to 7.7
1st Upper Sidelobe Suppression, dB	> 18 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Polarization	Dual pol +/-45°
Front-To-Back Ratio, dB	>26 (typically 28)
Maximum Power Input, W	300

Technical Data Sheet	APX16DWV-16DWVS-C-A20

Isolation between Ports, dB	> 30
Lightning Protection	Direct Ground
3rd Order IMP @ 2 x 43 dBm, dBc	> 150 (155 Typical)
Impedance, Ohms	50
Overall Length, m (ft)	1.42 (4.6)
Mounting Hardware Weight, kg (lb)	3.4 (7.5)
Dimensions - HxWxD, mm (in)	1420 x 337 x 80 (55.9 x 13.3 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	18.5 (40.7)
Radiating Element Material	Brass
Radome Color	Light Grey RAL7035
Radome Material	Fiberglass
Mounting Hardware Material	Diecasted Aluminum
Reflector Material	Aluminum
Max Wind Loading Area, m² (ft²)	0.64 (6.6)
Survival Wind Speed, km/h (mph)	200 (125)
Maximum Thrust @ Rated Wind, N (lbf)	787 (177)
Front Thrust @ Rated Wind, N (lbf)	787 (177)
Packing Dimensions, HxWxD, mm (in)	1550 x 420 x 260 (61 x 16.5 x 10.3)

Notes

For additional mounting information please click "External Document Link" below.



Dual Broadband Antenna

90° 1.4 m MET Antenna

Part Number:	Horizontal Beamwidth: 90°	Electrical Downtilt: Adjustable
7770.00	Gain: 13.5/16 dBi	Connector Type: 7/16 female

The Powerwave dual band dual polarized broadband antenna has individual adjustable electrical downtilt per band (upgradeable to Remote Electrical Tilt (RET). Four connector ports allow separate tilts on each frequency band and ensure the use of diversity concepts. The phase shifter technology, based on a patented sliding dielectric, minimizes intermodulation distortion and maximizes efficiency. The slant +/- 45° dual polarization system provides the independent fading signals needed for achieving top-quality coverage via diversity concepts. The Powerwave Broadband antenna design is based on a patented stacked aperture-coupled patch technology, which provides high isolation performance and a wide VSWR bandwidth. The antennas have superior radiation patterns due to a unique reflector design which provides a very small variation of the –3dB horizontal beam width over the frequency band as well as a high front-to-back ratio.

Key Benefits

- Excellent broad- and multi-band capabilities
- Polarization purity makes good diversity gain
- Excellent pattern performance and high gain over frequency
- High passive intermodulation performance
- Light, slim and robust design

Preliminary

ANTENNA SYSTEMS

BASE STATION SYSTEMS

COVERAGE SYSTEMS

Dual Broadband Antenna

Electrical Specifications (Preliminary)

Frequency band (MHz)	806-960		1710-2170
Gain, ± 0.5dB (dBi)	13.5		16.0
Polarization		Dual linear ±45°	
Nominal Impedance (Ohm)		50	
VSWR	1.5:1		
VSWR			1.5:1
Isolation between inputs (dB)	30		
Isolation between inputs (dB)			30
Inter band isolation (dB)		40	
Horizontal -3 dB beamwidth	85 ± 5°		85 ± 5°
Tracking, Horizontal plane, ±60° (dB)	<2.0		
Tracking, Horizontal plane, ±60° (dB)			<2.0
Electrical downtilt range (adjustable)	0° to 10°		0° to 8°
Vertical -3 dB beamwidth	14.3 ± 2.0°		6.6 ± 1°
Sidelobe suppression, Vertical 1 st upper (dB)	>17,16,15 x=0, 5, 10° MET		> 17, 16,15 x=0, 4, 8° MET
Vertical beam squint	<0.8°		<0.5°
First null-fill (dB)	<-25		<-25
Front-to-back ratio (dB)	>25		>27
Front-to-back ratio, total power (dB)	>20		>23
IM3, 2Tx@43dBm (dBc)	<-153		
IM3, 2Tx@43dBm (dBc)			<-153
IM7, 2Tx@43dBm (dBc)			<-160
Power Handling, Average per input (W)	400		250
Power Handling, Average total (W)	800		500

All specifications are subject to change without notice.
Contact your Powerwave representative for complete performance data.

Mechanical Specifications

Connector Type	4 x 7/16 DIN female
Connector Position	Bottom
Dimensions, HxWxD	1408mm x 280mm x 125mm (55"x11"x5")
Weight Including Brackets	15.8 kg (35 lbs)
Wind Load, Frontal, 42m/s Cd=1	435N (98 lbf)
Survival Wind Speed (m/s)	70 (156mph)
Lightning Protection	DC grounded
Radome Material	GRP
Radome Color	Light Gray
Mounting	Pre-mounted Standard Brackets
Packing Size	1550mm x 355mm x 255mm (61"x14"x10")

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Powerwave technologies

GLOBAL PARTNER | INTEGRATED SOLUTIONS | QUALITY AND RELIABILITY

D031-08208 Rev A

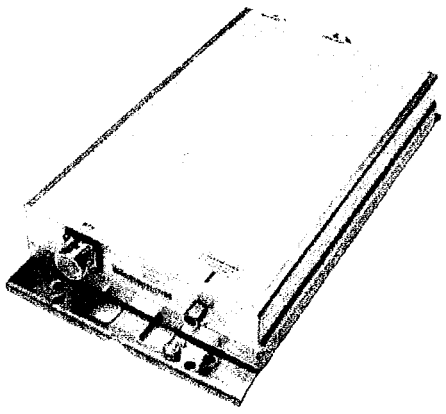
Tower Mounted Amplifier

Dual Band 1900 MHz with 850 MHz Bypass

Part Number:	Up-link: 1850-1910 MHz	Gain: 12 dB
LGP 214nn	Down-link: 1930-1990 MHz	Noise Figure: < 1.7 dB
	Bypass: 824-894 MHz	

The Powerwave® TMA-DD 1900/850 is a dual band Tower Mounted Amplifier (TMA) to be installed near the antenna. Deployed in an AMPS, GSM, GPRS, EDGE and CDMA network it will increase capacity and coverage as well as extend the battery life time for the handsets. The TMA System will provide enhanced coverage and improved up-link signal quality. Appropriate for new rollouts by optimizing coverage with a reduced number of BTSs or as an upgrade to existing BTSs for enhancing the existing coverage.

Extended band TMA facilitates simplified logistics, especially when the frequency bands are scattered. The unit comprises of high Q band-pass filters, dual balanced low noise amplifiers with circuits for active bias, supervision, alarms and lightning protection circuit. The Powerwave patented design with all active components integrated within the filter body provides an extremely reliable, compact and lightweight TMA solution. The vented enclosure design is employed to prevent the effect of condensation, thereby guaranteeing long, reliable, maintenance-free service in all environmental conditions. These TMAs offer an easy to install, maintenance free, cost effective solution for coverage enhancement and increased quality in mobile communication networks.



Key Benefits:

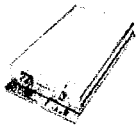
- 850 MHz Bypass
- Improved Network Quality
- Increased Coverage
- State of the Art Performance
- Excellent Power Handling
- Low Tx Loss
- Exceptional Reliability

ANTENNA SYSTEMS

BASE STATION SYSTEMS

COVERAGE SYSTEMS

Tower Mounted Amplifier



Technical Specifications

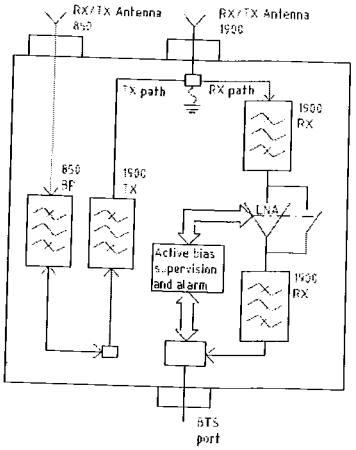
Product Number	LGP214nn	
850 MHz		
	Bypass (MHz)	824-894
	Return loss* (dB)	> 20
	Insertion loss* (dB)	< 0.3
1900 MHz		
Up-link		
	Frequency range, full band (60 MHz)	1850-1910
	Nominal gain (dB)	12
	Return loss* (dB)	> 20
	Noise figure* (dB)	< 1.7
	Output 3rd order Intercept Point* (dBm)	> +23
Down-link		
	Frequency range, full band (60 MHz)	1930-1990
	Insertion loss* (dB)	< 0.6
	Return loss* (dB)	> 20
Intermodulation	2 Tx@x43 dBm (dBc)	<-158
Alarm Functionality	Two levels,individually supervised LNAs	
Power Consumption	@12 VDC	1.2 W

* Typical

All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

Mechanical Specifications

Size,W x H x D (without mounting plate)	235 x 366 x 66 mm (9.2 x 14.4 x 2.6 in)
Weight	6.4 kg (14.1 lbs)
Color	Off white (NCS 1502-R)
Housing	Aluminum
RF-connectors	DIN 7/16 female.
Mounting kit	Mounting kit for pole and wall is included
Temperature range	-40 °C to +65 °C (-40 °F to +149 °F)
MTBF	>1 million hours
Safety	UL 60 950
Ingress protection, IP 65	EN 60 529
Environmental	ETS 300 019
EMC	FCC Part 15



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