Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

June 6, 2016

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

Notice of Exempt Modification
8 Old Bridge Road, Old Lyme, CT 06371
Latitude- 41.32033
Longitude- -72.34406

Dear Ms. Bachman,

T-Mobile currently maintains 3 existing antennas at the 196' level of the existing 190' transmission tower at 8 Old Bridge Road, Old Lyme, Connecticut. The tower is owned by Eversource Energy, formerly Connecticut Light & Power. The property is owned by Town of Old Lyme. T-Mobile now intends on replacing 3 existing antennas with 3 new 700 Mhz antennas. These antennas would be installed at the existing 196' level of the tower. T-Mobile also intends to add (6) 1-5/8" coax and 3 smart Bias-T's.

This facility was approved by the Town of Old Lyme in permit no. 99-70 on April 23, 1999. This approval did not include conditions. This modification complies with this approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to Bonnie Reemsnyder, First Selectwoman for the Town of Old Lyme, as well as the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard,

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

6. The existing structure and its foundation can support the proposed loading with certain modifications, as detailed in the attached structural analysis report.

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

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

Attachments:

CC: Bonnie Reemsynder- as elected official
Eversource Energy- as tower owner
Town of Old Lyme- as property owner

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

T-Mobile Existing Facility

Site ID: CT11036C

CT036/OldLyme/ I-95/ X70
8 Old Bridge Road
Old Lyme, CT 06371

February 22, 2016

EBI Project Number: 6216000931

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	0.48 %

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

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February 22, 2016

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

Emissions Analysis for Site: **CT11036C – CT036/OldLyme/ I-95/ X70**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **8 Old Bridge Road, Old Lyme, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **8 Old Bridge Road, Old Lyme, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) Since the radios are ground mounted there are additional cabling losses accounted for. For each RF path the following losses were calculated. 1.12 dB of additional cable loss for all 700 MHz Channels, 2.06 dB of additional cable loss for all 1900 MHz channels and 2.12 dB of additional cable loss for all 2100 MHz channels. This is based on manufacturers Specifications for 200 feet of 1-5/8” coax cable on each path.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Commscope SBNHH-1D65A** for 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Commscope SBNHH-1D65A** have a maximum gain of **10.95 dBd** at its main lobe at 700 MHz, **14.35 dBd** at its main lobe at 1900 MHz and **14.55 dBd** at its main lobe at 2100 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is **196 feet** above ground level (AGL).

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A
Gain:	14.35 / 14.55 / 10.95 dBd	Gain:	14.35 / 14.55 / 10.95 dBd	Gain:	14.35 / 14.55 / 10.95 dBd
Height (AGL):	196	Height (AGL):	196	Height (AGL):	196
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 700 MHz
Channel Count	7	Channel Count	7	Channel Count	7
Total TX Power(W):	270	Total TX Power(W):	270	Total TX Power(W):	270
ERP (W):	4,454.81	ERP (W):	4,454.81	ERP (W):	4,454.81
Antenna A1 MPE%	0.48	Antenna B1 MPE%	0.48	Antenna C1 MPE%	0.48

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**0.48 %**
No Additional Carriers On Site	NA
Site Total MPE %:	**0.48 %**

T-Mobile Sector 1 Total:	0.48 %
T-Mobile Sector 2 Total:	0.48 %
T-Mobile Sector 3 Total:	0.48 %
Site Total:	0.48 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**1049.91**	**196**	**2.09**	**2100**	**1000**	**0.21 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**508.30**	**196**	**1.01**	**1900**	**1000**	**0.10 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**524.95**	**196**	**1.05**	**2100**	**1000**	**0.10 %**
T-Mobile 700 MHz LTE	**1**	**288.48**	**196**	**0.29**	**700**	**467**	**0.06 %**
						Total:	**0.48%**

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Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	0.48 %
Sector 2:	0.48 %
Sector 3 :	0.48 %
T-Mobile Per Sector Maximum:	0.48 %
Site Total:	0.48 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **0.48%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

Structural Analysis Report

CL&P Tower #CT River Crossing East Side Old Lyme

Site #CT11036C

Prepared on behalf of:

35 Griffin Road South
Bloomfield, CT 06002

PJF Project #31216-0005.002.6125_6280

REVISION	DATE	DESCRIPTION	ENGINEER	PJF TRACKING
0	02/02/2016	ORIGINAL ISSUE DATE	JRA	.001.6000
1	03/29/2016	NEW ANTENNA MOUNT	JRA	.002.6125_6280

Columbus
250 E Broad St, Suite 600
Columbus, OH 43215
Phone 614.221.6679

Orlando
1801 Lee Rd, Suite 230
Winter Park, FL 32789
Phone 407.898.9039

PAUL J. FORD & COMPANY

Report Date:	March 29, 2016
Client:	T-Mobile 35 Griffin Road South Bloomfield, CT 06002
Attention:	Sam Simons 203-482-5156 sam.simons@t-mobile.com
Utility Name:	Eversource
Structure ID:	CL&P Tower #CT River Crossing East Side Old Lyme
Site Name and/or Reference:	Site #CT11036C
Site Address:	8 Old Bridge Road
City, County, State:	Old Lyme, New London County, Connecticut
Latitude, Longitude:	41° 19' 13"N, 72° 20' 38"W
PJF Project:	31216-0005.002.6125_6280

Executive Summary

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**". The purpose of this analysis is to determine if the modified structure has sufficient capacity to support the proposed equipment along with the existing wire loads described herein.

Analysis Criteria:

Reference Standards:	IEEE Standards Association, "National Electrical Safety Code" (NESC) C2-2007 ANSI/TIA/EIA-222-F-1996 Standard "Structural Standard for Antenna Supporting Structures and Antennas" ASCE Standard 10-15, "Design of Latticed Steel Transmission Structures"
Utility Specification:	Northeast Utilities OTRM 059.1 (3/12/2014)

Proposed Appurtenance Loads:

The structure was analyzed with the addition of the proposed appurtenance loads shown in Table 1 combined with the existing and reserved loads shown in Tables 2 and 3 of this report.

Summary of Analysis Results:

Modified Structure:	**Pass**
Existing Foundation:	**Pass**
Proposed Antenna Mount	**Pass**

We at Paul J. Ford and Company appreciate the opportunity to provide our professional services to you and T-Mobile. If you have any questions or need further assistance on this or any other projects please feel free to contact us.

Respectfully submitted by:
Paul J. Ford and Company

James R. Antoszewski, P.E.
Project Manager
jantoszewski@pjfweb.com

TABLE OF CONTENTS

1) INTRODUCTION

The purpose of this analysis is to determine if the modified structure has sufficient capacity to support the proposed equipment along with the existing wire loads described herein. The modified structure is a 190.0' tall double circuit steel tower designated as a type "River Crossing".

The proposed antenna mounting system consists of a flush mount installed on a proposed antenna mast. Refer to Tables 1 and 2 below and the modification drawings located in Appendix A for further antenna equipment and mount information.

2) ANALYSIS CRITERIA

Reference Standards:	IEEE Standards Association, "National Electrical Safety Code" (NESC) C2-2007 ANSI/TIA/EIA-222-F-1996 Standard "Structural Standard for Antenna Supporting Structures and Antennas" ASCE Standard 10-15, "Design of Latticed Steel Transmission Structures"
Utility Specification:	Northeast Utilities OTRM 059.1 (3/12/2014)

Table 1 – Proposed Antenna and Cable Information[1]

Mounting Level (feet)	Center Line Elevation (feet)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (inches)	Note
196	196	3	Commscope	SBNHH-1D65A	12	1-5/8	2
		3	Commscope	ATSBT-TOP-MF-4G (Bias T)			
		6	Ericsson	KRY 112 489/2 (TMA)			

Notes:
1) See drawing SK-1 in "Appendix A – Structure Profile Sheet" for further details.
2) Coax to be installed on existing coax brackets using stackable snap-ins.

Table 2 – Existing and Reserved Antenna and Cable Information[1]

Mounting Level (feet)	Center Line Elevation (feet)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (inches)	Note
196	196	3	RFS	APX16DWV_16DWVS	6	1-5/8	2

Notes:
1) See drawing SK-1 in "Appendix A – Structure Profile Sheet" for further details.
2) Existing antennas to be removed – coax to remain.

Table 3 – Existing Electrical Utility Wire Information[1]

Wire Designation	Wire Type	Tension Angle (degrees)	Wind Span		Weight Span	
			Back (feet)	Ahead (feet)	Back (feet)	Ahead (feet)
Shield Wire #1	7#8 Alumoweld	0	240	1035	3836	1035
Conductor #1	477 ACSR 30/7 (Hen)	0	240	1035	3836	1035

Notes:
1) Wire loads provided by the utility – See "Appendix B – Load Calculations" for further details.

Table 4a – Utility Tower Analysis - Load Case Information[1]

Load Case Name	Radial Ice (inches)	Wind Speed (mph)	Overload Capacity Factors				Note
			Vertical	Wind	Wire Tension		
					Long.	Trans.	
NESC 250B (Heavy)	0.5	39.5	1.5	2.5	1.1	1.65	-
NESC 250C (Extreme Wind)	0	120	1.0	1.0	1.0	1.0	2

Notes:

1) As per the requirements of NU Design Criteria Table, NESC C2-2007 – Construction Grade B, and ASCE 10-15, "Design of Latticed Steel Transmission Structures".
2) Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and a 1.0 x Gust Response Factor to the tower/pole structure as per NU Design Criteria Table.

Table 4b – Antenna Mount Analysis - Load Case Information[1]

Load Case Name	Radial Ice (inches)	Wind Speed (mph)	Note
TIA/EIA – High Wind	0	85	-
TIA/EIA – Wind and Ice	0.5	74	2

Notes:

1) As per the requirements of NU Design Criteria Table, TIA/EIA-222-F and AISC-ASD standards.
2) 75% of 85mph wind pressure

3) ANALYSIS PROCEDURE

Table 5 – Documents Provided

Document	Remarks	Reference	Source
Structure Erection Drawings	R.D. Coombs & Co., 1938	01503-50003 – Sheets C1485 E1, E2, E3	Eversource
Structure Fabrication Drawings	R.D. Coombs & Co., 1938	01503-50003 – Sheets C1485 1-6	Eversource
Structure Foundation Drawing	CL&P, 1938	01503-60002	Eversource
Structure Foundation Modification Drawing	Northeast Utilities Service Co., 02/03/1968	01503-42001	Eversource
RF Data Sheet	CT11036C, 12/18/2015	CT11036C_L700_V1	T-Mobile
Modification Drawings	Sheets T-1, N-1, MI-1, S-1	A31216-0005.002.6280	PJF

3.1) Analysis Method

Tower™ is a commercially available analysis software package made by Powerline Systems, Inc. Tower™ was used to create a three-dimensional model of the tower and calculate member stresses for various load cases. Equipment and wire load calculations were completed using MathCAD and applied to the structure model as point loads. Load Calculations are included in Appendix B. Selected output from the analysis is included in Appendix C

Risa-3D is a commercially available analysis software package made by Risa Technologies, LLC. For this analysis, Risa-3D was used to create a three dimensional model of the antenna mast and calculate member stresses and reactions for various load cases. Those reactions were then applied to the tower model as point loads. Equipment and wire load calculations were completed using MathCAD and applied to the antenna mast and tower models as point loads. Load Calculations are included in Appendix B. Select output from the Risa-3D and Tower™ analyses are included in Appendix C.

3.2) Assumptions

1. *The structure was built in accordance with the manufacturer's specifications.*
2. *The structure has been maintained in accordance with the manufacturer's specifications.*
3. *No allowance was made for any damaged, missing, or rusted members. The analysis assumes that no physical deterioration has occurred in any of the structural components and that all members have the same load carrying capacity as the day it was installed.*
4. *All bolts have been torqued to the snug-tight condition as defined by AISC.*
5. *No residual stresses exist due to incorrect tower erection.*
6. *All welds conform to the requirements of AWS D1.1.*
7. *Pipe mast and utility tower will be in plumb condition.*
8. *The configuration of antennas, cables, mounts and other appurtenances are as specified in Tables 1 and 2 of this report and as per the referenced documents in Table 5.*
9. *The wind loads applied to the tower due to the antenna installations are based on the full projected area of all antenna equipment in all directions (i.e. no shielding used).*

If any of the above assumptions are found to be inaccurate, invalid or incomplete, Paul J. Ford and Company shall be informed of these discrepancies to determine the validity of the conclusions stated in this report.

4) ANALYSIS RESULTS

The following table provides the maximum usages for each structure element type and the loading condition in which they occur:

Table 6 – Maximum Structure Element Usages[1,2]

Tower – Analysis			
Element Type	**Member Designation**	**Load Case**	**Usage (%)**
Leg Members	19Y	NESC 250C (Extreme Wind)	77
Vertical "X" Bracing / Diagonal Members	54P	NESC 250C (Extreme Wind)	97
Horizontal Members & Hangers	62P	NESC 250B (Heavy)	71
Tower – Supplemental Analysis – Direct Mount			
Element Type		**Load Case**	**Usage (%)**
Leg Members Supporting Antenna Mounts		NESC 250C (Extreme Wind)	77
		Maximum Structure Element Usage =	**97**
		Structure Result =	**Pass**

Notes:
1) See "Appendix C – Computer Output" for further detailed information.
2) See "Appendix D – Supplemental Calculations" for calculations supporting the % capacity used.

Table 7 – Maximum Structure Foundation Usages[1]

Foundation Analysis		
	Load Case	**Usage (%)**
Uplift Pier – Uplift Check	Maximum Forces All Cases	85
Uplift Pier – Bearing Check	Maximum Forces All Cases	81
Uplift Pier – Overturning Check	Maximum Forces All Cases	68
Uplift Pier – Sliding Check	Maximum Forces All Cases	22
Compression Pier – Uplift Check	Maximum Forces All Cases	57
Compression Pier – Bearing Check	Maximum Forces All Cases	28
Compression Pier – Overturning Check	Maximum Forces All Cases	9
Compression Pier – Sliding Check	Maximum Forces All Cases	14
	Maximum Foundation Usage =	**85**
	Foundation Result =	**Pass**

Notes:
1) See "Appendix D – Supplemental Calculations" for calculations supporting the % capacity used.

Table 8 – Maximum Antenna Mount Usages[1,2]

Antenna Mount – Analysis		
Member	**Load Case**	**Usage (%)**
6" Schedule 80 Mast	TIA/EIA – High Wind	57
HSS Braces	TIA/EIA – High Wind	36
Mast Connection to CL&P Tower[3]	TIA/EIA – High Wind	45
	Maximum Antenna Mount Usage =	**57**
	Antenna Mount Result =	**Pass**

Notes:
1) See "Appendix C – Computer Output" for further detailed information.
2) See "Appendix D – Supplemental Calculations" for calculations supporting the % capacity used.
3) 1/3 increase in allowable stress not used for connection to tower as per OTRM 059.

4.1) Recommendations

Install proposed antenna mount and tower reinforcing as per drawings in Appendix A.

5) CONCLUSION

The modified tower and foundation have **sufficient** capacity to support the proposed equipment along with the existing wire loads described herein. The proposed antenna mount has **sufficient** capacity to support the proposed equipment as described herein.

This analysis is presented based upon the assumptions listed herein and information provided by the utility and the wireless carrier. If the existing conditions are different than those presented here, Paul J. Ford and Company should be contacted to verify the validity of the conclusions presented here.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company and used in the performance of our engineering services is correct and complete. All engineering services are performed on the basis that the information used is current and correct.

2) Paul J. Ford and Company has not performed a site visit to verify the details regarding structure or the antenna/coax loading. If the existing conditions are not as represented on the referenced drawings and/or documents, we should be contacted immediately to evaluate the significance of the deviation.

3) It is not possible to have all of the detailed information to perform a very thorough analysis of every sub-component of the structure. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, plate connection, etc.

4) The structural integrity of the existing foundation can only be verified if exact foundation sizes and soil conditions are known. Paul J. Ford and Company will not accept any responsibility for the adequacy of the existing foundations unless the foundation sizes and a soils report are provided.

5) The structure has been analyzed according to the minimum design loads recommended by the codes referenced in this report. We do not imply to meet any other codes or requirements unless explicitly agreed in writing. If the owner or local or state agencies require a higher design wind speed or a higher ice load, Paul J. Ford and Company should be made aware of this requirement prior to the start of the project.

6) This analysis does not imply to meet any serviceability criteria such as deflections, twist, sway, etc. unless expressly agreed to in writing. If the owner or local or state agencies require a higher design wind load or specific serviceability requirements, Paul J. Ford and Company should be made aware of this requirement prior to the start of the project.

7) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusion, opinions and/or recommendations made by others based on the information we supply.

APPENDIX A

STRUCTURE PHOTOS / MODIFICATION DRAWING PACKAGE

MODIFIED 190'-0" TRANSMISSION TOWER
CL&P STRUCTURE #CT RIVER CROSSING EAST SIDE OLD LYME

T-MOBILE SITE # CT11036C

8 OLD BRIDGE ROAD
OLD LYME, NEW LONDON COUNTY, CONNECTICUT
LAT: 41°19' 13"; LONG: 72° 20' 38"

PROJECT CONTACTS

STRUCTURE OWNER:
EVERSOURCE
CONTACT: ROBERT GRAY AT ROBERT.GRAY@EVERSOURCE.COM
PH: (860) 728-6125

CARRIER INFO:
T-MOBILE
CONTACT: SAM SIMONS AT SAM.SIMONS@T-MOBILE.COM
PH: (203) 482-5156

ENGINEER OF RECORD:
PJFMOD@PJFWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
NEW ANTENNA MOUNT
STRUCTURE REINFORCEMENT

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
N-1	GENERAL NOTES
MI-1	MI CHECKLIST
S-1	TOWER ELEVATION AND DETAILS
S-2	
S-3	
S-4	
S-5	
S-6	
S-7	
S-8	
S-9	
S-10	

DESIGN DATA - MOUNT	
REFERENCE STANDARD	TIA/EIA-222-F NUSCO OTRM 059.1
LOCAL CODE	2003 IBC
BASIC WIND SPEED (FASTEST-MILE)	85 MPH *
ICE THICKNESS	0.5 IN
ICE WIND SPEED	74 MPH

* PER EXCEPTION IN NUSCO OTRM 059.1

DESIGN DATA - TOWER	
REFERENCE STANDARD	NESC 2007 NUSCO OTRM 059.1
BASIC WIND SPEED (3-SECOND GUST)	110 MPH
ICE THICKNESS	0.5 IN
ICE WIND SPEED	40 MPH

STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
LICENSED
PROFESSIONAL ENGINEER
6/6/2016

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 - Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

T-MOBILE
35 GRIFFIN ROAD SOUTH BLOOMFIELD, CONNECTICUT 06002

CL&P STRUCTURE #CT RIVER CROSSING EAST SIDE OLD LYME
8 OLD BRIDGE ROAD
OLD LYME, NEW LONDON COUNTY, CONNECTICUT
SITE # CT11036C

PROJECT No:	31216-0005.002.6125_6280
DRAWN BY:	BMS
DESIGNED BY:	JRA
CHECKED BY:	
DATE:	03-29-2016

TITLE SHEET

T-1
SHEET NO. 1 OF 4

31216-0005.002.6125_6280.DWG

EVERSOURCE PROJECT: 8 OLD BRIDGE ROAD; OLD LYME, NEW LONDON COUNTY, CONNECTICUT
UTILITY PROJECT MASTER NOTES DOCUMENT (REV. 0, 2/17/2016)

1. **GENERAL NOTES**
   - 1.1. THE STRUCTURAL ANALYSIS ASSUMES THAT ALL TOWER COMPONENTS ARE IN BRAND-NEW CONDITION. NO ALLOWANCE WAS MADE FOR ANY DAMAGED, MISSING OR RUSTED MEMBERS. IF ANY OF THESE CONDITIONS ARE DISCOVERED, THE CONTRACTOR SHALL BRING THEM TO THE ATTENTION OF THE OWNERS REPRESENTATIVE.
   - 1.2. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED BY OWNER. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND COORDINATE WITH THE AVAILABLE SOURCES OF INFORMATION ABOVE AND WITH THE PROJECT DRAWINGS BEFORE PROCEEDING WITH THE WORK. CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND OWNER FIELD PERSONNEL BEFORE PROCEEDING WITH THE WORK.
   - 1.3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
   - 1.4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE MODIFICATIONS DESCRIBED HEREIN. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
   - 1.5. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET OSHA AND GENERAL INDUSTRY STANDARDS.
   - 1.6. OBSERVATION VISITS TO THE SITE BY OWNER AND/OR THE EOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
   - 1.7. ANY SUPPORT SERVICES PERFORMED BY THE EOR DURING CONSTRUCTION ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING GENERAL CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
   - 1.8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY OWNER AND EOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
   - 1.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS OWNER SAFETY GUIDELINES.
   - 1.10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW EQUIPMENT DURING CONSTRUCTION.
   - 1.11. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE STRUCTURE THAT MAY INTERFERE WITH THE INSTALLATION OF THE MODIFICATION SYSTEM WILL HAVE TO BE REMOVED AND RELOCATED, REPLACED, OR RE-INSTALLED AS REQUIRED AFTER THE MODIFICATION IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH OWNER, TESTING AGENCY, AND EOR.
   - 1.12. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE EOR.

2. **STRUCTURAL STEEL**
   - 2.1. SHOP DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKERS INITIALS BEFORE SUBMITTING TO ENGINEER. CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS FOR GENERAL CONFORMANCE TO THE PLANS PRIOR TO SUBMITTING TO ENGINEER. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS, ELEVATIONS AND SECTIONS. SHOP DRAWINGS SHALL ALSO INCLUDE SECTION PROFILES, SIZES, CONNECTIONS, ATTACHMENTS, REINFORCING, ANCHORAGE SIZE AND TYPE OF FASTENERS AND ASSEMBLIES.
   - 2.2. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
     - 2.2.1. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
       - 2.2.1.1. "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
       - 2.2.1.2. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.
       - 2.2.1.3. "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
     - 2.2.2. BY THE AMERICAN WELDING SOCIETY (AWS):
       - 2.2.2.1. "STRUCTURAL WELDING CODE – STEEL D1.1."
       - 2.2.2.2. "STANDARD SYMBOLS FOR WELDING, BRAZING, AND NONDESTRUCTIVE EXAMINATION"
     - 2.2.3. BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS:
       - 2.2.3.1. DESIGN OF LATTICED STEEL TRANSMISSION STRUCTURES (ASCE 10-XX)
       - 2.2.3.2. DESIGN OF STEEL TRANSMISSION POLE STRUCTURES (ASCE 48-XX)
   - 2.3. NEW STEEL (UNLESS NOTED OTHERWISE) SHALL CONFORM TO THE REQUIREMENTS OF THE ASTM STANDARD SPECIFICATION FOR STRUCTURAL STEEL AS NOTED BELOW:
     M, S, C, MC, L, PLATES & BARS - ASTM A36 (36 KSI YIELD POINT MATERIAL)
     W - ASTM A992 (50 KSI YIELD POINT MATERIAL)
     HSS RECTANGULAR - ASTM A500, GRADE B (46 KSI YIELD POINT MATERIAL)
     HSS ROUND - ASTM A500, GRADE B (42 KSI YIELD POINT MATERIAL)
     PIPE - ASTM A53, GRADE B (35 KSI YIELD POINT MATERIAL)
   - 2.4. NEW BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325, TYPE "X" UNLESS NOTED OTHERWISE. ALL HOLES FOR BOLTS SHALL BE 1/16" LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 3/4 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE PROVIDED WITH LOCK WASHERS, PALNUTS, OR LOCK NUTS.
   - 2.5. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO A SNUG TIGHT CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS',UNLESS NOTED OTHERWISE ON DRAWINGS.
   - 2.6. ALL U-BOLTS SHALL BE A307 UNLESS NOTED OTHERWISE.
   - 2.7. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
   - 2.8. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E70XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - 2.9. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   - 2.10. ALL SURFACES MUST BE CLEAN AND FREE OF WELD SPATTER. ALL EDGES SHALL BE DEBURRED.
   - 2.11. ALL PARTS ARE TO BE MARKED WITH ITEM NUMBERS USING 3/4" HIGH STEEL STENCILS.
   - 2.12. SHOP SHALL ASSEMBLE AND VERIFY FIT AND GAPS BEFORE BREAKDOWN FOR GALVANIZING.
   - 2.13. NO FIELD WELDING SHALL BE DONE TO THE EXISTING STRUCTURE.
   - 2.14. FIELD CUTTING OF STEEL:
     - 2.14.1. IMPORTANT CUTTING SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL OWNER CUTTING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT OWNER GUIDELINES. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
     - 2.14.2. ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.
     - 2.14.3. FIELD HOLES SHALL BE PUNCHED OR DRILLED. BURNING OF MEMBERS SHALL NOT BE PERMITTED.

3. **BASE PLATE GROUT**
   - 3.1. NEW GROUT FOR THE POLE BASE SHALL BE NON-SHRINK, NON-METALLIC, GROUT (NS GROUT BY EUCLID, OR APPROVED EQUAL) WITH A 7500 PSI MINIMUM COMPRESSIVE STRENGTH. CONTRACTOR SHALL SUBMIT PROPOSED GROUT SPECIFICATION INFORMATION TO OWNER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FOLLOW GROUT MANUFACTURER'S SPECIFICATIONS FOR COLD WEATHER GROUTING PROCEDURES (IF NECESSARY) AND THE TESTING AGENCY SHALL PREPARE GROUT SAMPLE SPECIMENS FOR COMPRESSIVE STRENGTH TESTING AND VERIFICATION.
   - 3.2. GROUT SHALL BE INSTALLED TIGHT UNDER THE BASE PLATE AND BEARING PLATE REGION WITH NO VOIDS REMAINING BETWEEN THE TOP OF THE EXISTING CONCRETE AND THE UNDERSIDE OF THE EXISTING BASE PLATE AND BEARING PLATE.
   - 3.3. CAULK AROUND ANCHOR RODS WHEN GROUTING.

4. **FOUNDATION WORK**
   - 4.1. THE CONTRACTOR SHALL PROTECT THE EXISTING STRUCTURE, AS WELL AS ANY OTHER NEARBY EXISTING FOUNDATIONS FOR OTHER STRUCTURES OR EQUIPMENT, FROM LOSS OF SOIL AROUND AND/OR BENEATH FOOTINGS DURING ANY EXCAVATION. THE CONTRACTOR SHALL BRACE THE SITES OF THE OPEN EXCAVATION AS REQUIRED.
   - 4.2. THE EFFECT OF ADDITIONAL EXCAVATION FOR FOUNDATION AUGMENTATION AND REINFORCING, WHERE REQUIRED, MAY HAVE IMPACT ON EXISTING EQUIPMENT AND/OR OTHER EXISTING STRUCTURES NEAR THE EXCAVATION. THE EOR HAS NOT BEEN PROVIDED WITH ANY SPECIFIC INFORMATION OR DETAILS REGARDING EXISTING EQUIPMENT OR OTHER EXISTING STRUCTURES ON THE SITE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EFFECT THAT ANY EXCAVATION WORK HAS ON EXISTING NEARBY EQUIPMENT AND/OR STRUCTURES. CONTRACTOR SHALL COORDINATE THIS SITE-SPECIFIC INFORMATION WITH OWNER AND THE TESTING AGENCY PRIOR TO CONSTRUCTION AND FOUNDATION WORK. AFTER OBTAINING THE PRIOR WRITTEN PERMISSION OF OWNER, THE CONTRACTOR SHALL ADEQUATELY BRACE, SHORE, AND/OR RELOCATE THE INTERFERING EXISTING NEARBY EQUIPMENT AND/OR STRUCTURES AS NECESSARY.

5. **CAST-IN-PLACE CONCRETE**
   - 5.1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
   - 5.2. CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED (6% +/- 1.5%).
   - 5.3. WATER CEMENT RATION = 0.45 (MAXIMUM).
   - 5.4. ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60.
   - 5.5. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318, LATEST EDITION. CONTRACTOR SHALL FOLLOW ALL APPLICABLE ACI PROCEDURES FOR COLD WEATHER AND HOT WEATHER CONCRETE PLACEMENT.
   - 5.6. ALL REINFORCING DETAILS SHALL CONFORM TO "DETAILS AND DETAILING OF CONCRETE REINFORCING" ACI 315, LATEST EDITION, UNLESS DETAILED OTHERWISE ON THE DRAWINGS.
   - 5.7. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL OPENINGS, SLEEVES, ANCHOR RODS, INSERTS, ETC., AS REQUIRED BEFORE CONCRETE IS PLACED.
   - 5.8. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED.
   - 5.9. CONTRACTOR SHALL PROVIDE SPACERS, CHAIRS, BOLSTERS, ETC., NECESSARY TO SUPPORT REINFORCING STEEL. CHAIRS WHICH BEAR ON EXPOSED CONCRETE SURFACES SHALL HAVE ENDS WHICH ARE PLASTIC TIPPED OR STAINLESS STEEL.
   - 5.10. ALL STRUCTURAL MEMBERS SHALL BE POURED MONOLITHICALLY, EXCEPT FOR REQUIRED CONSTRUCTION JOINTS. CONTRACTOR SHALL SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS AND DETAILS TO THE EOR FOR REVIEW.
   - 5.11. CONTRACTOR SHALL PROVIDE ¾-INCH CHAMFER ON ALL EXPOSED CORNERS UNLESS OTHERWISE INDICATED ON THE DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL BE MAINTAINED AS SPECIFIED BY ACI.
   - 5.12. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
     - 3" ..... CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
     - 2" ..... CONCRETE EXPOSED TO EARTH OR WEATHER, #6 THROUGH #18 BARS.
     - 1-1/2"... CONCRETE EXPOSED TO EARTH OR WEATHER, #5 BAR AND SMALLER.
   - 5.13. FOOTING BARS SHALL BE BENT 1'-6" AROUND CORNERS, OR PROVIDE CORNER BARS WITH A 2'-0" LAP ON EACH LEG.
   - 5.14. TESTING LABORATORY SHALL SUBMIT ONE COPY OF ALL CONCRETE TEST REPORTS DIRECTLY TO THE EOR.
   - 5.15. CONTRACTOR SHALL KEEP A COPY OF "FIELD REFERENCE MANUAL" (ACI PUBLICATION SP-15, LATEST EDITION) AT THE PROJECT FIELD OFFICE.
   - 5.16. FLY ASH SHALL BE PERMITTED. FLY ASH CONTENT SHALL BE A MAXIMUM OF 25% OF CEMENT WEIGHT.

6. **EPOXY GROUTED REINFORCING ANCHOR RODS**
   - 6.1. UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BARS CONFORMING TO ASTM A722. RECOMMENDED MANUFACTURERS/SUPPLIERS OF 150 KSI ALL-THREAD BARS ARE WILLIAMS FORM ENGINEERING CORPORATION AND DYWIDAG SYSTEMS INTERNATIONAL.
   - 6.2. ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A123. ALTERNATIVELY, ALL REINFORCING ANCHOR RODS MAY BE EPOXY COATED PER ASTM A775.
   - 6.3. THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
   - 6.4. HILTI HIT RE-500 SD OR ITW RED HEAD EPCON G5 EPOXY SHALL BE USED TO ANCHOR THE BAR IN THE DRILL HOLES. IF THE DESIGNED EMBEDMENT IS GREATER THAN 12 FT, CONTRACTOR HAS THE OPTION TO USE PILE ANCHOR GROUT BY E-CHEM AS AN ALTERNATE. IF CONTRACTOR WISHES TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO THE EOR FOR REVIEW PRIOR TO CONSTRUCTION.
   - 6.5. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN INSTALLED AND ALL EPOXY AND GROUT HAVE CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED PRIOR TO TESTING), ALL REINFORCING ANCHORS SHALL BE LOAD TESTED. REFER TO THE NEW ANCHOR & BRACKET DETAIL ON FOLLOWING SHEETS FOR SPECIFIED ANCHOR ROD TARGET TENSION LOAD.
   - 6.6. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN SUCCESSFULLY LOAD TESTED AND APPROVED THE CONTRACTOR SHALL TIGHTEN ALL HEAVY HEX ANCHOR NUTS TO SNUG TIGHT PLUS 1/8 TURN OF NUT.

7. **TOUCH UP OF GALVANIZING**
   - 7.1. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS AND FIELD DRILLING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
   - 7.2. OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE ADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

8. **HOT-DIP GALVANIZING**
   - 8.1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123, ASTM A386 OR PER ASTM A153, AS APPROPRIATE.
   - 8.2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
   - 8.3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES WITH EOR APPROVAL OF LOCATIONS.
   - 8.4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

9. **PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER**
   - 9.1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MODIFICATION SYSTEM AND THE WORK HAS BEEN ACCEPTED BY OWNER, OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE STRUCTURE AND MODIFICATION SYSTEM.

STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
LICENSED
PROFESSIONAL ENGINEER
6/6/2016

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PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.8679 www.paulfford.com

T-MOBILE
35 GRIFFIN ROAD SOUTH BLOOMFIELD, CONNECTICUT 06002

CL&P STRUCTURE #CT RIVER CROSSING EAST SIDE OLD LYME
8 OLD BRIDGE ROAD
OLD LYME, NEW LONDON COUNTY, CONNECTICUT
SITE # CT11036C

PROJECT No:	31216-0005.002.6125_6280
DRAWN BY:	BMS
DESIGNED BY:	JRA
CHECKED BY:	
DATE:	03-29-2016

GENERAL NOTES

N-1
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ICATION INSPECTION NOTES:

INSPECTION AND TESTING

INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS ARE STILL REQUIRED WHEN THE EOR PERFORMS SUPPORT SERVICES DURING CONSTRUCTION.
OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.

1.3.1. ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
1.3.2. THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.

GENERAL

1.4.1. PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY OWNER AND THE EOR IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.

FOUNDATIONS AND SOIL PREPARATION

1.5.1. VERIFY MATERIALS AT BOTTOM OF EXCAVATION ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.
1.5.2. VERIFY THAT EXCAVATIONS HAVE EXTENDED TO PROPER DEPTH AND ARE FOUNDED ON PROPER MATERIAL.
1.5.3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS AS SPECIFIED.
1.5.4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.
1.5.5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY SITE HAS BEEN PREPARED PROPERLY.

CONCRETE TESTING PER ACI

1.6.1. INSPECT PLACEMENT OF REINFORCING STEEL.
1.6.2. INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE.
1.6.3. VERIFY USE OF REQUIRED MIX DESIGN.
1.6.4. AT THE TIME FRESH CONCRETE IS SAMPLED FABRICATE SPECIMENS FOR STRENGTH TEST, PERFORM SLUMP AND AIR CONTENT TEST AND DETERMINE TEMPERATURE OF THE CONCRETE.
1.6.5. INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUE.
1.6.6. INSPECT SPECIFIED CURING AND TEMPERATURE TECHNIQUES.

STRUCTURAL STEEL

1.7.1. CHECK STEEL ON THE JOB WITH THE PLANS.
1.7.2. CHECK MILL CERTIFICATIONS. CALL FOR LABORATORY TEST REPORTS WHEN MILL CERTIFICATION IS IN QUESTION.
1.7.3. CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
1.7.4. INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
1.7.5. CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
1.7.6. CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
1.7.7. CHECK THAT BOLTS HAVE BEEN TIGHTENED PROPERLY.
1.7.8. PRIOR TO ANY FIELD CUTTING THE CONTRACTOR SHALL MARK THE CUTOUT LINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.

WELDING:

1.8.1. VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
1.8.2. INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND WITH AWS D1.1.
1.8.3. APPROVE FIELD WELDING SEQUENCE.
1.8.4. INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
1.8.4.1. INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE, AND WORKING CONDITIONS.
1.8.4.2. VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
1.8.4.3. INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
1.8.4.4. VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT.
1.8.4.5. SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE.
1.8.4.6. INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED DRAWINGS.
1.8.4.7. VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
1.8.4.8. REVIEW THE REPORTS BY TESTING LABS.
1.8.4.9. CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
1.8.4.10. INSPECT RUST PROTECTION OF WELDS AS PER SPECIFICATIONS.
1.8.4.11. CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.
1.8.4.12. FULL PENETRATION WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY UT IN ACCORDANCE WITH AWS D1.1.
1.8.4.13. PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MP IN ACCORDANCE WITH AWS D1.1.

REPORTS:

1.9.1. COMPILE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO OWNER.
1.9.2. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES OR PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. OWNER RESERVES THE RIGHT TO DETERMINE WHETHER OR NOT A RESOLUTION IS ACCEPTABLE.
1.9.3. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
1.9.4. THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

1.10. CORRECTION OF FAILING MI'S
1.10.1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH THE OWNER TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
1.10.1.1. CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
1.10.1.2. OR, WITH THE OWNERS APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

1.11. PHOTOGRAPHS
1.11.1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
1.11.1.1. PRE-CONSTRUCTION GENERAL SITE CONDITION
1.11.1.2. PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
1.11.1.2.1. RAW MATERIALS
1.11.1.2.2. PHOTOS OF ALL CRITICAL DETAILS
1.11.1.2.3. FOUNDATION MODIFICATIONS
1.11.1.2.4. WELD PREPARATION
1.11.1.2.5. BOLT INSTALLATION AND TORQUE
1.11.1.2.6. FINAL INSTALLED CONDITION
1.11.1.2.7. SURFACE COATING REPAIR
1.11.1.3. POST CONSTRUCTION PHOTOGRAPHS
1.11.1.3.1. FINAL INFIELD CONDITION
1.11.2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

POST-MODIFICATION CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT
X	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE THE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR CERTIFIED WELD INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE TESTING AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL WITH A YIELD STRENGTH GREATER THAN 36 KSI AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR NDE INSPECTION	A VISUAL OBSERVATION OF A PORTION OF THE EXISTING STRUCTURE (AS NOTED ON THESE DRAWINGS) IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)	A VISUAL OBSERVATION OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	POST INSTALLED ANCHOR ROD VERIFICATION	ANCHOR ROD INSTALLATION SHALL INCLUDE VERIFICATION BY LETTER AND PHOTOGRAPHIC DOCUMENTATION.
NA	BASE PLATE GROUT VERIFICATION	A LETTER FROM THE GENERAL CONTRACTOR SHALL BE PROVIDED TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH SPECIFICATIONS FOR INCLUSION IN THE MI REPORT.
NA	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. PRE, DURING AND POST WELD INSPECTION IS REQUIRED.
NA	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH SPECIFICATIONS.
NA	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE FOR INCLUSION IN THE MI REPORT.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
NA	MICROPILE / ROCK ANCHOR	THE GENERAL CONTRACTOR SHALL PROVIDE INSTALLER'S DRILLING AND INSTALLATION LOGS AND QA/QC DOCUMENTATION TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
NA	POST INSTALLED ANCHOR ROD PULL TESTING	POST INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH SPECIFICATIONS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	POST INSTALLED MICROPILE / ROCK ANCHOR TESTING	POST INSTALLED ANCHORS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH SPECIFICATION STATED ON MICROPILE/ROCK ANCHOR NOTES.

NOTE: X DENOTES A DOCUMENT NEEDED FROM THE CONTRACTOR FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
LICENSED
PROFESSIONAL ENGINEER
6/6/2016

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

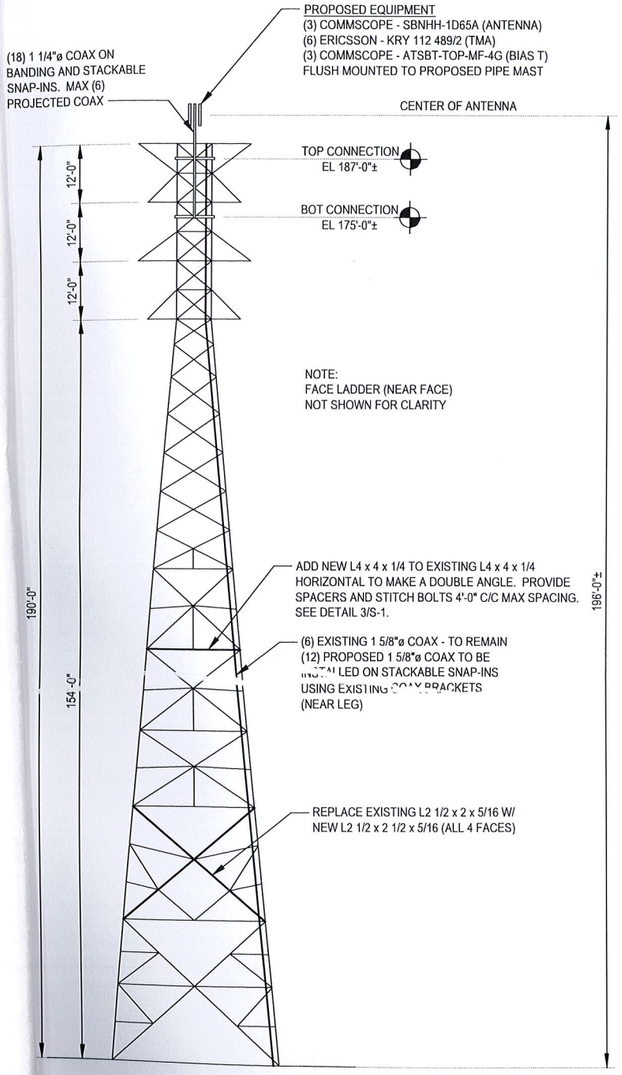
T-MOBILE
35 GRIFFIN ROAD SOUTH BLOOMFIELD, CONNECTICUT 06002

CL&P STRUCTURE #CT RIVER CROSSING EAST SIDE OLD LYME
8 OLD BRIDGE ROAD
OLD LYME, NEW LONDON COUNTY, CONNECTICUT
SITE # CT11036C

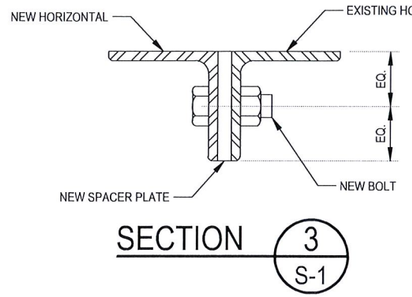
PROJECT No:	31216-0005.002.6125_6280
DRAWN BY:	BMS
DESIGNED BY:	JRA
CHECKED BY:	
DATE:	03-29-2016

MI CHECKLIST AND NOTES

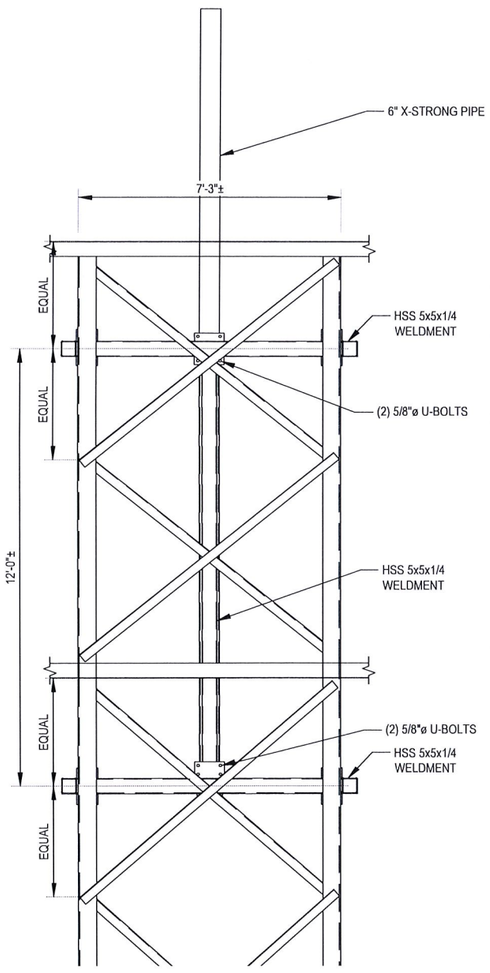
MI-1



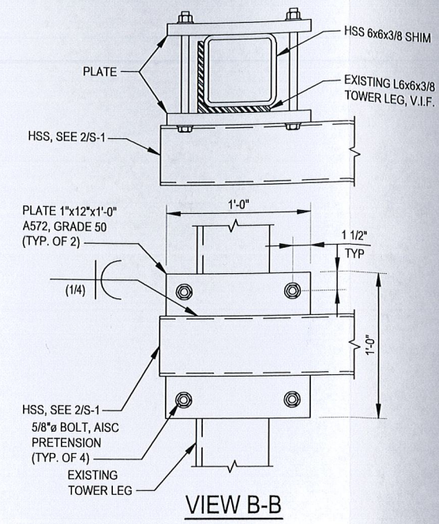
OWER ELEVATION 1 / S-1
LE: LOOKING WEST



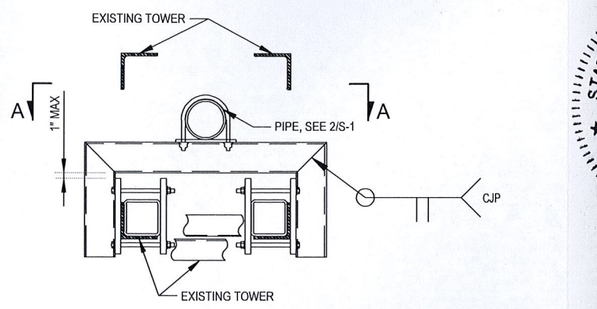
SECTION 3 / S-1



ELEVATION 2 / S-1
NOTE:
FACE LADDER NOT SHOWN THIS ELEVATION FOR CLARITY



VIEW B-B



VIEW A-A
SQUARE TUBE WELDMENT

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

T-MOBILE
35 GRIFFIN ROAD SOUTH BLOOMFIELD, CONNECTICUT 06002

CL&P STRUCTURE #CT RIVER CROSSING EAST
SIDE OLD LYME
8 OLD BRIDGE ROAD
OLD LYME, NEW LONDON COUNTY, CONNECTICUT
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STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
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6/6/2016

PROJECT No:	31216-0005.002.6125_6280
DRAWN BY:	BMS
DESIGNED BY:	JRA
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TOWER ELEVATIONS AND DETAILS

S-1
SHEET NO. 4 OF 4

APPENDIX B

LOAD CALCULATIONS

EVERSOURCE

		Page	of
Job :	Spec. Number	Sheet	of
Description:	Computed by	Date	3/24/16
	Checked by	Date	

INPUT DATA

TOWER ID: Dist CT-River east

Structure Height (ft) : 190

Wind Zone : SE Coastal CT (red)

Wind Speed : 120 mph

Tower Type : ○ Suspension ◉ Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

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

Conductor Properties:

	BACK	AHEAD		
NAME =	*HEN*	*HEN*		
Number of Conductors per phase: 1	477.000 30/7 ACSR	477.000 30/7 ACSR	1	Number of Conductors per phase
DIAMETER =	0.883 in	0.883 in		
WEIGHT =	0.747 lb/ft	0.747 lb/ft		

Insulator Weight = 200 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	8,000	12,000	8,000	12,000
EXTREME WIND =	7,040	10,229	6,782	13,213
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 =	6,640	7,913	2,433	4,804

NOTE: Higher tension is in the span over the river so longitudinal pull is towards the river.

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	12	AHEAD:	12	**25**
WIND SPAN (ft) =	BACK:	240	AHEAD:	1,035	**1,275**
WEIGHT SPAN (ft) =	BACK:	3,836	AHEAD:	1,035	**4,870**

EVERSOURCE

		Page	of
Job :	Spec. Number	Sheet	of
Description:	Computed by	Date	3/24/16
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: Dist CT-River east

Wind Span =	1,275	ft	Broken Wire Span =	AHEAD SPAN
Weight Span =	4,870	ft	Type of Insulator Attachment =	STRAIN
Total Angle =	25	degrees		

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	7,073 lb	0 lb	5,932 lb	3,078 lb	12,899 lb	4,672 lb
Conductor =	10,402 lb	0 lb	12,339 lb	4,578 lb	19,349 lb	9,545 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	4,568 lb	252 lb	1,275 lb
Conductor =	8,726 lb	2,916 lb	4,038 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,275 lb
Conductor =	#VALUE!	#VALUE!	4,038 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	9,663 lb
Conductor =	#VALUE!	#VALUE!	15,442 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	3,955 lb
Conductor =	#VALUE!	#VALUE!	8,226 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	1,925 lb	4,111 lb	1,275 lb
Conductor =	2,698 lb	3,038 lb	4,038 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	1,925 lb	4,111 lb	1,275 lb
Conductor =	2,698 lb	3,038 lb	4,038 lb

EVERSOURCE

		Page	of
Job :	Spec. Number	Sheet	of
Description:	Computed by	Date	3/24/16
	Checked by	Date	

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

LC 1		HORIZONTAL	LONGITUDINAL	VERTICAL
NESC Heavy	shield - back	3077.745272	12899.45061	4672.039358
	shield - ahead	3994.846106	-12899.45061	1260.250794
	SHIELD - SUM	**7072.591378**	**0**	**5932.290152**
	conductor - back	4577.717909	19349.17591	9544.971148
	conductor - ahead	5824.577742	-19349.17591	2793.767996
	CONDUCTOR - SUM	**10402.29565**	**0**	**12338.73914**
LC 2		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Extreme Wind	shield - back	1801.736319	6879.706989	1004.1339
	shield - ahead	2766.749379	-6627.581364	270.85828
	SHIELD - SUM	**4568.485699**	**252.1256255**	**1274.99218**
	conductor - back	2876.778039	9996.096988	3065.1185
	conductor - ahead	5848.730697	-12912.15461	972.8462
	CONDUCTOR - SUM	**8725.508736**	**-2916.057622**	**4037.9647**
LC 3		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Long. Wind	shield - back	#VALUE!	#VALUE!	1004.1339
	shield - ahead	#VALUE!	#VALUE!	270.85828
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**1274.99218**
	conductor - back	#VALUE!	#VALUE!	3065.1185
	conductor - ahead	#VALUE!	#VALUE!	972.8462
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**4037.9647**
LC 4		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
RULE 250D	shield - back	#VALUE!	#VALUE!	7610.064347
	shield - ahead	#VALUE!	#VALUE!	2052.763023
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**9662.82737**
	conductor - back	#VALUE!	#VALUE!	12046.32213
	conductor - ahead	#VALUE!	#VALUE!	3395.464706
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**15441.78684**
LC 5		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
NESC w/o OLF's	shield - back	#VALUE!	#VALUE!	3114.692906
	shield - ahead	#VALUE!	#VALUE!	840.167196
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**3954.860102**
	conductor - back	#VALUE!	#VALUE!	6363.314099
	conductor - ahead	#VALUE!	#VALUE!	1862.511998
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**8225.826096**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Raking	shield - back	1408.859743	6488.814547	1004.1339
	shield - ahead	516.2282764	-2377.603282	270.85828
	SHIELD - SUM	**1925.088019**	**4111.211265**	**1274.99218**
	conductor - back	1678.96192	7732.829745	3065.1185
	conductor - ahead	1019.301537	-4694.618235	972.8462
	CONDUCTOR - SUM	**2698.263457**	**3038.21151**	**4037.9647**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
60 DEG F NO WIND	shield - back	1408.859743	6488.814547	1004.1339
	shield - ahead	516.2282764	-2377.603282	270.85828
	SHIELD - SUM	**1925.088019**	**4111.211265**	**1274.99218**
	conductor - back	1678.96192	7732.829745	3065.1185
	conductor - ahead	1019.301537	-4694.618235	972.8462
	CONDUCTOR - SUM	**2698.263457**	**3038.21151**	**4037.9647**

Equipment Loads (Tubular Pole on Lattice Structure)

Constants

$h_{lattice} := 190 \cdot ft$ height of lattice structure

$h_{mast} := 198 \cdot ft$ Top of Mast AGL

$b_{mast} := 175 \cdot ft$ Bot. of Mast AGL

$z_{equip} := 196 \cdot ft$ elevation of equip.

$z_{coax} := 185.5 \cdot ft$ elevation to CL of coax section for TIA wind (linear appurtance)

$z_{pipe} := 186.5 \cdot ft$ elevation to CL of pipe section for TIA wind

$r_{ice} := 0.5 \cdot in$ Radial Ice, Tia & NESC

$I_d := 57 \cdot pcf$ Ice Density

NESC Shape Factors:

$Cd_R := 1.3$ $Cd_F := 1.6$ $Cd_{coax} := 1.45$

NESC Overload Factors:

$OLF250B_V := 1.5$ 250B Vertical OLF

$OLF250B_T := 2.5$ 250B Transverse Wind OLF

$OLF250C_V := 1.0$ 250C Vertical OLF

$OLF250C_T := 1.0$ 250C Transverse Wind OLF

TIA/EIA Wind

$V_{tia} := 85$ TIA Basic Wind Speed

$V_{i.tia} := 74$ TIA Basic Wind Speed with Ice

$$G_H := \begin{cases} \text{if } 0.65 + \left(\dfrac{0.60}{\left(\dfrac{h_{lattice}}{33 \cdot ft} \right)^{\frac{1}{7}}} \right) \le 1 \\ \quad 1 \\ \text{also if } 0.65 + \left(\dfrac{0.60}{\left(\dfrac{h_{lattice}}{33 \cdot ft} \right)^{\frac{1}{7}}} \right) \ge 1.25 \\ \quad 1.25 \\ \text{else} \\ \quad \left(0.65 + \left(\dfrac{0.60}{\left(\dfrac{h_{lattice}}{33 \cdot ft} \right)^{\frac{1}{7}}} \right) \right) \end{cases}$$

$G_H = 1.117$ Calculated GRF, Sec. 2.3.4.1

$m_{grf.pole} := 1.25$ GRF Multiplier, Sec. 2.3.4.4

$G'_H := G_H \cdot m_{grf.pole} = 1.397$ Final GRF of pole on lattice, Sec. 2.3.4.4

NESC Wind

$V_{nesc} := 120$ NESC 250C 3 sec Gust Speed per OTRM 060

$V_{i.nesc} := 39.5$ NESC 250B 3 sec Gust Speed with Ice

$I := 1.0$ NESC Importance Factor

$$E_s := 0.346 \cdot \left(\frac{33}{\left(0.67 \cdot \frac{h_{mast}}{ft} \right)} \right)^{\frac{1}{7}} = 0.284$$ NESC Factors, Table 250-3

$$B_s := \frac{1}{\left(1 + \frac{0.56 \cdot \left(0.67 \cdot \frac{h_{mast}}{ft} \right)}{220} \right)} = 0.748$$ NESC Factors, Table 250-3

$k_v := 1.43$ NESC Constant, Table 250-3

$$G_{RF} := \frac{\left(1 + \left(2.7 \cdot E_s \cdot B_s^{0.5} \right) \right)}{k_v^{2}} = 0.813$$ Calculated GRF, Table 250-3

$m_{grf} := 1.25$ NEU specified multiplier for 250C (OTRM 059.1, Attachment A)

$G'_{RF} := G_{RF} \cdot m_{grf} = 1.016$ Calculated GRF for 250C

TIA/EIA Exposure Coefficients:

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

$$Kz_{coax} := \left(\frac{z_{coax}}{33 \cdot ft}\right)^{\frac{2}{7}} = 1.638$$

Section Average Height Above Ground for Wind Load

$$Kz_{pipe} := \left(\frac{z_{pipe}}{33 \cdot ft}\right)^{\frac{2}{7}} = 1.64$$

Section Average Height Above Ground for Wind Load

NESC Exposure Coefficient:

$$k_z := 2.01 \cdot \left(\frac{h_{mast}}{900 \cdot ft}\right)^{\left(\frac{2}{9.5}\right)} = 1.461$$

Calculated kz per Table 250-2

TIA/EIA Wind Pressure:

$$qzice_{equip} := 0.00256 \cdot psf \cdot V_{i.tia}^{2} \cdot Kz_{equip} = 23.3\ psf$$

$$qz_{equip} := 0.00256 \cdot psf \cdot V_{tia}^{2} \cdot Kz_{equip} = 30.8\ psf$$

$$qzice_{coax} := 0.00256 \cdot psf \cdot V_{i.tia}^{2} \cdot Kz_{coax} = 23\ psf$$

$$qz_{coax} := 0.00256 \cdot psf \cdot V_{tia}^{2} \cdot Kz_{coax} = 30.3\ psf$$

$$qzice_{pipe} := 0.00256 \cdot psf \cdot V_{i.tia}^{2} \cdot Kz_{pipe} = 23\ psf$$

$$qz_{pipe} := 0.00256 \cdot psf \cdot V_{tia}^{2} \cdot Kz_{pipe} = 30.3\ psf$$

$$qzice_{comp} := 0.00256 \cdot psf \cdot V_{i.tia}^{2} \cdot Kz_{pipe} = 23.0\ psf$$

$$qz_{comp} := 0.00256 \cdot psf \cdot V_{tia}^{2} \cdot Kz_{pipe} = 30.3\ psf$$

NESC Wind Pressure:

$$qz_{250B} := 0.00256 \cdot V_{i.nesc}^{2} \cdot I \cdot psf = 4.0\ psf$$

$$qz_{250C} := 0.00256 \cdot k_z \cdot V_{nesc}^{2} \cdot I \cdot psf = 53.9\ psf$$

Pipe Extension Loads

Constants

$OD := 6.625 \cdot in$ outer diameter of pipe riser

$L_{pipe} := 23\ ft$ Length of pipe riser

$MemberLabel_{pipe} :=$ "M1" Member Label in Risa

$Weight.ice_{pipe} := I_d \cdot \frac{\pi}{4} \cdot \left(\langle OD + 2 \cdot r_{ice} \rangle^2 - OD^2 \right) = 4.4\ plf$

$SA_{pipe} := OD = 0.552\ ft$ Projected Surface Area of Pipe

$SAice_{pipe} := OD + \langle 2 \cdot r_{ice} \rangle = 0.635\ ft$ Projected Surface Area of Pipe with Ice

TIA/EIA Wind:

$Ar_{pipe} := \frac{L_{pipe}}{OD} = 41.66$

$$Ca_{pipe} := \begin{cases} \text{if } Ar_{pipe} \le 7 \\ \quad 0.8 \\ \text{if } 7 < Ar_{pipe} < 25 \\ \quad 0.8 + \frac{\langle Ar_{pipe} - 7 \rangle \cdot (1.2 - 0.8)}{(25 - 7)} \\ \text{if } Ar_{pipe} \ge 25 \\ \quad 1.2 \end{cases} = 1.2$$

Table 1

$Wind.TIA_{pipe} := qz_{pipe} \cdot G'_H \cdot Ca_{pipe} \cdot SA_{pipe} = 28.1\ plf$

$IceWind.TIA_{pipe} := qzice_{pipe} \cdot G'_H \cdot Ca_{pipe} \cdot SAice_{pipe} = 24.5\ plf$

NESC Wind:

$Wind.250B_{pipe} := qz_{250B} \cdot Cd_R \cdot SAice_{pipe} = 3.3\ plf$

Wind Pressure Above Top of Tower:

$Wind.250C_{pipe.Above} := qz_{250C} \cdot G'_{RF} \cdot Cd_R \cdot SA_{pipe} = 39.3\ plf$

Wind Pressure Below Top of Tower:

$Wind.250C_{pipe.Below} := qz_{250C} \cdot G_{RF} \cdot Cd_R \cdot SA_{pipe} = 31.4\ plf$

Mast Component Loads

$a := 1 .. 3$ <----- input number of component slots used

Component Description					
1. 5x5x1/4 Hor Tube	$Cd_{comp_1} := Cd_F$	$W_{comp_1} := 5 \cdot in$	$H_{comp_1} := 5 \cdot in$	$L_{comp_1} := 7.25\ ft$	$MemLabel_{comp_1} := \text{“M2”}$
2. 5x5x1/4 Vert Tube	$Cd_{comp_2} := Cd_F$	$W_{comp_2} := 5 \cdot in$	$H_{comp_2} := 5 \cdot in$	$L_{comp_2} := 12\ ft$	$MemLabel_{comp_2} := \text{“M8”}$
3. 5x5x1/4 Hor Tube	$Cd_{comp_3} := Cd_F$	$W_{comp_3} := 5 \cdot in$	$H_{comp_3} := 5 \cdot in$	$L_{comp_3} := 7.25\ ft$	$MemLabel_{comp_3} := \text{“M3”}$
4. Not Used	$Cd_{comp_4} := Cd_F$	$W_{comp_4} := 0 \cdot in$	$H_{comp_4} := 0 \cdot in$	$L_{comp_4} := 0\ ft$	$MemLabel_{comp_4} := \text{“NA”}$
5. Not Used	$Cd_{comp_5} := Cd_F$	$W_{comp_5} := 0 \cdot in$	$H_{comp_5} := 0 \cdot in$	$L_{comp_5} := 0\ ft$	$MemLabel_{comp_5} := \text{“NA”}$
6. Not Used	$Cd_{comp_6} := Cd_F$	$W_{comp_6} := 0 \cdot in$	$H_{comp_6} := 0 \cdot in$	$L_{comp_6} := 0\ ft$	$MemLabel_{comp_6} := \text{“NA”}$

$$Weight.ice_{comp_a} := I_d \cdot \left(\left(W_{comp_a} + 2 \cdot r_{ice} \right) \cdot \left(H_{comp_a} + 2 \cdot r_{ice} \right) - W_{comp_a} \cdot H_{comp_a} \right) = \begin{bmatrix} 4.4 \\ 4.4 \\ 4.4 \end{bmatrix} plf$$

$$SA_{comp_a} := \max\left(W_{comp_a}, H_{comp_a} \right) = \begin{bmatrix} 0.4 \\ 0.4 \\ 0.4 \end{bmatrix} ft$$

$$SAice_{comp_a} := \max\left(W_{comp_a}, H_{comp_a} \right) + 2 \cdot r_{ice} = \begin{bmatrix} 0.5 \\ 0.5 \\ 0.5 \end{bmatrix} ft$$

$$Ar_{comp_a} := \frac{L_{comp_a}}{\max\left(W_{comp_a}, H_{comp_a} \right)} = \begin{bmatrix} 17.4 \\ 28.8 \\ 17.4 \end{bmatrix}$$

$$Ca_{comp_a} := \begin{bmatrix} \text{if } Ar_{comp_a} \le 7 \\ \quad 1.4 \\ \text{if } 7 < Ar_{comp_a} < 25 \\ \quad 1.4 + \dfrac{\left(Ar_{comp_a} - 7 \right) \cdot (2.0 - 1.4)}{(25 - 7)} \\ \text{if } Ar_{comp_a} \ge 25 \\ \quad 2.0 \end{bmatrix} = \begin{bmatrix} 1.7 \\ 2 \\ 1.7 \end{bmatrix}$$

TIA/EIA-222-F, Table 3

TIA/EIA Wind:

$$IceWind.TIA_{comp_a} := qzice_{comp} \cdot G'_H \cdot Ca_{comp_a} \cdot SAice_{comp_a} = \begin{bmatrix} 28.0 \\ 32.1 \\ 28.0 \end{bmatrix} \textit{plf}$$

$$Wind.TIA_{comp_a} := qz_{comp} \cdot G'_H \cdot Ca_{comp_a} \cdot SA_{comp_a} = \begin{bmatrix} 30.8 \\ 35.3 \\ 30.8 \end{bmatrix} \textit{plf}$$

NESC Wind:

$$Wind.250B_{comp_a} := qz_{250B} \cdot Cd_{comp_a} \cdot \max\left(W_{comp_a}, H_{comp_a}\right) = \begin{bmatrix} 2.7 \\ 2.7 \\ 2.7 \end{bmatrix} \textit{plf}$$

$$Wind.250C_{comp_a} := qz_{250C} \cdot G_{RF} \cdot Cd_{comp_a} \cdot \max\left(W_{comp_a}, H_{comp_a}\right) = \begin{bmatrix} 29.2 \\ 29.2 \\ 29.2 \end{bmatrix} \textit{plf}$$

Mount Load

$b := 1 .. 1$ <----- input number of mount slots used

				TIA/EIA-222-F Table 3	NESC Shape Factor
1. Clamp-On Tri-Antenna Mount					
$A_{mount_1} := 5 \cdot ft^2$	$Aice_{mount_1} := 6 \cdot ft^2$	$WT_{mount_1} := 265 \cdot lb$	$WTice_{mount_1} := 27 \cdot lb$	$Ca_{mount_1} := 1.2$	$Cd_{mount_1} := Cd_F$
2. Not Used					
$A_{mount_2} := 0 \cdot ft^2$	$Aice_{mount_2} := 0 \cdot ft^2$	$WT_{mount_2} := 0 \cdot lb$	$WTice_{mount_2} := 0 \cdot lb$	$Ca_{mount_2} := 1.2$	$Cd_{mount_2} := Cd_F$
3. Not Used					
$A_{mount_3} := 0 \cdot ft^2$	$Aice_{mount_3} := 0 \cdot ft^2$	$WT_{mount_3} := 0 \cdot lb$	$WTice_{mount_3} := 0 \cdot lb$	$Ca_{mount_3} := 1.2$	$Cd_{mount_3} := Cd_F$
4. Not Used					
$A_{mount_4} := 0 \cdot ft^2$	$Aice_{mount_4} := 0 \cdot ft^2$	$WT_{mount_4} := 0 \cdot lb$	$WTice_{mount_4} := 0 \cdot lb$	$Ca_{mount_4} := 1.2$	$Cd_{mount_4} := Cd_F$

TIA/EIA Wind:

$$IceWind.TIA_{mount_b} := qzice_{equip} \cdot G'_H \cdot Ca_{mount_b} \cdot Aice_{mount_b} = [234.5]\ lbf$$

$$Wind.TIA_{mount_b} := qz_{equip} \cdot G'_H \cdot Ca_{mount_b} \cdot A_{mount_b} = [257.8]\ lbf$$

NESC Wind:

$$Wind.250B_{mount_b} := qz_{250B} \cdot Cd_{mount_b} \cdot Aice_{mount_b} = [38.3]\ lbf$$

$$Wind.250C_{mount_b} := qz_{250C} \cdot G'_{RF} \cdot Cd_{mount_b} \cdot A_{mount_b} = [437.9]\ lbf$$

Equipment Loads

Equipment Description

$i := 1 .. 3$ <----- input number of equip slots used

1. SBNHH-1D65A	$QTY_{eq_1} := 3$	$L_{eq_1} := 55.0 \cdot in$	$W_{eq_1} := 11.9 \cdot in$	$t_{eq_1} := 7.1 \cdot in$	$WT_{eq_1} := 47.4 \cdot lbf$
2. ATSBT-TOP-MF-4G	$QTY_{eq_2} := 3$	$L_{eq_2} := 5.63 \cdot in$	$W_{eq_2} := 3.7 \cdot in$	$t_{eq_2} := 2.0 \cdot in$	$WT_{eq_2} := 1.8 \cdot lbf$
3. KRY 112 489/2	$QTY_{eq_3} := 6$	$L_{eq_3} := 11.0 \cdot in$	$W_{eq_3} := 6.1 \cdot in$	$t_{eq_3} := 3.94 \cdot in$	$WT_{eq_3} := 15.4 \cdot lbf$
4. Not Used	$QTY_{eq_4} := 0$	$L_{eq_4} := 0 \cdot in$	$W_{eq_4} := 0 \cdot in$	$t_{eq_4} := 0 \cdot in$	$WT_{eq_4} := 0 \cdot lbf$
5. Not Used	$QTY_{eq_5} := 0$	$L_{eq_5} := 0 \cdot in$	$W_{eq_5} := 0 \cdot in$	$t_{eq_5} := 0 \cdot in$	$WT_{eq_5} := 0 \cdot lbf$
6. Not Used	$QTY_{eq_6} := 0$	$L_{eq_6} := 0 \cdot in$	$W_{eq_6} := 0 \cdot in$	$t_{eq_6} := 0 \cdot in$	$WT_{eq_6} := 0 \cdot lbf$

$$Weight_{equip_i} := WT_{eq_i} \cdot QTY_{eq_i} = \begin{bmatrix} 142.2 \\ 5.4 \\ 92.4 \end{bmatrix} lbf$$

$$Weight.Ice_{equip_i} := I_d \cdot QTY_{eq_i} \cdot \left(\left(L_{eq_i} + 2 \cdot r_{ice} \right) \cdot \left(W_{eq_i} + 2 \cdot r_{ice} \right) \cdot \left(t_{eq_i} + 2 \cdot r_{ice} \right) - L_{eq_i} \cdot W_{eq_i} \cdot t_{eq_i} \right) = \begin{bmatrix} 119.2 \\ 5.1 \\ 31.0 \end{bmatrix} lbf$$

$$SA_{eq_i} := L_{eq_i} \cdot W_{eq_i} = \begin{bmatrix} 4.5 \\ 0.1 \\ 0.5 \end{bmatrix} ft^2$$

$$A_{eq_i} := SA_{eq_i} \cdot QTY_{eq_i} = \begin{bmatrix} 13.6 \\ 0.4 \\ 2.8 \end{bmatrix} ft^2$$

$$SAice_{eq_i} := \left(L_{eq_i} + 2 \cdot r_{ice} \right) \cdot \left(W_{eq_i} + 2 \cdot r_{ice} \right) = \begin{bmatrix} 5.0 \\ 0.2 \\ 0.6 \end{bmatrix} ft^2$$

$$Aice_{eq_i} := SAice_{eq_i} \cdot QTY_{eq_i} = \begin{bmatrix} 15.1 \\ 0.6 \\ 3.6 \end{bmatrix} ft^2$$

$$Ar_{eq_i} := \frac{L_{eq_i}}{W_{eq_i}} = \begin{bmatrix} 4.6 \\ 1.5 \\ 1.8 \end{bmatrix}$$

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$$Ca_{eq_i} := \begin{cases} \text{if } Ar_{eq_i} \le 7 \\ \quad 1.4 \\ \text{if } 7 < Ar_{eq_i} < 25 \\ \quad 1.4 + \dfrac{\left(Ar_{eq_i} - 7\right) \cdot (2.0 - 1.4)}{(25 - 7)} \\ \text{if } Ar_{eq_i} \ge 25 \\ \quad 2.0 \end{cases} = \begin{bmatrix} 1.4 \\ 1.4 \\ 1.4 \end{bmatrix}$$ TIA/EIA-222-F, Table 3

TIA/EIA Wind:

$$IceWind.TIA_{equip_i} := qzice_{equip} \cdot G'_H \cdot Ca_{eq_i} \cdot Aice_{eq_i} = \begin{bmatrix} 686.3 \\ 29.6 \\ 161.9 \end{bmatrix} \textit{lbf}$$

$$Wind.TIA_{equip_i} := qz_{equip} \cdot G'_H \cdot Ca_{eq_i} \cdot A_{eq_i} = \begin{bmatrix} 820.4 \\ 26.1 \\ 168.2 \end{bmatrix} \textit{lbf}$$

NESC Wind:

$$Wind.250B_{equip_i} := qz_{250B} \cdot Cd_F \cdot Aice_{eq_i} = \begin{bmatrix} 96.2 \\ 4.1 \\ 22.7 \end{bmatrix} \textit{lbf}$$

$$Wind.250C_{equip_i} := qz_{250C} \cdot G'_{RF} \cdot Cd_F \cdot A_{eq_i} = \begin{bmatrix} 1194.1 \\ 38.0 \\ 244.8 \end{bmatrix} \textit{lbf}$$

Coax Loads

Coax Cable Description

$k := 1 .. 2$ <----- input number of coax cable slots used

1. Heliax 1-5/8"ø	$QTY_{coax_1} := 6$	$NP_{coax_1} := 6$	$OD_{coax_1} := 1.98 \cdot in$	$WT_{coax_1} := 0.92 \cdot plf$	$L_{coax_1} := 23 \cdot ft$
2. Heliax 1-5/8"ø	$QTY_{coax_2} := 12$	$NP_{coax_2} := 0$	$OD_{coax_2} := 1.98 \cdot in$	$WT_{coax_2} := 0.92 \cdot plf$	$L_{coax_2} := 23 \cdot ft$
3. Not Used	$QTY_{coax_3} := 0$	$NP_{coax_3} := 0$	$OD_{coax_3} := 0 \cdot in$	$WT_{coax_3} := 0 \cdot plf$	$L_{coax_3} := 0 \cdot ft$
4. Not Used	$QTY_{coax_4} := 0$	$NP_{coax_4} := 0$	$OD_{coax_4} := 0 \cdot in$	$WT_{coax_4} := 0 \cdot plf$	$L_{coax_4} := 0 \cdot ft$
5. Not Used	$QTY_{coax_5} := 0$	$NP_{coax_5} := 0$	$OD_{coax_5} := 0 \cdot in$	$WT_{coax_5} := 0 \cdot plf$	$L_{coax_5} := 0 \cdot ft$
6. Not Used	$QTY_{coax_6} := 0$	$NP_{coax_6} := 0$	$OD_{coax_6} := 0 \cdot in$	$WT_{coax_6} := 0 \cdot plf$	$L_{coax_6} := 0 \cdot ft$

$$coaxspan := \begin{bmatrix} 26.75 \\ 19.75 \\ 16.25 \\ 16.58 \\ 12.33 \\ 8 \\ 8 \\ 8 \\ 7.79 \\ 7.04 \\ 5.88 \\ 8.63 \\ 12 \\ 12 \\ 6 \end{bmatrix} \cdot ft$$

Input coax vertical span between attachment joints for PLS Loads

$$SA_{coax_k} := NP_{coax_k} \cdot OD_{coax_k} = \begin{bmatrix} 1.0 \\ 0.0 \end{bmatrix} ft$$

$$SAice_{coax_k} := \begin{vmatrix} \text{if } NP_{coax_k} = 0 \\ \quad 0 \\ \text{else} \\ \quad \left(\left(NP_{coax_k} \cdot OD_{coax_k} \right) + \left\langle 2 \cdot r_{ice} \right\rangle \right) \end{vmatrix} = \begin{bmatrix} 1.1 \\ 0.0 \end{bmatrix} ft$$

$$Weight_{coax_k} := WT_{coax_k} \cdot QTY_{coax_k} = \begin{bmatrix} 5.5 \\ 11.0 \end{bmatrix} plf$$

$$Weight.Ice_{coax_k} := \left(\frac{\pi}{4} \cdot \left(\left(OD_{coax_k} + 2 \cdot r_{ice} \right)^2 - OD_{coax_k}^{\ 2} \right) \cdot QTY_{coax_k} \cdot I_d \right) = \begin{bmatrix} 9.3 \\ 18.5 \end{bmatrix} plf$$

$$Ar_{coax_k} := \frac{L_{coax_k}}{OD_{coax_k}} = \begin{bmatrix} 139.4 \\ 139.4 \end{bmatrix}$$ Aspect Ratio of Coax

$$Ca_{coax_k} := \left\| \begin{array}{l} \text{if } Ar_{coax_k} \le 7 \\ \quad 0.8 \\ \text{if } 7 < Ar_{coax_k} < 25 \\ \quad 0.8 + \frac{\left(Ar_{coax_k} - 7\right) \cdot (2.0 - 1.4)}{(25 - 7)} \\ \text{if } Ar_{coax_k} \ge 25 \\ \quad 1.2 \end{array} \right| = \begin{bmatrix} 1.2 \\ 1.2 \end{bmatrix}$$ TIA/EIA-222-F, Table 3

TIA/EIA Wind:

$$IceWind.TIA_{coax_k} := qzice_{coax} \cdot G'_H \cdot Ca_{coax_k} \cdot SAice_{coax_k} = \begin{bmatrix} 41.3 \\ 0.0 \end{bmatrix} \textit{plf}$$

$$Wind.TIA_{coax_k} := qz_{coax} \cdot G'_H \cdot Ca_{coax_k} \cdot SA_{coax_k} = \begin{bmatrix} 50.3 \\ 0.0 \end{bmatrix} \textit{plf}$$

NESC Wind for Coax on Pipe Mast Risa Model:

$$Wind.250B_{coax.pipe_k} := qz_{250B} \cdot Cd_{coax} \cdot SAice_{coax_k} = \begin{bmatrix} 6.2 \\ 0.0 \end{bmatrix} \textit{plf}$$

$$Wind.250C_{coax.pipe.Above_k} := qz_{250C} \cdot G'_{RF} \cdot Cd_{coax} \cdot SA_{coax_k} = \begin{bmatrix} 78.6 \\ 0.0 \end{bmatrix} \textit{plf}$$

$$Wind.250C_{coax.pipe.Below_k} := qz_{250C} \cdot G_{RF} \cdot Cd_{coax} \cdot SA_{coax_k} = \begin{bmatrix} 62.9 \\ 0.0 \end{bmatrix} \textit{plf}$$

NESC Loads For PLS Model:

$$Weight.250B_{coax.twr} := \left(\sum Weight_{coax} + \sum Weight.Ice_{coax} \right) \cdot coaxspan \cdot OLF250B_V$$

$$Wind.250B_{coax.twr} := qz_{250B} \cdot Cd_{coax} \cdot \left(\sum SAice_{coax} \right) \cdot coaxspan \cdot OLF250B_T$$

$$Weight.250C_{coax.twr} := \left(\sum Weight_{coax} \right) \cdot coaxspan \cdot OLF250C_V$$

$$Wind.250C_{coax.twr} := qz_{250C} \cdot G_{RF} \cdot Cd_{coax} \cdot \left(\sum SA_{coax} \right) \cdot coaxspan \cdot OLF250C_T$$

Summary of Loads - PLS Coax Load Inputs

NESC 250B_X-dir - Wind w/ Ice

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
5kS	1778	416	0	Coax Load
5jS	1313	307	0	Coax Load
5iS	1080	253	0	Coax Load
5hS	1102	258	0	Coax Load
5gS	820	192	0	Coax Load
5fS	532	124	0	Coax Load
5eS	532	124	0	Coax Load
5dS	532	124	0	Coax Load
5cS	518	121	0	Coax Load
5bS	468	109	0	Coax Load
5aS	391	91	0	Coax Load
5P	574	134	0	Coax Load
1dS	798	186	0	Coax Load
1bS	798	186	0	Coax Load
1P	399	93	0	Coax Load

NESC 250C_X-dir - Wind w/o Ice

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
5kS	443	1681	0	Coax Load
5jS	327	1241	0	Coax Load
5iS	269	1021	0	Coax Load
5hS	275	1042	0	Coax Load
5gS	204	775	0	Coax Load
5fS	132	503	0	Coax Load
5eS	132	503	0	Coax Load
5dS	132	503	0	Coax Load
5cS	129	490	0	Coax Load
5bS	117	443	0	Coax Load
5aS	97	370	0	Coax Load
5P	143	542	0	Coax Load
1dS	199	754	0	Coax Load
1bS	199	754	0	Coax Load
1P	99	377	0	Coax Load

Summary of Loads - Risa Loads Inputs

BLC 2 Weight of Equipment

Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	Y	-265.0	21.0	**Mount 1**
M1	Y	0.0	21.0	**Mount 2**
M1	Y	0.0	21.0	**Mount 3**
M1	Y	0.0	21.0	**Mount 4**
M1	Y	-142.2	21.0	**Equipment 1**
M1	Y	-5.4	21.0	**Equipment 2**
M1	Y	-92.4	21.0	**Equipment 3**
M1	Y	0.0	21.0	**Equipment 4**
M1	Y		21.0	**Equipment 5**
M1	Y		21.0	**Equipment 6**

Member Distributed Loads - Rows 1-6: Coax 1-6 Weight

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	Y	-5.5	-5.5	0.0	21.0
M1	Y	-11.0	-11.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0

3LC 3 Weight of Ice on Mast & Equipment

BLC 3 Weight of Ice on Mast & Equipment
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	Y	-27.0	21.0	**Mount 1**
M1	Y	0.0	21.0	**Mount 2**
M1	Y	0.0	21.0	**Mount 3**
M1	Y	0.0	21.0	**Mount 4**
M1	Y	-119.2	21.0	**Equipment 1**
M1	Y	-5.1	21.0	**Equipment 2**
M1	Y	-31.0	21.0	**Equipment 3**
M1	Y	0.0	21.0	**Equipment 4**
M1	Y		21.0	**Equipment 5**
M1	Y		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Weight of Ice on Mast
Rows 2-7: Coax 1-6
Rows 8-13: Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	Y	-4.4	-4.4	0.0	0.0
M1	Y	-9.3	-9.3	0.0	21.0
M1	Y	-18.5	-18.5	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M1	Y	0.0	0.0	0.0	21.0
M2	Y	-4.4	-4.4	0.0	0.0
M8	Y	-4.4	-4.4	0.0	0.0
M3	Y	-4.4	-4.4	0.0	0.0
NA	Y			0.0	0.0
NA	Y			0.0	0.0

3LC 4 TIA X-dir - Wind w/ Ice

BLC 4 TIA_X-dir - Wind w/ Ice
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	X	234.5	21.0	**Mount 1**
M1	X	0.0	21.0	**Mount 2**
M1	X	0.0	21.0	**Mount 3**
M1	X	0.0	21.0	**Mount 4**
M1	X	686.3	21.0	**Equipment 1**
M1	X	29.6	21.0	**Equipment 2**
M1	X	161.9	21.0	**Equipment 3**
M1	X	0.0	21.0	**Equipment 4**
M1	X		21.0	**Equipment 5**
M1	X		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast
Rows 2-7: Wind on Coax 1-6
Rows 8-13: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PX	24.5	24.5	0.0	0.0
M1	PX	41.3	41.3	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M2	PX	28.0	28.0	0.0	0.0
M8	PX	32.1	32.1	0.0	0.0
M3	PX	28.0	28.0	0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0

BLC 5 TIA_X-dir - Wind w/o Ice
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	X	257.8	21.0	**Mount 1**
M1	X	0.0	21.0	**Mount 2**
M1	X	0.0	21.0	**Mount 3**
M1	X	0.0	21.0	**Mount 4**
M1	X	820.4	21.0	**Equipment 1**
M1	X	26.1	21.0	**Equipment 2**
M1	X	168.2	21.0	**Equipment 3**
M1	X	0.0	21.0	**Equipment 4**
M1	X		21.0	**Equipment 5**
M1	X		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast
Rows 2-7: Wind on Coax 1-6
Rows 8-13: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PX	28.1	28.1	0.0	0.0
M1	PX	50.3	50.3	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M1	PX			0.0	21.0
M2	PX	30.8	30.8	0.0	0.0
M8	PX	35.3	35.3	0.0	0.0
M3	PX	30.8	30.8	0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0

BLC 6 TIA_Z-dir - Wind w/ Ice
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	Z	234.5	21.0	**Mount 1**
M1	Z	0.0	21.0	**Mount 2**
M1	Z	0.0	21.0	**Mount 3**
M1	Z	0.0	21.0	**Mount 4**
M1	Z	686.3	21.0	**Equipment 1**
M1	Z	29.6	21.0	**Equipment 2**
M1	Z	161.9	21.0	**Equipment 3**
M1	Z	0.0	21.0	**Equipment 4**
M1	Z		21.0	**Equipment 5**
M1	Z		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast
Rows 2-7: Wind on Coax 1-6
Rows 8-13: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PZ	24.5	24.5	0.0	0.0
M1	PZ	41.3	41.3	0.0	21.0
M1	PZ	0.0	0.0	0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M2	PZ	28.0	28.0	0.0	0.0
M8	PZ	32.1	32.1	0.0	0.0
M3	PZ	28.0	28.0	0.0	0.0
NA	PZ			0.0	0.0
NA	PZ			0.0	0.0
NA	PZ			0.0	0.0

BLC 7 TIA_Z-dir - Wind w/o Ice
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	Z	257.8	21.0	**Mount 1**
M1	Z	0.0	21.0	**Mount 2**
M1	Z	0.0	21.0	**Mount 3**
M1	Z	0.0	21.0	**Mount 4**
M1	Z	820.4	21.0	**Equipment 1**
M1	Z	26.1	21.0	**Equipment 2**
M1	Z	168.2	21.0	**Equipment 3**
M1	Z	0.0	21.0	**Equipment 4**
M1	Z		21.0	**Equipment 5**
M1	Z		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast
Rows 2-7: Wind on Coax 1-6
Rows 8-13: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PZ	28.1	28.1	0.0	0.0
M1	PZ	50.3	50.3	0.0	21.0
M1	PZ	0.0	0.0	0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M1	PZ			0.0	21.0
M2	PZ	30.8	30.8	0.0	0.0
M8	PZ	35.3	35.3	0.0	0.0
M3	PZ	30.8	30.8	0.0	0.0
NA	PZ			0.0	0.0
NA	PZ			0.0	0.0
NA	PZ			0.0	0.0

BLC 8 NESC 250B_X-dir - Wind w/ Ice
Member Point Loads

Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	X	38.3	21.0	**Mount 1**
M1	X	0.0	21.0	**Mount 2**
M1	X	0.0	21.0	**Mount 3**
M1	X	0.0	21.0	**Mount 4**
M1	X	96.2	21.0	**Equipment 1**
M1	X	4.1	21.0	**Equipment 2**
M1	X	22.7	21.0	**Equipment 3**
M1	X	0.0	21.0	**Equipment 4**
M1	X		21.0	**Equipment 5**
M1	X		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast
Rows 2-7: Wind on Coax 1-6
Rows 8-13: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PX	3.3	3.3	0.0	0.0
M1	PX	6.2	6.2	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M1	PX	0.0	0.0	0.0	21.0
M2	PX	2.7	2.7	0.0	0.0
M8	PX	2.7	2.7	0.0	0.0
M3	PX	2.7	2.7	0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0

BLC 9 NESC 250C_X-dir - Wind w/o Ice
Member Point Loads

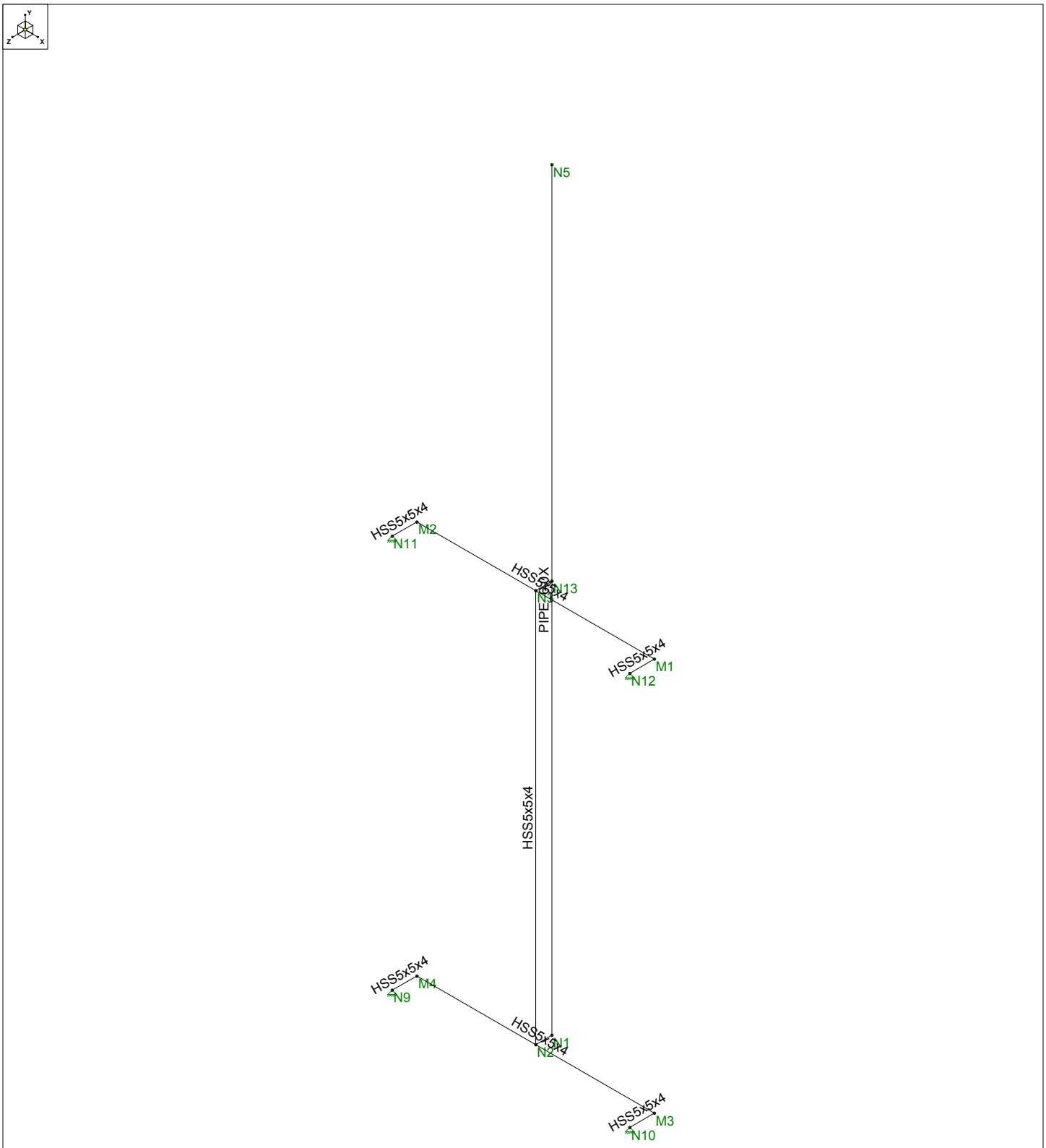
Member Label	Direction	Magnitude [lb,k-ft]	Location [ft,%]	
M1	X	437.9	21.0	**Mount 1**
M1	X	0.0	21.0	**Mount 2**
M1	X	0.0	21.0	**Mount 3**
M1	X	0.0	21.0	**Mount 4**
M1	X	1194.1	21.0	**Equipment 1**
M1	X	38.0	21.0	**Equipment 2**
M1	X	244.8	21.0	**Equipment 3**
M1	X	0.0	21.0	**Equipment 4**
M1	X		21.0	**Equipment 5**
M1	X		21.0	**Equipment 6**

Member Distributed Loads
Row 1: Wind on Mast Above Top of Tower
Row 2-7: Wind on Coax 1-6 Above Top of Tower
Row 8: Wind on Mast Below Top of Tower
Row 9-14: Wind on Coax 1-6 Below Top of Tower
Row 15-20: Wind on Mast Components 1-6

Member Label	Direction	Start Magnitude [lb/ft]	End Magnitude [lb/ft]	Start Location [ft,%]	End Location [ft,%]
M1	PX	39.3	39.3	15.0	23.0
M1	PX	78.6	78.6	15.0	21.0
M1	PX	0.0	0.0	15.0	21.0
M1	PX	0.0	0.0	15.0	21.0
M1	PX	0.0	0.0	15.0	21.0
M1	PX	0.0	0.0	15.0	21.0
M1	PX	0.0	0.0	15.0	21.0
M1	PX	31.4	31.4	0.0	15.8
M1	PX	62.9	62.9	0.0	15.0
M1	PX	0.0	0.0	0.0	15.0
M1	PX	0.0	0.0	0.0	15.0
M1	PX	0.0	0.0	0.0	15.0
M1	PX	0.0	0.0	0.0	15.0
M1	PX	0.0	0.0	0.0	15.0
M2	PX	29.2	29.2	0.0	0.0
M8	PX	29.2	29.2	0.0	0.0
M3	PX	29.2	29.2	0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0
NA	PX			0.0	0.0

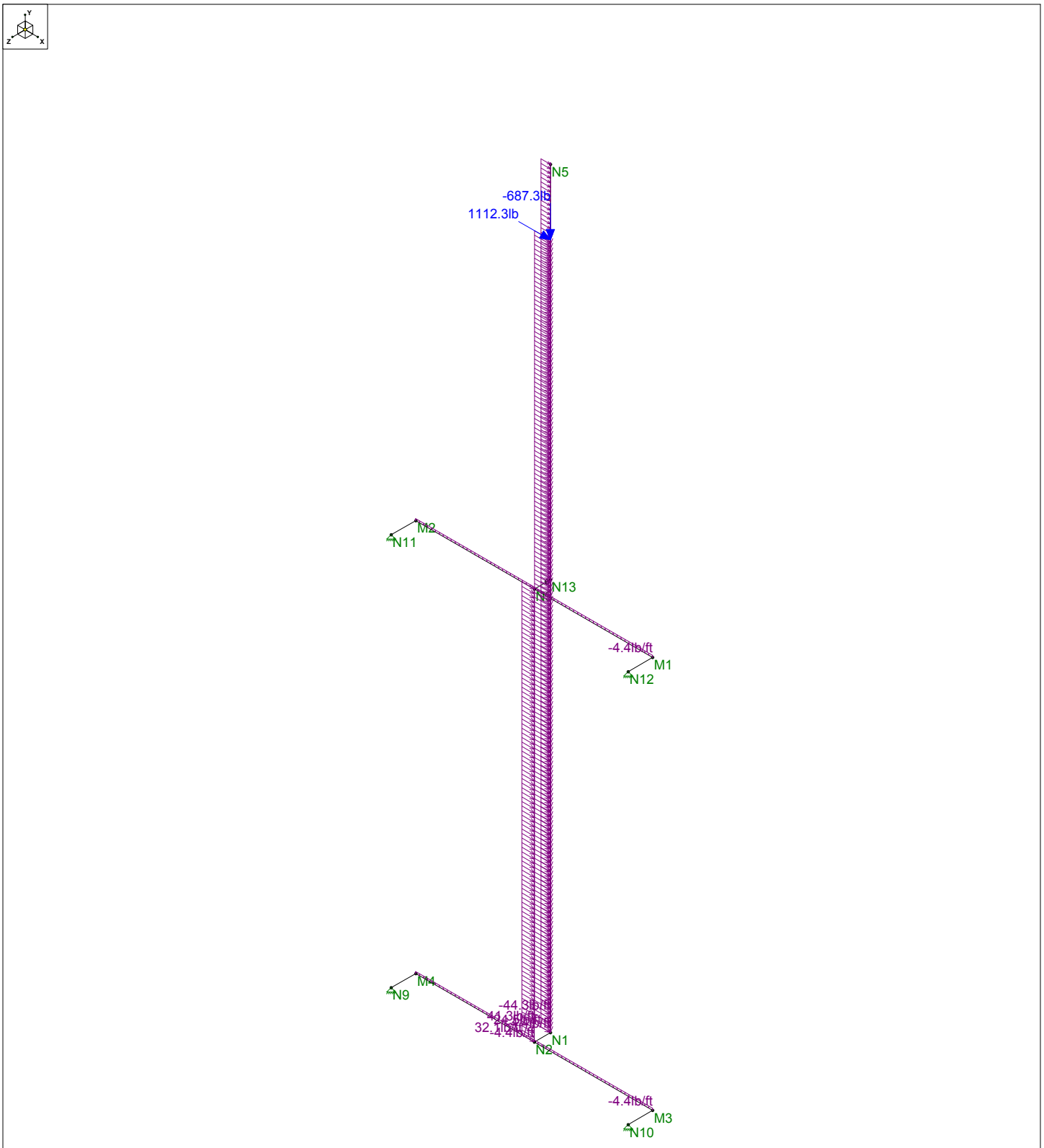
APPENDIX C

COMPUTER OUTPUT



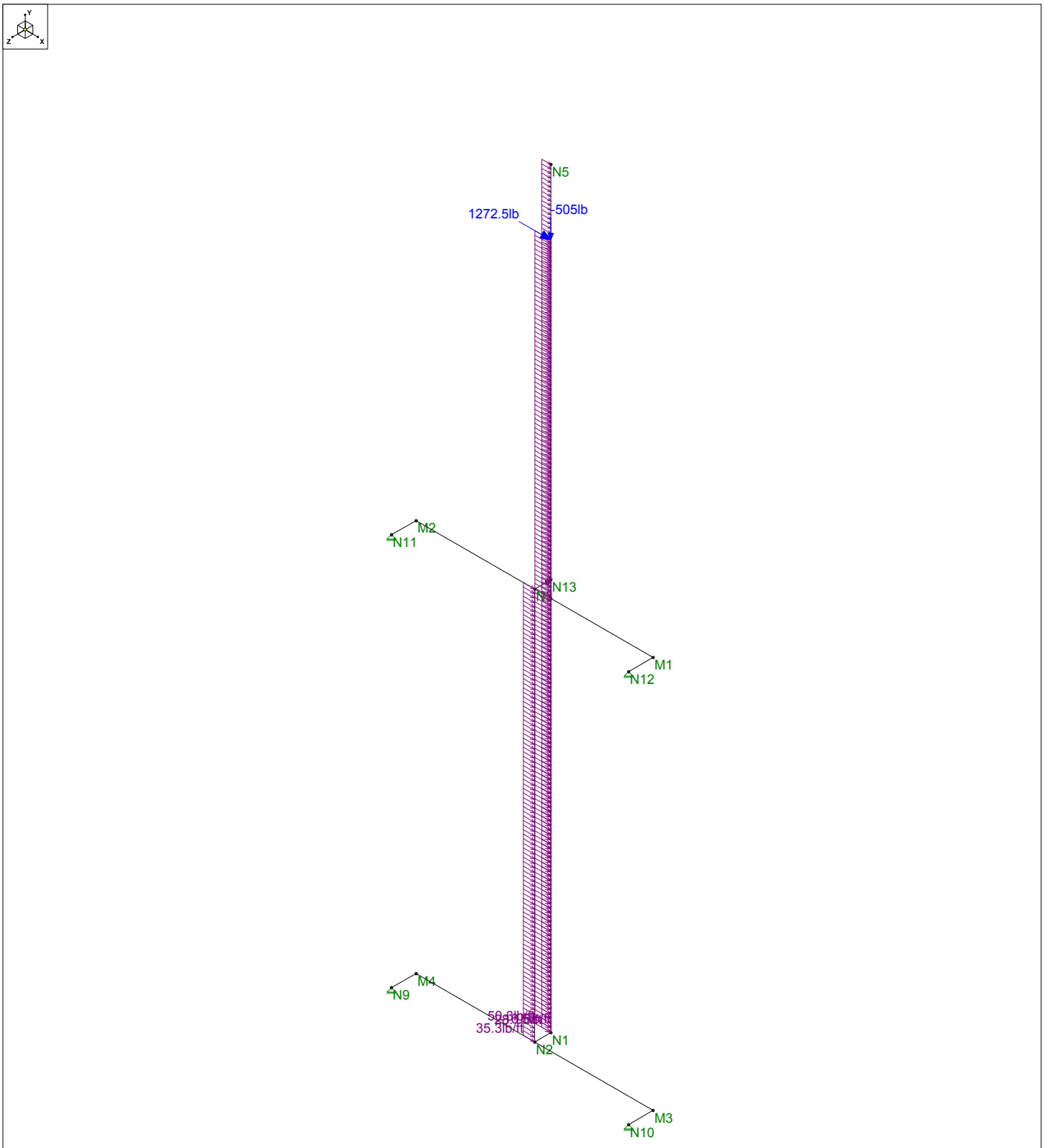
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 1
JRA		Mar 25, 2016 at 10:58 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



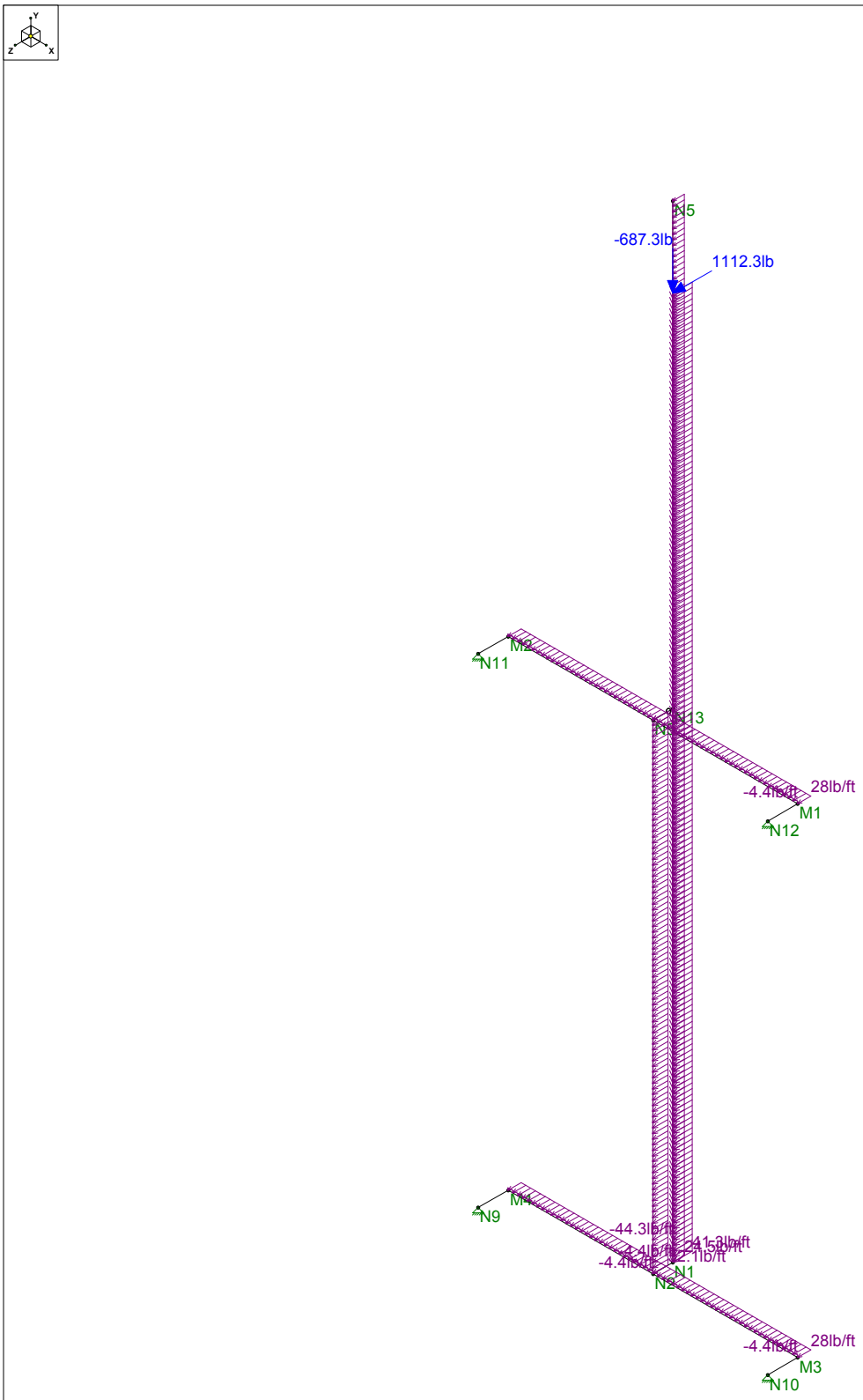
Loads: LC 1, TIA_X-dir - Wind w/ Ice
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 2
JRA		Mar 25, 2016 at 11:02 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



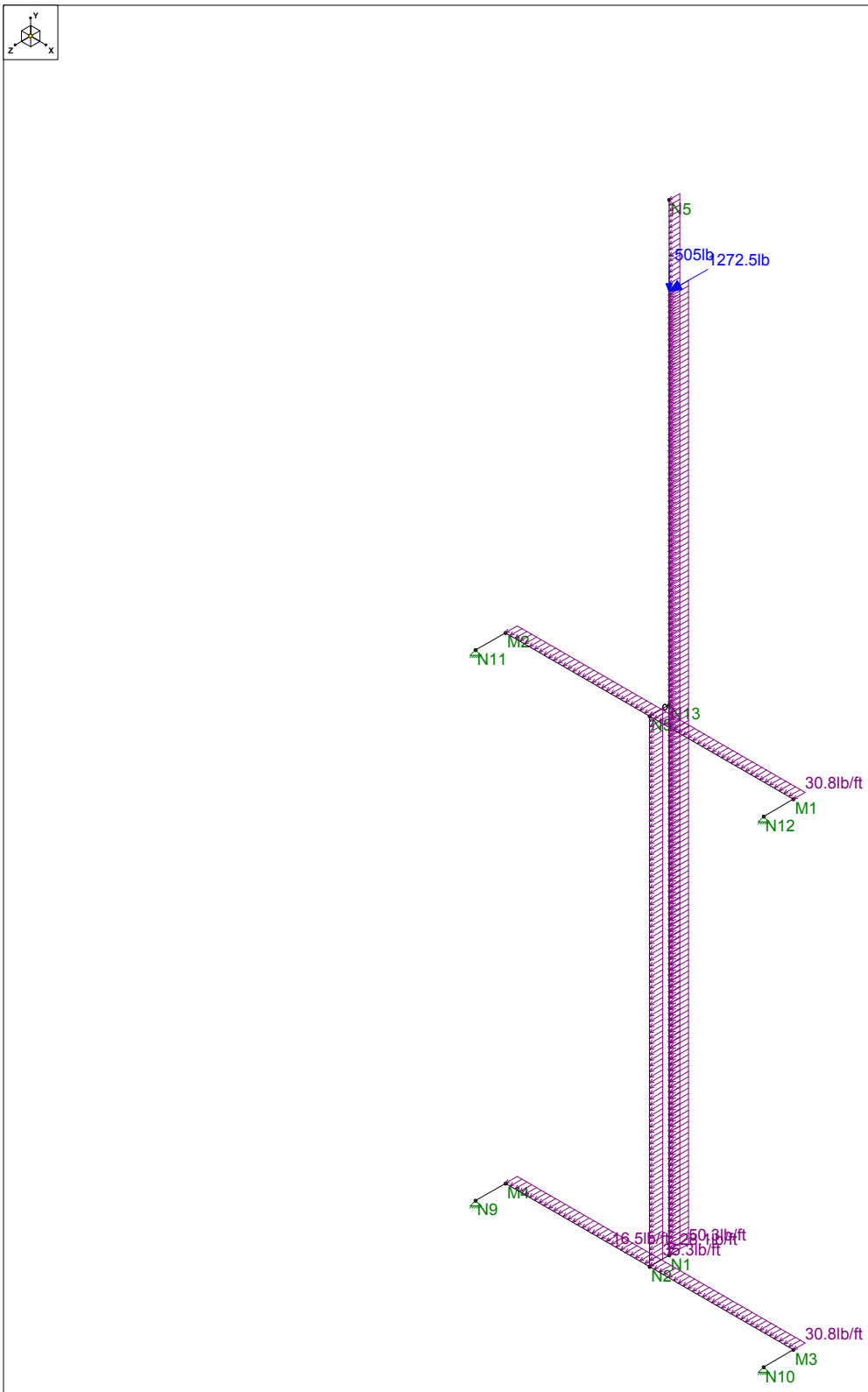
Loads: LC 2, TIA_X-dir - Wind w/o Ice
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 3
JRA		Mar 25, 2016 at 11:02 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



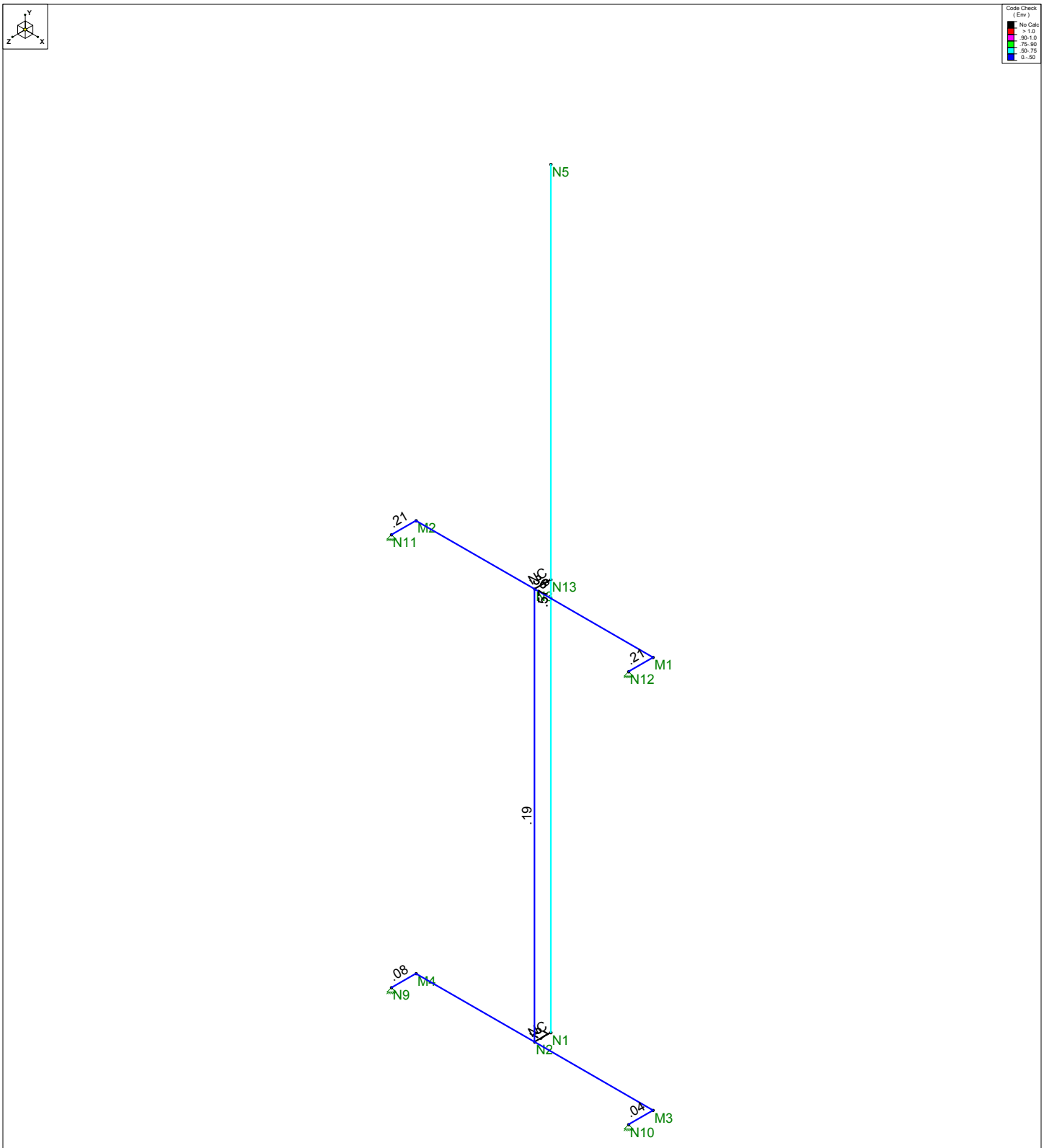
Loads: LC 3, TIA_Z-dir - Wind w/ Ice
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 4
JRA		Mar 25, 2016 at 11:02 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



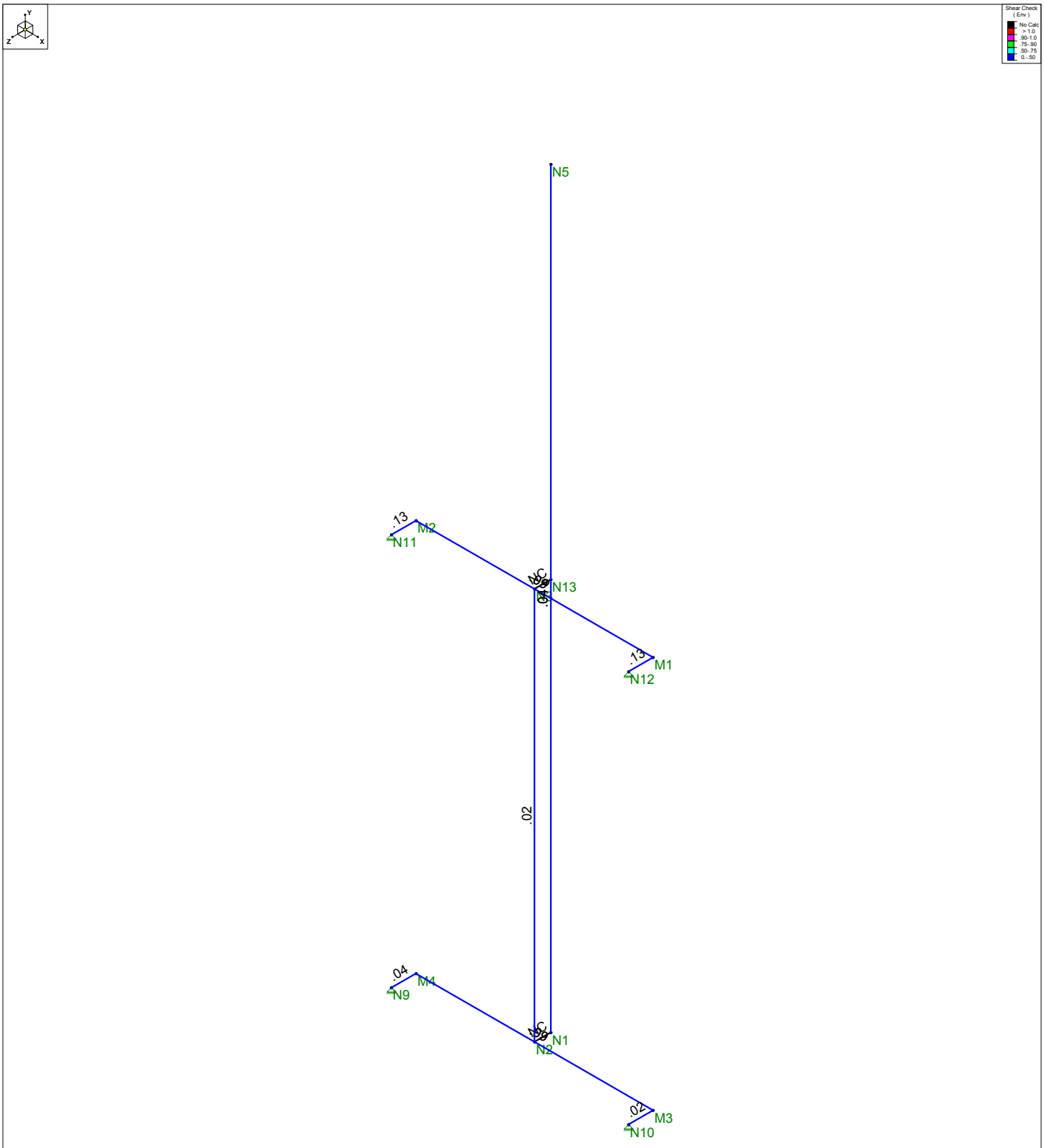
Loads: LC 4, TIA_Z-dir - Wind w/o Ice
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 5
JRA		Mar 25, 2016 at 11:02 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 6
JRA		Mar 25, 2016 at 11:03 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 7
JRA		Mar 25, 2016 at 11:03 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE 6.0X	Beam	Pipe	A53 Gr. B	Typical	7.83	38.3	38.3	76.6
2	Brace	HSS5x5x4	Beam	Tube	A500 Gr.46	Typical	4.3	16	16	25.8

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
1	N1	0	175	-.5	0	
2	N2	0	175	0	0	
3	N3	0	187	0	0	
4	N5	0	198	-.5	0	
5	M4	-3.625	175	0	0	
6	M3	3.625	175	0	0	
7	M2	-3.625	187	0	0	
8	M1	3.625	187	0	0	
9	N9	-3.625	175	.75	0	
10	N10	3.625	175	.75	0	
11	N11	-3.625	187	.75	0	
12	N12	3.625	187	.75	0	
13	N13	0	187	-.5	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	M1						
2	M3						
3	M4						
4	M2						
5	N3						
6	N2						
7	N9	Reaction	Reaction	Reaction			
8	N10	Reaction	Reaction	Reaction			
9	N11	Reaction	Reaction	Reaction			
10	N12	Reaction	Reaction	Reaction			
11	N13						
12	N1						

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate...	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N5			Mast	Beam	Pipe	A53 Gr. B	Typical
2	M2	M1	M2			Brace	Beam	Tube	A500 Gr.46	Typical
3	M3	M3	M4			Brace	Beam	Tube	A500 Gr.46	Typical
4	M4	M2	N11			Brace	Beam	Tube	A500 Gr.46	Typical
5	M5	M1	N12			Brace	Beam	Tube	A500 Gr.46	Typical
6	M6	M4	N9			Brace	Beam	Tube	A500 Gr.46	Typical
7	M7	M3	N10			Brace	Beam	Tube	A500 Gr.46	Typical
8	M8	N2	N3			Brace	Beam	Tube	A500 Gr.46	Typical
9	M9	N3	N13			RIGID	None	None	RIGID	Typical
10	M10	N2	N1			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight (Mast Members)	None		-1.07						
2	Weight of Equipment	None					10	6		
3	Weight of Ice on Mast and Equip.	None					10	10		
4	TIA_X-dir - Wind w/ Ice	None					10	10		
5	TIA_X-dir - Wind w/o Ice	None					10	10		
6	TIA_Z-dir - Wind w/ Ice	None					10	10		
7	TIA_Z-dir - Wind w/o Ice	None					10	10		
8	NESC 250B_X-dir - Wind w/ Ice	None					10	10		
9	NESC 250C_X-dir - Wind w/o Ice	None					10	17		

Load Combinations

	Description	S...	PDelta	SRSS	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...	B...F...
1	TIA_X-dir - Wind w/ Ice	Y...	Y		1	1	2	1	3	1	4	1											
2	TIA_X-dir - Wind w/o Ice	Y...	Y		1	1	2	1	5	1													
3	TIA_Z-dir - Wind w/ Ice	Y...	Y		1	1	2	1	3	1	6	1											
4	TIA_Z-dir - Wind w/o Ice	Y...	Y		1	1	2	1	7	1													
5	NESC 250B_X-dir - Wind w/ Ice		Y		1	1.5	2	1.5	3	1.5	8	2.5											
6	NESC 250C_X-dir - Wind w/o ...		Y		1	1	2	1	9	1													

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-265	21
2	M1	Y	0	21
3	M1	Y	0	21
4	M1	Y	0	21
5	M1	Y	-142.2	21
6	M1	Y	-5.4	21
7	M1	Y	-92.4	21
8	M1	Y	0	21
9	M1	Y	0	21
10	M1	Y	0	21

Member Point Loads (BLC 3 : Weight of Ice on Mast and Equip.)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-27	21
2	M1	Y	0	21
3	M1	Y	0	21
4	M1	Y	0	21
5	M1	Y	-119.2	21
6	M1	Y	-5.1	21
7	M1	Y	-31	21
8	M1	Y	0	21
9	M1	Y	0	21
10	M1	Y	0	21

Member Point Loads (BLC 4 : TIA_X-dir - Wind w/ Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	X	234.5	21
2	M1	X	0	21
3	M1	X	0	21
4	M1	X	0	21
5	M1	X	686.3	21
6	M1	X	29.6	21
7	M1	X	161.9	21
8	M1	X	0	21
9	M1	X	0	21
10	M1	X	0	21

Member Point Loads (BLC 5 : TIA_X-dir - Wind w/o Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	X	257.8	21
2	M1	X	0	21
3	M1	X	0	21
4	M1	X	0	21
5	M1	X	820.4	21
6	M1	X	26.1	21
7	M1	X	168.2	21
8	M1	X	0	21
9	M1	X	0	21
10	M1	X	0	21

Member Point Loads (BLC 6 : TIA_Z-dir - Wind w/ Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Z	234.5	21
2	M1	Z	0	21

Member Point Loads (BLC 6 : TIA_Z-dir - Wind w/ Ice) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
3	M1	Z	0	21
4	M1	Z	0	21
5	M1	Z	686.3	21
6	M1	Z	29.6	21
7	M1	Z	161.9	21
8	M1	Z	0	21
9	M1	Z	0	21
10	M1	Z	0	21

Member Point Loads (BLC 7 : TIA_Z-dir - Wind w/o Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Z	257.8	21
2	M1	Z	0	21
3	M1	Z	0	21
4	M1	Z	0	21
5	M1	Z	820.4	21
6	M1	Z	26.1	21
7	M1	Z	168.2	21
8	M1	Z	0	21
9	M1	Z	0	21
10	M1	Z	0	21

Member Point Loads (BLC 8 : NESC 250B_X-dir - Wind w/ Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	X	38.3	21
2	M1	X	0	21
3	M1	X	0	21
4	M1	X	0	21
5	M1	X	96.2	21
6	M1	X	4.1	21
7	M1	X	22.7	21
8	M1	X	0	21
9	M1	X	0	21
10	M1	X	0	21

Member Point Loads (BLC 9 : NESC 250C_X-dir - Wind w/o Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	X	437.9	21
2	M1	X	0	21
3	M1	X	0	21
4	M1	X	0	21
5	M1	X	1194.1	21
6	M1	X	38	21
7	M1	X	244.8	21
8	M1	X	0	21
9	M1	X	0	21
10	M1	X	0	21

Member Distributed Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	Y	-5.5	-5.5	0	21
2	M1	Y	-11	-11	0	21
3	M1	Y	0	0	0	21
4	M1	Y	0	0	0	21

Member Distributed Loads (BLC 2 : Weight of Equipment) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
5	M1	Y	0	0	0	21
6	M1	Y	0	0	0	21

Member Distributed Loads (BLC 3 : Weight of Ice on Mast and Equip.)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	Y	-4.4	-4.4	0	0
2	M1	Y	-9.3	-9.3	0	21
3	M1	Y	-18.5	-18.5	0	21
4	M1	Y	0	0	0	21
5	M1	Y	0	0	0	21
6	M1	Y	0	0	0	21
7	M1	Y	0	0	0	21
8	M2	Y	-4.4	-4.4	0	0
9	M8	Y	-4.4	-4.4	0	0
10	M3	Y	-4.4	-4.4	0	0

Member Distributed Loads (BLC 4 : TIA_X-dir - Wind w/ Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PX	24.5	24.5	0	0
2	M1	PX	41.3	41.3	0	21
3	M1	PX	0	0	0	21
4	M1	PX	0	0	0	21
5	M1	PX	0	0	0	21
6	M1	PX	0	0	0	21
7	M1	PX	0	0	0	21
8	M2	PX	28	28	0	0
9	M8	PX	32.1	32.1	0	0
10	M3	PX	28	28	0	0

Member Distributed Loads (BLC 5 : TIA_X-dir - Wind w/o Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PX	28.1	28.1	0	0
2	M1	PX	50.3	50.3	0	21
3	M1	PX	0	0	0	21
4	M1	PX	0	0	0	21
5	M1	PX	0	0	0	21
6	M1	PX	0	0	0	21
7	M1	PX	0	0	0	21
8	M2	PX	30.8	30.8	0	0
9	M8	PX	35.3	35.3	0	0
10	M3	PX	30.8	30.8	0	0

Member Distributed Loads (BLC 6 : TIA_Z-dir - Wind w/ Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PZ	24.5	24.5	0	0
2	M1	PZ	41.3	41.3	0	21
3	M1	PZ	0	0	0	21
4	M1	PZ	0	0	0	21
5	M1	PZ	0	0	0	21
6	M1	PZ	0	0	0	21
7	M1	PZ	0	0	0	21
8	M2	PZ	28	28	0	0
9	M8	PZ	32.1	32.1	0	0
10	M3	PZ	28	28	0	0

Member Distributed Loads (BLC 7 : TIA_Z-dir - Wind w/o Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PZ	28.1	28.1	0	0
2	M1	PZ	50.3	50.3	0	21
3	M1	PZ	0	0	0	21
4	M1	PZ	0	0	0	21
5	M1	PZ	0	0	0	21
6	M1	PZ	0	0	0	21
7	M1	PZ	0	0	0	21
8	M2	PZ	30.8	30.8	0	0
9	M8	PZ	35.3	35.3	0	0
10	M3	PZ	30.8	30.8	0	0

Member Distributed Loads (BLC 8 : NESC 250B_X-dir - Wind w/ Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PX	3.3	3.3	0	0
2	M1	PX	6.2	6.2	0	21
3	M1	PX	0	0	0	21
4	M1	PX	0	0	0	21
5	M1	PX	0	0	0	21
6	M1	PX	0	0	0	21
7	M1	PX	0	0	0	21
8	M2	PX	2.7	2.7	0	0
9	M8	PX	2.7	2.7	0	0
10	M3	PX	2.7	2.7	0	0

Member Distributed Loads (BLC 9 : NESC 250C_X-dir - Wind w/o Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude...	Start Location[f...	End Location[ft...
1	M1	PX	39.3	39.3	15	23
2	M1	PX	78.6	78.6	15	21
3	M1	PX	0	0	15	21
4	M1	PX	0	0	15	21
5	M1	PX	0	0	15	21
6	M1	PX	0	0	15	21
7	M1	PX	0	0	15	21
8	M1	PX	31.4	31.4	0	15.8
9	M1	PX	62.9	62.9	0	15
10	M1	PX	0	0	0	15
11	M1	PX	0	0	0	15
12	M1	PX	0	0	0	15
13	M1	PX	0	0	0	15
14	M1	PX	0	0	0	15
15	M2	PX	29.2	29.2	0	0
16	M8	PX	29.2	29.2	0	0
17	M3	PX	29.2	29.2	0	0

Joint Reactions

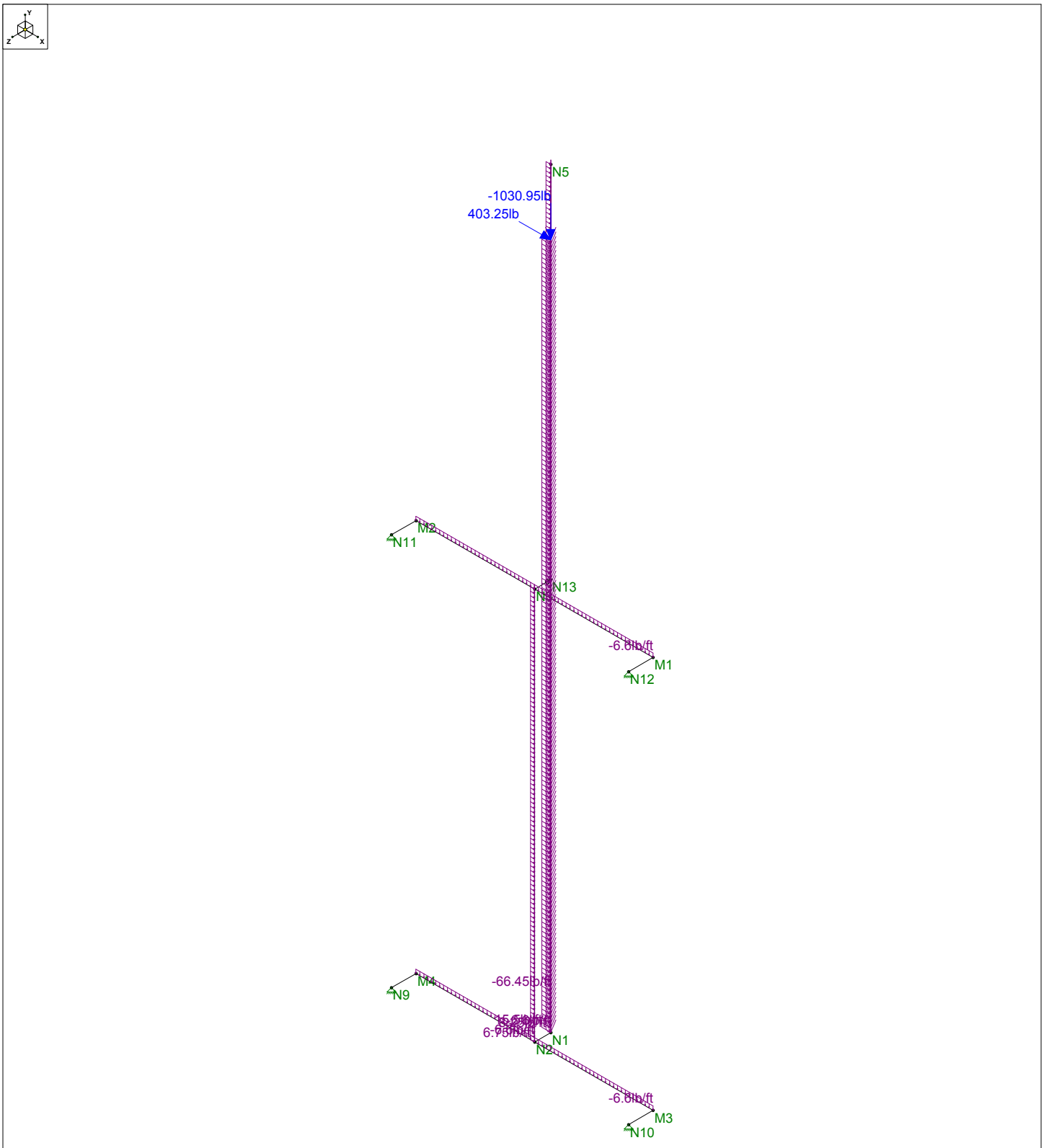
	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N9	676.237	1164.496	-288.628	0	0	0
2	1	N10	87.761	363.36	6.84	0	0	0
3	1	N11	-2140.902	711.887	767.228	0	0	0
4	1	N12	-1551.396	713.216	-485.44	0	0	0
5	1	Totals:	-2928.3	2952.959	0			
6	1	COG (ft):	X: 0	Y: 187.319	Z: -.396			
7	2	N9	626.195	967.177	-259.423	0	0	0
8	2	N10	241.368	51.295	75.112	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
9	2	N11	-2326.399	471.306	816.407	0	0	0
10	2	N12	-1939.864	479.282	-632.097	0	0	0
11	2	Totals:	-3398.7	1969.06	0			
12	2	COG (ft):	X: 0	Y: 187.47	Z: -.374			
13	3	N9	-111.479	719.948	19.567	0	0	0
14	3	N10	111.479	719.948	19.567	0	0	0
15	3	N11	3463.771	756.532	-1686.722	0	0	0
16	3	N12	-3463.771	756.532	-1686.722	0	0	0
17	3	Totals:	0	2952.96	-3334.311			
18	3	COG (ft):	X: 0	Y: 187.319	Z: -.396			
19	4	N9	-272.559	457.178	93.366	0	0	0
20	4	N10	272.559	457.178	93.366	0	0	0
21	4	N11	4149.788	527.352	-2016.022	0	0	0
22	4	N12	-4149.788	527.352	-2016.022	0	0	0
23	4	Totals:	0	1969.06	-3845.313			
24	4	COG (ft):	X: 0	Y: 187.47	Z: -.374			

Member AISC 14th(360-10): ASD Steel Code Checks

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Pnc/o...	Pnt/o...	Mnyy/...	Mnzz/...	Cb	Eqn
1	1	M1	PIPE 6.0X	.492	11.979	.037	11.9...		13209...	16410...	27.246	27.246	1.5...	H1-1b
2	1	M2	HSS5x5x4	.215	3.625	.060	3.625	z	11813...	11844...	17.468	17.468	1	H1-1b
3	1	M3	HSS5x5x4	.266	3.625	.094	7.25	y	11813...	11844...	17.468	17.468	1	H1-1b
4	1	M4	HSS5x5x4	.125	0	.065	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
5	1	M5	HSS5x5x4	.099	0	.047	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
6	1	M6	HSS5x5x4	.080	0	.035	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
7	1	M7	HSS5x5x4	.019	0	.011	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
8	1	M8	HSS5x5x4	.130	0	.011	0	y	81415...	11844...	17.468	17.468	3.0...	H1-1b
9	2	M1	PIPE 6.0X	.564	11.979	.043	11.9...		13209...	16410...	27.246	27.246	1.5...	H1-1b
10	2	M2	HSS5x5x4	.171	3.625	.049	3.625	z	11813...	11844...	17.468	17.468	1	H1-1b
11	2	M3	HSS5x5x4	.222	3.625	.078	7.25	y	11813...	11844...	17.468	17.468	1	H1-1b
12	2	M4	HSS5x5x4	.123	0	.070	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
13	2	M5	HSS5x5x4	.106	0	.059	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
14	2	M6	HSS5x5x4	.069	0	.029	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
15	2	M7	HSS5x5x4	.013	0	.007	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
16	2	M8	HSS5x5x4	.116	0	.012	0	y	81415...	11844...	17.468	17.468	3.0...	H1-1b
17	3	M1	PIPE 6.0X	.491	11.979	.036	12.2...		13209...	16410...	27.246	27.246	1	H1-1b
18	3	M2	HSS5x5x4	.355	3.625	.090	7.25	z	11813...	11844...	17.468	17.468	1	H1-1b
19	3	M3	HSS5x5x4	.150	3.625	.058	0	y	11813...	11844...	17.468	17.468	1	H1-1b
20	3	M4	HSS5x5x4	.188	0	.105	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
21	3	M5	HSS5x5x4	.188	0	.105	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
22	3	M6	HSS5x5x4	.036	0	.022	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
23	3	M7	HSS5x5x4	.036	0	.022	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
24	3	M8	HSS5x5x4	.186	0	.019	0	z	81415...	11844...	17.468	17.468	1	H1-1b
25	4	M1	PIPE 6.0X	.565	11.979	.041	12.2...		13209...	16410...	27.246	27.246	1	H1-1b
26	4	M2	HSS5x5x4	.350	3.625	.088	7.25	z	11813...	11844...	17.468	17.468	1	H1-1b
27	4	M3	HSS5x5x4	.107	3.625	.037	0	y	11813...	11844...	17.468	17.468	1	H1-1b
28	4	M4	HSS5x5x4	.209	0	.125	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
29	4	M5	HSS5x5x4	.209	0	.125	0	z	11826...	11844...	17.468	17.468	1.6...	H1-1b
30	4	M6	HSS5x5x4	.031	0	.014	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
31	4	M7	HSS5x5x4	.031	0	.014	.75	y	11826...	11844...	17.468	17.468	1.6...	H1-1b
32	4	M8	HSS5x5x4	.184	0	.019	0	z	81415...	11844...	17.468	17.468	1	H1-1b



Loads: LC 5, NESC 250B_X-dir - Wind w/ Ice

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 8
JRA		Mar 25, 2016 at 11:06 AM
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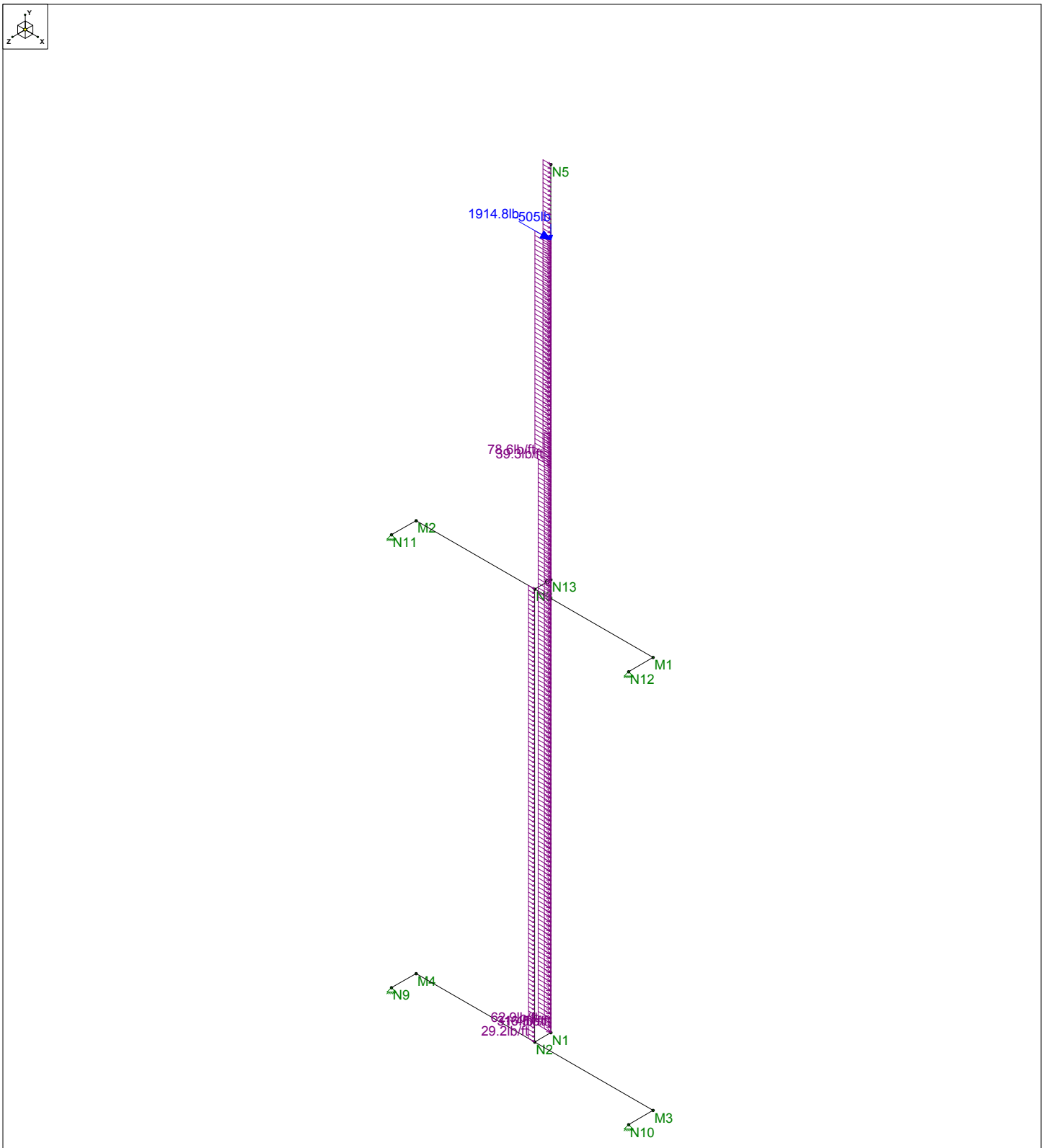

Loads: LC 6, NESC 250C_X-dir - Wind w/o Ice

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 9
JRA		Mar 25, 2016 at 11:06 AM
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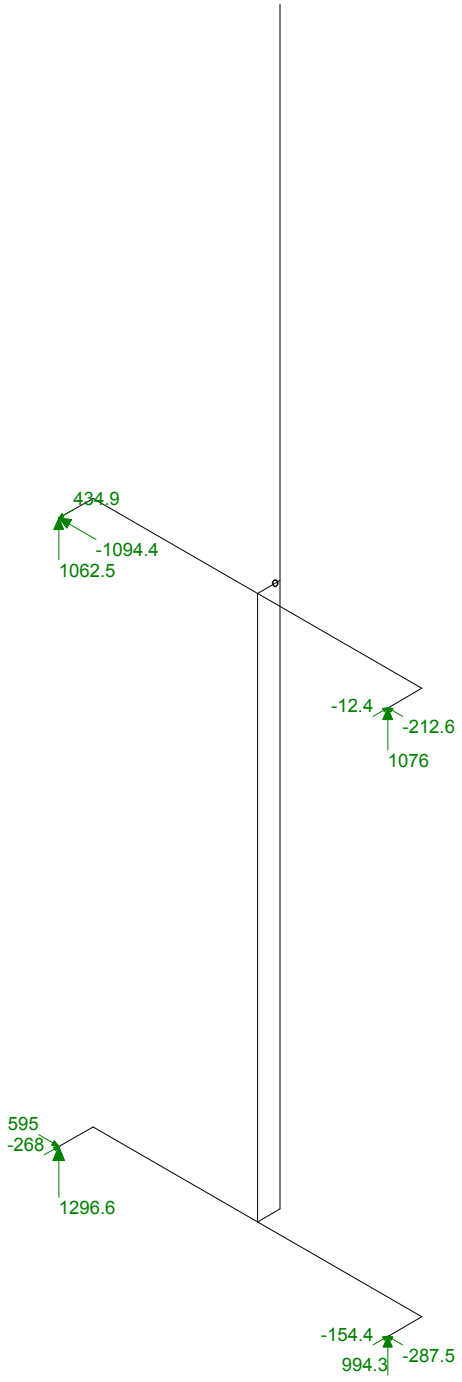

Results for LC 5, NESC 250B_X-dir - Wind w/ Ice
Z-direction Reaction Units are lb and k-ft

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 10
JRA		Mar 25, 2016 at 11:08 AM
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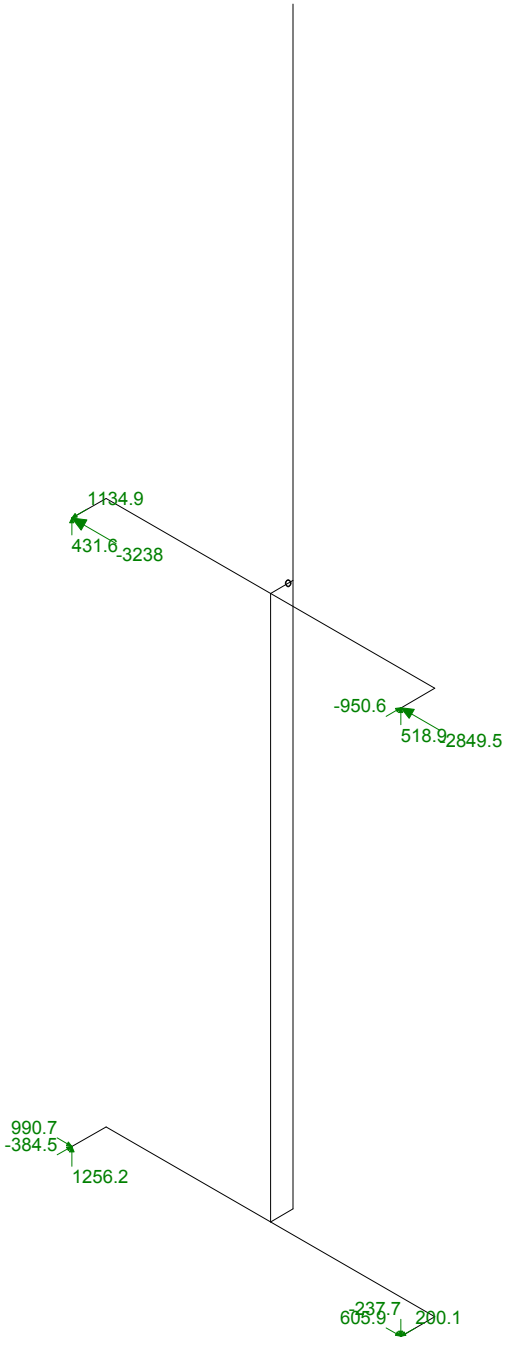


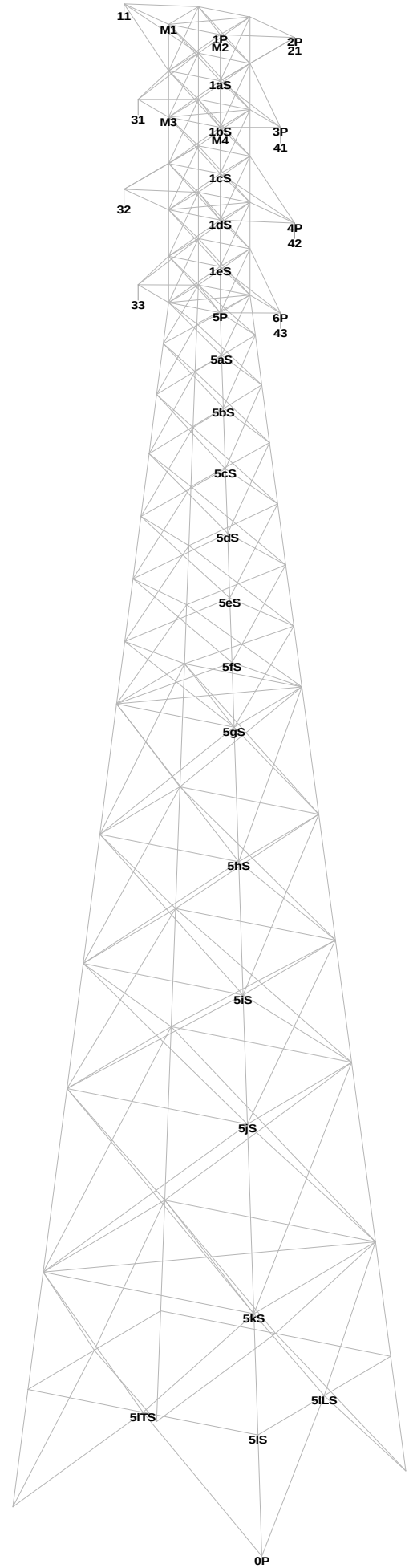
Results for LC 6, NESC 250C_X-dir - Wind w/o Ice
Z-direction Reaction Units are lb and k-ft

Paul J. Ford and Company	T-Mobile CT11036C - Antenna Mast	SK - 11
JRA		Mar 25, 2016 at 11:09 AM
31216-0005.002.6280		Antenna Mount_TIA_NESC.r3d

Joint Reactions

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N9	594.999	1296.58	-268.011	0	0	0
2	5	N10	-287.463	994.319	-154.448	0	0	0
3	5	N11	-1094.424	1062.506	434.907	0	0	0
4	5	N12	-212.613	1076.033	-12.449	0	0	0
5	5	Totals:	-999.5	4429.439	0			
6	5	COG (ft):	X: 0	Y: 187.319	Z: -.396			
7	6	N9	990.689	1256.209	-384.48	0	0	0
8	6	N10	605.927	-237.67	200.114	0	0	0
9	6	N11	-3237.974	431.649	1134.916	0	0	0
10	6	N12	-2849.462	518.873	-950.551	0	0	0
11	6	Totals:	-4490.82	1969.06	0			
12	6	COG (ft):	X: 0	Y: 187.47	Z: -.374			

Paul J. Ford and Company, Project: "31216-0005.002.6280 - Dist CT-River East"
Tower Version 14.00, 11:15:24 AM Friday, March 25, 2016
Undeformed geometry displayed



Paul J. Ford and Company, Project: "31216-0005.002.6280 - Dist CT-River East"
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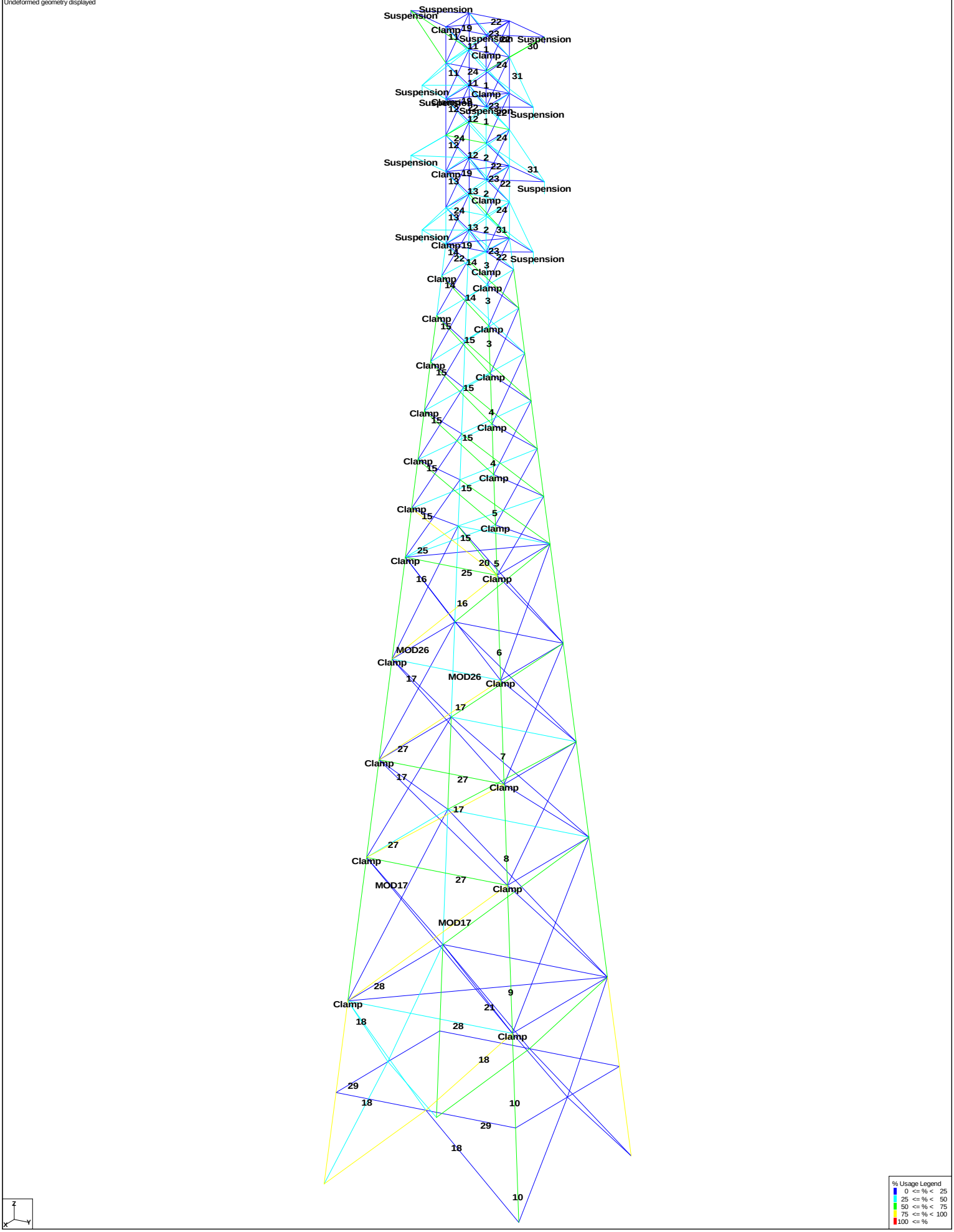

```
*************************************************************************
*                                                                       *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2013 *
*                                                                       *
*************************************************************************

Project Name : 31216-0005.002.6280; CL&P Tower #CT River X-ing East Old Lyme
Project Notes: T-Mobile Site #CT11036C
Project File : G:\Transmission\Eversource\2016\312-T-Mobile\31216-0005 TMobile_CT11036C_CLP River Crossing_8 Old Bridge Rd\31216-0005.002.6125_6280\Calcs\PLS-Tower\31216-0005.002.6280 - Dist CT-River
East.tow
Date run     : 11:13:52 AM Friday, March 25, 2016
by           : Tower Version 14.00
Licensed to  : Paul J. Ford and Company

Successfully performed nonlinear analysis

The model has 0 warnings.
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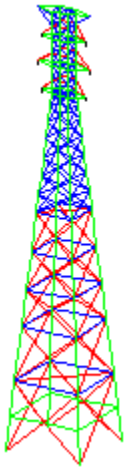

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Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 75%
Member check option: ASCE 10
Connection rupture check: Not Checked
Crossing diagonal check: ASCE 10  [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
```

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	3.625	3.625	190	Free	Free	Free	Free	Free	Free
2P	X-Symmetry	0	12	190	Free	Free	Free	Free	Free	Free
3P	X-Symmetry	0	10	178	Free	Free	Free	Free	Free	Free
4P	X-Symmetry	0	12	166	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	3.625	3.625	154	Free	Free	Free	Free	Free	Free
6P	X-Symmetry	0	10	154	Free	Free	Free	Free	Free	Free
0P	XY-Symmetry	17.5	17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
1X	X-GenXY	3.625	-3.625	190	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-3.625	-3.625	190	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-3.625	3.625	190	Free	Free	Free	Free	Free	Free
2X	X-Gen	0	-12	190	Free	Free	Free	Free	Free	Free
3X	X-Gen	0	-10	178	Free	Free	Free	Free	Free	Free
4X	X-Gen	0	-12	166	Free	Free	Free	Free	Free	Free
5X	X-GenXY	3.625	-3.625	154	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-3.625	-3.625	154	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-3.625	3.625	154	Free	Free	Free	Free	Free	Free
6X	X-Gen	0	-10	154	Free	Free	Free	Free	Free	Free

0X	X-GenXY	17.5	-17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
0XY	XY-GenXY	-17.5	-17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
0Y	Y-GenXY	-17.5	17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

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.
1aS	XY-Symmetry	1P	5P	0	184	Free	Free	Free	Free	Free	Free
1bS	XY-Symmetry	1P	5P	0	178	Free	Free	Free	Free	Free	Free
1cS	XY-Symmetry	1P	5P	0	172	Free	Free	Free	Free	Free	Free
1dS	XY-Symmetry	1P	5P	0	166	Free	Free	Free	Free	Free	Free
1eS	XY-Symmetry	1P	5P	0	160	Free	Free	Free	Free	Free	Free
5aS	XY-Symmetry	5P	0P	0	148.8	Free	Free	Free	Free	Free	Free
5bS	XY-Symmetry	5P	0P	0	142.3	Free	Free	Free	Free	Free	Free
5cS	XY-Symmetry	5P	0P	0	134.7	Free	Free	Free	Free	Free	Free
5dS	XY-Symmetry	5P	0P	0	126.7	Free	Free	Free	Free	Free	Free
5eS	XY-Symmetry	5P	0P	0	118.7	Free	Free	Free	Free	Free	Free
5fS	XY-Symmetry	5P	0P	0	110.7	Free	Free	Free	Free	Free	Free
5gS	XY-Symmetry	5P	0P	0	102.7	Free	Free	Free	Free	Free	Free
5hS	XY-Symmetry	5P	0P	0	86	Free	Free	Free	Free	Free	Free
5iS	XY-Symmetry	5P	0P	0	69.5	Free	Free	Free	Free	Free	Free
5jS	XY-Symmetry	5P	0P	0	53.5	Free	Free	Free	Free	Free	Free
5kS	XY-Symmetry	5P	0P	0	30	Free	Free	Free	Free	Free	Free
5lS	XY-Symmetry	5P	0P	0	15	Free	Free	Free	Free	Free	Free
5lTS	Y-Symmetry	5lS	5lX	0.5	0	Free	Free	Free	Free	Free	Free
5lLS	X-Symmetry	5lS	5lY	0.5	0	Free	Free	Free	Free	Free	Free
1aX	X-GenXY	1P	5P	0	184	Free	Free	Free	Free	Free	Free
1aXY	XY-GenXY	1P	5P	0	184	Free	Free	Free	Free	Free	Free
1aY	Y-GenXY	1P	5P	0	184	Free	Free	Free	Free	Free	Free
1bX	X-GenXY	1P	5P	0	178	Free	Free	Free	Free	Free	Free
1bXY	XY-GenXY	1P	5P	0	178	Free	Free	Free	Free	Free	Free
1bY	Y-GenXY	1P	5P	0	178	Free	Free	Free	Free	Free	Free
1cX	X-GenXY	1P	5P	0	172	Free	Free	Free	Free	Free	Free
1cXY	XY-GenXY	1P	5P	0	172	Free	Free	Free	Free	Free	Free
1cY	Y-GenXY	1P	5P	0	172	Free	Free	Free	Free	Free	Free
1dX	X-GenXY	1P	5P	0	166	Free	Free	Free	Free	Free	Free
1dXY	XY-GenXY	1P	5P	0	166	Free	Free	Free	Free	Free	Free
1dY	Y-GenXY	1P	5P	0	166	Free	Free	Free	Free	Free	Free
1eX	X-GenXY	1P	5P	0	160	Free	Free	Free	Free	Free	Free
1eXY	XY-GenXY	1P	5P	0	160	Free	Free	Free	Free	Free	Free
1eY	Y-GenXY	1P	5P	0	160	Free	Free	Free	Free	Free	Free
5aX	X-GenXY	5P	0P	0	148.8	Free	Free	Free	Free	Free	Free
5aXY	XY-GenXY	5P	0P	0	148.8	Free	Free	Free	Free	Free	Free
5aY	Y-GenXY	5P	0P	0	148.8	Free	Free	Free	Free	Free	Free
5bX	X-GenXY	5P	0P	0	142.3	Free	Free	Free	Free	Free	Free
5bXY	XY-GenXY	5P	0P	0	142.3	Free	Free	Free	Free	Free	Free
5bY	Y-GenXY	5P	0P	0	142.3	Free	Free	Free	Free	Free	Free
5cX	X-GenXY	5P	0P	0	134.7	Free	Free	Free	Free	Free	Free
5cXY	XY-GenXY	5P	0P	0	134.7	Free	Free	Free	Free	Free	Free
5cY	Y-GenXY	5P	0P	0	134.7	Free	Free	Free	Free	Free	Free
5dX	X-GenXY	5P	0P	0	126.7	Free	Free	Free	Free	Free	Free
5dXY	XY-GenXY	5P	0P	0	126.7	Free	Free	Free	Free	Free	Free
5dY	Y-GenXY	5P	0P	0	126.7	Free	Free	Free	Free	Free	Free
5eX	X-GenXY	5P	0P	0	118.7	Free	Free	Free	Free	Free	Free
5eXY	XY-GenXY	5P	0P	0	118.7	Free	Free	Free	Free	Free	Free
5eY	Y-GenXY	5P	0P	0	118.7	Free	Free	Free	Free	Free	Free
5fX	X-GenXY	5P	0P	0	110.7	Free	Free	Free	Free	Free	Free
5fXY	XY-GenXY	5P	0P	0	110.7	Free	Free	Free	Free	Free	Free
5fY	Y-GenXY	5P	0P	0	110.7	Free	Free	Free	Free	Free	Free
5gX	X-GenXY	5P	0P	0	102.7	Free	Free	Free	Free	Free	Free
5gXY	XY-GenXY	5P	0P	0	102.7	Free	Free	Free	Free	Free	Free
5gY	Y-GenXY	5P	0P	0	102.7	Free	Free	Free	Free	Free	Free
5hX	X-GenXY	5P	0P	0	86	Free	Free	Free	Free	Free	Free
5hXY	XY-GenXY	5P	0P	0	86	Free	Free	Free	Free	Free	Free
5hY	Y-GenXY	5P	0P	0	86	Free	Free	Free	Free	Free	Free
5iX	X-GenXY	5P	0P	0	69.5	Free	Free	Free	Free	Free	Free
5iXY	XY-GenXY	5P	0P	0	69.5	Free	Free	Free	Free	Free	Free
5iY	Y-GenXY	5P	0P	0	69.5	Free	Free	Free	Free	Free	Free
5jX	X-GenXY	5P	0P	0	53.5	Free	Free	Free	Free	Free	Free
5jXY	XY-GenXY	5P	0P	0	53.5	Free	Free	Free	Free	Free	Free
5jY	Y-GenXY	5P	0P	0	53.5	Free	Free	Free	Free	Free	Free
5kX	X-GenXY	5P	0P	0	30	Free	Free	Free	Free	Free	Free
5kXY	XY-GenXY	5P	0P	0	30	Free	Free	Free	Free	Free	Free
5kY	Y-GenXY	5P	0P	0	30	Free	Free	Free	Free	Free	Free
5lX	X-GenXY	5P	0P	0	15	Free	Free	Free	Free	Free	Free
5lXY	XY-GenXY	5P	0P	0	15	Free	Free	Free	Free	Free	Free
5lY	Y-GenXY	5P	0P	0	15	Free	Free	Free	Free	Free	Free
5lTY	Y-Gen	5lS	5lX	0.5	0	Free	Free	Free	Free	Free	Free

51LX	X-Gen	51S	51Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 20 primary and 72 secondary joints for a total of 92 joints.

Steel Material Properties:

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

Bolt Properties:

Bolt Label	Bolt Diameter (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 A394-55T	0.75	0.875	13.6	0	0	0	0
7/8 A394-55T	0.875	1	18.85	0	0	0	0
5/8 A325	0.625	0.75	16.81	0	0	0	0
3/4 A325	0.75	0.875	24.88	0	0	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394-55T	828
7/8 A394-55T	1400
5/8 A325	6
3/4 A325	6

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)
DAE	3.5X3.5X0.25	3.5	3.5	0.25	11.6	3.38	11.5	1.09	1.59	1.09	2	3.5	0	0	1.0000	0
DAE	4X4X0.25	4	4	0.25	13.2	3.88	13.5	1.25	1.79	1.25	2	4	0	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	0	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	0	0	1.0000	0
SAE	2.5X2.5X0.3125	2.5	2.5	0.3125	5	1.46	6	0.761	0.761	0.489	1	2.5	0	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	0	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	0	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	0	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	0	0	1.0000	0
SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	0	0	1.0000	0
SAE	8X8X0.5	8	8	0.5	26.4	7.75	13.75	2.5	2.5	1.59	1	8	0	0	1.0000	0
SAE	8X8X0.6875	8	8	0.6875	35.8	10.53	11.64	2.48	2.48	1.58	1	8	0	0	1.0000	0
SAE	8X8X0.75	8	8	0.75	38.9	11.44	8.83	2.47	2.47	1.58	1	8	0	0	1.0000	0
SAE	8X8X0.8125	8	8	0.8125	42.1	12.34	8.08	2.46	2.46	1.57	1	8	0	0	1.0000	0
SAE	8X8X0.875	8	8	0.875	45	13.23	7.43	2.45	2.45	1.57	1	8	0	0	1.0000	0
SAE	8X8X0.9375	8	8	0.9375	48.05	14.12	6.867	2.44	2.44	1.567	1	8	0	0	1.0000	0
SAE	8X8X1	8	8	1	51	15	6.38	2.44	2.44	1.56	1	8	0	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	0	0	1.0000	0
SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	0	0	1.0000	0
SAU	2.5X2X0.3125	2.5	2	0.3125	4.5	1.31	6	0.776	0.584	0.422	1	2.5	0	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	0	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	0	0	1.0000	0
SAU	3X2.5X0.3125	3	2.5	0.3125	5.6	1.62	7.4	0.937	0.744	0.525	1	3	0	0	1.0000	0
SAU	5X3.5X0.3125	5	3.5	0.3125	8.7	2.56	13.4	1.61	1.03	0.766	1	5	0	0	1.0000	0
SAU	5X3X0.3125	5	3	0.3125	8.2	2.4	13.4	1.61	0.853	0.658	1	5	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	LEG-1	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
2	LEG-2	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
3	LEG-3	SAE	8X8X0.6875	A7	Beam	Leg	None	0.000
4	LEG-4	SAE	8X8X0.75	A7	Beam	Leg	None	0.000
5	LEG-5	SAE	8X8X0.8125	A7	Beam	Leg	None	0.000

6	LEG-6	SAE	8X8X0.875	A7	Beam	Leg	None	0.000
7	LEG-7	SAE	8X8X0.9375	A7	Beam	Leg	None	0.000
8	LEG-8	SAE	8X8X0.9375	A7	Beam	Leg	None	0.000
9	LEG-9	SAE	8X8X1	A7	Beam	Leg	None	0.000
10	LEG-10	SAE	8X8X1	A7	Beam	Leg	None	0.000
11	VBR-11	SAU	2.5X2X0.25	A7	Truss	Crossing Diagonal	None	0.000
12	VBR-12_52	SAU	3X2.5X0.25	A7	Truss	Crossing Diagonal	None	0.000
13	VBR-13	SAE	3X3X0.3125	A7	Truss	Crossing Diagonal	None	0.000
14	VBR-14_15	SAU	3X2.5X0.3125	A7	Truss	Crossing Diagonal	None	0.000
15	VBR-16-20	SAU	3.5X3X0.25	A7	Truss	Crossing Diagonal	None	0.000
16	VBR-22	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
17	VBR-24_26_28	SAU	2.5X2X0.3125	A7	T-Only	Other	None	0.000
18	VBR-30_53	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
19	HBR-24_26_28	SAU	2.5X2X0.25	A7	Truss	Crossing Diagonal	None	0.000
20	HBR-99_100	SAE	2.5X2.5X0.1875	A7	T-Only	Other	None	0.000
21	HBR-98	SAE	2.5X2.5X0.25	A7	T-Only	Other	None	0.000
22	HRZ-C1-C7	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
23	HRZ-C22_C23	SAU	5X3X0.3125	A7	Truss	Other	None	0.000
24	HRZ-50_51	SAU	2.5X2X0.1875	A7	T-Only	Other	None	0.000
25	HRZ-21	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
26	HRZ-23	SAE	4X4X0.25	A7	Truss	Other	None	0.000
27	HRZ-25_27	DAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
28	HRZ-29	DAE	4X4X0.25	A7	Truss	Other	None	0.000
29	HRZ-44	DAE	3.5X3.5X0.25	A7	Beam	Redundant	None	0.000
30	STR-C18_C19	SAE	3X3X0.25	A7	Truss	Other	None	0.000
31	STR-C20_C21	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
MOD17	VBR-PJF-1	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
MOD26	HRZ-23_PJF-2	DAE	4X4X0.25	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	6X6X0.375	A7	72.00	144.00	1072.80
SAE	8X8X0.5	A7	72.00	192.00	1900.80
SAE	8X8X0.6875	A7	77.95	207.85	2790.44
SAE	8X8X0.75	A7	64.52	172.05	2509.73
SAE	8X8X0.8125	A7	64.52	172.05	2716.18
SAE	8X8X0.875	A7	67.22	179.25	3024.86
SAE	8X8X0.9375	A7	131.05	349.47	6297.00
SAE	8X8X1	A7	215.73	575.28	11002.24
SAU	2.5X2X0.25	A7	352.09	264.06	1274.55
SAU	3X2.5X0.25	A7	150.57	138.02	677.58
SAE	3X3X0.3125	A7	150.57	150.57	918.49
SAU	3X2.5X0.3125	A7	162.33	148.81	909.07
SAU	3.5X3X0.25	A7	607.43	658.05	3280.10
SAE	2.5X2.5X0.3125	A7	840.00	700.00	4199.99
SAU	2.5X2X0.3125	A7	444.42	333.31	1999.89
SAE	2.5X2.5X0.1875	A7	46.67	38.89	143.27
SAE	2.5X2.5X0.25	A7	83.70	69.75	343.19
SAU	5X3.5X0.3125	A7	189.68	268.71	1650.18
SAU	5X3X0.3125	A7	58.00	77.33	475.60
SAU	2.5X2X0.1875	A7	87.00	65.25	239.25
SAE	3.5X3.5X0.25	A7	66.00	77.00	382.79
DAE	4X4X0.25	A7	196.39	261.85	2592.34
DAE	3.5X3.5X0.25	A7	320.53	373.95	3718.18
SAE	3X3X0.25	A7	43.69	43.69	214.06

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

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
SWarm		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	1.000	None
Cage		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	1.000	None
TXarm		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	1.000	None
MXarm		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	1.000	None
BXarm		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	1.000	None
Std Body		1.070	3.200	3.200	1.000	1.000	0.000	0.000	1.600	1.600	1.600	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	Bolt Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
1P	1	Cage	XY-Symmetry	1P	1aS	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
1X	1	Cage	X-GenXY	1X	1aX	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
1XY	1	Cage	XY-GenXY	1XY	1aXY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
1Y	1	Cage	Y-GenXY	1Y	1aY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
2P	1	Cage	XY-Symmetry	1aS	1bS	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
2X	1	Cage	X-GenXY	1aX	1bX	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
2XY	1	Cage	XY-GenXY	1aXY	1bXY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
2Y	1	Cage	Y-GenXY	1aY	1bY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
3P	1	Cage	XY-Symmetry	1bS	1cS	1	4	1	1	1	3/4 A394-55T	12	3.11	1	Both	0	0	0	0	0	0	0
3X	1	Cage	X-GenXY	1bX	1cX	1	4	1	1	1	3/4 A394-55T	12	3.11	1	Both	0	0	0	0	0	0	0
3XY	1	Cage	XY-GenXY	1bXY	1cXY	1	4	1	1	1	3/4 A394-55T	12	3.11	1	Both	0	0	0	0	0	0	0
3Y	1	Cage	Y-GenXY	1bY	1cY	1	4	1	1	1	3/4 A394-55T	12	3.11	1	Both	0	0	0	0	0	0	0
4P	2	Cage	XY-Symmetry	1cS	1dS	1	4	1	1	1	3/4 A394-55T	12	3.63	1	Both	0	0	0	0	0	0	0
4X	2	Cage	X-GenXY	1cX	1dX	1	4	1	1	1	3/4 A394-55T	12	3.63	1	Both	0	0	0	0	0	0	0
4XY	2	Cage	XY-GenXY	1cXY	1dXY	1	4	1	1	1	3/4 A394-55T	12	3.63	1	Both	0	0	0	0	0	0	0
4Y	2	Cage	Y-GenXY	1cY	1dY	1	4	1	1	1	3/4 A394-55T	12	3.63	1	Both	0	0	0	0	0	0	0
5P	2	Cage	XY-Symmetry	1dS	1eS	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
5X	2	Cage	X-GenXY	1dX	1eX	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
5XY	2	Cage	XY-GenXY	1dXY	1eXY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
5Y	2	Cage	Y-GenXY	1dY	1eY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
6P	2	Cage	XY-Symmetry	1eS	5P	1	4	1	1	1	7/8 A394-55T	16	3.68	1	Both	0	0	0	0	0	0	0
6X	2	Cage	X-GenXY	1eX	5X	1	4	1	1	1	7/8 A394-55T	16	3.68	1	Both	0	0	0	0	0	0	0
6XY	2	Cage	XY-GenXY	1eXY	5XY	1	4	1	1	1	7/8 A394-55T	16	3.68	1	Both	0	0	0	0	0	0	0
6Y	2	Cage	Y-GenXY	1eY	5Y	1	4	1	1	1	7/8 A394-55T	16	3.68	1	Both	0	0	0	0	0	0	0
7P	3	Std Body	XY-Symmetry	5P	5aS	1	4	1	1	1	7/8 A394-55T	16	3.61	1	Both	0	0	0	0	0	0	0
7X	3	Std Body	X-GenXY	5X	5aX	1	4	1	1	1	7/8 A394-55T	16	3.61	1	Both	0	0	0	0	0	0	0
7XY	3	Std Body	XY-GenXY	5XY	5aXY	1	4	1	1	1	7/8 A394-55T	16	3.61	1	Both	0	0	0	0	0	0	0
7Y	3	Std Body	Y-GenXY	5Y	5aY	1	4	1	1	1	7/8 A394-55T	16	3.61	1	Both	0	0	0	0	0	0	0
8P	3	Std Body	XY-Symmetry	5aS	5bS	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
8X	3	Std Body	X-GenXY	5aX	5bX	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
8XY	3	Std Body	XY-GenXY	5aXY	5bXY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
8Y	3	Std Body	Y-GenXY	5aY	5bY	1	4	1	1	1		0	0	1		0	0	0	0	0	0	0
9P	3	Std Body	XY-Symmetry	5bS	5cS	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
9X	3	Std Body	X-GenXY	5bX	5cX	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
9XY	3	Std Body	XY-GenXY	5bXY	5cXY	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
9Y	3	Std Body	Y-GenXY	5bY	5cY	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
10P	4	Std Body	XY-Symmetry	5dS	5cS	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
10X	4	Std Body	X-GenXY	5dX	5cX	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
10XY	4	Std Body	XY-GenXY	5dXY	5cXY	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
10Y	4	Std Body	Y-GenXY	5dY	5cY	1	4	1	1	1	7/8 A394-55T	22	3.61	1	Both	0	0	0	0	0	0	0
11P	4	Std Body	XY-Symmetry	5eS	5dS	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
11X	4	Std Body	X-GenXY	5eX	5dX	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
11XY	4	Std Body	XY-GenXY	5eXY	5dXY	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
11Y	4	Std Body	Y-GenXY	5eY	5dY	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
12P	5	Std Body	XY-Symmetry	5fS	5eS	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
12X	5	Std Body	X-GenXY	5fX	5eX	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
12XY	5	Std Body	XY-GenXY	5fXY	5eXY	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
12Y	5	Std Body	Y-GenXY	5fY	5eY	1	4	1	1	1	7/8 A394-55T	26	3.61	1	Both	0	0	0	0	0	0	0
13P	5	Std Body	XY-Symmetry	5gS	5fS	1	4	1	1	1	7/8 A394-55T	28	3.59	1	Both	0	0	0	0	0	0	0
13X	5	Std Body	X-GenXY	5gX	5fX	1	4	1	1	1	7/8 A394-55T	28	3.59	1	Both	0	0	0	0	0	0	0
13XY	5	Std Body	XY-GenXY	5gXY	5fXY	1	4	1	1	1	7/8 A394-55T	28	3.59	1	Both	0	0	0	0	0	0	0
13Y	5	Std Body	Y-GenXY	5gY	5fY	1	4	1	1	1	7/8 A394-55T	28	3.59	1	Both	0	0	0	0	0	0	0
14P	6	Std Body	XY-Symmetry	5hS	5gS	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
14X	6	Std Body	X-GenXY	5hX	5gX	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
14XY	6	Std Body	XY-GenXY	5hXY	5gXY	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
14Y	6	Std Body	Y-GenXY	5hY	5gY	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
15P	7	Std Body	XY-Symmetry	5iS	5hS	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
15X	7	Std Body	X-GenXY	5iX	5hX	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
15XY	7	Std Body	XY-GenXY	5iXY	5hXY	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
15Y	7	Std Body	Y-GenXY	5iY	5hY	1	4	0.5	0.5	0.5	7/8 A394-55T	30	3.59	1	Both	0	0	0	0	0	0	0
16P	8	Std Body	XY-Symmetry	5jS	5iS	1	4	0.5	0.5	0.5	7/8 A394-55T	32	3.59	1	Both	0	0	0	0	0	0	0
16X	8	Std Body	X-GenXY	5jX	5iX	1	4	0.5	0.5	0.5	7/8 A394-55T	32	3.59	1	Both	0	0	0	0	0	0	0
16XY	8	Std Body	XY-GenXY	5jXY	5iXY	1	4	0.5	0.5	0.5	7/8 A394-55T	32	3.59	1	Both	0	0	0	0	0	0	0
16Y	8	Std Body	Y-GenXY	5jY	5iY	1	4	0.5	0.5	0.5	7/8 A394-55T	32	3.59	1	Both	0	0	0	0	0	0	0
17P	9	Std Body	XY-Symmetry	5kS	5jS	1	4	0.333	0.333	0.333	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
17X	9	Std Body	X-GenXY	5kX	5jX	1	4	0.333	0.333	0.333	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
17XY	9	Std Body	XY-GenXY	5kXY	5jXY	1	4	0.333	0.333	0.333	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
17Y	9	Std Body	Y-GenXY	5kY	5jY	1	4	0.333	0.333	0.333	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
18P	10	Std Body	XY-Symmetry	5lS	5kS	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
18X	10	Std Body	X-GenXY	5lX	5kX	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
18XY	10	Std Body	XY-GenXY	5lXY	5kXY	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
18Y	10	Std Body	Y-GenXY	5lY	5kY	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.57	1	Both	0	0	0	0	0	0	0
19P	10	Std Body	XY-Symmetry	0P	5lS	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.63	1	Both	0	0	0	0	0	0	0
19X	10	Std Body	X-GenXY	0X	5lX	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.63	1	Both	0	0	0	0	0	0	0
19XY	10	Std Body	XY-GenXY	0XY	5lXY	1	4	0.5	0.5	0.5	7/8 A394-55T	34	3.63	1	Both	0	0	0	0	0	0	0

19Y	10	Std	Body	Y-GenXY	0Y	5lY	1	4	0.5	0.5	0.5	7/8	A394-55T	34	3.63	1	Both	0	0	0	0	0	0	0
20P	11		Cage	XY-Symmetry	1P	1aX	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
20X	11		Cage	X-GenXY	1X	1aS	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
20XY	11		Cage	XY-GenXY	1XY	1aY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
20Y	11		Cage	Y-GenXY	1Y	1aXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
21P	11		Cage	XY-Symmetry	1X	1aXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
21X	11		Cage	X-GenXY	1P	1aY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
21XY	11		Cage	XY-GenXY	1Y	1aS	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
21Y	11		Cage	Y-GenXY	1XY	1aX	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
22P	11		Cage	XY-Symmetry	1aS	1bX	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
22X	11		Cage	X-GenXY	1aX	1bS	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
22XY	11		Cage	XY-GenXY	1aXY	1bY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
22Y	11		Cage	Y-GenXY	1aY	1bXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
23P	11		Cage	XY-Symmetry	1aX	1bXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
23X	11		Cage	X-GenXY	1aS	1bY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
23XY	11		Cage	XY-GenXY	1aY	1bS	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
23Y	11		Cage	Y-GenXY	1aXY	1bX	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
24P	12		Cage	XY-Symmetry	1bS	1cX	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
24X	12		Cage	X-GenXY	1bX	1cS	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
24XY	12		Cage	XY-GenXY	1bXY	1cY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
24Y	12		Cage	Y-GenXY	1bY	1cXY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
25P	12		Cage	XY-Symmetry	1bX	1cXY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
25X	12		Cage	X-GenXY	1bS	1cY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
25XY	12		Cage	XY-GenXY	1bY	1cS	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
25Y	12		Cage	Y-GenXY	1bXY	1cX	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
26P	12		Cage	XY-Symmetry	1cS	1dX	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
26X	12		Cage	X-GenXY	1cX	1dS	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
26XY	12		Cage	XY-GenXY	1cXY	1dY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
26Y	12		Cage	Y-GenXY	1cY	1dXY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
27P	12		Cage	XY-Symmetry	1cX	1dXY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
27X	12		Cage	X-GenXY	1cS	1dY	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
27XY	12		Cage	XY-GenXY	1cY	1dS	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
27Y	12		Cage	Y-GenXY	1cXY	1dX	2	5	0.5	0.75	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
28P	13		Cage	XY-Symmetry	1dS	1eX	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
28X	13		Cage	X-GenXY	1dX	1eS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
28XY	13		Cage	XY-GenXY	1dXY	1eY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
28Y	13		Cage	Y-GenXY	1dY	1eXY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
29P	13		Cage	XY-Symmetry	1dX	1eXY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
29X	13		Cage	X-GenXY	1dS	1eY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
29XY	13		Cage	XY-GenXY	1dY	1eS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
29Y	13		Cage	Y-GenXY	1dXY	1eX	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
30P	13		Cage	XY-Symmetry	1eS	5X	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
30X	13		Cage	X-GenXY	1eX	5P	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
30XY	13		Cage	XY-GenXY	1eXY	5Y	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
30Y	13		Cage	Y-GenXY	1eY	5XY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
31P	13		Cage	XY-Symmetry	1eX	5XY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
31X	13		Cage	X-GenXY	1eS	5Y	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
31XY	13		Cage	XY-GenXY	1eY	5P	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
31Y	13		Cage	Y-GenXY	1eXY	5X	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
32P	14	Std	Body	XY-Symmetry	5P	5aX	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
32X	14	Std	Body	X-GenXY	5X	5aS	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
32XY	14	Std	Body	XY-GenXY	5XY	5aY	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
32Y	14	Std	Body	Y-GenXY	5Y	5aXY	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
33P	14	Std	Body	XY-Symmetry	5X	5aXY	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
33X	14	Std	Body	X-GenXY	5P	5aY	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
33XY	14	Std	Body	XY-GenXY	5Y	5aS	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
33Y	14	Std	Body	Y-GenXY	5XY	5aX	2	5	0.535	0.535	0.535	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
34P	14	Std	Body	XY-Symmetry	5aS	5bX	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
34X	14	Std	Body	X-GenXY	5aX	5bS	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
34XY	14	Std	Body	XY-GenXY	5aXY	5bY	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
34Y	14	Std	Body	Y-GenXY	5aY	5bXY	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
35P	14	Std	Body	XY-Symmetry	5aX	5bXY	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
35X	14	Std	Body	X-GenXY	5aS	5bY	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
35XY	14	Std	Body	XY-GenXY	5aY	5bS	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
35Y	14	Std	Body	Y-GenXY	5aXY	5bX	2	5	0.536	0.536	0.536	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
36P	15	Std	Body	XY-Symmetry	5bS	5cX	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
36X	15	Std	Body	X-GenXY	5bX	5cS	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
36XY	15	Std	Body	XY-GenXY	5bXY	5cY	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
36Y	15	Std	Body	Y-GenXY	5bY	5cXY	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
37P	15	Std	Body	XY-Symmetry	5bX	5cXY	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
37X	15	Std	Body	X-GenXY	5bS	5cY	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
37XY	15	Std	Body	XY-GenXY	5bY	5cS	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
37Y	15	Std	Body	Y-GenXY	5bXY	5cX	2	5	0.542	0.542	0.542	3/4	A394-55T	4	1	1	Short only	0	0	0	0	0	0	0
38P	15	Std	Body	XY-Symmetry	5cS	5dX	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
38X	15	Std	Body	X-GenXY	5cX	5dS	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
38XY	15	Std	Body	XY-GenXY	5cXY	5dY	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
38Y	15	Std	Body	Y-GenXY	5cY	5dXY	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
39P	15	Std	Body	XY-Symmetry	5cX	5dXY	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
39X	15	Std	Body	X-GenXY	5cS	5dY	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
39XY	15	Std	Body	XY-GenXY	5cY	5dS	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
39Y	15	Std	Body	Y-GenXY	5cXY	5dX	2	5	0.533	0.533	0.533	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0

40P	15	Std	Body	XY-Symmetry	5dS	5eX	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
40X	15	Std	Body	X-GenXY	5dX	5eS	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
40XY	15	Std	Body	XY-GenXY	5dXY	5eY	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
40Y	15	Std	Body	Y-GenXY	5dY	5eXY	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
41P	15	Std	Body	XY-Symmetry	5dX	5eXY	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
41X	15	Std	Body	X-GenXY	5dS	5eY	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
41XY	15	Std	Body	XY-GenXY	5dY	5eS	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
41Y	15	Std	Body	Y-GenXY	5dXY	5eX	2	5	0.526	0.526	0.526	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
42P	15	Std	Body	XY-Symmetry	5eS	5fX	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
42X	15	Std	Body	X-GenXY	5eX	5fS	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
42XY	15	Std	Body	XY-GenXY	5eXY	5fY	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
42Y	15	Std	Body	Y-GenXY	5eY	5fXY	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
43P	15	Std	Body	XY-Symmetry	5eX	5fXY	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
43X	15	Std	Body	X-GenXY	5eS	5fY	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
43XY	15	Std	Body	XY-GenXY	5eY	5fS	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
43Y	15	Std	Body	Y-GenXY	5eXY	5fX	2	5	0.525	0.525	0.525	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
44P	15	Std	Body	XY-Symmetry	5fS	5gX	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
44X	15	Std	Body	X-GenXY	5fX	5gS	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
44XY	15	Std	Body	XY-GenXY	5fXY	5gY	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
44Y	15	Std	Body	Y-GenXY	5fY	5gXY	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
45P	15	Std	Body	XY-Symmetry	5fX	5gXY	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
45X	15	Std	Body	X-GenXY	5fS	5gY	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
45XY	15	Std	Body	XY-GenXY	5fY	5gS	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
45Y	15	Std	Body	Y-GenXY	5fXY	5gX	2	5	0.527	0.527	0.527	3/4	A394-55T	3	1	1	Short only	0	0	0	0	0	0	0
46P	16	Std	Body	XY-Symmetry	5gS	5hX	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
46X	16	Std	Body	X-GenXY	5gX	5hS	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
46XY	16	Std	Body	XY-GenXY	5gXY	5hY	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
46Y	16	Std	Body	Y-GenXY	5gY	5hXY	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
47P	16	Std	Body	XY-Symmetry	5gX	5hXY	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
47X	16	Std	Body	X-GenXY	5gS	5hY	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
47XY	16	Std	Body	XY-GenXY	5gY	5hS	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
47Y	16	Std	Body	Y-GenXY	5gXY	5hX	3	6	1	0.529	0.529	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
48P	17	Std	Body	XY-Symmetry	5hS	5iX	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
48X	17	Std	Body	X-GenXY	5hX	5iS	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
48XY	17	Std	Body	XY-GenXY	5hXY	5iY	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
48Y	17	Std	Body	Y-GenXY	5hY	5iXY	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
49P	17	Std	Body	XY-Symmetry	5hX	5iXY	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
49X	17	Std	Body	X-GenXY	5hS	5iY	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
49XY	17	Std	Body	XY-GenXY	5hY	5iS	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
49Y	17	Std	Body	Y-GenXY	5hXY	5iX	3	6	0.522	1	0.522	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
50P	17	Std	Body	XY-Symmetry	5iS	5jX	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
50X	17	Std	Body	X-GenXY	5iX	5jS	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
50XY	17	Std	Body	XY-GenXY	5iXY	5jY	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
50Y	17	Std	Body	Y-GenXY	5iY	5jXY	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
51P	17	Std	Body	XY-Symmetry	5iX	5jXY	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
51X	17	Std	Body	X-GenXY	5iS	5jY	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
51XY	17	Std	Body	XY-GenXY	5iY	5jS	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
51Y	17	Std	Body	Y-GenXY	5iXY	5jX	3	6	0.517	1	0.517	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
52P	MOD17	Std	Body	XY-Symmetry	5jS	5kX	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
52X	MOD17	Std	Body	X-GenXY	5jX	5kS	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
52XY	MOD17	Std	Body	XY-GenXY	5jXY	5kY	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
52Y	MOD17	Std	Body	Y-GenXY	5jY	5kXY	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
53P	MOD17	Std	Body	XY-Symmetry	5jX	5kXY	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
53X	MOD17	Std	Body	X-GenXY	5jS	5kY	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
53XY	MOD17	Std	Body	XY-GenXY	5jY	5kS	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
53Y	MOD17	Std	Body	Y-GenXY	5jXY	5kX	3	6	0.466	1	0.466	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
54P	18	Std	Body	XY-Symmetry	5kS	51TS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
54X	18	Std	Body	X-GenXY	5kX	51TS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
54XY	18	Std	Body	XY-GenXY	5kXY	51TY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
54Y	18	Std	Body	Y-GenXY	5kY	51TY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
55P	18	Std	Body	XY-Symmetry	5kX	51LX	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
55X	18	Std	Body	X-GenXY	5kS	51LS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
55XY	18	Std	Body	XY-GenXY	5kY	51LS	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
55Y	18	Std	Body	Y-GenXY	5kXY	51LX	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
56P	18	Std	Body	XY-Symmetry	51TS	0P	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
56X	18	Std	Body	X-GenXY	51TS	0X	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
56XY	18	Std	Body	XY-GenXY	51TY	0XY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
56Y	18	Std	Body	Y-GenXY	51TY	0Y	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
57P	18	Std	Body	XY-Symmetry	51LX	0X	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
57X	18	Std	Body	X-GenXY	51LS	0P	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
57XY	18	Std	Body	XY-GenXY	51LS	0Y	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
57Y	18	Std	Body	Y-GenXY	51LX	0XY	2	5	0.5	0.5	0.5	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
58P	19		Cage	X-Symmetry	1X	1Y	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
58X	19		Cage	X-Gen	1P	1XY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
59P	19		Cage	X-Symmetry	1bX	1bY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
59X	19		Cage	X-Gen	1bS	1bXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
60P	19		Cage	X-Symmetry	1dX	1dY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
60X	19		Cage	X-Gen	1dS	1dXY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
61P	19		Cage	X-Symmetry	5X	5Y	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
61X	19		Cage	X-Gen	5P	5XY	2	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
62P	20	Std	Body	X-Symmetry	5gS	5gXY	3	6	0.5	1	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0

62X	20	Std Body	X-Gen	5gX	5gY	3	6	0.5	1	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
63P	21	Std Body	X-Symmetry	5kS	5kXY	3	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
63X	21	Std Body	X-Gen	5kX	5kY	3	5	0.5	0.75	0.5	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
64P	22	Cage	Y-Symmetry	1Y	1XY	3	6	1	1	1	3/4	A394-55T	0	0	1		0	0	0	0	0	0	0
64Y	22	Cage	Y-Gen	1P	1X	3	6	1	1	1	3/4	A394-55T	0	0	1		0	0	0	0	0	0	0
65P	22	SWarm	XY-Symmetry	1P	2P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
65X	22	SWarm	X-GenXY	1X	2X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
65XY	22	SWarm	XY-GenXY	1XY	2X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
65Y	22	SWarm	Y-GenXY	1Y	2P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
66P	22	Cage	Y-Symmetry	1bS	1bX	3	6	1	1	1	3/4	A394-55T	0	0	1		0	0	0	0	0	0	0
66Y	22	Cage	Y-Gen	1bY	1bXY	3	6	1	1	1	3/4	A394-55T	0	0	1		0	0	0	0	0	0	0
67P	22	TXarm	XY-Symmetry	1bS	3P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
67X	22	TXarm	X-GenXY	1bX	3X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
67XY	22	TXarm	XY-GenXY	1bXY	3X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
67Y	22	TXarm	Y-GenXY	1bY	3P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
68P	22	MXarm	XY-Symmetry	1dS	4P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
68X	22	MXarm	X-GenXY	1dX	4X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
68XY	22	MXarm	XY-GenXY	1dXY	4X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
68Y	22	MXarm	Y-GenXY	1dY	4P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
69P	22	Cage	Y-Symmetry	1dY	1dXY	3	6	1	1	1			0	0	1		0	0	0	0	0	0	0
69Y	22	Cage	Y-Gen	1dS	1dX	3	6	1	1	1			0	0	1		0	0	0	0	0	0	0
70P	22	BXarm	XY-Symmetry	5P	6P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
70X	22	BXarm	X-GenXY	5X	6X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
70XY	22	BXarm	XY-GenXY	5XY	6X	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
70Y	22	BXarm	Y-GenXY	5Y	6P	3	6	1	0.5	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
71P	22	Cage	Y-Symmetry	5X	5P	3	6	1	1	1			0	0	1		0	0	0	0	0	0	0
71Y	22	Cage	Y-Gen	5XY	5Y	3	6	1	1	1			0	0	1		0	0	0	0	0	0	0
72P	23	Cage	X-Symmetry	1P	1Y	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
72X	23	Cage	X-Gen	1X	1XY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
73P	23	Cage	X-Symmetry	1bS	1bY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
73X	23	Cage	X-Gen	1bX	1bXY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
74P	23	Cage	X-Symmetry	1dS	1dY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
74X	23	Cage	X-Gen	1dX	1dXY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
75P	23	Cage	X-Symmetry	5P	5Y	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
75X	23	Cage	X-Gen	5X	5XY	3	6	1	1	1	3/4	A394-55T	4	1	1	Long only	0	0	0	0	0	0	0
76P	24	Cage	Y-Symmetry	1aS	1aX	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
76Y	24	Cage	Y-Gen	1aY	1aXY	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
77P	24	Cage	X-Symmetry	1aY	1aS	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
77X	24	Cage	X-Gen	1aXY	1aX	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
78P	24	Cage	Y-Symmetry	1cX	1cS	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
78Y	24	Cage	Y-Gen	1cXY	1cY	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
79P	24	Cage	X-Symmetry	1cY	1cS	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
79X	24	Cage	X-Gen	1cXY	1cX	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
80P	24	Cage	Y-Symmetry	1eX	1eS	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
80Y	24	Cage	Y-Gen	1eXY	1eY	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
81P	24	Cage	X-Symmetry	1eY	1eS	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
81X	24	Cage	X-Gen	1eXY	1eX	3	4	1	1	1	3/4	A394-55T	1	1	1	Long only	0	0	0	0	0	0	0
82P	25	Std Body	Y-Symmetry	5gS	5gX	3	6	0.5	1	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
82Y	25	Std Body	Y-Gen	5gY	5gXY	3	6	0.5	1	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
83P	25	Std Body	X-Symmetry	5gX	5gXY	3	6	0.5	1	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
83X	25	Std Body	X-Gen	5gS	5gY	3	6	0.5	1	0.5	3/4	A394-55T	3	1	1	Long only	0	0	0	0	0	0	0
84P	MOD26	Std Body	Y-Symmetry	5hS	5hX	1	6	0.5	1	0.5		5/8 A325	3	2	2	Long only	0	0	0	0	0	0	0
84Y	MOD26	Std Body	Y-Gen	5hY	5hXY	1	6	0.5	1	0.5		5/8 A325	3	2	2	Long only	0	0	0	0	0	0	0
85P	MOD26	Std Body	X-Symmetry	5hX	5hXY	1	6	0.5	1	0.5		3/4 A325	3	2	2	Long only	0	0	0	0	0	0	0
85X	MOD26	Std Body	X-Gen	5hS	5hY	1	6	0.5	1	0.5		3/4 A325	3	2	2	Long only	0	0	0	0	0	0	0
86P	27	Std Body	Y-Symmetry	5iS	5iX	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
86Y	27	Std Body	Y-Gen	5iY	5iXY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
87P	27	Std Body	X-Symmetry	5iX	5iXY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
87X	27	Std Body	X-Gen	5iS	5iY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
88P	27	Std Body	Y-Symmetry	5jS	5jX	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
88Y	27	Std Body	Y-Gen	5jY	5jXY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
89P	27	Std Body	X-Symmetry	5jX	5jXY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
89X	27	Std Body	X-Gen	5jS	5jY	3	6	0.5	1	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
90P	28	Std Body	Y-Symmetry	5kS	5kX	3	6	0.5	0.5	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
90Y	28	Std Body	Y-Gen	5kY	5kXY	3	6	0.5	0.5	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
91P	28	Std Body	X-Symmetry	5kX	5kXY	3	6	0.5	0.5	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
91X	28	Std Body	X-Gen	5kS	5kY	3	6	0.5	0.5	0.5	3/4	A394-55T	3	2	2	Long only	0	0	0	0	0	0	0
92P	29	Std Body	XY-Symmetry	5lS	5lTS	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
92X	29	Std Body	X-GenXY	5lX	5lTS	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
92XY	29	Std Body	XY-GenXY	5lXY	5lTY	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
92Y	29	Std Body	Y-GenXY	5lY	5lTY	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
93P	29	Std Body	XY-Symmetry	5lX	5lLX	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
93X	29	Std Body	X-GenXY	5lS	5lLS	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
93XY	29	Std Body	XY-GenXY	5lY	5lLS	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
93Y	29	Std Body	Y-GenXY	5lXY	5lLX	3	6	1	1	1	3/4	A394-55T	2	2	2	Long only	0	0	0	0	0	0	0
94P	30	SWarm	XY-Symmetry	2P	1aY	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
94X	30	SWarm	X-GenXY	2X	1aXY	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
94XY	30	SWarm	XY-GenXY	2X	1aX	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
94Y	30	SWarm	Y-GenXY	2P	1aS	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
95P	31	TXarm	XY-Symmetry	1aY	3P	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
95X	31	TXarm	X-GenXY	1aXY	3X	3	5	1	1	1	3/4	A394-55T	2	1	1	Long only	0	0	0	0	0	0	0

95XY	31	TXarm	XY-GenXY	1aX	3X	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
95Y	31	TXarm	Y-GenXY	1aS	3P	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
96P	31	MXarm	XY-Symmetry	4P	1cY	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
96X	31	MXarm	X-GenXY	4X	1cXY	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
96XY	31	MXarm	XY-GenXY	4X	1cX	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
96Y	31	MXarm	Y-GenXY	4P	1cS	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
97P	31	BXarm	XY-Symmetry	1eS	6P	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
97X	31	BXarm	X-GenXY	1eX	6X	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
97XY	31	BXarm	XY-GenXY	1eXY	6X	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0
97Y	31	BXarm	Y-GenXY	1eY	6P	3	5	1	1	1 3/4 A394-55T	2	1	1	Long only	0	0	0	0	0	0	0

Member Capacities and Overrides:

Member Label	Group Label	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. Capacity Unsup. (kips)	Override Comp. Control Criterion	Override Tension Capacity (kips)	Override Tension Control Criterion	Override Face Membership	Warnings or Errors
1P	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
1X	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
1XY	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
1Y	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
2P	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
2X	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
2XY	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
2Y	1	128.698	L/r	143.880	Net Sect	61	6.00	128.698	0.000	0.000	143.880	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
3P	1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
3X	1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
3XY	1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
3Y	1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
4P	2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
4X	2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
4XY	2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
4Y	2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
5P	2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
5X	2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
5XY	2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
5Y	2	240.633	L/r	255.750	Net Sect	45	6.00	240.633	0.000	0.000	255.750	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
6P	2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
6X	2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
6XY	2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
6Y	2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
7P	3	301.600	Shear	265.588	Net Sect	40	5.29	331.306	301.600	866.249	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
7X	3	301.600	Shear	265.588	Net Sect	40	5.29	331.306	301.600	866.249	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
7XY	3	301.600	Shear	265.588	Net Sect	40	5.29	331.306	301.600	866.249	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
7Y	3	301.600	Shear	265.588	Net Sect	40	5.29	331.306	301.600	866.249	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
8P	3	322.683	L/r	347.489	Net Sect	50	6.55	322.683	0.000	0.000	347.489	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
8X	3	322.683	L/r	347.489	Net Sect	50	6.55	322.683	0.000	0.000	347.489	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
8XY	3	322.683	L/r	347.489	Net Sect	50	6.55	322.683	0.000	0.000	347.489	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
8Y	3	322.683	L/r	347.489	Net Sect	50	6.55	322.683	0.000	0.000	347.489	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
9P	3	313.755	L/r	265.588	Net Sect	58	7.64	313.755	414.700	1191.092	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
9X	3	313.755	L/r	265.588	Net Sect	58	7.64	313.755	414.700	1191.092	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
9XY	3	313.755	L/r	265.588	Net Sect	58	7.64	313.755	414.700	1191.092	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
9Y	3	313.755	L/r	265.588	Net Sect	58	7.64	313.755	414.700	1191.092	265.588	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
10P	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
10X	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
10XY	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
10Y	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	414.700	1299.373	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
11P	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	490.100	1535.623	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
11X	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	490.100	1535.623	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
11XY	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	490.100	1535.623	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
11Y	4	336.695	L/r	288.172	Net Sect	61	8.06	336.695	490.100	1535.623	288.172	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
12P	5	362.621	L/r	310.426	Net Sect	62	8.06	362.621	490.100	1663.591	310.426	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
12X	5	362.621	L/r	310.426	Net Sect	62	8.06	362.621	490.100	1663.591	310.426	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
12XY	5	362.621	L/r	310.426	Net Sect	62	8.06	362.621	490.100	1663.591	310.426	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
12Y	5	362.621	L/r	310.426	Net Sect	62	8.06	362.621	490.100	1663.591	310.426	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
13P	5	362.621	L/r	310.963	Net Sect	62	8.06	362.621	527.800	1791.560	310.963	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
13X	5	362.621	L/r	310.963	Net Sect	62	8.06	362.621	527.800	1791.560	310.963	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
13XY	5	362.621	L/r	310.963	Net Sect	62	8.06	362.621	527.800	1791.560	310.963	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
13Y	5	362.621	L/r	310.963	Net Sect	62	8.06	362.621	527.800	1791.560	310.963	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
14P	6	384.686	L/r	332.928	Net Sect	64	16.80	384.686	565.500	2067.184	332.928	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
14X	6	384.686	L/r	332.928	Net Sect	64	16.80	384.686	565.500	2067.184	332.928	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
14XY	6	384.686	L/r	332.928	Net Sect	64	16.80	384.686	565.500	2067.184	332.928	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
14Y	6	384.686	L/r	332.928	Net Sect	64	16.80	384.686	565.500	2067.184	332.928	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
15P	7	411.509	L/r	354.927	Net Sect	64	16.63	411.509	565.500	2214.840	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
15X	7	411.509	L/r	354.927	Net Sect	64	16.63	411.509	565.500	2214.840	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
15XY	7	411.509	L/r	354.927	Net Sect	64	16.63	411.509	565.500	2214.840	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
15Y	7	411.509	L/r	354.927	Net Sect	64	16.63	411.509	565.500	2214.840	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
16P	8	414.761	L/r	354.927	Net Sect	62	16.13	414.761	603.200	2362.496	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	
16X	8	414.761	L/r	354.927	Net Sect	62	16.13	414.761	603.200	2362.496	354.927	0.000	0.000	0.000	0.000	0.000	0.000		Automatic	

16XY	8	414.761	L/r	354.927	Net Sect	62	16.13	414.761	603.200	2362.496	354.927	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
16Y	8	414.761	L/r	354.927	Net Sect	62	16.13	414.761	603.200	2362.496	354.927	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
17P	9	442.459	L/r	377.189	Net Sect	61	23.69	442.459	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
17X	9	442.459	L/r	377.189	Net Sect	61	23.69	442.459	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
17XY	9	442.459	L/r	377.189	Net Sect	61	23.69	442.459	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
17Y	9	442.459	L/r	377.189	Net Sect	61	23.69	442.459	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
18P	10	446.739	L/r	377.189	Net Sect	58	15.12	446.739	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
18X	10	446.739	L/r	377.189	Net Sect	58	15.12	446.739	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
18XY	10	446.739	L/r	377.189	Net Sect	58	15.12	446.739	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
18Y	10	446.739	L/r	377.189	Net Sect	58	15.12	446.739	640.900	2677.496	377.189	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
19P	10	446.739	L/r	375.209	Net Sect	58	15.12	446.739	640.900	2677.496	375.209	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
19X	10	446.739	L/r	375.209	Net Sect	58	15.12	446.739	640.900	2677.496	375.209	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
19XY	10	446.739	L/r	375.209	Net Sect	58	15.12	446.739	640.900	2677.496	375.209	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
19Y	10	446.739	L/r	375.209	Net Sect	58	15.12	446.739	640.900	2677.496	375.209	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
20P	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
20X	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
20XY	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
20Y	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
21P	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
21X	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
21XY	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
21Y	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
22P	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
22X	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
22XY	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
22Y	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
23P	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
23X	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
23XY	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
23Y	11	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
24P	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
24X	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
24XY	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
24Y	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
25P	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
25X	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
25XY	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
25Y	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
26P	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
26X	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
26XY	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
26Y	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
27P	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
27X	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
27XY	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
27Y	12	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
28P	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
28X	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
28XY	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
28Y	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
29P	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
29X	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
29XY	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
29Y	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
30P	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
30X	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
30XY	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
30Y	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
31P	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
31X	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
31XY	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
31Y	13	41.159	L/r	44.745	Net Sect	96	9.41	41.159	54.400	84.375	44.745	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
32P	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
32X	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
32XY	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
32Y	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
33P	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
33X	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
33XY	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
33Y	14	32.812	L/r	35.352	Net Sect	114	9.35	32.812	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
34P	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
34X	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
34XY	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
34Y	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
35P	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
35X	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
35XY	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
35Y	14	27.120	L/r	35.352	Net Sect	134	10.94	27.120	54.400	84.375	35.352	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
36P	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
36X	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
36XY	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic

36Y	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
37P	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
37X	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
37XY	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
37Y	15	27.314	L/r	36.123	Net Sect	130	12.61	27.314	54.400	67.500	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
38P	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
38X	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
38XY	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
38Y	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
39P	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
39X	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
39XY	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
39Y	15	23.910	L/r	36.123	Net Sect	142	13.99	23.910	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
40P	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
40X	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
40XY	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
40Y	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
41P	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
41X	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
41XY	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
41Y	15	21.412	L/r	36.123	Net Sect	152	15.19	21.412	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
42P	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
42X	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
42XY	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
42Y	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
43P	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
43X	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
43XY	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
43Y	15	18.918	L/r	36.123	Net Sect	164	16.43	18.918	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
44P	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
44X	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
44XY	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
44Y	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
45P	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
45X	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
45XY	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
45Y	15	16.638	L/r	36.123	Net Sect	177	17.71	16.638	40.800	50.625	36.123	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
46P	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
46X	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
46XY	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
46Y	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
47P	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
47X	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
47XY	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
47Y	16	5.160	L/r	35.241	Net Sect	388	24.58	5.160	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
48P	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
48X	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
48XY	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
48Y	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
49P	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
49X	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
49XY	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
49Y	17	2.541	L/r	30.786	Net Sect	549	26.74	2.541	54.400	84.375	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
50P	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
50X	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
50XY	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
50Y	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
51P	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
51X	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
51XY	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
51Y	17	2.227	L/r	30.786	Net Sect	592	28.81	2.227	40.800	63.281	30.786	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
52P	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
52X	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
52XY	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
52Y	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
53P	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
53X	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
53XY	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
53Y	MOD17	2.646	L/r	35.241	Net Sect	571	36.22	2.646	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
54P	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
54X	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
54XY	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
54Y	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
55P	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
55X	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
55XY	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
55Y	18	8.181	L/r	35.241	Net Sect	259	21.11	8.181	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
56P	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
56X	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
56XY	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
56Y	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic

57P	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
57X	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
57XY	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
57Y	18	6.992	L/r	35.241	Net Sect	283	23.09	6.992	54.400	84.375	35.241	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
58P	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
58X	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
59P	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
59X	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
60P	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
60X	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
61P	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
61X	19	13.968	L/r	24.985	Net Sect	156	10.25	13.968	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
62P	20	3.607	L/r	21.917	Net Sect	360	23.33	3.607	27.200	25.312	21.917	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
62X	20	3.607	L/r	21.917	Net Sect	360	23.33	3.607	27.200	25.312	21.917	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
63P	21	1.946	L/r	27.200	Shear	511	41.85	1.946	27.200	33.750	28.846	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
63X	21	1.946	L/r	27.200	Shear	511	41.85	1.946	27.200	33.750	28.846	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
64P	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
64Y	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
65P	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
65X	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
65XY	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
65Y	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
66P	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
66Y	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
67P	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
67X	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
67XY	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
67Y	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
68P	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
68X	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
68XY	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
68Y	22	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
69P	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
69Y	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
70P	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
70X	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
70XY	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
70Y	22	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
71P	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
71Y	22	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
72P	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
72X	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
73P	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
73X	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
74P	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
74X	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
75P	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
75X	23	42.080	L/r	54.400	Shear	132	7.25	42.080	54.400	84.375	63.159	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
76P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
76Y	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
77P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
77X	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
78P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
78Y	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
79P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
79X	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
80P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
80Y	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
81P	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
81X	24	5.585	L/r	12.656	Bearing	204	7.25	5.585	13.600	12.656	19.184	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
82P	25	19.398	L/r	40.800	Shear	182	16.50	19.398	40.800	50.625	43.696	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
82Y	25	19.398	L/r	40.800	Shear	182	16.50	19.398	40.800	50.625	43.696	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
83P	25	19.398	L/r	40.800	Shear	182	16.50	19.398	40.800	50.625	43.696	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
83X	25	19.398	L/r	40.800	Shear	182	16.50	19.398	40.800	50.625	43.696	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
84P	MOD26	68.879	L/r	84.375	Bearing	131	19.50	68.879	100.860	84.375	104.098	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
84Y	MOD26	68.879	L/r	84.375	Bearing	131	19.50	68.879	100.860	84.375	104.098	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
85P	MOD26	68.879	L/r	101.250	Bearing	131	19.50	68.879	149.280	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
85X	MOD26	68.879	L/r	101.250	Bearing	131	19.50	68.879	149.280	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
86P	27	42.697	L/r	81.600	Shear	170	22.48	42.697	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
86Y	27	42.697	L/r	81.600	Shear	170	22.48	42.697	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
87P	27	42.697	L/r	81.600	Shear	170	22.48	42.697	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
87X	27	42.697	L/r	81.600	Shear	170	22.48	42.697	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
88P	27	36.010	L/r	81.600	Shear	191	25.36	36.010	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
88Y	27	36.010	L/r	81.600	Shear	191	25.36	36.010	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
89P	27	36.010	L/r	81.600	Shear	191	25.36	36.010	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
89X	27	36.010	L/r	81.600	Shear	191	25.36	36.010	81.600	101.250	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
90P	28	62.253	L/r	81.600	Shear	142	29.59	62.253	81.600	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
90Y	28	62.253	L/r	81.600	Shear	142	29.59	62.253	81.600	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
91P	28	62.253	L/r	81.600	Shear	142	29.59	62.253	81.600	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
91X	28	62.253	L/r	81.600	Shear	142	29.59	62.253	81.600	101.250	102.242	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
92P	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic

92X	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
92XY	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
92Y	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
93P	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
93X	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
93XY	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
93Y	29	39.990	L/r	54.400	Shear	178	16.15	39.990	54.400	67.500	87.392	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
94P	30	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
94X	30	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
94XY	30	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
94Y	30	10.588	L/r	27.200	Shear	221	10.92	10.588	27.200	33.750	36.271	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
95P	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
95X	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
95XY	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
95Y	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
96P	31	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
96X	31	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
96XY	31	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
96Y	31	4.349	L/r	24.985	Net Sect	309	10.92	4.349	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
97P	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
97X	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
97XY	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
97Y	31	5.591	L/r	24.985	Net Sect	268	9.48	5.591	27.200	33.750	24.985	0.000	0.000	0.000	0.000	0.000	0.000	Automatic

The model contains 328 angle members.

Sum of Unfactored Dead Load and Drag Areas From Equipment, Input and Calculated:

Joint Label	Dead Load (kips)	X-Drag Area (ft^2)	Y-Drag Area (ft^2)
1P	0.198	7.116	6.126
2P	0.133	6.065	3.263
3P	0.0981	4.480	2.971
4P	0.119	5.636	2.971
5P	0.395	11.103	10.530
6P	0.0981	4.480	2.971
0P	0.501	8.990	8.990
1X	0.198	7.116	6.126
1XY	0.198	7.116	6.126
1Y	0.198	7.116	6.126
2X	0.133	6.065	3.263
3X	0.0981	4.480	2.971
4X	0.119	5.636	2.971
5X	0.395	11.103	10.530
5XY	0.395	11.103	10.530
5Y	0.395	11.103	10.530
6X	0.0981	4.480	2.971
0X	0.501	8.990	8.990
0XY	0.501	8.990	8.990
0Y	0.501	8.990	8.990
1aS	0.221	9.166	8.572
1bS	0.278	10.125	9.552
1cS	0.248	9.181	8.838
1dS	0.378	11.863	10.874
1eS	0.31	9.520	9.338
5aS	0.326	7.940	7.940
5bS	0.383	9.840	9.840
5cS	0.437	11.369	11.369
5dS	0.471	11.948	11.948
5eS	0.497	12.305	12.305
5fS	0.524	12.672	12.672
5gS	0.898	20.432	20.432
5hS	1.28	23.158	23.158
5iS	1.3	23.333	23.333
5jS	1.6	27.813	27.813
5kS	1.75	30.888	30.888
5lS	0.959	12.396	12.396
5lTS	0.408	13.901	6.275
5lLS	0.408	6.275	13.901
1aX	0.221	9.166	8.572
1aXY	0.221	9.166	8.572
1aY	0.221	9.166	8.572
1bX	0.278	10.125	9.552
1bXY	0.278	10.125	9.552
1bY	0.278	10.125	9.552
1cX	0.248	9.181	8.838
1cXY	0.248	9.181	8.838
1cY	0.248	9.181	8.838
1dX	0.378	11.863	10.874

1dXY	0.378	11.863	10.874
1dY	0.378	11.863	10.874
1eX	0.31	9.520	9.338
1eXY	0.31	9.520	9.338
1eY	0.31	9.520	9.338
5aX	0.326	7.940	7.940
5aXY	0.326	7.940	7.940
5aY	0.326	7.940	7.940
5bX	0.383	9.840	9.840
5bXY	0.383	9.840	9.840
5bY	0.383	9.840	9.840
5cX	0.437	11.369	11.369
5cXY	0.437	11.369	11.369
5cY	0.437	11.369	11.369
5dX	0.471	11.948	11.948
5dXY	0.471	11.948	11.948
5dY	0.471	11.948	11.948
5eX	0.497	12.305	12.305
5eXY	0.497	12.305	12.305
5eY	0.497	12.305	12.305
5fX	0.524	12.672	12.672
5fXY	0.524	12.672	12.672
5fY	0.524	12.672	12.672
5gX	0.898	20.432	20.432
5gXY	0.898	20.432	20.432
5gY	0.898	20.432	20.432
5hX	1.28	23.158	23.158
5hXY	1.28	23.158	23.158
5hY	1.28	23.158	23.158
5iX	1.3	23.333	23.333
5iXY	1.3	23.333	23.333
5iY	1.3	23.333	23.333
5jX	1.6	27.813	27.813
5jXY	1.6	27.813	27.813
5jY	1.6	27.813	27.813
5kX	1.75	30.888	30.888
5kXY	1.75	30.888	30.888
5kY	1.75	30.888	30.888
5lX	0.959	12.396	12.396
5lXY	0.959	12.396	12.396
5lY	0.959	12.396	12.396
5lTY	0.408	13.901	6.275
5lLX	0.408	6.275	13.901
Total	54.3	1206.306	1172.363

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)
SWarm	0.532	24.261	13.052	12.130	6.526
Cage	6.631	216.640	216.640	85.278	85.278
TXarm	0.392	17.920	11.883	8.960	5.942
MXarm	0.476	22.544	11.883	11.272	5.942
BXarm	0.392	17.920	11.883	8.960	5.942
Std Body	45.909	907.021	907.021	371.875	371.875
Total	54.333	1206.306	1172.363	498.476	481.504

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)
SWarm	0.532	0.569	95.400	102.078
Cage	6.631	7.095	1023.794	1095.460
TXarm	0.392	0.420	69.983	74.882
MXarm	0.476	0.509	84.478	90.391
BXarm	0.392	0.420	69.983	74.882
Std Body	45.909	49.123	4317.560	4619.789
Total	54.333	58.136	5661.198	6057.481

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
SWarm	1P	190.000

SWarm	2P	190.000
SWarm	1X	190.000
SWarm	2X	190.000
SWarm	1XY	190.000
SWarm	1Y	190.000
SWarm	1aY	184.000
SWarm	1aXY	184.000
SWarm	1aX	184.000
SWarm	1aS	184.000
Cage	1P	190.000
Cage	1aS	184.000
Cage	1X	190.000
Cage	1aX	184.000
Cage	1XY	190.000
Cage	1aXY	184.000
Cage	1Y	190.000
Cage	1aY	184.000
Cage	1bS	178.000
Cage	1bX	178.000
Cage	1bXY	178.000
Cage	1bY	178.000
Cage	1cS	172.000
Cage	1cX	172.000
Cage	1cXY	172.000
Cage	1cY	172.000
Cage	1dS	166.000
Cage	1dX	166.000
Cage	1dXY	166.000
Cage	1dY	166.000
Cage	1eS	160.000
Cage	1eX	160.000
Cage	1eXY	160.000
Cage	1eY	160.000
Cage	5P	154.000
Cage	5X	154.000
Cage	5XY	154.000
Cage	5Y	154.000
TXarm	1bS	178.000
TXarm	3P	178.000
TXarm	1bX	178.000
TXarm	3X	178.000
TXarm	1bXY	178.000
TXarm	1bY	178.000
TXarm	1aY	184.000
TXarm	1aXY	184.000
TXarm	1aX	184.000
TXarm	1aS	184.000
MXarm	1dS	166.000
MXarm	4P	166.000
MXarm	1dX	166.000
MXarm	4X	166.000
MXarm	1dXY	166.000
MXarm	1dY	166.000
MXarm	1cY	172.000
MXarm	1cXY	172.000
MXarm	1cX	172.000
MXarm	1cS	172.000
BXarm	5P	154.000
BXarm	6P	154.000
BXarm	5X	154.000
BXarm	6X	154.000
BXarm	5XY	154.000
BXarm	5Y	154.000
BXarm	1eS	160.000
BXarm	1eX	160.000
BXarm	1eXY	160.000
BXarm	1eY	160.000
Std Body	5P	154.000
Std Body	5aS	148.750
Std Body	5X	154.000
Std Body	5aX	148.750
Std Body	5XY	154.000
Std Body	5aXY	148.750
Std Body	5Y	154.000
Std Body	5aY	148.750
Std Body	5bS	142.250
Std Body	5bX	142.250
Std Body	5bXY	142.250
Std Body	5bY	142.250
Std Body	5cS	134.670
Std Body	5cX	134.670

Std Body	5cXY	134.670
Std Body	5cY	134.670
Std Body	5dS	126.670
Std Body	5dX	126.670
Std Body	5dXY	126.670
Std Body	5dY	126.670
Std Body	5eS	118.670
Std Body	5eX	118.670
Std Body	5eXY	118.670
Std Body	5eY	118.670
Std Body	5fS	110.670
Std Body	5fX	110.670
Std Body	5fXY	110.670
Std Body	5fY	110.670
Std Body	5gS	102.670
Std Body	5gX	102.670
Std Body	5gXY	102.670
Std Body	5gY	102.670
Std Body	5hS	86.000
Std Body	5hX	86.000
Std Body	5hXY	86.000
Std Body	5hY	86.000
Std Body	5iS	69.500
Std Body	5iX	69.500
Std Body	5iXY	69.500
Std Body	5iY	69.500
Std Body	5jS	53.500
Std Body	5jX	53.500
Std Body	5jXY	53.500
Std Body	5jY	53.500
Std Body	5kS	30.000
Std Body	5kX	30.000
Std Body	5kXY	30.000
Std Body	5kY	30.000
Std Body	5lS	15.000
Std Body	5lX	15.000
Std Body	5lXY	15.000
Std Body	5lY	15.000
Std Body	0P	0.000
Std Body	0X	0.000
Std Body	0XY	0.000
Std Body	0Y	0.000
Std Body	5lTS	15.000
Std Body	5lTY	15.000
Std Body	5lLX	15.000
Std Body	5lLS	15.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
SWarm	190.000	184.000	10	8	0.00	7.25	21.750	24.00	7.25	93.750
Cage	190.000	154.000	28	108	7.25	7.25	261.000	7.25	7.25	261.000
TXarm	184.000	178.000	10	8	7.25	7.25	43.500	7.25	20.00	81.750
MXarm	172.000	166.000	10	8	7.25	7.25	43.500	7.25	24.00	93.750
BXarm	160.000	154.000	10	8	7.25	7.25	43.500	7.25	20.00	81.750
Std Body	154.000	0.000	60	188	7.25	35.00	3253.250	7.25	35.00	3253.250

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
C-EX1		7e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	5kX	C-EX1	No Limit
2	5kS	C-EX1	No Limit
3	5jX	C-EX1	No Limit

4	5jS	C-EX1	No Limit
5	5iX	C-EX1	No Limit
6	5iS	C-EX1	No Limit
7	5hX	C-EX1	No Limit
8	5hS	C-EX1	No Limit
9	5gX	C-EX1	No Limit
10	5gS	C-EX1	No Limit
11	5fX	C-EX1	No Limit
12	5fS	C-EX1	No Limit
13	5eX	C-EX1	No Limit
14	5eS	C-EX1	No Limit
15	5dX	C-EX1	No Limit
16	5dS	C-EX1	No Limit
17	5cX	C-EX1	No Limit
18	5cS	C-EX1	No Limit
19	5bX	C-EX1	No Limit
20	5bS	C-EX1	No Limit
21	5aX	C-EX1	No Limit
22	5aS	C-EX1	No Limit
23	5X	C-EX1	No Limit
24	5P	C-EX1	No Limit
25	1dX	C-EX1	No Limit
26	1dS	C-EX1	No Limit
27	1bX	C-EX1	No Limit
28	1bS	C-EX1	No Limit
29	1X	C-EX1	No Limit
30	1P	C-EX1	No Limit

Suspension Properties:

Label	Stock Number	Length (ft)	Weight (lbs)	Wind Area (ft^2)	Tension Capacity (lbs)	Top Rect Width (ft)	Top Rect Height (ft)	Bot. Rect Width (ft)	Bot. Rect Height (ft)	Vert. Rect Width (ft)	Vert. Rect Height (ft)
2 Generic		2	0	0	5e+004	0	0	0	0	0	0
Mount		0.1	0	0	5e+004	0	0	0	0	0	0
STATIC		1	10	0.25	5e+004	0	0	0	0	0	0

Suspension Insulator Connectivity:

Suspension Label	Structure Attach	Tip Label	Property Set	Cond. 1 Minimum Swing (deg)	Cond. 1 Maximum Swing (deg)	Cond. 2 Minimum Swing (deg)	Cond. 2 Maximum Swing (deg)	Cond. 3 Minimum Swing (deg)	Cond. 3 Maximum Swing (deg)	Cond. 4 Minimum Swing (deg)	Cond. 4 Maximum Swing (deg)	Min. Required Vertical Load (uplift) (lbs)
11	2X	11	STATIC	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
21	2P	21	STATIC	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
31	3X	31	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
32	4X	32	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
33	6X	33	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
41	3P	41	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
42	4P	42	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
43	6P	43	2 Generic	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
M1	1X	M1	Mount	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
M2	1P	M2	Mount	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
M3	1bX	M3	Mount	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
M4	1bS	M4	Mount	-180.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit

*** Loads Data

Loads from file: g:\transmission\eversource\2016\312-t-mobile\31216-0005 tmobile_ct11036c_clp river crossing_8 old bridge rd\31216-0005.002.6125_6280\calcs\pls-tower\31216-0005.002.6280 - dist ct-river east.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):
  Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
  Ground elevation shift 0.00 (ft)
  Z of ground with shift 0.00 (ft)
  Z of structure top (highest joint) 190.00 (ft)
  Structure height 190.00 (ft)
  Structure height above ground 190.00 (ft)
  Tower Shape Rectangular

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC 250B (Heavy)	1.5000	1.0000	1.00000	1.0000	1.0000	1.0000	57 loads	Wind on Face	10	0	0.000	56.000	0.0	
NESC 250C (Extreme Wind)	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	57 loads	NESC 2007	36.8	0	0.000	0.000	0.0	

Point Loads for Load Case "NESC 250B (Heavy)":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
11	5932	7073	0	Shield Wire
21	5932	7073	0	Shield Wire
31	12339	10402	0	Conductor
32	12339	10402	0	Conductor
33	12339	10402	0	Conductor
41	12339	10402	0	Conductor
42	12339	10402	0	Conductor
43	12339	10402	0	Conductor
M1	1063	1094	-435	Mount Upper Support
M2	1076	213	12	Mount Upper Support
M3	1297	-595	268	Mount Lower Support
M4	994	287	154	Mount Lower Support
5kS	1778	416	0	Coax Loads
5jS	1313	307	0	Coax Loads
5iS	1080	253	0	Coax Loads
5hS	1102	258	0	Coax Loads
5gS	820	192	0	Coax Loads
5fS	532	124	0	Coax Loads
5eS	532	124	0	Coax Loads
5dS	532	124	0	Coax Loads
5cS	518	121	0	Coax Loads
5bS	468	109	0	Coax Loads
5aS	391	91	0	Coax Loads
5P	574	134	0	Coax Loads
1dS	798	186	0	Coax Loads
1bS	798	186	0	Coax Loads
1P	399	93	0	Coax Loads
5kX	680	178	0	Ladder Loads
5jX	502	132	0	Ladder Loads
5iX	413	108	0	Ladder Loads
5hX	421	110	0	Ladder Loads
5gX	313	82	0	Ladder Loads
5fX	203	53	0	Ladder Loads
5eX	203	53	0	Ladder Loads
5dX	203	53	0	Ladder Loads
5cX	198	52	0	Ladder Loads
5bX	179	47	0	Ladder Loads
5aX	149	39	0	Ladder Loads
5X	219	57	0	Ladder Loads
1dX	305	80	0	Ladder Loads

1bX	305	80	0	Ladder Loads
1X	152	40	0	Ladder Loads
5kS	680	178	0	Ladder Loads
5jS	502	132	0	Ladder Loads
5iS	413	108	0	Ladder Loads
5hS	421	110	0	Ladder Loads
5gS	313	82	0	Ladder Loads
5fS	203	53	0	Ladder Loads
5eS	203	53	0	Ladder Loads
5dS	203	53	0	Ladder Loads
5cS	198	52	0	Ladder Loads
5bS	179	47	0	Ladder Loads
5aS	149	39	0	Ladder Loads
5P	219	57	0	Ladder Loads
1dS	305	80	0	Ladder Loads
1bS	305	80	0	Ladder Loads
1P	152	40	0	Ladder Loads

Section Load Case Information (Standard) for "NESC 250B (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)
SWarm	190.00	184.00	187.00	10.00	10.00	3.200	208.8	0.00	3.200	0.0	0	853
Cage	190.00	154.00	172.00	10.00	10.00	3.200	2728.9	0.00	3.200	0.0	0	10643
TXarm	184.00	178.00	181.00	10.00	10.00	3.200	190.1	0.00	3.200	0.0	0	630
MXarm	172.00	166.00	169.00	10.00	10.00	3.200	190.1	0.00	3.200	0.0	0	764
BXarm	160.00	154.00	157.00	10.00	10.00	3.200	190.1	0.00	3.200	0.0	0	630
Std Body	154.00	0.00	77.00	10.00	10.00	3.200	11900.0	0.00	3.200	0.0	0	73684

Point Loads for Load Case "NESC 250C (Extreme Wind)":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
11	1275	4568	-252	Shield Wire
21	1275	4568	-252	Shield Wire
31	4038	8726	-2916	Conductor
32	4038	8726	-2916	Conductor
33	4038	8726	-2916	Conductor
41	4038	8726	-2916	Conductor
42	4038	8726	-2916	Conductor
43	4038	8726	-2916	Conductor
M1	432	3238	-1135	Mount Upper Support
M2	519	2849	951	Mount Upper Support
M3	1256	-991	384	Mount Lower Support
M4	-238	-606	-200	Mount Lower Support
5kS	443	1681	0	Coax Loads
5jS	327	1241	0	Coax Loads
5iS	269	1021	0	Coax Loads
5hS	275	1042	0	Coax Loads
5gS	204	775	0	Coax Loads
5fS	132	503	0	Coax Loads
5eS	132	503	0	Coax Loads
5dS	132	503	0	Coax Loads
5cS	129	490	0	Coax Loads
5bS	117	443	0	Coax Loads
5aS	97	370	0	Coax Loads
5P	143	542	0	Coax Loads
1dS	199	754	0	Coax Loads
1bS	199	754	0	Coax Loads
1P	99	377	0	Coax Loads
5kX	453	715	0	Ladder Loads
5jX	335	528	0	Ladder Loads
5iX	275	434	0	Ladder Loads
5hX	281	443	0	Ladder Loads
5gX	209	330	0	Ladder Loads
5fX	136	214	0	Ladder Loads
5eX	136	214	0	Ladder Loads
5dX	136	214	0	Ladder Loads
5cX	132	208	0	Ladder Loads
5bX	119	188	0	Ladder Loads
5aX	100	157	0	Ladder Loads
5X	146	231	0	Ladder Loads
1dX	203	321	0	Ladder Loads
1bX	203	321	0	Ladder Loads

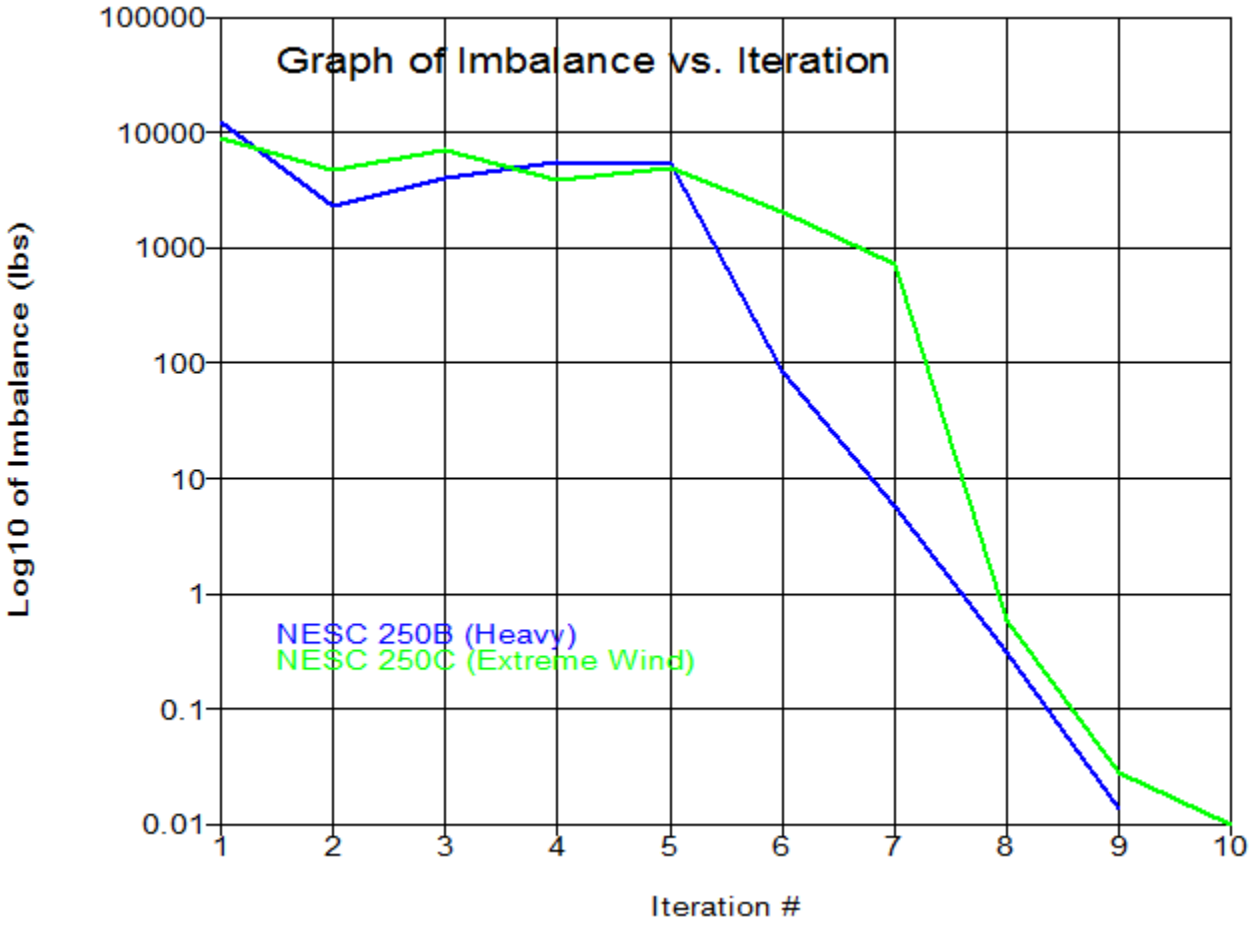
1X	102	160	0	Ladder Loads
5kS	453	715	0	Ladder Loads
5jS	335	528	0	Ladder Loads
5iS	275	434	0	Ladder Loads
5hS	281	443	0	Ladder Loads
5gS	209	330	0	Ladder Loads
5fS	136	214	0	Ladder Loads
5eS	136	214	0	Ladder Loads
5dS	136	214	0	Ladder Loads
5cS	132	208	0	Ladder Loads
5bS	119	188	0	Ladder Loads
5aS	100	157	0	Ladder Loads
5P	146	231	0	Ladder Loads
1dS	203	321	0	Ladder Loads
1bS	203	321	0	Ladder Loads
1P	102	160	0	Ladder Loads

Section Load Case Information (Code) for "NESC 250C (Extreme Wind)":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli-dity Ratio	Tran Angle Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli-dity Ratio	Long Angle Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
SWarm	190.00	184.00	187.00	39.97	39.97	6.53	21.75	0.300	3.200	834.7	0.00	12.13	93.75	0.129	3.200	0.0	0	569
Cage	190.00	154.00	172.00	39.97	39.97	85.28	261.00	0.327	3.200	10907.8	0.00	85.28	261.00	0.327	3.200	0.0	0	7095
TXarm	184.00	178.00	181.00	39.97	39.97	5.94	43.50	0.137	3.200	760.0	0.00	8.96	81.75	0.110	3.200	0.0	0	420
MXarm	172.00	166.00	169.00	39.97	39.97	5.94	43.50	0.137	3.200	760.0	0.00	11.27	93.75	0.120	3.200	0.0	0	509
BXarm	160.00	154.00	157.00	39.97	39.97	5.94	43.50	0.137	3.200	760.0	0.00	8.96	81.75	0.110	3.200	0.0	0	420
Std Body	154.00	0.00	77.00	39.97	39.97	371.87	3253.25	0.114	3.200	47565.7	0.00	371.87	3253.25	0.114	3.200	0.0	0	49123

*** Analysis Results:

Maximum element usage is 96.91% for Angle "54P" in load case "NESC 250C (Extreme Wind)"
Maximum insulator usage is 32.28% for Suspension "31" in load case "NESC 250B (Heavy)"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
1	1P	4.12	0.000	-5.308	-5.308	-4.907
1	1X	2.13	3.065	0.000	1.617	3.065
1	1XY	2.09	3.013	0.000	2.550	3.013
1	1Y	3.05	0.000	-3.928	-3.915	-3.928
1	2P	15.36	0.000	-19.767	-19.767	-14.766
1	2X	5.34	7.684	-0.320	-0.320	7.684
1	2XY	5.52	7.935	0.000	0.582	7.935
1	2Y	14.65	0.000	-18.850	-18.850	-14.046
1	3P	26.26	0.000	-33.797	-33.797	-26.104
1	3X	17.76	19.574	0.000	7.886	19.574
1	3XY	15.74	17.348	0.000	10.119	17.348

1	3Y	24.02	0.000	-30.917	-30.917	-27.472
2	4P	34.54	0.000	-56.362	-56.362	-42.839
2	4X	22.20	36.228	0.000	17.011	36.228
2	4XY	18.05	29.464	0.000	19.469	29.464
2	4Y	32.80	0.000	-53.523	-53.523	-48.989
2	5P	32.40	0.000	-77.958	-77.958	-60.778
2	5X	24.60	62.905	0.000	38.772	62.905
2	5XY	18.96	48.479	0.000	41.733	48.479
2	5Y	30.81	0.000	-74.144	-74.102	-74.144
2	6P	44.23	0.000	-106.441	-106.441	-81.574
2	6X	45.60	88.925	0.000	55.592	88.925
2	6XY	33.82	65.951	0.000	58.954	65.951
2	6Y	43.50	0.000	-104.678	-102.953	-104.678
3	7P	43.70	0.000	-131.786	-131.786	-102.151
3	7X	42.97	114.132	0.000	74.387	114.132
3	7XY	31.32	83.184	0.000	79.312	83.184
3	7Y	45.44	0.000	-137.040	-128.789	-137.040
3	8P	46.40	0.000	-149.713	-149.713	-116.242
3	8X	38.72	134.547	0.000	89.209	134.547
3	8XY	28.29	98.298	0.000	96.153	98.298
3	8Y	50.53	0.000	-163.055	-148.709	-163.055
3	9P	51.97	0.000	-163.051	-163.051	-128.548
3	9X	57.32	152.243	0.000	101.709	152.243
3	9XY	42.07	111.724	0.000	110.407	111.724
3	9Y	58.89	0.000	-184.765	-163.856	-184.765
4	10P	52.46	0.000	-176.630	-176.630	-142.181
4	10X	58.90	169.724	0.000	112.828	169.724
4	10XY	43.20	124.491	0.000	122.991	124.491
4	10Y	61.22	0.000	-206.140	-178.715	-206.140
4	11P	55.56	0.000	-187.078	-187.078	-153.693
4	11X	64.26	185.183	0.000	121.817	185.183
4	11XY	47.08	135.670	0.000	132.979	135.670
4	11Y	66.25	0.000	-223.056	-190.091	-223.056
5	12P	54.42	0.000	-197.334	-197.334	-166.514
5	12X	63.78	197.982	0.000	128.586	197.982
5	12XY	46.54	144.476	0.000	140.650	144.476
5	12Y	66.05	0.000	-239.502	-200.717	-239.502
5	13P	56.31	0.000	-204.180	-204.180	-175.239
5	13X	67.95	211.294	0.000	135.069	211.294
5	13XY	49.49	153.898	0.000	147.465	153.898
5	13Y	69.18	0.000	-250.851	-208.072	-250.851
6	14P	58.03	0.000	-223.240	-223.240	-204.129
6	14X	63.69	212.047	0.000	132.894	212.047
6	14XY	45.43	151.260	0.000	144.768	151.260
6	14Y	72.37	0.000	-278.407	-222.871	-278.407
7	15P	57.65	0.000	-237.231	-237.231	-220.767
7	15X	66.32	235.399	0.000	145.083	235.399
7	15XY	46.90	166.445	0.000	152.435	166.445
7	15Y	71.64	0.000	-294.797	-232.198	-294.797
8	16P	60.00	0.000	-248.863	-248.863	-235.523
8	16X	71.83	254.947	0.000	154.029	254.947
8	16XY	50.28	178.472	0.000	157.750	178.472
8	16Y	74.30	0.000	-308.150	-240.202	-308.150
9	17P	59.48	0.000	-263.163	-263.163	-255.914
9	17X	71.20	268.565	0.000	157.981	268.565
9	17XY	49.00	184.840	0.000	158.735	184.840
9	17Y	73.25	0.000	-324.104	-250.005	-324.104
10	18P	62.65	0.000	-279.876	-278.984	-279.876
10	18X	76.37	288.076	0.000	163.790	288.076
10	18XY	51.30	193.482	0.000	160.639	193.482
10	18Y	76.65	0.000	-342.408	-260.695	-342.408
10	19P	62.86	0.000	-280.817	-280.492	-280.817
10	19X	76.58	287.339	0.000	162.187	287.339
10	19XY	51.36	192.726	0.000	159.061	192.726
10	19Y	76.86	0.000	-343.373	-262.361	-343.373
11	20P	27.06	6.760	0.000	6.201	6.760
11	20X	36.63	0.000	-5.869	-4.327	-5.869
11	20XY	30.74	0.000	-4.925	-4.014	-4.925
11	20Y	24.67	6.163	0.000	6.163	5.565
11	21P	4.45	0.000	-0.505	-0.505	-0.076
11	21X	9.48	0.000	-1.076	-1.076	-0.766
11	21XY	5.95	0.000	-0.675	-0.675	-0.010
11	21Y	3.45	0.000	-0.392	-0.392	-0.165
11	22P	29.23	7.303	0.000	4.625	7.303
11	22X	44.07	0.000	-7.059	-6.440	-7.059
11	22XY	39.80	0.000	-6.376	-6.230	-6.376
11	22Y	21.95	5.484	0.000	4.400	5.484
11	23P	1.39	0.348	0.000	0.179	0.348
11	23X	15.88	0.000	-1.801	-1.571	-1.801
11	23XY	10.83	0.000	-1.229	-1.229	-0.462
11	23Y	3.62	0.905	0.000	0.247	0.905

12	24P	43.91	14.230	0.000	13.240	14.230
12	24X	48.33	0.000	-13.017	-11.702	-13.017
12	24XY	44.10	0.000	-11.878	-11.148	-11.878
12	24Y	40.05	12.982	0.000	12.982	11.710
12	25P	1.68	0.544	-0.005	0.544	-0.005
12	25X	25.21	0.000	-4.932	-3.176	-4.932
12	25XY	14.52	0.480	-2.842	-2.842	0.480
12	25Y	8.13	2.635	0.000	0.128	2.635
12	26P	45.12	14.624	0.000	13.290	14.624
12	26X	49.12	0.000	-13.231	-12.013	-13.231
12	26XY	48.53	0.000	-13.070	-11.702	-13.070
12	26Y	40.53	13.134	0.000	13.134	12.527
12	27P	2.16	0.701	-0.436	0.701	-0.436
12	27X	17.23	0.000	-4.640	-2.625	-4.640
12	27XY	12.21	1.001	-2.389	-2.389	1.001
12	27Y	9.25	2.997	0.000	0.311	2.997
13	28P	48.69	21.786	0.000	19.783	21.786
13	28X	49.91	0.000	-20.544	-19.750	-20.544
13	28XY	47.59	0.000	-19.589	-19.180	-19.589
13	28Y	43.60	19.507	0.000	19.507	18.545
13	29P	10.09	0.000	-4.154	-1.992	-4.154
13	29X	17.85	0.000	-7.347	-3.392	-7.347
13	29XY	8.61	2.373	-2.903	-2.903	2.373
13	29Y	7.83	1.648	-2.642	-2.642	1.648
13	30P	49.73	22.252	0.000	19.562	22.252
13	30X	49.38	0.000	-20.324	-20.002	-20.324
13	30XY	50.94	0.000	-20.968	-19.552	-20.968
13	30Y	43.65	19.531	0.000	19.531	18.805
13	31P	3.38	0.257	-1.390	0.257	-1.390
13	31X	33.21	0.000	-11.204	-7.755	-11.204
13	31XY	21.77	0.000	-7.342	-7.342	-1.459
13	31Y	11.23	5.026	-0.392	-0.392	5.026
14	32P	42.60	15.060	0.000	12.111	15.060
14	32X	45.97	0.000	-15.084	-15.084	-14.928
14	32XY	47.45	0.000	-15.568	-15.517	-15.568
14	32Y	38.17	13.496	0.000	12.648	13.496
14	33P	8.75	3.093	0.000	3.093	0.648
14	33X	22.73	0.000	-7.459	-2.816	-7.459
14	33XY	9.41	3.326	-1.001	-1.001	3.326
14	33Y	11.68	4.130	0.000	1.927	4.130
14	34P	41.93	14.824	0.000	12.793	14.824
14	34X	54.67	0.000	-14.827	-12.147	-14.827
14	34XY	50.78	0.000	-13.771	-12.600	-13.771
14	34Y	40.51	14.320	0.000	13.164	14.320
14	35P	9.19	0.000	-2.494	-0.395	-2.494
14	35X	15.17	0.000	-4.113	-0.082	-4.113
14	35XY	16.39	5.795	0.000	1.675	5.795
14	35Y	5.53	0.618	-1.463	-1.463	0.618
15	36P	40.07	14.475	0.000	10.874	14.475
15	36X	52.93	0.000	-14.456	-11.519	-14.456
15	36XY	49.61	0.000	-13.551	-11.774	-13.551
15	36Y	35.94	12.982	0.000	11.139	12.982
15	37P	4.09	0.724	-1.117	0.724	-1.117
15	37X	17.65	0.000	-4.822	-1.262	-4.822
15	37XY	10.66	3.850	0.000	0.346	3.850
15	37Y	4.63	1.671	-0.196	-0.196	1.671
15	38P	38.80	14.014	0.000	9.798	14.014
15	38X	56.79	0.000	-13.579	-9.839	-13.579
15	38XY	50.63	0.000	-12.106	-10.018	-12.106
15	38Y	34.15	12.334	0.000	9.864	12.334
15	39P	5.90	0.205	-1.411	0.205	-1.411
15	39X	14.21	0.000	-3.399	-0.496	-3.399
15	39XY	11.03	3.984	0.000	0.948	3.984
15	39Y	2.80	1.011	-0.571	-0.571	1.011
15	40P	35.51	12.827	0.000	8.204	12.827
15	40X	63.92	0.000	-13.687	-9.173	-13.687
15	40XY	55.73	0.000	-11.933	-9.102	-11.933
15	40Y	29.82	10.771	0.000	8.264	10.771
15	41P	4.71	0.388	-1.009	0.388	-1.009
15	41X	17.35	0.000	-3.715	-1.075	-3.715
15	41XY	7.24	2.614	0.000	0.256	2.614
15	41Y	3.07	1.109	-0.260	-0.260	1.109
15	42P	38.53	13.917	0.000	8.244	13.917
15	42X	62.27	0.000	-11.781	-7.289	-11.781
15	42XY	51.70	0.000	-9.781	-7.402	-9.781
15	42Y	31.88	11.517	0.000	7.980	11.517
15	43P	5.72	0.084	-1.083	0.084	-1.083
15	43X	9.75	0.000	-1.844	-0.063	-1.844
15	43XY	9.67	3.492	0.000	1.071	3.492
15	43Y	2.61	0.808	-0.482	-0.482	0.808
15	44P	32.24	11.644	0.000	6.329	11.644

15	44X	89.51	0.000	-14.894	-8.719	-14.894
15	44XY	74.40	0.000	-12.379	-8.176	-12.379
15	44Y	25.23	9.113	0.000	6.298	9.113
15	45P	5.01	0.381	-0.833	0.381	-0.833
15	45X	24.31	0.000	-4.044	-1.622	-4.044
15	45XY	3.78	1.367	-0.115	-0.115	1.367
15	45Y	2.48	0.895	-0.067	-0.067	0.895
16	46P	89.42	31.512	0.000	18.224	31.512
16	46X	0.00	0.000	0.000	0.000	0.000
16	46XY	0.00	0.000	0.000	0.000	0.000
16	46Y	66.42	23.408	0.000	13.552	23.408
16	47P	16.65	5.869	0.000	4.850	5.869
16	47X	0.00	0.000	0.000	0.000	0.000
16	47XY	13.52	4.765	-0.570	-0.570	4.765
16	47Y	23.50	8.280	0.000	6.309	8.280
17	48P	96.61	29.741	0.000	16.049	29.741
17	48X	0.00	0.000	0.000	0.000	0.000
17	48XY	0.00	0.000	0.000	0.000	0.000
17	48Y	67.75	20.857	0.000	11.728	20.857
17	49P	14.03	4.320	0.000	3.306	4.320
17	49X	0.00	0.000	0.000	0.000	0.000
17	49XY	13.53	4.165	-0.068	-0.068	4.165
17	49Y	20.68	6.368	0.000	4.537	6.368
17	50P	92.72	28.546	0.000	14.229	28.546
17	50X	0.00	0.000	0.000	0.000	0.000
17	50XY	0.00	0.000	0.000	0.000	0.000
17	50Y	61.56	18.953	0.000	10.312	18.953
17	51P	10.37	3.192	0.000	2.389	3.192
17	51X	0.00	0.000	0.000	0.000	0.000
17	51XY	11.05	3.401	0.000	0.217	3.401
17	51Y	16.21	4.990	0.000	3.445	4.990
MOD17	52P	90.15	31.768	0.000	15.304	31.768
MOD17	52X	0.00	0.000	0.000	0.000	0.000
MOD17	52XY	0.00	0.000	0.000	0.000	0.000
MOD17	52Y	55.92	19.707	0.000	10.827	19.707
MOD17	53P	17.17	6.050	0.000	4.316	6.050
MOD17	53X	0.00	0.000	0.000	0.000	0.000
MOD17	53XY	9.59	3.379	0.000	0.179	3.379
MOD17	53Y	22.50	7.928	0.000	5.385	7.928
18	54P	96.91	34.152	0.000	15.246	34.152
18	54X	25.89	0.000	-2.118	0.000	-2.118
18	54XY	5.85	0.000	-0.478	0.000	-0.478
18	54Y	59.01	20.797	0.000	10.381	20.797
18	55P	26.16	9.219	0.000	5.905	9.219
18	55X	5.85	0.000	-0.478	-0.478	0.000
18	55XY	10.28	3.623	0.000	0.606	3.623
18	55Y	30.35	10.696	0.000	7.216	10.696
18	56P	0.00	0.000	0.000	0.000	0.000
18	56X	96.18	33.893	0.000	15.611	33.893
18	56XY	59.74	21.053	0.000	10.340	21.053
18	56Y	0.00	0.000	0.000	0.000	0.000
18	57P	31.56	11.122	0.000	7.293	11.122
18	57X	11.51	2.645	-0.805	-0.805	2.645
18	57XY	0.00	0.000	0.000	0.000	0.000
18	57Y	26.86	9.467	0.000	6.085	9.467
19	58P	8.36	0.000	-1.168	-0.030	-1.168
19	58X	5.13	1.282	0.000	0.563	1.282
19	59P	1.08	0.000	-0.108	-0.108	-0.074
19	59X	0.44	0.096	-0.044	-0.044	0.096
19	60P	4.10	0.000	-0.411	-0.411	-0.306
19	60X	1.76	0.378	-0.177	-0.177	0.378
19	61P	11.11	0.000	-1.374	-1.113	-1.374
19	61X	4.76	1.189	0.000	0.139	1.189
20	62P	71.10	0.000	-2.564	-2.564	0.000
20	62X	9.00	0.564	-0.325	-0.325	0.564
21	63P	0.00	0.000	0.000	0.000	0.000
21	63X	16.00	0.265	-0.311	0.265	-0.311
22	64P	3.76	3.174	0.000	3.174	0.428
22	64Y	3.38	2.857	0.000	2.857	0.718
22	65P	20.45	8.343	0.000	8.343	3.266
22	65X	2.18	0.758	-0.890	0.758	-0.890
22	65XY	5.47	0.577	-2.231	0.577	-2.231
22	65Y	21.05	8.590	0.000	8.590	3.738
22	66P	10.85	0.188	-5.560	-5.560	0.188
22	66Y	12.13	0.000	-6.218	-6.218	-3.709
22	67P	13.72	5.596	-1.332	-1.332	5.596
22	67X	33.48	0.000	-13.661	-13.661	-5.376
22	67XY	33.07	0.000	-13.493	-13.493	-9.621
22	67Y	3.77	0.000	-1.538	-1.538	-0.224
22	68P	13.00	5.304	-3.549	-3.549	5.304
22	68X	37.33	0.000	-15.232	-15.232	-4.992

22	68XY	36.94	0.000	-15.070	-15.070	-10.697
22	68Y	9.03	0.000	-3.685	-3.685	-1.655
22	69P	15.99	0.000	-8.198	-8.198	-4.595
22	69Y	15.47	0.000	-7.933	-7.933	-0.350
22	70P	14.02	5.722	-1.330	-1.330	5.722
22	70X	33.51	0.000	-13.673	-13.673	-5.171
22	70XY	33.33	0.000	-13.601	-13.601	-9.941
22	70Y	3.65	0.000	-1.489	-1.489	-0.269
22	71P	12.55	0.132	-6.436	-6.436	0.132
22	71Y	12.49	0.000	-6.403	-6.403	-4.340
23	72P	6.82	0.000	-2.871	-2.871	-0.645
23	72X	0.87	0.087	-0.366	-0.366	0.087
23	73P	7.73	4.204	0.000	4.204	1.212
23	73X	11.31	6.151	0.000	6.151	2.187
23	74P	11.42	6.211	0.000	6.211	3.000
23	74X	11.49	6.251	0.000	6.251	1.962
23	75P	8.51	0.000	-3.582	-1.627	-3.582
23	75X	17.01	9.254	0.000	9.254	6.691
24	76P	15.64	1.979	0.000	1.979	1.157
24	76Y	15.31	1.937	0.000	1.937	0.805
24	77P	2.71	0.342	-0.111	-0.111	0.342
24	77X	27.95	0.000	-1.561	-1.561	-1.112
24	78P	52.65	6.663	0.000	6.663	2.041
24	78Y	51.59	6.529	0.000	6.529	2.291
24	79P	13.98	1.769	0.000	0.545	1.769
24	79X	65.66	0.000	-3.667	-3.667	-2.697
24	80P	42.26	5.349	0.000	5.349	0.921
24	80Y	40.85	5.170	0.000	5.170	2.498
24	81P	38.17	4.831	0.000	3.960	4.831
24	81X	0.00	0.000	0.000	0.000	0.000
25	82P	54.24	0.000	-10.522	-5.273	-10.522
25	82Y	39.99	0.000	-7.757	-3.793	-7.757
25	83P	30.48	0.000	-5.912	-3.723	-5.912
25	83X	4.81	1.964	-0.748	1.964	-0.748
MOD26	84P	33.19	0.000	-22.862	-13.485	-22.862
MOD26	84Y	24.60	0.000	-16.941	-10.147	-16.941
MOD26	85P	13.56	0.000	-9.341	-7.237	-9.341
MOD26	85X	5.12	0.000	-3.529	-0.078	-3.529
27	86P	54.03	0.000	-23.067	-12.671	-23.067
27	86Y	37.81	0.000	-16.142	-9.429	-16.142
27	87P	17.78	0.000	-7.590	-5.637	-7.590
27	87X	7.27	0.000	-3.102	-0.320	-3.102
27	88P	66.23	0.000	-23.850	-12.526	-23.850
27	88Y	43.78	0.000	-15.764	-9.214	-15.764
27	89P	25.03	0.000	-9.014	-6.504	-9.014
27	89X	7.83	0.000	-2.819	-0.475	-2.819
28	90P	36.67	0.000	-22.828	-11.831	-22.828
28	90Y	23.94	0.000	-14.902	-8.559	-14.902
28	91P	19.97	0.000	-12.433	-8.743	-12.433
28	91X	4.16	0.000	-2.592	-0.581	-2.592
29	92P	0.69	0.000	-0.275	-0.246	-0.275
29	92X	3.44	0.232	-1.377	-1.377	0.232
29	92XY	2.35	0.000	-0.939	-0.939	-0.172
29	92Y	0.96	0.088	-0.383	-0.383	0.088
29	93P	0.82	0.000	-0.326	-0.238	-0.326
29	93X	0.98	0.536	0.000	0.536	0.227
29	93XY	2.09	0.000	-0.835	-0.835	-0.308
29	93Y	0.60	0.000	-0.241	-0.241	-0.109
30	94P	52.99	0.000	-5.611	-5.611	-1.788
30	94X	50.86	0.000	-5.386	-5.386	-0.736
30	94XY	53.31	0.000	-5.645	-5.645	-1.614
30	94Y	50.64	0.000	-5.362	-5.362	-0.513
31	95P	39.36	9.835	0.000	9.835	3.093
31	95X	38.38	9.589	0.000	9.589	2.073
31	95XY	39.02	9.749	0.000	9.749	4.154
31	95Y	38.05	9.506	0.000	9.506	3.118
31	96P	45.25	11.307	0.000	11.307	3.406
31	96X	44.65	11.156	0.000	11.156	2.668
31	96XY	45.18	11.289	0.000	11.289	4.566
31	96Y	44.31	11.070	0.000	11.070	3.770
31	97P	37.94	9.479	0.000	9.479	2.943
31	97X	39.09	9.767	0.000	9.767	3.891
31	97XY	38.87	9.713	0.000	9.713	2.470
31	97Y	39.06	9.758	0.000	9.758	3.161

*** Analysis Results for Load Case No. 1 "NESC 250B (Heavy)" - Number of iterations in SAPS 9

Equilibrium Joint Positions and Rotations for Load Case "NESC 250B (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	0.005677	0.855	-0.05513	-0.5152	0.0195	0.0987	3.631	4.48	189.9
2P	-0.008828	0.8495	-0.1335	-0.5589	0.0225	0.1006	-0.008828	12.85	189.9
3P	-0.00966	0.7391	-0.116	-0.5976	0.0216	0.1001	-0.00966	10.74	177.9
4P	-0.01707	0.6308	-0.1342	-0.6216	0.0197	0.0993	-0.01707	12.63	165.9
5P	-0.006733	0.538	-0.0445	-0.4427	0.0081	0.1024	3.618	4.163	154
6P	-0.01744	0.5314	-0.1033	-0.5734	0.0174	0.1004	-0.01744	10.53	153.9
0P	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
1X	0.0184	0.8551	0.008378	-0.5148	0.0270	0.0981	3.643	-2.77	190
1XY	0.01845	0.8423	0.01127	-0.5141	0.0182	0.1003	-3.607	-2.783	190
1Y	0.005988	0.8423	-0.05219	-0.5147	0.0252	0.0996	-3.619	4.467	189.9
2X	0.03313	0.8489	0.08335	-0.4964	0.0219	0.1011	0.03313	-11.15	190.1
3X	0.02495	0.7425	0.06031	-0.4180	0.0213	0.0994	0.02495	-9.257	178.1
4X	0.02378	0.6354	0.07178	-0.3872	0.0203	0.0991	0.02378	-11.36	166.1
5X	0.005791	0.5388	0.006365	-0.4322	0.0162	0.0569	3.631	-3.086	154
5XY	0.004837	0.5265	0.008826	-0.4335	0.0247	0.1220	-3.62	-3.098	154
5Y	-0.006553	0.5257	-0.04209	-0.4444	0.0279	0.0770	-3.632	4.151	154
6X	0.01609	0.5346	0.05177	-0.3815	0.0194	0.1004	0.01609	-9.465	154.1
0X	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
0XY	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0
0Y	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
1aS	0.003585	0.8007	-0.05463	-0.5238	0.0205	0.1003	3.629	4.426	183.9
1bS	0.001631	0.746	-0.05344	-0.5127	0.0185	0.1020	3.627	4.371	177.9
1cS	-0.0006357	0.6926	-0.0516	-0.5259	0.0213	0.1026	3.624	4.318	171.9
1dS	-0.002454	0.6381	-0.04985	-0.4995	0.0140	0.1029	3.623	4.263	166
1eS	-0.004137	0.5877	-0.04755	-0.4816	0.0263	0.1025	3.621	4.213	160
5aS	-0.007622	0.5004	-0.04553	-0.4028	0.0029	0.1000	4.09	4.598	148.7
5bS	-0.01022	0.4564	-0.04634	-0.3798	0.0151	0.0963	4.673	5.14	142.2
5cS	-0.01315	0.4098	-0.04655	-0.3378	0.0118	0.0918	5.353	5.776	134.6
5dS	-0.01656	0.3657	-0.04638	-0.3068	0.0177	0.0873	6.071	6.453	126.6
5eS	-0.02031	0.3259	-0.04562	-0.2686	0.0122	0.0825	6.788	7.134	118.6
5fS	-0.02329	0.2914	-0.04444	-0.2425	0.0202	0.0782	7.506	7.82	110.6
5gS	-0.02791	0.2582	-0.04314	-0.2419	0.0145	0.0705	8.222	8.508	102.6
5hS	-0.02686	0.1904	-0.03916	-0.2196	-0.0202	0.0553	9.725	9.942	85.96
5iS	-0.02491	0.1335	-0.0343	-0.1824	-0.0101	0.0462	11.21	11.37	69.47
5jS	-0.02244	0.088	-0.02824	-0.1396	-0.0278	0.0355	12.66	12.77	53.47
5kS	-0.01429	0.03875	-0.01744	-0.1205	0.0058	0.0223	14.78	14.84	29.98
5lS	-0.01568	0.00933	-0.01041	-0.0769	-0.0487	0.0100	16.13	16.16	14.99
5lTS	-0.009125	0.009376	0.001339	-0.0015	-0.0284	0.0535	16.14	0.009376	15
5lLS	-0.01577	0.003233	-0.0188	-0.0682	0.0307	-0.0037	-0.01577	16.15	14.98
1aX	0.01593	0.8004	0.008551	-0.5175	0.0187	0.0935	3.641	-2.825	184
1aXY	0.01642	0.7878	0.0114	-0.5161	0.0260	0.1034	-3.609	-2.837	184
1aY	0.003631	0.7881	-0.05176	-0.5230	0.0236	0.0966	-3.621	4.413	183.9
1bX	0.01426	0.7468	0.008805	-0.5148	0.0259	0.0888	3.639	-2.878	178
1bXY	0.01363	0.7344	0.01161	-0.5139	0.0192	0.1065	-3.611	-2.891	178
1bY	0.001204	0.7335	-0.05062	-0.5118	0.0251	0.0937	-3.624	4.358	177.9
1cX	0.01112	0.6908	0.008693	-0.5057	0.0114	0.0791	3.636	-2.934	172
1cXY	0.01227	0.6785	0.01139	-0.5050	0.0326	0.1109	-3.613	-2.947	172
1cY	-0.0007929	0.6802	-0.04891	-0.5249	0.0206	0.0877	-3.626	4.305	172
1dX	0.009836	0.6391	0.008462	-0.4955	0.0326	0.0758	3.635	-2.986	166
1dXY	0.009195	0.6268	0.01109	-0.4950	0.0104	0.1125	-3.616	-2.998	166
1dY	-0.00309	0.6257	-0.04724	-0.4992	0.0264	0.0857	-3.628	4.251	166
1eX	0.005616	0.5862	0.007662	-0.4862	0.0190	0.0664	3.631	-3.039	160
1eXY	0.009153	0.574	0.01021	-0.4854	0.0231	0.1173	-3.616	-3.051	160
1eY	-0.005349	0.5754	-0.04505	-0.4806	0.0130	0.0815	-3.63	4.2	160
5aX	0.003401	0.4999	0.008496	-0.4129	0.0316	0.0501	4.101	-3.598	148.8
5aXY	0.005159	0.486	0.01122	-0.4157	0.0078	0.1217	-4.093	-3.612	148.8
5aY	-0.01012	0.4864	-0.04292	-0.4065	0.0313	0.0723	-4.108	4.584	148.7
5bX	0.002196	0.4561	0.01055	-0.3705	0.0139	0.0469	4.686	-4.228	142.3
5bXY	0.003973	0.4402	0.01354	-0.3733	0.0224	0.1160	-4.68	-4.243	142.3
5bY	-0.01295	0.4404	-0.04343	-0.3822	0.0196	0.0672	-4.697	5.124	142.2
5cX	0.0007638	0.4095	0.0122	-0.3376	0.0169	0.0393	5.367	-4.957	134.7
5cXY	0.002893	0.3914	0.01541	-0.3392	0.0159	0.1131	-5.364	-4.975	134.7
5cY	-0.01632	0.3916	-0.04323	-0.3401	0.0235	0.0614	-5.383	5.758	134.6
5dX	-0.0003672	0.3653	0.01344	-0.2975	0.0118	0.0334	6.087	-5.722	126.7
5dXY	0.001709	0.3451	0.0168	-0.2992	0.0175	0.1088	-6.086	-5.742	126.7
5dY	-0.0196	0.3454	-0.04259	-0.3072	0.0190	0.0558	-6.107	6.433	126.6
5eX	-0.001204	0.3261	0.01401	-0.2717	0.0112	0.0258	6.807	-6.482	118.7
5eXY	0.0005615	0.304	0.01745	-0.2705	0.0144	0.1060	-6.808	-6.504	118.7
5eY	-0.0226	0.3038	-0.04129	-0.2695	0.0244	0.0507	-6.831	7.112	118.6
5fX	-0.002089	0.2901	0.01433	-0.2326	0.0091	0.0202	7.527	-7.239	110.7
5fXY	-0.0002329	0.2666	0.01778	-0.2337	0.0141	0.1023	-7.529	-7.262	110.7
5fY	-0.02647	0.2675	-0.03957	-0.2421	0.0231	0.0460	-7.555	7.796	110.6

5gX	-0.002489	0.2601	0.01399	-0.2159	0.0050	0.0127	8.247	-7.99	102.7
5gXY	-0.001216	0.2349	0.01745	-0.2116	0.0126	0.1000	-8.251	-8.015	102.7
5gY	-0.02855	0.2335	-0.03766	-0.2322	0.0049	0.0415	-8.278	8.483	102.6
5hX	-0.002691	0.1929	0.01429	-0.2183	0.0014	-0.0055	9.749	-9.559	86.01
5hXY	-0.001424	0.17	0.01704	-0.1966	0.0062	0.0983	-9.753	-9.582	86.02
5hY	-0.02683	0.1682	-0.03373	-0.1993	-0.0098	0.0332	-9.778	9.92	85.97
5iX	-0.002509	0.1365	0.01354	-0.1750	-0.0006	-0.0185	11.24	-11.1	69.51
5iXY	-0.001208	0.1172	0.01562	-0.1541	0.0057	0.0937	-11.24	-11.12	69.52
5iY	-0.02483	0.115	-0.02911	-0.1610	-0.0035	0.0265	-11.26	11.35	69.47
5jX	-0.002344	0.09128	0.01157	-0.1329	-0.0006	-0.0313	12.68	-12.59	53.51
5jXY	-0.0006563	0.07594	0.01308	-0.1174	0.0033	0.0898	-12.68	-12.6	53.51
5jY	-0.02231	0.07352	-0.02348	-0.1239	-0.0199	0.0181	-12.7	12.75	53.48
5kX	-0.002062	0.04187	0.007428	-0.1234	-0.0073	-0.0528	14.8	-14.76	30.01
5kXY	0.000239	0.03251	0.008233	-0.0859	0.0073	0.0854	-14.8	-14.76	30.01
5kY	-0.01413	0.03025	-0.01435	-0.0858	0.0118	0.0124	-14.81	14.83	29.99
5lX	-0.000572	0.009606	0.004764	-0.0785	-0.0081	-0.0633	16.15	-16.14	15
5lXY	-0.0002976	0.009774	0.004717	-0.0596	0.0052	0.0825	-16.15	-16.14	15
5lY	-0.01563	0.00955	-0.006936	-0.0594	-0.0373	0.0024	-16.16	16.16	14.99
5lTY	-0.007564	0.009616	-0.001862	-0.0012	-0.0161	0.0196	-16.16	0.009616	15
5lLX	-0.0004347	0.06566	-0.0004448	-0.0687	0.0006	-0.0052	-0.0004347	-16.08	15

Joint Support Reactions for Load Case "NESC 250B (Heavy)":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
0P	-25.35	0.0	-24.87	0.0	0.0	-279.62	0.0	0.0	281.87	0.0	0.86	0.0	5.8	0.0	0.0	0.26	0.0	0.0
0X	20.93	0.0	-26.99	0.0	0.0	174.96	0.0	0.0	178.26	0.0	0.75	0.0	0.0	0.0	0.0	0.98	0.0	0.0
0XY	-19.39	0.0	-22.80	0.0	0.0	167.64	0.0	0.0	170.29	0.0	1.51	0.0	0.2	0.0	0.0	-1.39	0.0	0.0
0Y	23.81	0.0	-23.35	0.0	0.0	-261.04	0.0	0.0	263.16	0.0	1.71	0.0	5.5	0.0	0.0	0.33	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC 250B (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	0.0120	0.3460	-1.9452	-0.0120	-0.3460	1.9452	0.0057	0.8550	-0.0551
2P	0.0000	7.0730	-6.1453	-0.0000	-7.0730	6.1453	-0.0088	0.8495	-0.1335
3P	0.0000	10.4020	-12.4965	-0.0000	-10.4020	12.4965	-0.0097	0.7391	-0.1160
4P	0.0000	10.4020	-12.5299	-0.0000	-10.4020	12.5299	-0.0171	0.6308	-0.1342
5P	0.0000	0.1910	-1.4277	0.0000	-0.1910	1.4277	-0.0067	0.5380	-0.0445
6P	0.0000	10.4020	-12.4965	-0.0000	-10.4020	12.4965	-0.0174	0.5314	-0.1033
0P	0.0000	0.0000	-0.8042	25.3465	24.8672	-278.8178	0.0000	0.0000	0.0000
1X	-0.4350	1.2859	-1.5332	0.4350	-1.2859	1.5332	0.0184	0.8551	0.0084
1XY	0.0000	0.1519	-0.3182	-0.0000	-0.1519	0.3182	0.0185	0.8423	0.0113
1Y	0.0000	0.0000	-0.3182	-0.0000	0.0000	0.3182	0.0060	0.8423	-0.0522
2X	0.0000	7.1774	-6.1453	-0.0000	-7.1774	6.1453	0.0331	0.8489	0.0833
3X	0.0000	10.4971	-12.4965	-0.0000	-10.4971	12.4965	0.0249	0.7425	0.0603
4X	0.0000	10.4971	-12.5299	-0.0000	-10.4971	12.5299	0.0238	0.6354	0.0718
5X	0.0000	0.3247	-0.8537	0.0000	-0.3247	0.8537	0.0058	0.5388	0.0064
5XY	0.0000	0.2677	-0.6347	0.0000	-0.2677	0.6347	0.0048	0.5265	0.0088
5Y	0.0000	0.0000	-0.6347	0.0000	0.0000	0.6347	-0.0066	0.5257	-0.0421
6X	0.0000	10.4971	-12.4965	-0.0000	-10.4971	12.4965	0.0161	0.5346	0.0518
0X	0.0000	0.2375	-0.8042	-20.9279	26.7555	175.7661	0.0000	0.0000	0.0000
0XY	0.0000	0.2375	-0.8042	19.3906	22.5581	168.4445	0.0000	0.0000	0.0000
0Y	0.0000	0.0000	-0.8042	-23.8101	23.3548	-260.2330	0.0000	0.0000	0.0000
1aS	0.0000	0.0000	-0.3553	-0.0000	0.0000	0.3553	0.0036	0.8007	-0.0546
1bS	0.1540	0.5530	-2.5424	-0.1540	-0.5530	2.5424	0.0016	0.7460	-0.0534
1cS	0.0000	0.0000	-0.3985	-0.0000	0.0000	0.3985	-0.0006	0.6926	-0.0516
1dS	0.0000	0.2660	-1.7092	0.0000	-0.2660	1.7092	-0.0025	0.6381	-0.0498
1eS	0.0000	0.0000	-0.4980	0.0000	0.0000	0.4980	-0.0041	0.5877	-0.0476
5aS	0.0000	0.1300	-1.0627	-0.0000	-0.1300	1.0627	-0.0076	0.5004	-0.0455
5bS	0.0000	0.1560	-1.2624	0.0000	-0.1560	1.2624	-0.0102	0.4564	-0.0463
5cS	0.0000	0.1730	-1.4178	-0.0000	-0.1730	1.4178	-0.0132	0.4098	-0.0465
5dS	0.0000	0.1770	-1.4914	-0.0000	-0.1770	1.4914	-0.0166	0.3657	-0.0464
5eS	0.0000	0.1770	-1.5333	-0.0000	-0.1770	1.5333	-0.0203	0.3259	-0.0456
5fS	0.0000	0.1770	-1.5758	-0.0000	-0.1770	1.5758	-0.0233	0.2914	-0.0444
5gS	0.0000	0.2740	-2.5741	0.0000	-0.2740	2.5741	-0.0279	0.2582	-0.0431
5hS	0.0000	0.3680	-3.5748	-0.0000	-0.3680	3.5748	-0.0269	0.1904	-0.0392
5iS	0.0000	0.3610	-3.5760	-0.0000	-0.3610	3.5760	-0.0249	0.1335	-0.0343
5jS	0.0000	0.4390	-4.3774	0.0000	-0.4390	4.3774	-0.0224	0.0880	-0.0282
5kS	0.0000	0.5940	-5.2712	-0.0000	-0.5940	5.2712	-0.0143	0.0387	-0.0174
5lS	0.0000	0.0000	-1.5384	0.0000	0.0000	1.5384	-0.0157	0.0093	-0.0104
5lTS	0.0000	0.0000	-0.6554	-0.0000	0.0000	0.6554	-0.0091	0.0094	0.0013
5lLS	0.0000	0.0000	-0.6554	-0.0000	0.0000	0.6554	-0.0158	0.0032	-0.0188
1aX	0.0000	0.2343	-0.3553	-0.0000	-0.2343	0.3553	0.0159	0.8004	0.0086
1aXY	0.0000	0.2343	-0.3553	-0.0000	-0.2343	0.3553	0.0164	0.7878	0.0114
1aY	0.0000	0.0000	-0.3553	-0.0000	0.0000	0.3553	0.0036	0.7881	-0.0518

1bX	0.2680	-0.2775	-2.0474	-0.2680	0.2775	2.0474	0.0143	0.7468	0.0088
1bXY	0.0000	0.2375	-0.4454	0.0000	-0.2375	0.4454	0.0136	0.7344	0.0116
1bY	0.0000	0.0000	-0.4454	-0.0000	0.0000	0.4454	0.0012	0.7335	-0.0506
1cX	0.0000	0.2348	-0.3985	-0.0000	-0.2348	0.3985	0.0111	0.6908	0.0087
1cXY	0.0000	0.2348	-0.3985	-0.0000	-0.2348	0.3985	0.0123	0.6785	0.0114
1cY	0.0000	0.0000	-0.3985	-0.0000	0.0000	0.3985	-0.0008	0.6802	-0.0489
1dX	0.0000	0.3558	-0.9112	0.0000	-0.3558	0.9112	0.0098	0.6391	0.0085
1dXY	0.0000	0.2758	-0.6062	-0.0000	-0.2758	0.6062	0.0092	0.6268	0.0111
1dY	0.0000	0.0000	-0.6062	0.0000	0.0000	0.6062	-0.0031	0.6257	-0.0472
1eX	0.0000	0.2508	-0.4980	-0.0000	-0.2508	0.4980	0.0056	0.5862	0.0077
1eXY	0.0000	0.2508	-0.4980	-0.0000	-0.2508	0.4980	0.0092	0.5740	0.0102
1eY	0.0000	0.0000	-0.4980	-0.0000	0.0000	0.4980	-0.0053	0.5754	-0.0450
5aX	0.0000	0.2459	-0.6717	0.0000	-0.2459	0.6717	0.0034	0.4999	0.0085
5aXY	0.0000	0.2069	-0.5227	-0.0000	-0.2069	0.5227	0.0052	0.4860	0.0112
5aY	0.0000	0.0000	-0.5227	0.0000	0.0000	0.5227	-0.0101	0.4864	-0.0429
5bX	0.0000	0.3002	-0.7944	-0.0000	-0.3002	0.7944	0.0022	0.4561	0.0106
5bXY	0.0000	0.2532	-0.6154	0.0000	-0.2532	0.6154	0.0040	0.4402	0.0135
5bY	0.0000	0.0000	-0.6154	-0.0000	0.0000	0.6154	-0.0130	0.4404	-0.0434
5cX	0.0000	0.3428	-0.8998	-0.0000	-0.3428	0.8998	0.0008	0.4095	0.0122
5cXY	0.0000	0.2908	-0.7018	-0.0000	-0.2908	0.7018	0.0029	0.3914	0.0154
5cY	0.0000	0.0000	-0.7018	-0.0000	0.0000	0.7018	-0.0163	0.3916	-0.0432
5dX	0.0000	0.3604	-0.9594	-0.0000	-0.3604	0.9594	-0.0004	0.3653	0.0134
5dXY	0.0000	0.3074	-0.7564	-0.0000	-0.3074	0.7564	0.0017	0.3451	0.0168
5dY	0.0000	0.0000	-0.7564	-0.0000	0.0000	0.7564	-0.0196	0.3454	-0.0426
5eX	0.0000	0.3718	-1.0013	-0.0000	-0.3718	1.0013	-0.0012	0.3261	0.0140
5eXY	0.0000	0.3188	-0.7983	-0.0000	-0.3188	0.7983	0.0006	0.3040	0.0175
5eY	0.0000	0.0000	-0.7983	-0.0000	0.0000	0.7983	-0.0226	0.3038	-0.0413
5fX	0.0000	0.3835	-1.0438	-0.0000	-0.3835	1.0438	-0.0021	0.2901	0.0143
5fXY	0.0000	0.3305	-0.8408	0.0000	-0.3305	0.8408	-0.0002	0.2666	0.0178
5fY	0.0000	0.0000	-0.8408	-0.0000	0.0000	0.8408	-0.0265	0.2675	-0.0396
5gX	0.0000	0.5875	-1.7541	0.0000	-0.5875	1.7541	-0.0025	0.2601	0.0140
5gXY	0.0000	0.5055	-1.4411	0.0000	-0.5055	1.4411	-0.0012	0.2349	0.0174
5gY	0.0000	0.0000	-1.4411	0.0000	0.0000	1.4411	-0.0286	0.2335	-0.0377
5hX	0.0000	0.7400	-2.4728	-0.0000	-0.7400	2.4728	-0.0027	0.1929	0.0143
5hXY	0.0000	0.6300	-2.0518	-0.0000	-0.6300	2.0518	-0.0014	0.1700	0.0170
5hY	0.0000	0.0000	-2.0518	-0.0000	0.0000	2.0518	-0.0268	0.1682	-0.0337
5iX	0.0000	0.7459	-2.4960	-0.0000	-0.7459	2.4960	-0.0025	0.1365	0.0135
5iXY	0.0000	0.6379	-2.0830	-0.0000	-0.6379	2.0830	-0.0012	0.1172	0.0156
5iY	0.0000	0.0000	-2.0830	-0.0000	0.0000	2.0830	-0.0248	0.1150	-0.0291
5jX	0.0000	0.8898	-3.0644	0.0000	-0.8898	3.0644	-0.0023	0.0913	0.0116
5jXY	0.0000	0.7578	-2.5624	0.0000	-0.7578	2.5624	-0.0007	0.0759	0.0131
5jY	0.0000	0.0000	-2.5624	-0.0000	0.0000	2.5624	-0.0223	0.0735	-0.0235
5kX	0.0000	0.9389	-3.4932	0.0000	-0.9389	3.4932	-0.0021	0.0419	0.0074
5kXY	0.0000	0.7609	-2.8132	-0.0000	-0.7609	2.8132	0.0002	0.0325	0.0082
5kY	0.0000	0.0000	-2.8132	-0.0000	0.0000	2.8132	-0.0141	0.0302	-0.0144
5lX	0.0000	0.3967	-1.5384	-0.0000	-0.3967	1.5384	-0.0006	0.0096	0.0048
5lXY	0.0000	0.3967	-1.5384	0.0000	-0.3967	1.5384	-0.0003	0.0098	0.0047
5lY	0.0000	0.0000	-1.5384	0.0000	0.0000	1.5384	-0.0156	0.0096	-0.0069
5lTY	0.0000	0.0000	-0.6554	-0.0000	0.0000	0.6554	-0.0076	0.0096	-0.0019
5lLX	0.0000	0.4448	-0.6554	-0.0000	-0.4448	0.6554	-0.0004	0.0657	-0.0004

Crossing Diagonal Check for Load Case "NESC 250B (Heavy)" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R Cap. (kips)	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R RLOUT	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
21P	21Y	Long only	-0.51	-0.39	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
21X	21XY	Long only	-1.08	-0.67	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
21XY	21X	Long only	-0.67	-1.08	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
21Y	21P	Long only	-0.39	-0.51	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
23X	23XY	Long only	-1.57	-1.23	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
23XY	23X	Long only	-1.23	-1.57	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35 1.000	190.76	163.52	6
25X	25XY	Long only	-3.18	-2.84	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57 1.000	149.97	138.43	6
25XY	25X	Long only	-2.84	-3.18	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57 1.000	149.97	138.43	6
27X	27XY	Long only	-2.62	-2.39	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57 1.000	149.97	138.43	6
27XY	27X	Long only	-2.39	-2.62	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57 1.000	149.97	138.43	6
29P	29Y	Long only	-1.99	-2.64	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
29X	29XY	Long only	-3.39	-2.90	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
29XY	29X	Long only	-2.90	-3.39	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
29Y	29P	Long only	-2.64	-1.99	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
31X	31XY	Long only	-7.75	-7.34	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
31XY	31X	Long only	-7.34	-7.75	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73 1.000	122.48	121.53	6
33X	33XY	Short only	-2.82	-1.00	32.81	0.535	0.535	0.535	114.34	115.76	2	31.32 1.000	119.75	119.87	3
33XY	33X	Short only	-1.00	-2.82	32.81	0.535	0.535	0.535	114.34	115.76	2	31.32 1.000	119.75	119.87	3
35P	35Y	Short only	-0.39	-1.46	27.12	0.536	0.536	0.536	134.05	130.74	5	26.46 1.000	140.12	132.38	6
35Y	35P	Short only	-1.46	-0.39	27.12	0.536	0.536	0.536	134.05	130.74	5	26.46 1.000	140.12	132.38	6
43Y	43P	Short only	-0.48	0.08	18.92	0.525	0.525	0.525	164.08	153.63	5	18.47 1.000	177.66	155.46	6
45X	45XY	Short only	-1.62	-0.11	16.64	0.527	0.527	0.527	177.45	163.82	5	16.62 1.000	191.41	163.92	6

45XY	45X	Short only	-0.11	-1.62	16.64	0.527	0.527	0.527	177.45	163.82	5	16.62	1.000	191.41	163.92	6
59P	59X	Long only	-0.11	-0.04	13.97	0.500	0.750	0.500	155.87	147.38	5	10.02	1.000	207.83	174.02	6
59X	59P	Long only	-0.04	-0.11	13.97	0.500	0.750	0.500	155.87	147.38	5	10.02	1.000	207.83	174.02	6
60P	60X	Long only	-0.41	-0.18	13.97	0.500	0.750	0.500	155.87	147.38	5	10.02	1.000	207.83	174.02	6
60X	60P	Long only	-0.18	-0.41	13.97	0.500	0.750	0.500	155.87	147.38	5	10.02	1.000	207.83	174.02	6
61P	61X	Long only	-1.11	0.14	13.97	0.500	0.750	0.500	155.87	147.38	5	10.02	1.000	207.83	174.02	6

Summary of Clamp Capacities and Usages for Load Case "NESC 250B (Heavy)":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	3.617	70.00	70.00	5.17
2	5.305	70.00	70.00	7.58
3	3.191	70.00	70.00	4.56
4	4.399	70.00	70.00	6.28
5	2.605	70.00	70.00	3.72
6	3.594	70.00	70.00	5.13
7	2.581	70.00	70.00	3.69
8	3.594	70.00	70.00	5.13
9	1.850	70.00	70.00	2.64
10	2.589	70.00	70.00	3.70
11	1.112	70.00	70.00	1.59
12	1.586	70.00	70.00	2.27
13	1.068	70.00	70.00	1.53
14	1.544	70.00	70.00	2.21
15	1.025	70.00	70.00	1.46
16	1.502	70.00	70.00	2.15
17	0.963	70.00	70.00	1.38
18	1.428	70.00	70.00	2.04
19	0.849	70.00	70.00	1.21
20	1.272	70.00	70.00	1.82
21	0.715	70.00	70.00	1.02
22	1.071	70.00	70.00	1.53
23	0.913	70.00	70.00	1.30
24	1.440	70.00	70.00	2.06
25	0.978	70.00	70.00	1.40
26	1.730	70.00	70.00	2.47
27	0.815	70.00	70.00	1.16
28	1.571	70.00	70.00	2.24
29	0.508	70.00	70.00	0.73
30	0.879	70.00	70.00	1.26

Summary of Suspension Capacities and Usages for Load Case "NESC 250B (Heavy)":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
11	9.231	50.00	50.00	18.46
21	9.231	50.00	50.00	18.46
31	16.139	50.00	50.00	32.28
32	16.139	50.00	50.00	32.28
33	16.139	50.00	50.00	32.28
41	16.139	50.00	50.00	32.28
42	16.139	50.00	50.00	32.28
43	16.139	50.00	50.00	32.28
M1	1.586	50.00	50.00	3.17
M2	1.097	50.00	50.00	2.19
M3	1.452	50.00	50.00	2.90
M4	1.046	50.00	50.00	2.09

*** Analysis Results for Load Case No. 2 "NESC 250C (Extreme Wind)" - Number of iterations in SAPS 10

Equilibrium Joint Positions and Rotations for Load Case "NESC 250C (Extreme Wind)":

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	-0.1663	1.015	-0.04442	-0.5604	-0.0726	0.1826	3.459	4.64	190
2P	-0.1936	1.004	-0.1326	-0.5780	-0.0708	0.1897	-0.1936	13	189.9
3P	-0.1717	0.8849	-0.1123	-0.5910	-0.0705	0.1896	-0.1717	10.88	177.9
4P	-0.1609	0.7677	-0.1286	-0.5907	-0.0696	0.1889	-0.1609	12.77	165.9
5P	-0.118	0.6702	-0.03561	-0.4801	-0.0785	0.1483	3.507	4.295	154
6P	-0.1374	0.6595	-0.09907	-0.5546	-0.0618	0.1844	-0.1374	10.66	153.9
0P	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
1X	-0.1432	1.016	0.02475	-0.5624	-0.0655	0.1818	3.482	-2.609	190
1XY	-0.1431	0.9919	0.01591	-0.5608	-0.0731	0.1826	-3.768	-2.633	190
1Y	-0.1662	0.9916	-0.05323	-0.5580	-0.0689	0.1853	-3.791	4.617	189.9
2X	-0.116	1.005	0.1031	-0.5674	-0.0717	0.1891	-0.116	-11	190.1
3X	-0.1085	0.8867	0.08073	-0.5322	-0.0727	0.1768	-0.1085	-9.113	178.1
4X	-0.08792	0.7701	0.09591	-0.5145	-0.0702	0.1684	-0.08792	-11.23	166.1
5X	-0.09667	0.6704	0.01998	-0.4751	-0.0661	0.1367	3.528	-2.955	154
5XY	-0.09733	0.6492	0.0124	-0.4772	-0.0649	0.1793	-3.722	-2.976	154
5Y	-0.1176	0.6485	-0.04332	-0.4784	-0.0659	0.1662	-3.743	4.274	154
6X	-0.07884	0.6611	0.07032	-0.4915	-0.0605	0.1679	-0.07884	-9.339	154.1
0X	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
0XY	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0
0Y	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
1aS	-0.1586	0.956	-0.04389	-0.5715	-0.0707	0.1806	3.466	4.581	184
1bS	-0.1508	0.8965	-0.04289	-0.5619	-0.0777	0.1787	3.474	4.522	178
1cS	-0.1422	0.8374	-0.04135	-0.5634	-0.0748	0.1691	3.483	4.462	172
1dS	-0.134	0.7792	-0.03992	-0.5431	-0.0830	0.1661	3.491	4.404	166
1eS	-0.125	0.7232	-0.03803	-0.5254	-0.0703	0.1571	3.5	4.348	160
5aS	-0.1112	0.6288	-0.03678	-0.4485	-0.0805	0.1371	3.987	4.727	148.7
5bS	-0.1049	0.5809	-0.03784	-0.4176	-0.0597	0.1245	4.579	5.265	142.2
5cS	-0.0985	0.5293	-0.03849	-0.3781	-0.0557	0.1085	5.268	5.896	134.6
5dS	-0.09306	0.48	-0.0388	-0.3471	-0.0393	0.0931	5.994	6.567	126.6
5eS	-0.08921	0.4347	-0.03864	-0.3053	-0.0402	0.0772	6.719	7.243	118.6
5fS	-0.08505	0.3952	-0.03795	-0.2816	-0.0202	0.0628	7.444	7.924	110.6
5gS	-0.08445	0.3555	-0.03739	-0.2903	-0.0225	0.0435	8.165	8.605	102.6
5hS	-0.06873	0.2721	-0.03426	-0.2744	-0.0642	0.0055	9.683	10.02	85.97
5iS	-0.05491	0.1974	-0.03053	-0.2378	-0.0417	-0.0227	11.18	11.44	69.47
5jS	-0.04332	0.1333	-0.02578	-0.2118	-0.0403	-0.0528	12.64	12.81	53.47
5kS	-0.02501	0.06083	-0.01649	-0.0902	-0.0438	-0.0870	14.77	14.86	29.98
5lS	-0.01108	0.03652	-0.007596	-0.1315	-0.0524	-0.1202	16.14	16.19	14.99
5lTS	-0.01425	0.03657	-0.01555	0.0323	-0.0337	0.0808	16.13	0.03657	14.98
5lLS	-0.0109	0.1207	-0.0001059	-0.1146	0.0260	0.0195	-0.0109	16.27	15
1aX	-0.1358	0.956	0.02491	-0.5711	-0.0718	0.1771	3.489	-2.669	184
1aXY	-0.1355	0.9327	0.01607	-0.5643	-0.0673	0.1813	-3.76	-2.692	184
1aY	-0.1587	0.9326	-0.05275	-0.5682	-0.0717	0.1833	-3.784	4.558	183.9
1bX	-0.1279	0.8969	0.02484	-0.5605	-0.0680	0.1723	3.497	-2.728	178
1bXY	-0.1281	0.8741	0.01598	-0.5584	-0.0755	0.1801	-3.753	-2.751	178
1bY	-0.1509	0.8734	-0.05179	-0.5570	-0.0717	0.1813	-3.776	4.498	177.9
1cX	-0.1206	0.837	0.02421	-0.5598	-0.0816	0.1605	3.504	-2.788	172
1cXY	-0.1197	0.8146	0.01546	-0.5534	-0.0655	0.1778	-3.745	-2.81	172
1cY	-0.1427	0.815	-0.05019	-0.5626	-0.0808	0.1749	-3.768	4.44	171.9
1dX	-0.1122	0.7795	0.02353	-0.5396	-0.0615	0.1565	3.513	-2.845	166
1dXY	-0.1123	0.7576	0.01495	-0.5390	-0.0847	0.1773	-3.737	-2.867	166
1dY	-0.1342	0.7569	-0.0486	-0.5384	-0.0723	0.1728	-3.759	4.382	166
1eX	-0.1061	0.7232	0.02211	-0.5277	-0.0751	0.1467	3.519	-2.902	160
1eXY	-0.1028	0.7013	0.01393	-0.5227	-0.0678	0.1782	-3.728	-2.924	160
1eY	-0.1265	0.7018	-0.04636	-0.5225	-0.0817	0.1696	-3.751	4.327	160
5aX	-0.09079	0.6292	0.0224	-0.4470	-0.0474	0.1257	4.007	-3.469	148.8
5aXY	-0.0887	0.6047	0.01437	-0.4538	-0.0745	0.1776	-4.187	-3.493	148.8
5aY	-0.1135	0.605	-0.04503	-0.4439	-0.0571	0.1641	-4.212	4.703	148.7
5bX	-0.08244	0.5813	0.02474	-0.4147	-0.0591	0.1153	4.601	-4.102	142.3
5bXY	-0.08017	0.5537	0.01627	-0.4139	-0.0548	0.1713	-4.764	-4.13	142.3
5bY	-0.1075	0.554	-0.04644	-0.4173	-0.0630	0.1615	-4.791	5.238	142.2
5cX	-0.07352	0.5298	0.02652	-0.3799	-0.0507	0.1007	5.293	-4.837	134.7
5cXY	-0.07084	0.499	0.01775	-0.3788	-0.0536	0.1671	-5.437	-4.868	134.7
5cY	-0.1015	0.4994	-0.04704	-0.3739	-0.0502	0.1591	-5.468	5.866	134.6
5dX	-0.06465	0.4802	0.02778	-0.3391	-0.0495	0.0877	6.023	-5.607	126.7
5dXY	-0.06205	0.4467	0.0188	-0.3350	-0.0457	0.1615	-6.149	-5.641	126.7
5dY	-0.09613	0.4473	-0.047	-0.3415	-0.0488	0.1566	-6.183	6.535	126.6
5eX	-0.05645	0.4357	0.02812	-0.3167	-0.0450	0.0727	6.752	-6.372	118.7
5eXY	-0.05413	0.4	0.0191	-0.3098	-0.0416	0.1579	-6.862	-6.408	118.7
5eY	-0.09129	0.3998	-0.04612	-0.2977	-0.0338	0.1543	-6.899	7.208	118.6
5fX	-0.04904	0.3939	0.02817	-0.2717	-0.0411	0.0609	7.48	-7.135	110.7
5fXY	-0.04681	0.3566	0.01919	-0.2642	-0.0375	0.1526	-7.576	-7.172	110.7
5fY	-0.0888	0.3585	-0.04452	-0.2715	-0.0307	0.1525	-7.618	7.887	110.6

5gX	-0.04225	0.3592	0.02718	-0.2560	-0.0386	0.0466	8.207	-7.89	102.7
5gXY	-0.04021	0.3206	0.01843	-0.2452	-0.0331	0.1496	-8.29	-7.929	102.7
5gY	-0.08416	0.3178	-0.0428	-0.2754	-0.0538	0.1512	-8.334	8.567	102.6
5hX	-0.02981	0.2762	0.02663	-0.2801	-0.0336	0.0135	9.722	-9.475	86.03
5hXY	-0.02816	0.2384	0.01828	-0.2567	-0.0258	0.1483	-9.78	-9.513	86.02
5hY	-0.06808	0.2353	-0.03918	-0.2492	-0.0646	0.1486	-9.82	9.987	85.96
5iX	-0.01998	0.2028	0.02465	-0.2325	-0.0279	-0.0111	11.22	-11.04	69.52
5iXY	-0.01822	0.1692	0.01694	-0.2017	-0.0201	0.1412	-11.26	-11.07	69.52
5iY	-0.05417	0.1654	-0.03451	-0.2036	-0.0520	0.1462	-11.29	11.4	69.47
5jX	-0.01275	0.1395	0.02101	-0.2085	-0.0204	-0.0372	12.67	-12.54	53.52
5jXY	-0.0104	0.1129	0.01432	-0.1717	-0.0145	0.1365	-12.69	-12.57	53.51
5jY	-0.04258	0.1088	-0.02831	-0.1715	-0.0500	0.1441	-12.72	12.79	53.47
5kX	-0.005704	0.06686	0.01355	-0.1091	-0.0225	-0.0661	14.79	-14.73	30.01
5kXY	-0.00243	0.05161	0.00906	-0.0838	-0.0031	0.1254	-14.8	-14.75	30.01
5kY	-0.02433	0.04767	-0.01759	-0.0705	-0.0573	0.1352	-14.82	14.84	29.98
5lX	-0.0008635	0.03655	0.006655	-0.1493	-0.0156	-0.0947	16.15	-16.11	15.01
5lXY	-0.0003159	0.0276	0.004271	-0.1103	0.0043	0.1257	-16.15	-16.12	15
5lY	-0.01058	0.02757	-0.008623	-0.0963	-0.0630	0.1375	-16.16	16.18	14.99
5lTY	-7.375e-005	0.02756	-0.0145	0.0173	-0.0295	-0.0384	-16.15	0.02756	14.99
5lLX	-0.0005954	0.1192	-0.002576	-0.1290	-0.0036	0.0160	-0.0005954	-16.03	15

Joint Support Reactions for Load Case "NESC 250C (Extreme Wind)":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
0P	-23.08	0.0	-26.14	0.0	0.0	-277.63	0.0	0.0	279.81	0.0	10.74	0.0	2.8	0.0	0.0	2.88	0.0	0.0
0X	36.05	0.0	-54.51	0.0	0.0	313.27	0.0	0.0	320.02	0.0	10.16	0.0	-0.1	0.0	0.0	2.24	0.0	0.0
0XY	-25.62	0.0	-35.63	0.0	0.0	210.07	0.0	0.0	214.61	0.0	7.54	0.0	-0.1	0.0	0.0	-2.52	0.0	0.0
0Y	30.65	0.0	-31.64	0.0	0.0	-341.43	0.0	0.0	344.26	0.0	7.85	0.0	2.6	0.0	0.0	-2.62	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC 250C (Extreme Wind)":

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	0.9510	3.8590	-1.0303	-0.9510	-3.8590	1.0303	-0.1663	1.0155	-0.0444
2P	-0.2520	4.6515	-1.3319	0.2520	-4.6515	1.3319	-0.1936	1.0036	-0.1326
3P	-2.9160	8.8020	-4.0800	2.9160	-8.8020	4.0800	-0.1717	0.8849	-0.1123
4P	-2.9160	8.8020	-4.0889	2.9160	-8.8020	4.0889	-0.1609	0.7677	-0.1286
5P	0.0000	2.0313	-1.4031	0.0000	-2.0313	1.4031	-0.1180	0.6702	-0.0356
6P	-2.9160	8.8020	-4.0800	2.9160	-8.8020	4.0800	-0.1374	0.6595	-0.0991
0P	0.0000	0.7928	-0.8187	23.0818	25.3518	-276.8136	0.0000	0.0000	0.0000
1X	-1.1350	3.8710	-0.8443	1.1350	-3.8710	0.8443	-0.1432	1.0157	0.0247
1XY	0.0000	0.4730	-0.3103	-0.0000	-0.4730	0.3103	-0.1431	0.9919	0.0159
1Y	0.0000	0.4730	-0.3103	-0.0000	-0.4730	0.3103	-0.1662	0.9916	-0.0532
2X	-0.2520	4.6515	-1.3319	0.2520	-4.6515	1.3319	-0.1160	1.0045	0.1031
3X	-2.9160	8.8020	-4.0800	2.9160	-8.8020	4.0800	-0.1085	0.8867	0.0807
4X	-2.9160	8.8020	-4.0889	2.9160	-8.8020	4.0889	-0.0879	0.7701	0.0959
5X	0.0000	1.4893	-1.2601	0.0000	-1.4893	1.2601	-0.0967	0.6704	0.0200
5XY	0.0000	1.2583	-1.1141	0.0000	-1.2583	1.1141	-0.0973	0.6492	0.0124
5Y	0.0000	1.2583	-1.1141	0.0000	-1.2583	1.1141	-0.1176	0.6485	-0.0433
6X	-2.9160	8.8020	-4.0800	2.9160	-8.8020	4.0800	-0.0788	0.6611	0.0703
0X	0.0000	0.7928	-0.8187	-36.0544	53.7176	314.0931	0.0000	0.0000	0.0000
0XY	0.0000	0.7928	-0.8187	25.6218	34.8331	210.8923	0.0000	0.0000	0.0000
0Y	0.0000	0.7928	-0.8187	-30.6492	30.8516	-340.6087	0.0000	0.0000	0.0000
1aS	0.0000	0.5490	-0.3523	-0.0000	-0.5490	0.3523	-0.1586	0.9560	-0.0439
1bS	-0.2000	0.9346	-0.4594	0.2000	-0.9346	0.4594	-0.1508	0.8965	-0.0429
1cS	0.0000	0.4656	-0.3043	-0.0000	-0.4656	0.3043	-0.1422	0.8374	-0.0414
1dS	0.0000	1.5406	-0.7063	0.0000	-1.5406	0.7063	-0.1340	0.7792	-0.0399
1eS	0.0000	0.4656	-0.2954	-0.0000	-0.4656	0.2954	-0.1250	0.7232	-0.0380
5aS	0.0000	1.3198	-1.0157	-0.0000	-1.3198	1.0157	-0.1112	0.6288	-0.0368
5bS	0.0000	1.4238	-1.0547	-0.0000	-1.4238	1.0547	-0.1049	0.5809	-0.0378
5cS	0.0000	1.4908	-1.0797	-0.0000	-1.4908	1.0797	-0.0985	0.5293	-0.0385
5dS	0.0000	1.5098	-1.0867	-0.0000	-1.5098	1.0867	-0.0931	0.4800	-0.0388
5eS	0.0000	1.5098	-1.0867	-0.0000	-1.5098	1.0867	-0.0892	0.4347	-0.0386
5fS	0.0000	1.5098	-1.0867	-0.0000	-1.5098	1.0867	-0.0850	0.3952	-0.0379
5gS	0.0000	1.8978	-1.2317	0.0000	-1.8978	1.2317	-0.0845	0.3555	-0.0374
5hS	0.0000	2.2778	-1.3747	-0.0000	-2.2778	1.3747	-0.0687	0.2721	-0.0343
5iS	0.0000	2.2478	-1.3627	-0.0000	-2.2478	1.3627	-0.0549	0.1974	-0.0305
5jS	0.0000	2.5618	-1.4807	0.0000	-2.5618	1.4807	-0.0433	0.1333	-0.0258
5kS	0.0000	3.1888	-1.7147	-0.0000	-3.1888	1.7147	-0.0250	0.0608	-0.0165
5lS	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0111	0.0365	-0.0076
5lTS	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0143	0.0366	-0.0155
5lLS	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0109	0.1207	-0.0001
1aX	0.0000	0.5490	-0.3523	-0.0000	-0.5490	0.3523	-0.1358	0.9560	0.0249
1aXY	0.0000	0.5490	-0.3523	-0.0000	-0.5490	0.3523	-0.1355	0.9327	0.0161
1aY	0.0000	0.5490	-0.3523	-0.0000	-0.5490	0.3523	-0.1587	0.9326	-0.0528

1bX	0.3840	-0.2044	-1.7544	-0.3840	0.2044	1.7544	-0.1279	0.8969	0.0248
1bXY	0.0000	0.4656	-0.2954	0.0000	-0.4656	0.2954	-0.1281	0.8741	0.0160
1bY	0.0000	0.4656	-0.2954	-0.0000	-0.4656	0.2954	-0.1509	0.8734	-0.0518
1cX	0.0000	0.4656	-0.3043	-0.0000	-0.4656	0.3043	-0.1206	0.8370	0.0242
1cXY	0.0000	0.4656	-0.3043	-0.0000	-0.4656	0.3043	-0.1197	0.8146	0.0155
1cY	0.0000	0.4656	-0.3043	-0.0000	-0.4656	0.3043	-0.1427	0.8150	-0.0502
1dX	0.0000	0.7866	-0.5073	0.0000	-0.7866	0.5073	-0.1122	0.7795	0.0235
1dXY	0.0000	0.4656	-0.3043	-0.0000	-0.4656	0.3043	-0.1123	0.7576	0.0149
1dY	0.0000	0.4656	-0.3043	0.0000	-0.4656	0.3043	-0.1342	0.7569	-0.0486
1eX	0.0000	0.4656	-0.2954	-0.0000	-0.4656	0.2954	-0.1061	0.7232	0.0221
1eXY	0.0000	0.4656	-0.2954	-0.0000	-0.4656	0.2954	-0.1028	0.7013	0.0139
1eY	0.0000	0.4656	-0.2954	-0.0000	-0.4656	0.2954	-0.1265	0.7018	-0.0464
5aX	0.0000	0.9498	-0.9187	0.0000	-0.9498	0.9187	-0.0908	0.6292	0.0224
5aXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0887	0.6047	0.0144
5aY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.1135	0.6050	-0.0450
5bX	0.0000	0.9808	-0.9377	-0.0000	-0.9808	0.9377	-0.0824	0.5813	0.0247
5bXY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0802	0.5537	0.0163
5bY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.1075	0.5540	-0.0464
5cX	0.0000	1.0008	-0.9507	-0.0000	-1.0008	0.9507	-0.0735	0.5298	0.0265
5cXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0708	0.4990	0.0177
5cY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.1015	0.4994	-0.0470
5dX	0.0000	1.0068	-0.9547	-0.0000	-1.0068	0.9547	-0.0647	0.4802	0.0278
5dXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0621	0.4467	0.0188
5dY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0961	0.4473	-0.0470
5eX	0.0000	1.0068	-0.9547	-0.0000	-1.0068	0.9547	-0.0564	0.4357	0.0281
5eXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0541	0.4000	0.0191
5eY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0913	0.3998	-0.0461
5fX	0.0000	1.0068	-0.9547	-0.0000	-1.0068	0.9547	-0.0490	0.3939	0.0282
5fXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0468	0.3566	0.0192
5fY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0888	0.3585	-0.0445
5gX	0.0000	1.1228	-1.0277	0.0000	-1.1228	1.0277	-0.0422	0.3592	0.0272
5gXY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0402	0.3206	0.0184
5gY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0842	0.3178	-0.0428
5hX	0.0000	1.2358	-1.0997	-0.0000	-1.2358	1.0997	-0.0298	0.2762	0.0266
5hXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0282	0.2384	0.0183
5hY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0681	0.2353	-0.0392
5iX	0.0000	1.2268	-1.0937	-0.0000	-1.2268	1.0937	-0.0200	0.2028	0.0247
5iXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0182	0.1692	0.0169
5iY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0542	0.1654	-0.0345
5jX	0.0000	1.3208	-1.1537	0.0000	-1.3208	1.1537	-0.0127	0.1395	0.0210
5jXY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0104	0.1129	0.0143
5jY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0426	0.1088	-0.0283
5kX	0.0000	1.5078	-1.2717	-0.0000	-1.5078	1.2717	-0.0057	0.0669	0.0136
5kXY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0024	0.0516	0.0091
5kY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0243	0.0477	-0.0176
5lX	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0009	0.0366	0.0067
5lXY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0003	0.0276	0.0043
5lY	0.0000	0.7928	-0.8187	0.0000	-0.7928	0.8187	-0.0106	0.0276	-0.0086
5lTY	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0001	0.0276	-0.0145
5lLX	0.0000	0.7928	-0.8187	-0.0000	-0.7928	0.8187	-0.0006	0.1192	-0.0026

Crossing Diagonal Check for Load Case "NESC 250C (Extreme Wind)" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
21P	21Y	Long only	-0.08	-0.16	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
21X	21XY	Long only	-0.77	-0.01	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
21XY	21X	Long only	-0.01	-0.77	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
21Y	21P	Long only	-0.16	-0.08	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23X	23XY	Long only	-1.80	-0.46	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23XY	23X	Long only	-0.46	-1.80	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
25X	25XY	Long only	-4.93	0.48	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
31X	31XY	Long only	-11.20	-1.46	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
31XY	31X	Long only	-1.46	-11.20	41.16	0.500	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6

Summary of Clamp Capacities and Usages for Load Case "NESC 250C (Extreme Wind)":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	1.972	70.00	70.00	2.82
2	3.621	70.00	70.00	5.17

3	1.754	70.00	70.00	2.51
4	2.959	70.00	70.00	4.23
5	1.644	70.00	70.00	2.35
6	2.629	70.00	70.00	3.76
7	1.654	70.00	70.00	2.36
8	2.660	70.00	70.00	3.80
9	1.522	70.00	70.00	2.17
10	2.262	70.00	70.00	3.23
11	1.387	70.00	70.00	1.98
12	1.860	70.00	70.00	2.66
13	1.387	70.00	70.00	1.98
14	1.860	70.00	70.00	2.66
15	1.387	70.00	70.00	1.98
16	1.860	70.00	70.00	2.66
17	1.380	70.00	70.00	1.97
18	1.841	70.00	70.00	2.63
19	1.357	70.00	70.00	1.94
20	1.772	70.00	70.00	2.53
21	1.321	70.00	70.00	1.89
22	1.665	70.00	70.00	2.38
23	1.951	70.00	70.00	2.79
24	2.469	70.00	70.00	3.53
25	0.936	70.00	70.00	1.34
26	1.695	70.00	70.00	2.42
27	0.931	70.00	70.00	1.33
28	1.691	70.00	70.00	2.42
29	0.755	70.00	70.00	1.08
30	1.132	70.00	70.00	1.62

Summary of Suspension Capacities and Usages for Load Case "NESC 250C (Extreme Wind)":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
11	4.749	50.00	50.00	9.50
21	4.749	50.00	50.00	9.50
31	10.047	50.00	50.00	20.09
32	10.047	50.00	50.00	20.09
33	10.047	50.00	50.00	20.09
41	10.047	50.00	50.00	20.09
42	10.047	50.00	50.00	20.09
43	10.047	50.00	50.00	20.09
M1	3.458	50.00	50.00	6.92
M2	3.048	50.00	50.00	6.10
M3	1.645	50.00	50.00	3.29
M4	0.681	50.00	50.00	1.36

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
1	LEG-1	SAE	6X6X0.375	33.0	26.26	Comp	26.26	3P	-33.797	NESC 250	128.698	163.200	303.750	1.000	1.000	1.000	60.50	60.50	6.000	1	12
2	LEG-2	SAE	8X8X0.5	33.0	45.60	Tens	44.23	6P	-106.441	NESC 250	240.633	301.600	629.999	1.000	1.000	1.000	45.28	45.28	6.000	1	16
3	LEG-3	SAE	8X8X0.6875	33.0	58.89	Comp	58.89	9Y	-184.765	NESC 250	313.755	414.700	1191.092	1.000	1.000	1.000	58.04	58.04	7.641	1	22
4	LEG-4	SAE	8X8X0.75	33.0	66.25	Comp	66.25	11Y	-223.056	NESC 250	336.695	490.100	1535.623	1.000	1.000	1.000	61.25	61.25	8.065	1	26
5	LEG-5	SAE	8X8X0.8125	33.0	69.18	Comp	69.18	13Y	-250.851	NESC 250	362.621	527.800	1791.560	1.000	1.000	1.000	61.64	61.64	8.065	1	28
6	LEG-6	SAE	8X8X0.875	33.0	72.37	Comp	72.37	14Y	-278.407	NESC 250	384.686	565.500	2067.184	0.500	0.500	0.500	64.22	64.22	16.805	1	30
7	LEG-7	SAE	8X8X0.9375	33.0	71.64	Comp	71.64	15Y	-294.797	NESC 250	411.509	565.500	2214.840	0.500	0.500	0.500	63.69	63.69	16.633	1	30
8	LEG-8	SAE	8X8X0.9375	33.0	74.30	Comp	74.30	16Y	-308.150	NESC 250	414.761	603.200	2362.496	0.500	0.500	0.500	61.76	61.76	16.129	1	32
9	LEG-9	SAE	8X8X1	33.0	73.25	Comp	73.25	17Y	-324.104	NESC 250	442.459	640.900	2677.496	0.333	0.333	0.333	60.68	60.68	23.690	1	34
10	LEG-10	SAE	8X8X1	33.0	76.86	Comp	76.86	19Y	-343.373	NESC 250	446.739	640.900	2677.496	0.500	0.500	0.500	58.16	58.16	15.121	1	34
11	VBR-11	SAU	2.5X2X0.25	33.0	44.07	Comp	44.07	22X	-7.059	NESC 250	16.019	27.200	33.750	0.500	0.750	0.500	143.07	137.62	9.411	5	2
12	VBR-12_52	SAU	3X2.5X0.25	33.0	49.12	Comp	49.12	26X	-13.231	NESC 250	26.934	40.800	50.625	0.500	0.750	0.500	112.48	114.36	9.411	2	3
13	VBR-13	SAE	3X3X0.3125	33.0	50.94	Comp	50.94	30XY	-20.968	NESC 250	41.159	54.400	84.375	0.500	0.500	0.500	95.87	101.90	9.411	2	4
14	VBR-14_15	SAU	3X2.5X0.3125	33.0	54.67	Comp	54.67	34X	-14.827	NESC 250	27.120	54.400	84.375	0.536	0.536	0.536	134.05	130.74	10.941	5	4
15	VBR-16-20	SAU	3.5X3X0.25	33.0	89.51	Comp	89.51	44X	-14.894	NESC 250	16.638	40.800	50.625	0.527	0.527	0.527	177.45	163.82	17.705	5	3
16	VBR-22	SAE	2.5X2.5X0.3125	33.0	89.42	Tens	11.05	47XY	-0.570	NESC 250	5.160	54.400	84.375	1.000	0.529	0.529	387.60	284.57	24.580	6	4
17	VBR-24_26_28	SAU	2.5X2X0.3125	33.0	96.61	Tens	2.66	49XY	-0.068	NESC 250	2.541	54.400	84.375	0.522	1.000	0.522	549.45	384.11	26.740	6	4
18	VBR-30_53	SAE	2.5X2.5X0.3125	33.0	96.91	Tens	25.89	54X	-2.118	NESC 250	8.181	54.400	84.375	0.500	0.500	0.500	259.06	226.00	21.114	5	4
19	HBR-24_26_28	SAU	2.5X2X0.25	33.0	11.11	Cross	11.11	61P	-1.113	NESC 250	10.019	27.200	33.750	0.500	1.000	0.500	207.83	174.02	10.253	6	2
20	HBR-99_100	SAE	2.5X2.5X0.1875	33.0	71.10	Comp	71.10	62P	-2.564	NESC 250	3.607	27.200	25.312	0.500	1.000	0.500	359.90	267.54	23.334	6	2
21	HBR-98	SAE	2.5X2.5X0.25	33.0	16.00	Comp	16.00	63X	-0.311	NESC 250	1.946	27.200	33.750	0.500	0.750	0.500	511.44	418.31	41.852	5	2
22	HRZ-C1-C7	SAU	5X3.5X0.3125	33.0	37.33	Comp	37.33	68X	-15.232	NESC 250	62.159	40.800	63.281	1.000	0.500	0.500	71.48	95.74	9.126	3	3
23	HRZ-C22_C23	SAU	5X3X0.3125	33.0	17.01	Tens	8.51	75P	-3.582	NESC 250	42.080	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
24	HRZ-50_51	SAU	2.5X2X0.1875	33.0	65.66	Comp	65.66	79X	-3.667	NESC 250	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
25	HRZ-21	SAE	3.5X3.5X0.25	33.0	54.24	Comp	54.24	82P	-10.522	NESC 250	19.398	40.800	50.625	0.500	1.000	0.500	181.64	157.91	16.499	6	3
26	HRZ-23	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
27	HRZ-25_27	DAE	3.5X3.5X0.25	33.0	66.23	Comp	66.23	88P	-23.850	NESC 250	36.010	81.600	101.250	0.500	1.000	0.500	191.39	163.91	25.360	6	3
28	HRZ-29	DAE	4X4X0.25	33.0	36.67	Comp	36.67	90P	-22.828	NESC 250	62.253	81.600	101.250	0.500	0.500	0.500	142.05	133.56	29.594	6	3
29	HRZ-44	DAE	3.5X3.5X0.25	33.0	3.44	Comp	3.44	92X	-1.377	NESC 250	39.990	54.400	67.500	1.000	1.000	1.000	177.78	155.54	16.149	6	2
30	STR-C18_C19	SAE	3X3X0.25	33.0	53.31	Comp	53.31	94XY	-5.645	NESC 250	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
31	STR-C20_C21	SAU	2.5X2X0.25	33.0	45.25	Tens	0.00	97Y	0.000		5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
MOD17	VBR-PJF-1	SAE	2.5X2.5X0.3125	33.0	90.15	Tens	0.00	53Y	0.000		2.646	54.400	84.375	0.466	1.000	0.466	571.10	397.43	36.218	6	4
MOD26	HRZ-23_PJF-2	DAE	4X4X0.25	33.0	33.19	Comp	33.19	84P	-22.862	NESC 250	68.879	100.860	84.375	0.500	1.000	0.500	130.75	126.61	19.503	6	3

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
1	LEG-1	SAE	6X6X0.375	33.0	26.26	Comp	17.76	3X	19.574	NESC 250	110.204	163.200	303.750	0.000	6.000	12	3.110	0.875
2	LEG-2	SAE	8X8X0.5	33.0	45.60	Tens	45.60	6X	88.925	NESC 250	195.030	301.600	629.999	0.000	6.000	16	3.680	1
3	LEG-3	SAE	8X8X0.6875	33.0	58.89	Comp	57.32	9X	152.243	NESC 250	265.588	414.700	1191.092	0.000	7.641	22	3.610	1
4	LEG-4	SAE	8X8X0.75	33.0	66.25	Comp	64.26	11X	185.183	NESC 250	288.172	490.100	1535.623	0.000	8.065	26	3.610	1
5	LEG-5	SAE	8X8X0.8125	33.0	69.18	Comp	67.95	13X	211.294	NESC 250	310.963	527.800	1791.560	0.000	8.065	28	3.590	1
6	LEG-6	SAE	8X8X0.875	33.0	72.37	Comp	63.69	14X	212.047	NESC 250	332.928	565.500	2067.184	0.000	16.805	30	3.590	1
7	LEG-7	SAE	8X8X0.9375	33.0	71.64	Comp	66.32	15X	235.399	NESC 250	354.927	565.500	2214.840	0.000	16.633	30	3.590	1
8	LEG-8	SAE	8X8X0.9375	33.0	74.30	Comp	71.83	16X	254.947	NESC 250	354.927	603.200	2362.496	0.000	16.129	32	3.590	1
9	LEG-9	SAE	8X8X1	33.0	73.25	Comp	71.20	17X	268.565	NESC 250	377.189	640.900	2677.496	0.000	23.690	34	3.570	1
10	LEG-10	SAE	8X8X1	33.0	76.86	Comp	76.58	19X	287.339	NESC 250	375.209	640.900	2677.496	0.000	15.121	34	3.630	1
11	VBR-11	SAU	2.5X2X0.25	33.0	44.07	Comp	29.23	22P	7.303	NESC 250	24.985	27.200	33.750	0.000	9.411	2	1.000	0.875
12	VBR-12_52	SAU	3X2.5X0.25	33.0	49.12	Comp	45.12	26P	14.624	NESC 250	32.410	40.800	50.625	0.000	9.411	3	1.000	0.875
13	VBR-13	SAE	3X3X0.3125	33.0	50.94	Comp	49.73	30P	22.252	NESC 250	44.745	54.400	84.375	0.000	9.411	4	1.000	0.875
14	VBR-14_15	SAU	3X2.5X0.3125	33.0	54.67	Comp	42.60	32P	15.060	NESC 250	35.352	54.400	84.375	0.000	9.350	4	1.000	0.875
15	VBR-16-20	SAU	3.5X3X0.25	33.0	89.51	Comp	40.07	36P	14.475	NESC 250	36.123	54.400	67.500	0.000	12.607	4	1.000	0.875
16	VBR-22	SAE	2.5X2.5X0.3125	33.0	89.42	Tens	89.42	46P	31.512	NESC 250	35.241	54.400	84.375	0.000	24.580	4	1.000	0.875
17	VBR-24_26_28	SAU	2.5X2X0.3125	33.0	96.61	Tens	96.61	48P	29.741	NESC 250	30.786	54.400	84.375	0.000	26.740	4	1.000	0.875
18	VBR-30_53	SAE	2.5X2.5X0.3125	33.0	96.91	Tens	96.91	54P	34.152	NESC 250	35.241	54.400	84.375	0.000	21.114	4	1.000	0.875
19	HBR-24_26_28	SAU	2.5X2X0.25	33.0	11.11	Cross	5.13	58X	1.282	NESC 250	24.985	27.200	33.750	0.000	10.253	2	1.000	0.875
20	HBR-99_100	SAE	2.5X2.5X0.1875	33.0	71.10	Comp	2.57	62X	0.564	NESC 250	21.917	27.200	25.312	0.000	23.334	2	1.000	0.875
21	HBR-98	SAE	2.5X2.5X0.25	33.0	16.00	Comp	0.98	63X	0.265	NESC 250	28.846	27.200	33.750	0.000	41.852	2	1.000	0.875

22	HRZ-C1-C7	SAU	5X3.5X0.3125	33.0	37.33	Comp	21.05	65Y	8.590NESC 250	67.911	40.800	63.281	0.000	9.126	3	1.000	0.875
23	HRZ-C22_C23	SAU	5X3X0.3125	33.0	17.01	Tens	17.01	75X	9.254NESC 250	63.159	54.400	84.375	0.000	7.250	4	1.000	0.875
24	HRZ-50_51	SAU	2.5X2X0.1875	33.0	65.66	Comp	52.65	78P	6.663NESC 250	19.184	13.600	12.656	0.000	7.250	1	1.000	0.875
25	HRZ-21	SAE	3.5X3.5X0.25	33.0	54.24	Comp	4.81	83X	1.964NESC 250	43.696	40.800	50.625	0.000	16.499	3	1.000	0.875
26	HRZ-23	SAE	4X4X0.25	33.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0
27	HRZ-25_27	DAE	3.5X3.5X0.25	33.0	66.23	Comp	0.00	89X	0.000	87.392	81.600	101.250	0.000	25.360	3	2.000	0.875
28	HRZ-29	DAE	4X4X0.25	33.0	36.67	Comp	0.00	91X	0.000	102.242	81.600	101.250	0.000	29.594	3	2.000	0.875
29	HRZ-44	DAE	3.5X3.5X0.25	33.0	3.44	Comp	0.98	93X	0.536NESC 250	87.392	54.400	67.500	0.000	16.149	2	2.000	0.875
30	STR-C18_C19	SAE	3X3X0.25	33.0	53.31	Comp	0.00	94Y	0.000	36.271	27.200	33.750	0.000	10.922	2	1.000	0.875
31	STR-C20_C21	SAU	2.5X2X0.25	33.0	45.25	Tens	45.25	96P	11.307NESC 250	24.985	27.200	33.750	0.000	10.922	2	1.000	0.875
MOD17	VBR-PJF-1	SAE	2.5X2.5X0.3125	33.0	90.15	Tens	90.15	52P	31.768NESC 250	35.241	54.400	84.375	0.000	36.218	4	1.000	0.875
MOD26	HRZ-23_PJF-2	DAE	4X4X0.25	33.0	33.19	Comp	0.00	85X	0.000	102.242	149.280	101.250	0.000	19.503	3	2.000	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 250B (Heavy)	71.10	62P	Angle
NESC 250C (Extreme Wind)	96.91	54P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	5.17	NESC 250B (Heavy)	0.0
2	Clamp	7.58	NESC 250B (Heavy)	0.0
3	Clamp	4.56	NESC 250B (Heavy)	0.0
4	Clamp	6.28	NESC 250B (Heavy)	0.0
5	Clamp	3.72	NESC 250B (Heavy)	0.0
6	Clamp	5.13	NESC 250B (Heavy)	0.0
7	Clamp	3.69	NESC 250B (Heavy)	0.0
8	Clamp	5.13	NESC 250B (Heavy)	0.0
9	Clamp	2.64	NESC 250B (Heavy)	0.0
10	Clamp	3.70	NESC 250B (Heavy)	0.0
11	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
12	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
13	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
14	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
15	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
16	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
17	Clamp	1.97	NESC 250C (Extreme Wind)	0.0
18	Clamp	2.63	NESC 250C (Extreme Wind)	0.0
19	Clamp	1.94	NESC 250C (Extreme Wind)	0.0
20	Clamp	2.53	NESC 250C (Extreme Wind)	0.0
21	Clamp	1.89	NESC 250C (Extreme Wind)	0.0
22	Clamp	2.38	NESC 250C (Extreme Wind)	0.0
23	Clamp	2.79	NESC 250C (Extreme Wind)	0.0
24	Clamp	3.53	NESC 250C (Extreme Wind)	0.0
25	Clamp	1.40	NESC 250B (Heavy)	0.0
26	Clamp	2.47	NESC 250B (Heavy)	0.0
27	Clamp	1.33	NESC 250C (Extreme Wind)	0.0
28	Clamp	2.42	NESC 250C (Extreme Wind)	0.0
29	Clamp	1.08	NESC 250C (Extreme Wind)	0.0
30	Clamp	1.62	NESC 250C (Extreme Wind)	0.0
11	Suspension	18.46	NESC 250B (Heavy)	10.0
21	Suspension	18.46	NESC 250B (Heavy)	10.0
31	Suspension	32.28	NESC 250B (Heavy)	0.0
32	Suspension	32.28	NESC 250B (Heavy)	0.0
33	Suspension	32.28	NESC 250B (Heavy)	0.0
41	Suspension	32.28	NESC 250B (Heavy)	0.0
42	Suspension	32.28	NESC 250B (Heavy)	0.0
43	Suspension	32.28	NESC 250B (Heavy)	0.0
M1	Suspension	6.92	NESC 250C (Extreme Wind)	0.0
M2	Suspension	6.10	NESC 250C (Extreme Wind)	0.0
M3	Suspension	3.29	NESC 250C (Extreme Wind)	0.0
M4	Suspension	2.09	NESC 250B (Heavy)	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach	Structure Attach	Structure Attach	Structure Attach	Structure Attach

			Label	Load X (kips)	Load Y (kips)	Load Z (kips)	Load Res. (kips)
NESC 250B (Heavy)	1	Clamp	5kX	0.000	0.939	3.493	3.617
NESC 250B (Heavy)	2	Clamp	5kS	0.000	0.594	5.271	5.305
NESC 250B (Heavy)	3	Clamp	5jX	0.000	0.890	3.064	3.191
NESC 250B (Heavy)	4	Clamp	5jS	0.000	0.439	4.377	4.399
NESC 250B (Heavy)	5	Clamp	5iX	0.000	0.746	2.496	2.605
NESC 250B (Heavy)	6	Clamp	5iS	0.000	0.361	3.576	3.594
NESC 250B (Heavy)	7	Clamp	5hX	0.000	0.740	2.473	2.581
NESC 250B (Heavy)	8	Clamp	5hS	0.000	0.368	3.575	3.594
NESC 250B (Heavy)	9	Clamp	5gX	0.000	0.588	1.754	1.850
NESC 250B (Heavy)	10	Clamp	5gS	0.000	0.274	2.574	2.589
NESC 250B (Heavy)	11	Clamp	5fX	0.000	0.384	1.044	1.112
NESC 250B (Heavy)	12	Clamp	5fS	0.000	0.177	1.576	1.586
NESC 250B (Heavy)	13	Clamp	5eX	0.000	0.372	1.001	1.068
NESC 250B (Heavy)	14	Clamp	5eS	0.000	0.177	1.533	1.544
NESC 250B (Heavy)	15	Clamp	5dX	0.000	0.360	0.959	1.025
NESC 250B (Heavy)	16	Clamp	5dS	0.000	0.177	1.491	1.502
NESC 250B (Heavy)	17	Clamp	5cX	0.000	0.343	0.900	0.963
NESC 250B (Heavy)	18	Clamp	5cS	0.000	0.173	1.418	1.428
NESC 250B (Heavy)	19	Clamp	5bX	0.000	0.300	0.794	0.849
NESC 250B (Heavy)	20	Clamp	5bS	0.000	0.156	1.262	1.272
NESC 250B (Heavy)	21	Clamp	5aX	0.000	0.246	0.672	0.715
NESC 250B (Heavy)	22	Clamp	5aS	0.000	0.130	1.063	1.071
NESC 250B (Heavy)	23	Clamp	5X	0.000	0.325	0.854	0.913
NESC 250B (Heavy)	24	Clamp	5P	0.000	0.191	1.428	1.440
NESC 250B (Heavy)	25	Clamp	1dX	0.000	0.356	0.911	0.978
NESC 250B (Heavy)	26	Clamp	1dS	0.000	0.266	1.709	1.730
NESC 250B (Heavy)	27	Clamp	1bX	0.000	0.318	0.750	0.815
NESC 250B (Heavy)	28	Clamp	1bS	0.000	0.266	1.548	1.571
NESC 250B (Heavy)	29	Clamp	1X	0.000	0.192	0.470	0.508
NESC 250B (Heavy)	30	Clamp	1P	0.000	0.133	0.869	0.879
NESC 250B (Heavy)	11	Suspension	2X	0.000	7.073	5.932	9.231
NESC 250B (Heavy)	21	Suspension	2P	0.000	7.073	5.932	9.231
NESC 250B (Heavy)	31	Suspension	3X	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	32	Suspension	4X	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	33	Suspension	6X	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	41	Suspension	3P	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	42	Suspension	4P	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	43	Suspension	6P	0.000	10.402	12.339	16.139
NESC 250B (Heavy)	M1	Suspension	1X	-0.435	1.094	1.063	1.586
NESC 250B (Heavy)	M2	Suspension	1P	0.012	0.213	1.076	1.097
NESC 250B (Heavy)	M3	Suspension	1bX	0.268	-0.595	1.297	1.452
NESC 250B (Heavy)	M4	Suspension	1bS	0.154	0.287	0.994	1.046
NESC 250C (Extreme Wind)	1	Clamp	5kX	0.000	1.508	1.272	1.972
NESC 250C (Extreme Wind)	2	Clamp	5kS	0.000	3.189	1.715	3.621
NESC 250C (Extreme Wind)	3	Clamp	5jX	0.000	1.321	1.154	1.754
NESC 250C (Extreme Wind)	4	Clamp	5jS	0.000	2.562	1.481	2.959
NESC 250C (Extreme Wind)	5	Clamp	5iX	0.000	1.227	1.094	1.644
NESC 250C (Extreme Wind)	6	Clamp	5iS	0.000	2.248	1.363	2.629
NESC 250C (Extreme Wind)	7	Clamp	5hX	0.000	1.236	1.100	1.654
NESC 250C (Extreme Wind)	8	Clamp	5hS	0.000	2.278	1.375	2.660
NESC 250C (Extreme Wind)	9	Clamp	5gX	0.000	1.123	1.028	1.522
NESC 250C (Extreme Wind)	10	Clamp	5gS	0.000	1.898	1.232	2.262
NESC 250C (Extreme Wind)	11	Clamp	5fX	0.000	1.007	0.955	1.387
NESC 250C (Extreme Wind)	12	Clamp	5fS	0.000	1.510	1.087	1.860
NESC 250C (Extreme Wind)	13	Clamp	5eX	0.000	1.007	0.955	1.387
NESC 250C (Extreme Wind)	14	Clamp	5eS	0.000	1.510	1.087	1.860
NESC 250C (Extreme Wind)	15	Clamp	5dX	0.000	1.007	0.955	1.387
NESC 250C (Extreme Wind)	16	Clamp	5dS	0.000	1.510	1.087	1.860
NESC 250C (Extreme Wind)	17	Clamp	5cX	0.000	1.001	0.951	1.380
NESC 250C (Extreme Wind)	18	Clamp	5cS	0.000	1.491	1.080	1.841
NESC 250C (Extreme Wind)	19	Clamp	5bX	0.000	0.981	0.938	1.357
NESC 250C (Extreme Wind)	20	Clamp	5bS	0.000	1.424	1.055	1.772
NESC 250C (Extreme Wind)	21	Clamp	5aX	0.000	0.950	0.919	1.321
NESC 250C (Extreme Wind)	22	Clamp	5aS	0.000	1.320	1.016	1.665
NESC 250C (Extreme Wind)	23	Clamp	5X	0.000	1.489	1.260	1.951
NESC 250C (Extreme Wind)	24	Clamp	5P	0.000	2.031	1.403	2.469
NESC 250C (Extreme Wind)	25	Clamp	1dX	0.000	0.787	0.507	0.936
NESC 250C (Extreme Wind)	26	Clamp	1dS	0.000	1.541	0.706	1.695
NESC 250C (Extreme Wind)	27	Clamp	1bX	0.000	0.787	0.498	0.931
NESC 250C (Extreme Wind)	28	Clamp	1bS	0.000	1.541	0.697	1.691
NESC 250C (Extreme Wind)	29	Clamp	1X	0.000	0.633	0.412	0.755
NESC 250C (Extreme Wind)	30	Clamp	1P	0.000	1.010	0.511	1.132
NESC 250C (Extreme Wind)	11	Suspension	2X	-0.252	4.568	1.275	4.749
NESC 250C (Extreme Wind)	21	Suspension	2P	-0.252	4.568	1.275	4.749
NESC 250C (Extreme Wind)	31	Suspension	3X	-2.916	8.726	4.038	10.047
NESC 250C (Extreme Wind)	32	Suspension	4X	-2.916	8.726	4.038	10.047
NESC 250C (Extreme Wind)	33	Suspension	6X	-2.916	8.726	4.038	10.047
NESC 250C (Extreme Wind)	41	Suspension	3P	-2.916	8.726	4.038	10.047

NESC 250C (Extreme Wind)	42	Suspension	4P	-2.916	8.726	4.038	10.047
NESC 250C (Extreme Wind)	43	Suspension	6P	-2.916	8.726	4.038	10.047
NESC 250C (Extreme Wind)	M1	Suspension	1X	-1.135	3.238	0.432	3.458
NESC 250C (Extreme Wind)	M2	Suspension	1P	0.951	2.849	0.519	3.048
NESC 250C (Extreme Wind)	M3	Suspension	1bX	0.384	-0.991	1.256	1.645
NESC 250C (Extreme Wind)	M4	Suspension	1bS	-0.200	-0.606	-0.238	0.681

Overturning Moments For User Input Concentrated Loads:

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

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC 250B (Heavy)	82.603	-0.001	110.853	13860.192	186.104	45.530
NESC 250C (Extreme Wind)	86.337	-18.000	37.576	13418.461	-2919.764	184.662

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 58135.8
Weight of Suspensions: 20.0
Total: 58155.8

*** End of Report

Project Name : 31216-0005.002.6280; CL&P Tower #CT River X-ing East Old Lyme
Project Notes: T-Mobile Site #CT11036C
Project File : G:\Transmission\Eversource\2016\312-T-Mobile\31216-0005 TMobile_CT11036C_CLP River Crossing_8 Old Bridge Rd\31216-0005.002.6125_6280\Calcs\PLS-Tower\31216-0005.002.6280 - Dist CT-River East.tow
Date run : 11:13:53 AM Friday, March 25, 2016
by : Tower Version 14.00
Licensed to : Paul J. Ford and Company

Successfully performed nonlinear analysis

The model has 0 warnings.

Member check option: ASCE 10
Connection rupture check: Not Checked
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force

Loads from file: g:\transmission\eversource\2016\312-t-mobile\31216-0005 tmobile_ct11036c_clp river crossing_8 old bridge rd\31216-0005.002.6125_6280\calcs\pls-tower\31216-0005.002.6280 - dist ct-river east.lca

*** Analysis Results:

Maximum element usage is 96.91% for Angle "54P" in load case "NESC 250C (Extreme Wind)"
Maximum insulator usage is 32.28% for Suspension "31" in load case "NESC 250B (Heavy)"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC 250B (Heavy)	0P	-25.35	-24.87	-279.62	35.51	0.86	5.85	5.91	0.26	0.00
NESC 250B (Heavy)	0X	20.93	-26.99	174.96	34.16	0.75	0.02	0.75	0.98	0.00
NESC 250B (Heavy)	0XY	-19.39	-22.80	167.64	29.93	1.51	0.15	1.51	-1.39	0.00
NESC 250B (Heavy)	0Y	23.81	-23.35	-261.04	33.35	1.71	5.45	5.72	0.33	0.00
NESC 250C (Extreme Wind)	0P	-23.08	-26.14	-277.63	34.88	10.74	2.83	11.11	2.88	0.00
NESC 250C (Extreme Wind)	0X	36.05	-54.51	313.27	65.36	10.16	-0.08	10.16	2.24	0.00
NESC 250C (Extreme Wind)	0XY	-25.62	-35.63	210.07	43.88	7.54	-0.11	7.54	-2.52	0.00
NESC 250C (Extreme Wind)	0Y	30.65	-31.64	-341.43	44.05	7.85	2.62	8.27	-2.62	0.00

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

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC 250B (Heavy)	0P	51S	19P	281.867	0.360	0.360	0.153	-0.326	-25.35	-24.87	-279.62
NESC 250B (Heavy)	0X	51X	19X	-177.842	12.273	12.360	-5.164	11.229	20.93	-26.99	174.96
NESC 250B (Heavy)	0XY	51XY	19XY	-170.066	8.740	8.805	4.287	7.692	-19.39	-22.80	167.64
NESC 250B (Heavy)	0Y	51Y	19Y	263.159	0.334	0.334	-0.291	-0.164	23.81	-23.35	-261.04
NESC 250C (Extreme Wind)	0P	51S	19P	279.805	2.238	2.239	-1.932	1.131	-23.08	-26.14	-277.63
NESC 250C (Extreme Wind)	0X	51X	19X	-318.856	27.256	27.426	-7.829	26.285	36.05	-54.51	313.27
NESC 250C (Extreme Wind)	0XY	51XY	19XY	-213.863	17.869	17.991	6.695	16.699	-25.62	-35.63	210.07
NESC 250C (Extreme Wind)	0Y	51Y	19Y	344.257	0.887	0.890	0.113	0.883	30.65	-31.64	-341.43

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC 250B (Heavy)	15457.073	197.105	15458.330
NESC 250C (Extreme Wind)	19992.136	-2922.429	20204.606

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)
SWarm	190.000	184.000	10	8	0.00	7.25	21.750	24.00	7.25	93.750
Cage	190.000	154.000	28	108	7.25	7.25	261.000	7.25	7.25	261.000
TXarm	184.000	178.000	10	8	7.25	7.25	43.500	7.25	20.00	81.750
MXarm	172.000	166.000	10	8	7.25	7.25	43.500	7.25	24.00	93.750
BXarm	160.000	154.000	10	8	7.25	7.25	43.500	7.25	20.00	81.750
Std Body	154.000	0.000	60	188	7.25	35.00	3253.250	7.25	35.00	3253.250

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
1	LEG-1	SAE	6X6X0.375	33.0	26.26	Comp	26.26	3P	-33.797	NESC 250	128.698	163.200	303.750	1.000	1.000	1.000	60.50	60.50	6.000	1	12
2	LEG-2	SAE	8X8X0.5	33.0	45.60	Tens	44.23	6P	-106.441	NESC 250	240.633	301.600	629.999	1.000	1.000	1.000	45.28	45.28	6.000	1	16
3	LEG-3	SAE	8X8X0.6875	33.0	58.89	Comp	58.89	9Y	-184.765	NESC 250	313.755	414.700	1191.092	1.000	1.000	1.000	58.04	58.04	7.641	1	22
4	LEG-4	SAE	8X8X0.75	33.0	66.25	Comp	66.25	11Y	-223.056	NESC 250	336.695	490.100	1535.623	1.000	1.000	1.000	61.25	61.25	8.065	1	26
5	LEG-5	SAE	8X8X0.8125	33.0	69.18	Comp	69.18	13Y	-250.851	NESC 250	362.621	527.800	1791.560	1.000	1.000	1.000	61.64	61.64	8.065	1	28
6	LEG-6	SAE	8X8X0.875	33.0	72.37	Comp	72.37	14Y	-278.407	NESC 250	384.686	565.500	2067.184	0.500	0.500	0.500	64.22	64.22	16.805	1	30
7	LEG-7	SAE	8X8X0.9375	33.0	71.64	Comp	71.64	15Y	-294.797	NESC 250	411.509	565.500	2214.840	0.500	0.500	0.500	63.69	63.69	16.633	1	30
8	LEG-8	SAE	8X8X0.9375	33.0	74.30	Comp	74.30	16Y	-308.150	NESC 250	414.761	603.200	2362.496	0.500	0.500	0.500	61.76	61.76	16.129	1	32
9	LEG-9	SAE	8X8X1	33.0	73.25	Comp	73.25	17Y	-324.104	NESC 250	442.459	640.900	2677.496	0.333	0.333	0.333	60.68	60.68	23.690	1	34
10	LEG-10	SAE	8X8X1	33.0	76.86	Comp	76.86	19Y	-343.373	NESC 250	446.739	640.900	2677.496	0.500	0.500	0.500	58.16	58.16	15.121	1	34
11	VBR-11	SAU	2.5X2X0.25	33.0	44.07	Comp	44.07	22X	-7.059	NESC 250	16.019	27.200	33.750	0.500	0.750	0.500	143.07	137.62	9.411	5	2
12	VBR-12_52	SAU	3X2.5X0.25	33.0	49.12	Comp	49.12	26X	-13.231	NESC 250	26.934	40.800	50.625	0.500	0.750	0.500	112.48	114.36	9.411	2	3
13	VBR-13	SAE	3X3X0.3125	33.0	50.94	Comp	50.94	30XY	-20.968	NESC 250	41.159	54.400	84.375	0.500	0.500	0.500	95.87	101.90	9.411	2	4
14	VBR-14_15	SAU	3X2.5X0.3125	33.0	54.67	Comp	54.67	34X	-14.827	NESC 250	27.120	54.400	84.375	0.536	0.536	0.536	134.05	130.74	10.941	5	4
15	VBR-16-20	SAU	3.5X3X0.25	33.0	89.51	Comp	89.51	44X	-14.894	NESC 250	16.638	40.800	50.625	0.527	0.527	0.527	177.45	163.82	17.705	5	3
16	VBR-22	SAE	2.5X2.5X0.3125	33.0	89.42	Tens	11.05	47XY	-0.570	NESC 250	5.160	54.400	84.375	1.000	0.529	0.529	387.60	284.57	24.580	6	4
17	VBR-24_26_28	SAU	2.5X2X0.3125	33.0	96.61	Tens	2.66	49XY	-0.068	NESC 250	2.541	54.400	84.375	0.522	1.000	0.522	549.45	384.11	26.740	6	4
18	VBR-30_53	SAE	2.5X2.5X0.3125	33.0	96.91	Tens	25.89	54X	-2.118	NESC 250	8.181	54.400	84.375	0.500	0.500	0.500	259.06	226.00	21.114	5	4
19	HBR-24_26_28	SAU	2.5X2X0.25	33.0	11.11	Cross	11.11	61P	-1.113	NESC 250	10.019	27.200	33.750	0.500	1.000	0.500	207.83	174.02	10.253	6	2
20	HBR-99_100	SAE	2.5X2.5X0.1875	33.0	71.10	Comp	71.10	62P	-2.564	NESC 250	3.607	27.200	25.312	0.500	1.000	0.500	359.90	267.54	23.334	6	2
21	HBR-98	SAE	2.5X2.5X0.25	33.0	16.00	Comp	16.00	63X	-0.311	NESC 250	1.946	27.200	33.750	0.500	0.750	0.500	511.44	418.31	41.852	5	2
22	HRZ-C1-C7	SAU	5X3.5X0.3125	33.0	37.33	Comp	37.33	68X	-15.232	NESC 250	62.159	40.800	63.281	1.000	0.500	0.500	71.48	95.74	9.126	3	3
23	HRZ-C22_C23	SAU	5X3X0.3125	33.0	17.01	Tens	8.51	75P	-3.582	NESC 250	42.080	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
24	HRZ-50_51	SAU	2.5X2X0.1875	33.0	65.66	Comp	65.66	79X	-3.667	NESC 250	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
25	HRZ-21	SAE	3.5X3.5X0.25	33.0	54.24	Comp	54.24	82P	-10.522	NESC 250	19.398	40.800	50.625	0.500	1.000	0.500	181.64	157.91	16.499	6	3
26	HRZ-23	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
27	HRZ-25_27	DAE	3.5X3.5X0.25	33.0	66.23	Comp	66.23	88P	-23.850	NESC 250	36.010	81.600	101.250	0.500	1.000	0.500	191.39	163.91	25.360	6	3
28	HRZ-29	DAE	4X4X0.25	33.0	36.67	Comp	36.67	90P	-22.828	NESC 250	62.253	81.600	101.250	0.500	0.500	0.500	142.05	133.56	29.594	6	3
29	HRZ-44	DAE	3.5X3.5X0.25	33.0	3.44	Comp	3.44	92X	-1.377	NESC 250	39.990	54.400	67.500	1.000	1.000	1.000	177.78	155.54	16.149	6	2
30	STR-C18_C19	SAE	3X3X0.25	33.0	53.31	Comp	53.31	94XY	-5.645	NESC 250	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
31	STR-C20_C21	SAU	2.5X2X0.25	33.0	45.25	Tens	0.00	97Y	0.000		5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
MOD17	VBR-PJF-1	SAE	2.5X2.5X0.3125	33.0	90.15	Tens	0.00	53Y	0.000		2.646	54.400	84.375	0.466	1.000	0.466	571.10	397.43	36.218	6	4
MOD26	HRZ-23_PJF-2	DAE	4X4X0.25	33.0	33.19	Comp	33.19	84P	-22.862	NESC 250	68.879	100.860	84.375	0.500	1.000	0.500	130.75	126.61	19.503	6	3

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
1	LEG-1	SAE	6X6X0.375	33.0	26.26	Comp	17.76	3X	19.574	NESC 250	110.204	163.200	303.750	0.000	6.000	12	3.110	0.875
2	LEG-2	SAE	8X8X0.5	33.0	45.60	Tens	45.60	6X	88.925	NESC 250	195.030	301.600	629.999	0.000	6.000	16	3.680	1
3	LEG-3	SAE	8X8X0.6875	33.0	58.89	Comp	57.32	9X	152.243	NESC 250	265.588	414.700	1191.092	0.000	7.641	22	3.610	1
4	LEG-4	SAE	8X8X0.75	33.0	66.25	Comp	64.26	11X	185.183	NESC 250	288.172	490.100	1535.623	0.000	8.065	26	3.610	1
5	LEG-5	SAE	8X8X0.8125	33.0	69.18	Comp	67.95	13X	211.294	NESC 250	310.963	527.800	1791.560	0.000	8.065	28	3.590	1
6	LEG-6	SAE	8X8X0.875	33.0	72.37	Comp	63.69	14X	212.047	NESC 250	332.928	565.500	2067.184	0.000	16.805	30	3.590	1
7	LEG-7	SAE	8X8X0.9375	33.0	71.64	Comp	66.32	15X	235.399	NESC 250	354.927	565.500	2214.840	0.000	16.633	30	3.590	1
8	LEG-8	SAE	8X8X0.9375	33.0	74.30	Comp	71.83	16X	254.947	NESC 250	354.927	603.200	2362.496	0.000	16.129	32	3.590	1
9	LEG-9	SAE	8X8X1	33.0	73.25	Comp	71.20	17X	268.565	NESC 250	377.189	640.900	2677.496	0.000	23.690	34	3.570	1
10	LEG-10	SAE	8X8X1	33.0	76.86	Comp	76.58	19X	287.339	NESC 250	375.209	640.900	2677.496	0.000	15.121	34	3.630	1
11	VBR-11	SAU	2.5X2X0.25	33.0	44.07	Comp	29.23	22P	7.303	NESC 250	24.985	27.200	33.750	0.000	9.411	2	1.000	0.875
12	VBR-12_52	SAU	3X2.5X0.25	33.0	49.12	Comp	45.12	26P	14.624	NESC 250	32.410	40.800	50.625	0.000	9.411	3	1.000	0.875
13	VBR-13	SAE	3X3X0.3125	33.0	50.94	Comp	49.73	30P	22.252	NESC 250	44.745	54.400	84.375	0.000	9.411	4	1.000	0.875
14	VBR-14_15	SAU	3X2.5X0.3125	33.0	54.67	Comp	42.60	32P	15.060	NESC 250	35.352	54.400	84.375	0.000	9.350	4	1.000	0.875
15	VBR-16-20	SAU	3.5X3X0.25	33.0	89.51	Comp	40.07	36P	14.475	NESC 250	36.123	54.400	67.500	0.000	12.607	4	1.000	0.875
16	VBR-22	SAE	2.5X2.5X0.3125	33.0	89.42	Tens	89.42	46P	31.512	NESC 250	35.241	54.400	84.375	0.000	24.580	4	1.000	0.875
17	VBR-24_26_28	SAU	2.5X2X0.3125	33.0	96.61	Tens	96.61	48P	29.741	NESC 250	30.786	54.400	84.375	0.000	26.740	4	1.000	0.875
18	VBR-30_53	SAE	2.5X2.5X0.3125	33.0	96.91	Tens	96.91	54P	34.152	NESC 250	35.241	54.400	84.375	0.000	21.114	4	1.000	0.875
19	HBR-24_26_28	SAU	2.5X2X0.25	33.0	11.11	Cross	5.13	58X	1.282	NESC 250	24.985	27.200	33.750	0.000	10.253	2	1.000	0.875
20	HBR-99_100	SAE	2.5X2.5X0.1875	33.0	71.10	Comp	2.57	62X	0.564	NESC 250	21.917	27.200	25.312	0.000	23.334	2	1.000	0.875
21	HBR-98	SAE	2.5X2.5X0.25	33.0	16.00	Comp	0.98	63X	0.265	NESC 250	28.846	27.200	33.750	0.000	41.852	2	1.000	0.875
22	HRZ-C1-C7	SAU	5X3.5X0.3125	33.0	37.33	Comp	21.05	65Y	8.590	NESC 250	67.911	40.800	63.281	0.000	9.126	3	1.000	0.875
23	HRZ-C22_C23	SAU	5X3X0.3125	33.0	17.01	Tens	17.01	75X	9.254	NESC 250	63.159	54.400	84.375	0.000	7.250	4	1.000	0.875

24	HRZ-50_51	SAU	2.5X2X0.1875	33.0	65.66	Comp	52.65	78P	6.663NESC 250	19.184	13.600	12.656	0.000	7.250	1	1.000	0.875
25	HRZ-21	SAE	3.5X3.5X0.25	33.0	54.24	Comp	4.81	83X	1.964NESC 250	43.696	40.800	50.625	0.000	16.499	3	1.000	0.875
26	HRZ-23	SAE	4X4X0.25	33.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0
27	HRZ-25_27	DAE	3.5X3.5X0.25	33.0	66.23	Comp	0.00	89X	0.000	87.392	81.600	101.250	0.000	25.360	3	2.000	0.875
28	HRZ-29	DAE	4X4X0.25	33.0	36.67	Comp	0.00	91X	0.000	102.242	81.600	101.250	0.000	29.594	3	2.000	0.875
29	HRZ-44	DAE	3.5X3.5X0.25	33.0	3.44	Comp	0.98	93X	0.536NESC 250	87.392	54.400	67.500	0.000	16.149	2	2.000	0.875
30	STR-C18_C19	SAE	3X3X0.25	33.0	53.31	Comp	0.00	94Y	0.000	36.271	27.200	33.750	0.000	10.922	2	1.000	0.875
31	STR-C20_C21	SAU	2.5X2X0.25	33.0	45.25	Tens	45.25	96P	11.307NESC 250	24.985	27.200	33.750	0.000	10.922	2	1.000	0.875
MOD17	VBR-PJF-1	SAE	2.5X2.5X0.3125	33.0	90.15	Tens	90.15	52P	31.768NESC 250	35.241	54.400	84.375	0.000	36.218	4	1.000	0.875
MOD26	HRZ-23_PJF-2	DAE	4X4X0.25	33.0	33.19	Comp	0.00	85X	0.000	102.242	149.280	101.250	0.000	19.503	3	2.000	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 250B (Heavy)	71.10	62P	Angle
NESC 250C (Extreme Wind)	96.91	54P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	5.17	NESC 250B (Heavy)	0.0
2	Clamp	7.58	NESC 250B (Heavy)	0.0
3	Clamp	4.56	NESC 250B (Heavy)	0.0
4	Clamp	6.28	NESC 250B (Heavy)	0.0
5	Clamp	3.72	NESC 250B (Heavy)	0.0
6	Clamp	5.13	NESC 250B (Heavy)	0.0
7	Clamp	3.69	NESC 250B (Heavy)	0.0
8	Clamp	5.13	NESC 250B (Heavy)	0.0
9	Clamp	2.64	NESC 250B (Heavy)	0.0
10	Clamp	3.70	NESC 250B (Heavy)	0.0
11	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
12	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
13	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
14	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
15	Clamp	1.98	NESC 250C (Extreme Wind)	0.0
16	Clamp	2.66	NESC 250C (Extreme Wind)	0.0
17	Clamp	1.97	NESC 250C (Extreme Wind)	0.0
18	Clamp	2.63	NESC 250C (Extreme Wind)	0.0
19	Clamp	1.94	NESC 250C (Extreme Wind)	0.0
20	Clamp	2.53	NESC 250C (Extreme Wind)	0.0
21	Clamp	1.89	NESC 250C (Extreme Wind)	0.0
22	Clamp	2.38	NESC 250C (Extreme Wind)	0.0
23	Clamp	2.79	NESC 250C (Extreme Wind)	0.0
24	Clamp	3.53	NESC 250C (Extreme Wind)	0.0
25	Clamp	1.40	NESC 250B (Heavy)	0.0
26	Clamp	2.47	NESC 250B (Heavy)	0.0
27	Clamp	1.33	NESC 250C (Extreme Wind)	0.0
28	Clamp	2.42	NESC 250C (Extreme Wind)	0.0
29	Clamp	1.08	NESC 250C (Extreme Wind)	0.0
30	Clamp	1.62	NESC 250C (Extreme Wind)	0.0
11	Suspension	18.46	NESC 250B (Heavy)	10.0
21	Suspension	18.46	NESC 250B (Heavy)	10.0
31	Suspension	32.28	NESC 250B (Heavy)	0.0
32	Suspension	32.28	NESC 250B (Heavy)	0.0
33	Suspension	32.28	NESC 250B (Heavy)	0.0
41	Suspension	32.28	NESC 250B (Heavy)	0.0
42	Suspension	32.28	NESC 250B (Heavy)	0.0
43	Suspension	32.28	NESC 250B (Heavy)	0.0
M1	Suspension	6.92	NESC 250C (Extreme Wind)	0.0
M2	Suspension	6.10	NESC 250C (Extreme Wind)	0.0
M3	Suspension	3.29	NESC 250C (Extreme Wind)	0.0
M4	Suspension	2.09	NESC 250B (Heavy)	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	58135.8
Weight of Suspensions:	20.0
Total:	58155.8

*** End of Report

APPENDIX D

SUPPLEMENTAL CALCULATIONS

Mast Connection at Tower (TIA/EIA Loads) - PJF Moment Frame

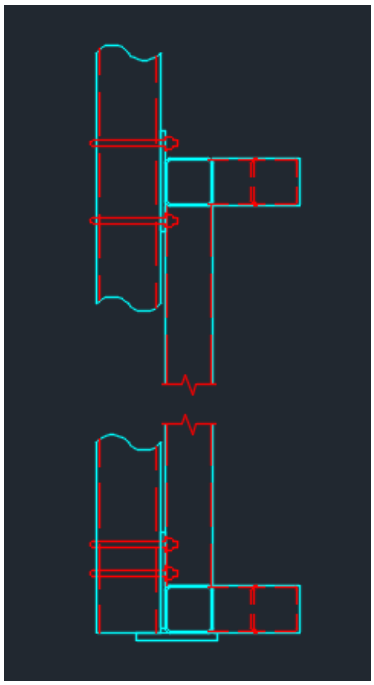
Envelope TIA Reactions - with joint supports at N1 & N13
Used for check of mast to frame connection

Joint		X[lb]	LC	Y[lb]	LC	Z[lb]	LC
N13	max	0	3	0	1	-7	2
	min	-4268	2	0	1	-4204	4
N1	max	915	2	3481	3	561	4
	min	0	4	1833	2	7	2

Envelope TIA Reactions
Used for check of frame to tower connection

Joint		X[lb]	LC	Y[lb]	LC	Z[lb]	LC
N9	max	676	1	1164	1	93	4
	min	-273	4	457	4	-289	1
N10	max	273	4	720	3	93	4
	min	88	1	51	2	7	1
N11	max	4150	4	757	3	816	2
	min	-2326	2	471	2	-2016	4
N12	max	-1551	1	757	3	-485	1
	min	-4150	4	479	2	-2016	4
	MAX	4150		1164		816	
	MIN	-4150		51		-2016	

Check Pipe Mast to Moment Frame Connection



RISA Reactions

$Vert := 3.481\ kip$ Max vertical Load at Base of Pipe (from Risa-3D LC3)

$H_{x.bot} := 0.915\ kip$ Max horizontal/transverse load at bottom support (from Risa-3D LC2)

$H_{z.bot} := 0.561\ kip$ Max horizontal/longitudinal load at bottom support (from Risa-3D LC4)

$H_{x.top} := 4.268\ kip$ Max horizontal/transverse load at top support (from Risa-3D LC2)

$H_{z.top} := 4.204\ kip$ Max horizontal/longitudinal load at top support (from Risa-3D LC4)

Bolt Input:

ASTM A307 U-Bolts

$N := 2$ Number of Bolts at Connection

$D_{bolt} := 0.625 \cdot in$ Diameter of Bolts

$F_{t.bolt} := 20 \cdot ksi \cdot \frac{\pi \cdot D_{bolt}^{2}}{4} = 6.14\ kip$ Allowable Tensile Strength, Calculated based on ASD 9th Table I-A,

$F_{v.bolt} := 10 \cdot ksi \cdot \frac{\pi \cdot D_{bolt}^{2}}{4} = 3.07\ kip$ Allowable Shear Strength, Calculated based on ASD 9th Table I-D,

Calculations:

Check U-Bolt Shear:

$f_v := \frac{\max\left(H_{x.bot}, H_{x.top}\right)}{N \cdot 2} = 1.07\ kip$

$Usage_{shear} := \frac{f_v}{F_{v.bolt}} = 0.348$

$Status_{shear} := \left\| \begin{array}{l} \text{if } Usage_{shear} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$

Check U-Bolt Tension:

$f_t := \frac{\max\left(H_{z.bot}, H_{z.top}\right)}{N \cdot 2} = 1.05\ kip$

$Usage_{tension} := \frac{f_t}{F_{t.bolt}} = 0.171$

$Status_{tension} := \left\| \begin{array}{l} \text{if } Usage_{tension} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$

Check Bearing Plate:

$W_{plate} := 6.625\ in$ $L_{plate} := 8.5\ in$ $W_{tube} := 5 \cdot in$ $t_{plate} := 0.75\ in$ $F_{y.plate} := 36 \cdot ksi$

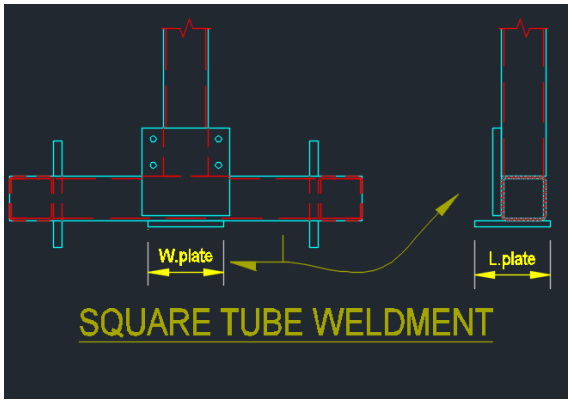
$$S_{plate} := \frac{W_{plate} \cdot t_{plate}^{2}}{6} = 0.621\ in^3$$

$$f_b := \frac{Vert \cdot \langle L_{plate} - W_{tube} \rangle}{S_{plate}} = 19.62\ ksi$$

$$F_b := 0.6 \cdot F_{y.plate} = 21.6\ ksi$$

$$Usage_{bending} := \frac{f_b}{F_b} = 0.908$$

$$Status_{plate} := \begin{cases} \text{if } Usage_{bending} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$$



Check Moment Frame Connection to Tower Leg (Clamping Connection)

RISA Reactions

$Vert_{leg} := 1.164\ kip$ Max vertical Load

$H_{x.leg} := 4.150\ kip$ Max horizontal/transverse load

$H_{z.leg} := 2.016\ kip$ Max horizontal/longitudinal

Bolt Input:

Assume Clamping Connection is Equivalent to AISC slip critical Connection

$F_{v.bolt} := 5.22\ kip$ Allowable Shear Strength, ASD 9th Table I-D, A325 5/8" Dia. SC Single Shear

$$f_v := \sqrt{H_{z.leg}^{2} + Vert_{leg}^{2}} = 2.33\ kip$$ Connection Resultant Shear Load

$$Usage_{shear} := \frac{f_v}{F_{v.bolt}} = 0.446$$

$$Status_{shear} := \begin{cases} \text{if } Usage_{shear} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$$

Antenna Support Moment Frame Bolted To Lattice Structure - NESC 2007
Local Analysis Check (OTRM 059.1 Section E.2.e)
Top Support Reactions - PLS-Tower Members 1X & 1P

Maximum Reactions

Compression Force =	$P_c := 4.907\ kip$	Input from PLS-TOWER (Load Case 250C)
Vertical Force =	$P_v := 0.519 \cdot kip$	Vertical Reaction Input from Risa
Horizontal Force, x =	$H_x := 3.238\ kip$	Horizontal Reaction Input from RISA Rx (250C)
Horizontal Force, y =	$H_y := 1.135\ kip$	Horizontal Reaction Input from RISA Rz (250C)

Member Properties (Equal Leg Angle)

Member Type =	L 6x6x3/8	User Input
Width of Member =	$w := 6\ in$	User Input
Member Thickness =	$t := 0.375\ in$	User Input
k(heel to toe of fillet) =	$k_{des} := 0.875\ in$	User Input
Member Area =	$A := 4.36\ in^2$	User Input
Unbraced Length =	$L := 6\ ft$	User Input
Distance to Load along member =	$a := 3 \cdot ft$	User Input
Effective Length Factor =	$K := 1$	User Input
Radius of Gyration =	$r_x := 1.88\ in$	User Input
Radius of Gyration =	$r_y := 1.88\ in$	User Input
Radius of Gyration =	$r_z := 1.19\ in$	User Input
Section Modulus =	$S_x := 3.53\ in^3$	User Input
Section Modulus =	$S_y := 3.53\ in^3$	User Input
Moment of Inertia =	$I_x := 15.4\ in^4$	User Input
Moment of Inertia =	$I_y := 15.4\ in^4$	User Input
Yield Stress =	$F_y := 33\ ksi$	User Input
Modulus of Elasticity =	$E := 29000\ ksi$	User Input

Calculate the Compression Capacity Per ASCE 10-97 Section 3.6 and 3.7)

Width to Thickness Ratio = $w_t := \frac{(w - k_{des})}{t} = 13.667$ (3.7-1)

Limits

$\frac{80}{\sqrt{\frac{F_y}{ksi}}} = 13.926$

$\frac{144}{\sqrt{\frac{F_y}{ksi}}} = 25.0672$

$$Fcr := \left\| \begin{array}{l} \text{if } w_t < \frac{80}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } F_y \\ \text{else if } \frac{80}{\sqrt{\frac{F_y}{ksi}}} \le w_t \le \frac{144}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } \left(1.677 - 0.677 \cdot \frac{w_t}{\left(\frac{80}{\sqrt{\frac{F_y}{ksi}}}\right)}\right) \cdot F_y \\ \text{else if } w_t > \frac{144}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } \frac{0.0332 \cdot \pi^2 \cdot E}{w_t^2} \end{array} \right\| = 33 \ ksi$$

(3.7-2)

(3.7-3)

$Fcr = 33 \ ksi$

$r := min(r_x, r_y, r_z)$

$C_c := \pi \cdot \sqrt{\frac{2 \cdot E}{F_y}} = 131.706$ (3.6-3)

Determine Compression Capacity, Fa =

$$F_a := \left\| \begin{array}{l} \text{if } \left(\frac{K \cdot L}{r}\right) \le C_c \\ \quad \left(1 - \frac{1}{2} \cdot \left(\frac{\left(\frac{K \cdot L}{r}\right)}{C_c}\right)^2\right) \cdot Fcr \\ \text{else} \\ \quad \frac{\pi^2 \cdot E}{\left(\frac{K \cdot L}{r}\right)^2} \end{array} \right\| = 29.518 \ ksi$$

$\frac{K \cdot L}{r} = 60.504$

(3.6-1)

(3.6-2)

$F_a = 29.518 \ ksi$

Determine the Bending capacity (per ASCE 10-97 Section 3.14.8)

$b := w - \frac{t}{2} = 5.813\ in$

$M_{yx} := F_y \cdot S_x = 116.49\ kip \cdot in$ (Yield Moment X direction)

$M_{yy} := F_y \cdot S_y = 116.49\ kip \cdot in$ (Yield Moment Y direction)

$M_{yc} := min\left(M_{yx}, M_{yy}\right) = 116.49\ kip \cdot in$ (Compressive Yield Moment, 3.14.8)

$$M_{e.pos} := \frac{\left(0.66 \cdot E \cdot b^4 \cdot t\right)}{(K \cdot L)^2} \cdot \left\{\left[\sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} + 1\right]\right\} = 3527.074\ kip \cdot in$$

(Elastic Critical Moment + direction, 3.14-7)

$$M_{e.neg} := \frac{\left(0.66 \cdot E \cdot b^4 \cdot t\right)}{(K \cdot L)^2} \cdot \left\{\left[\sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} - 1\right]\right\} = 366.325\ kip \cdot in$$

(Elastic Critical Moment - direction, 3.14-7)

$M_e := min\left(M_{e.pos}, M_{e.neg}\right) = 366.325\ kip \cdot in$

$$M_b := \begin{cases} \text{if } M_e \le 0.5 \cdot M_{yc} \\ \quad M_e \\ \text{else if } M_e > 0.5 \cdot M_{yc} \\ \quad M_{yc} \cdot \left(1 - \frac{M_{yc}}{4 \cdot M_e}\right) \end{cases} = 107.229\ kip \cdot in$$

$M_a := min\left(M_b, M_{yc}\right) = 107.229\ kip \cdot in$ (Allowable Bending Moment, 3.14.8)

$M_{ax} := M_a \qquad M_{ay} := M_a$

Check Combined Axial and Bending

$C_m := 0.85$ (Restrained Ends)

$L_x := L$ (Bending Length)

$L_y := L$ (Bending Length)

$P := P_c + P_v = 5.426\ kip$ (Total Axial Load)

$P_a := F_a \cdot A = 128.698\ kip$ (Design Axial Load)

$P_y := F_y \cdot A = 143.88\ kip$ (Axial Compression at Yield)

$$P_{ex} := \frac{\pi^2 \cdot E \cdot I_x}{\left(K \cdot L_x\right)^2} = 850.263\ kip$$

$$P_{ey} := \frac{\pi^2 \cdot E \cdot I_y}{\left(K \cdot L_y\right)^2} = 850.263\ kip$$

$$M_x := \frac{H_x \cdot a \cdot \left(L_x - a\right)}{L_x} = 58.284\ kip \cdot in$$

$$M_y := \frac{H_y \cdot a \cdot \left(L_y - a\right)}{L_y} = 20.43\ kip \cdot in$$

$$Check_1 := \frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{ax}} \cdot \left(\frac{1}{1 - \frac{P}{P_{ex}}}\right) + \frac{C_m \cdot M_y}{M_{ay}} \cdot \left(\frac{1}{1 - \frac{P}{P_{ey}}}\right) = 0.67 \qquad (3.12\text{-}1)$$

$$Check_2 := \frac{P}{P_y} + \frac{M_x}{M_{ax}} + \frac{M_y}{M_{ay}} = 0.772 \qquad (3.12\text{-}2)$$

$$Status_1 := \left\| \begin{array}{l} \text{if } Check_1 \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$$

$$Status_2 := \left\| \begin{array}{l} \text{if } Check_2 \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$$

Antenna Support Moment Frame Bolted To Lattice Structure - NESC 2007
Local Analysis Check (OTRM 059.1 Section E.2.e)
Bottom Support Reactions - PLS-Tower Members 3X & 3P

Maximum Reactions

Compression Force =	$P_c := 26.104\ kip$	Input from PLS-TOWER (Load Case 250C)
Vertical Force =	$P_v := 1.256 \cdot kip$	Vertical Reaction Input from Risa
Horizontal Force, x =	$H_x := 0.991\ kip$	Horizontal Reaction Input from RISA Rx (250C)
Horizontal Force, y =	$H_y := 0.200\ kip$	Horizontal Reaction Input from RISA Rz (250C)

Member Properties (Equal Leg Angle)

Member Type =	L 6x6x3/8	User Input
Width of Member =	$w := 6\ in$	User Input
Member Thickness =	$t := 0.375\ in$	User Input
k(heel to toe of fillet) =	$k_{des} := 0.875\ in$	User Input
Member Area =	$A := 4.36\ in^2$	User Input
Unbraced Length =	$L := 6\ ft$	User Input
Distance to Load along member =	$a := 3 \cdot ft$	User Input
Effective Length Factor =	$K := 1$	User Input
Radius of Gyration =	$r_x := 1.88\ in$	User Input
Radius of Gyration =	$r_y := 1.88\ in$	User Input
Radius of Gyration =	$r_z := 1.19\ in$	User Input
Section Modulus =	$S_x := 3.53\ in^3$	User Input
Section Modulus =	$S_y := 3.53\ in^3$	User Input
Moment of Inertia =	$I_x := 15.4\ in^4$	User Input
Moment of Inertia =	$I_y := 15.4\ in^4$	User Input
Yield Stress =	$F_y := 33\ ksi$	User Input
Modulus of Elasticity =	$E := 29000\ ksi$	User Input

Calculate the Compression Capacity Per ASCE 10-97 Section 3.6 and 3.7)

Width to Thickness Ratio = $w_t := \frac{(w - k_{des})}{t} = 13.667$ (3.7-1)

Limits

$\frac{80}{\sqrt{\frac{F_y}{ksi}}} = 13.926$

$\frac{144}{\sqrt{\frac{F_y}{ksi}}} = 25.0672$

$$Fcr := \left\| \begin{array}{l} \text{if } w_t < \frac{80}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } F_y \\ \text{else if } \frac{80}{\sqrt{\frac{F_y}{ksi}}} \le w_t \le \frac{144}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } \left(1.677 - 0.677 \cdot \frac{w_t}{\left(\frac{80}{\sqrt{\frac{F_y}{ksi}}}\right)}\right) \cdot F_y \\ \text{else if } w_t > \frac{144}{\sqrt{\frac{F_y}{ksi}}} \\ \quad \text{return } \frac{0.0332 \cdot \pi^2 \cdot E}{w_t^2} \end{array} \right\| = 33 \ ksi$$

(3.7-2)

(3.7-3)

$Fcr = 33 \ ksi$

$r := min(r_x, r_y, r_z)$

$C_c := \pi \cdot \sqrt{\frac{2 \cdot E}{F_y}} = 131.706$ (3.6-3)

Determine Compression Capacity, Fa =

$$F_a := \left\| \begin{array}{l} \text{if } \left(\frac{K \cdot L}{r}\right) \le C_c \\ \quad \left(1 - \frac{1}{2} \cdot \left(\frac{\left(\frac{K \cdot L}{r}\right)}{C_c}\right)^2\right) \cdot Fcr \\ \text{else} \\ \quad \frac{\pi^2 \cdot E}{\left(\frac{K \cdot L}{r}\right)^2} \end{array} \right\| = 29.518 \ ksi$$

$\frac{K \cdot L}{r} = 60.504$

(3.6-1)

(3.6-2)

$F_a = 29.518 \ ksi$

Determine the Bending capacity (per ASCE 10-97 Section 3.14.8)

$b := w - \frac{t}{2} = 5.813\ in$

$M_{yx} := F_y \cdot S_x = 116.49\ kip \cdot in$ (Yield Moment X direction)

$M_{yy} := F_y \cdot S_y = 116.49\ kip \cdot in$ (Yield Moment Y direction)

$M_{yc} := min\left(M_{yx}, M_{yy}\right) = 116.49\ kip \cdot in$ (Compressive Yield Moment, 3.14.8)

$$M_{e.pos} := \frac{\left(0.66 \cdot E \cdot b^4 \cdot t\right)}{(K \cdot L)^2} \cdot \left[\left(\sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} + 1\right)\right] = 3527.074\ kip \cdot in$$

(Elastic Critical Moment + direction, 3.14-7)

$$M_{e.neg} := \frac{\left(0.66 \cdot E \cdot b^4 \cdot t\right)}{(K \cdot L)^2} \cdot \left[\left(\sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} - 1\right)\right] = 366.325\ kip \cdot in$$

(Elastic Critical Moment - direction, 3.14-7)

$M_e := min\left(M_{e.pos}, M_{e.neg}\right) = 366.325\ kip \cdot in$

$$M_b := \begin{cases} \text{if } M_e \le 0.5 \cdot M_{yc} \\ \quad M_e \\ \text{else if } M_e > 0.5 \cdot M_{yc} \\ \quad M_{yc} \cdot \left(1 - \frac{M_{yc}}{4 \cdot M_e}\right) \end{cases} = 107.229\ kip \cdot in$$

$M_a := min\left(M_b, M_{yc}\right) = 107.229\ kip \cdot in$ (Allowable Bending Moment, 3.14.8)

$M_{ax} := M_a \qquad M_{ay} := M_a$

Check Combined Axial and Bending

$C_m := 0.85$ (Restrained Ends)

$L_x := L$ (Bending Length)

$L_y := L$ (Bending Length)

$P := P_c + P_v = 27.36\ kip$ (Total Axial Load)

$P_a := F_a \cdot A = 128.698\ kip$ (Design Axial Load)

$P_y := F_y \cdot A = 143.88\ kip$ (Axial Compression at Yield)

$$P_{ex} := \frac{\pi^2 \cdot E \cdot I_x}{\langle K \cdot L_x \rangle^2} = 850.263\ kip$$

$$P_{ey} := \frac{\pi^2 \cdot E \cdot I_y}{\langle K \cdot L_y \rangle^2} = 850.263\ kip$$

$$M_x := \frac{H_x \cdot a \cdot \langle L_x - a \rangle}{L_x} = 17.838\ kip \cdot in$$

$$M_y := \frac{H_y \cdot a \cdot \langle L_y - a \rangle}{L_y} = 3.6\ kip \cdot in$$

$$Check_1 := \frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{ax}} \cdot \left(\frac{1}{1 - \frac{P}{P_{ex}}} \right) + \frac{C_m \cdot M_y}{M_{ay}} \cdot \left(\frac{1}{1 - \frac{P}{P_{ey}}} \right) = 0.388 \qquad (3.12\text{-}1)$$

$$Check_2 := \frac{P}{P_y} + \frac{M_x}{M_{ax}} + \frac{M_y}{M_{ay}} = 0.39 \qquad (3.12\text{-}2)$$

$$Status_1 := \left\| \begin{array}{l} \text{if } Check_1 \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”} \qquad Status_2 := \left\| \begin{array}{l} \text{if } Check_2 \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$$

Foundation Analysis (OTRM 059.1)
Uplift Pier (as per foundation drawing 01503-60002)

Joint Support Reactions from PLS-Tower

Row #	Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Comp. Foundation / Uplift Foundation
1	NESC 250B (Heavy)	0P	-25.35	-24.87	-279.62	35.51	U
2	NESC 250B (Heavy)	0X	20.93	-26.99	174.96	34.16	U
3	NESC 250B (Heavy)	0XY	-19.39	-22.8	167.64	29.93	C
4	NESC 250B (Heavy)	0Y	23.81	-23.35	-261.04	33.35	C
5	NESC 250C (Extreme Wind)	0P	-23.08	-26.14	-277.63	34.88	U
6	NESC 250C (Extreme Wind)	0X	36.05	-54.51	313.27	65.36	U
7	NESC 250C (Extreme Wind)	0XY	-25.62	-35.63	210.07	43.88	C
8	NESC 250C (Extreme Wind)	0Y	30.65	-31.64	-341.43	44.05	C

Reactions

$H_{shear} := 34.88\ kip \cdot 1.1 = 38.37\ kip$ Maximum Compression Shear Force

$P_{comp} := 279.62\ kip \cdot 1.1 = 307.58\ kip$ Maximum Compression Force

$P_{tens} := 313.27\ kip \cdot 1.1 = 344.6\ kip$ Maximum Tension Force

Foundation Properties

$Pier_{height} := 12.5\ ft$

$Pier_{width.top} := 3.5\ ft$

$Pier_{width.bot} := 6\ ft$

$Pier_{projection} := 0.5\ ft$

$Ftg_{width} := 10\ ft$

$Ftg_{thick} := 2\ ft$

Geotechnical Properties

$\gamma_{conc} := 150\ pcf$

$\gamma_{water} := 62.4\ pcf$

$\gamma_{soil} := 100\ pcf$

$\phi_{soil} := 30\ deg$

$q_{soil} := 9\ ksf$

$\mu := 0.45$

Calculations

$V_{ftg} := Ftg_{width}^{2} \cdot Ftg_{thick} = 200\ ft^3$

$V_{pier} := \frac{Pier_{height}}{3} \cdot \left(Pier_{width.top}^{2} + Pier_{width.bot}^{2} + \sqrt{Pier_{width.top}^{2} \cdot Pier_{width.bot}^{2}}\right) = 288.5\ ft^3$

$Base_1 := Ftg_{width}^{2} = 100\ ft^2$ Resisting Pyramid Base 1

$Base_2 := \left(2 \cdot \tan\left(\phi_{soil}\right) \cdot \left(Pier_{height} - Pier_{projection}\right) + Ftg_{width}\right)^{2} = 569.128\ ft^2$ Resisting Pyramid Base 2

$V_{soil} := \left(\left(\frac{Pier_{height} - Pier_{projection}}{3}\right) \cdot \left(Base_1 + Base_2 + \sqrt{Base_1 \cdot Base_2}\right)\right) - V_{pier} = 3342.2\ ft^3$

$V_{conc} := V_{ftg} + V_{pier} = 488.5\ ft^3$

$W_{conc} := V_{conc} \cdot \gamma_{conc} = 73.3\ kip$

$W_{soil} := V_{soil} \cdot \gamma_{soil} = 334.2\ kip$

$W_{tot} := W_{conc} + W_{soil} = 407.5\ kip$

Uplift Check

$$Usage_{uplift} := \frac{P_{tens}}{W_{tot}} = 0.85$$

$$Status_{uplift} := \left| \begin{array}{l} \text{if } Usage_{uplift} \le 1 \\ \quad \text{"OK"} \\ \text{else} \\ \quad \text{"NG"} \end{array} \right| = \text{"OK"}$$

Soil Bearing Check

$$A_{ftg} := Ftg_{width}^{\ 2} = 100\ \textit{ft}^2$$

$$S_{ftg} := \frac{Ftg_{width}^{\ 3}}{6} = 166.667\ \textit{ft}^3$$

$$q_{brg} := \frac{P_{comp} + W_{conc}}{A_{ftg}} + \frac{H_{shear} \cdot \langle Pier_{height} + Pier_{projection} + Ftg_{thick} \rangle}{S_{ftg}} = 7.3\ \textit{ksf}$$

$$Usage_{bearing} := \frac{q_{brg}}{q_{soil}} = 0.81$$

$$Status_{bearing} := \left| \begin{array}{l} \text{if } Usage_{bearing} \le 1 \\ \quad \text{"OK"} \\ \text{else} \\ \quad \text{"NG"} \end{array} \right| = \text{"OK"}$$

Overturning Check

$$M_{ot} := H_{shear} \cdot \langle Pier_{height} + Pier_{projection} + Ftg_{thick} \rangle = 575.5\ \textit{kip} \cdot \textit{ft}$$

$$M_{res} := \left(W_{conc} + \left(\gamma_{soil} \cdot \left(\left(Ftg_{width}^{\ 2} \cdot Pier_{height} \right) - V_{pier} \right) \right) \right) \cdot \frac{Ftg_{width}}{2} = 847.1\ \textit{kip} \cdot \textit{ft}$$

$$Usage_{OT} := \frac{M_{ot}}{M_{res}} = 0.68$$

$$Status_{ot} := \left| \begin{array}{l} \text{if } Usage_{OT} \le 1 \\ \quad \text{"OK"} \\ \text{else} \\ \quad \text{"NG"} \end{array} \right| = \text{"OK"}$$

Sliding Check

$$V_{sliding} := \mu \cdot \langle W_{conc} + P_{comp} \rangle = 171.4\ \textit{kip}$$

$$Usage_{sliding} := \frac{H_{shear}}{V_{sliding}} = 0.22$$

$$Status_{sliding} := \left| \begin{array}{l} \text{if } Usage_{sliding} \le 1 \\ \quad \text{"OK"} \\ \text{else} \\ \quad \text{"NG"} \end{array} \right| = \text{"OK"}$$

Foundation Analysis (OTRM 059.1)
Compression Pier (as per foundation drawings 01503-60002& 01503-42001)

Joint Support Reactions from PLS-Tower

Row #	Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Comp. Foundation / Uplift Foundation
1	NESC 250B (Heavy)	0P	-25.35	-24.87	-279.62	35.51	U
2	NESC 250B (Heavy)	0X	20.93	-26.99	174.96	34.16	U
3	NESC 250B (Heavy)	0XY	-19.39	-22.8	167.64	29.93	C
4	NESC 250B (Heavy)	0Y	23.81	-23.35	-261.04	33.35	C
5	NESC 250C (Extreme Wind)	0P	-23.08	-26.14	-277.63	34.88	U
6	NESC 250C (Extreme Wind)	0X	36.05	-54.51	313.27	65.36	U
7	NESC 250C (Extreme Wind)	0XY	-25.62	-35.63	210.07	43.88	C
8	NESC 250C (Extreme Wind)	0Y	30.65	-31.64	-341.43	44.05	C

Reactions

$H_{shear} := 44.05\ kip \cdot 1.1 = 48.46\ kip$ Maximum Compression Shear Force

$P_{comp} := 341.43\ kip \cdot 1.1 = 375.57\ kip$ Maximum Compression Force

$P_{tens} := 210.07\ kip \cdot 1.1 = 231.08\ kip$ Maximum Tension Force

Foundation Properties

$Pier_{height} := 0\ ft$

$Pier_{width.top} := 0\ ft$

$Pier_{width.bot} := 0\ ft$

$Pier_{projection} := 0\ ft$

$Ftg_{width} := 19\ ft$

$Ftg_{thick} := 7.5\ ft$

Geotechnical Properties

$\gamma_{conc} := 150\ pcf$

$\gamma_{water} := 62.4\ pcf$

$\gamma_{soil} := 100\ pcf$

$\phi_{soil} := 30\ deg$

$q_{soil} := 9\ ksf$

$\mu := 0.45$

Calculations

$V_{ftg} := Ftg_{width}^{2} \cdot Ftg_{thick} = 2707.5\ ft^3$

$V_{pier} := \frac{Pier_{height}}{3} \cdot \left(Pier_{width.top}^{2} + Pier_{width.bot}^{2} + \sqrt{Pier_{width.top}^{2} \cdot Pier_{width.bot}^{2}}\right) = 0\ ft^3$

$Base_1 := Ftg_{width}^{2} = 361\ ft^2$ Resisting Pyramid Base 1

$Base_2 := \left(2 \cdot \tan\left(\phi_{soil}\right) \cdot \left(Pier_{height} - Pier_{projection}\right) + Ftg_{width}\right)^{2} = 361\ ft^2$ Resisting Pyramid Base 2

$V_{soil} := \left(\left(\frac{Pier_{height} - Pier_{projection}}{3}\right) \cdot \left(Base_1 + Base_2 + \sqrt{Base_1 \cdot Base_2}\right)\right) - V_{pier} = 0\ ft^3$

$V_{conc} := V_{ftg} + V_{pier} = 2707.5\ ft^3$

$W_{conc} := V_{conc} \cdot \gamma_{conc} = 406.1\ kip$

$W_{soil} := V_{soil} \cdot \gamma_{soil} = 0\ kip$

$W_{tot} := W_{conc} + W_{soil} = 406.1\ kip$

Uplift Check

$$Usage_{uplift} := \frac{P_{tens}}{W_{tot}} = 0.57$$

$$Status_{uplift} := \left| \begin{array}{l} \text{if } Usage_{uplift} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$$

Soil Bearing Check

$$A_{ftg} := Ftg_{width}^{\ 2} = 361\ ft^2$$

$$S_{ftg} := \frac{Ftg_{width}^{\ 3}}{6} = 1143.167\ ft^3$$

$$q_{brg} := \frac{P_{comp} + W_{conc}}{A_{ftg}} + \frac{H_{shear} \cdot \left\langle Pier_{height} + Pier_{projection} + Ftg_{thick} \right\rangle}{S_{ftg}} = 2.5\ ksf$$

$$Usage_{bearing} := \frac{q_{brg}}{q_{soil}} = 0.28$$

$$Status_{bearing} := \left| \begin{array}{l} \text{if } Usage_{bearing} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$$

Overturning Check

$$M_{ot} := H_{shear} \cdot \left\langle Pier_{height} + Pier_{projection} + Ftg_{thick} \right\rangle = 363.4\ kip \cdot ft$$

$$M_{res} := \left(W_{conc} + \left(\gamma_{soil} \cdot \left(\left(Ftg_{width}^{\ 2} \cdot Pier_{height} \right) - V_{pier} \right) \right) \right) \cdot \frac{Ftg_{width}}{2} = 3858.2\ kip \cdot ft$$

$$Usage_{OT} := \frac{M_{ot}}{M_{res}} = 0.09$$

$$Status_{ot} := \left| \begin{array}{l} \text{if } Usage_{OT} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$$

Sliding Check

$$V_{sliding} := \mu \cdot \left\langle W_{conc} + P_{comp} \right\rangle = 351.8\ kip$$

$$Usage_{sliding} := \frac{H_{shear}}{V_{sliding}} = 0.14$$

$$Status_{sliding} := \left| \begin{array}{l} \text{if } Usage_{sliding} \le 1 \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$$

APPENDIX E

SUPPLEMENTAL INFORMATION

1. Scope

This standard provides the required design criteria for wireless communication antennas on or extending above existing electric transmission towers and poles, and the analysis of transmission towers/poles supporting wireless communication antenna support system. This standard also describes the required submittal information.

This standard is applicable to Connecticut Light & Power (CL&P) only.

2. Regulations and Related Codes and Standards

A. ANSI Standard – TIA/EIA-222-F.

B. ANSI Standard – C2-2007 – National Electrical Safety Code.

C. Northeast Utilities (NU) Overhead Transmission Line Standards

1) OTRM 051 – Transmission Line and Substation Terminal Structure & Lightning Mast Foundations.
2) OTRM 060 – Extreme Wind & Ice Loading on Transmission Line Structures.
3) OTRM 063.1 – General Parameters and Guying for 115-kV & 345-kV Wood Pole Construction
4) OTRM 063.2 – Transmission Line Re-conductor Evaluation for Natural Wood Pole Structures
5) OTRM 160 –Technical Requirements for Steel Pole Structures
6) OTRM 162 – Laminated Wood Pole Structures
7) OTRM 163 – Natural Wood Pole Transmission Structures

D. NU Standard Drawings

1) Drawing # 09000-60000 – Grounding Details for Transmission Line Foundations.

E. NU Transmission Group Administrative Guidelines

1) M7-EN-3008 – Telecommunications Attachment Process
2) M7-EN-3016 – Transmission Line & Civil Engineering Calculations

3. Use of Consulting Engineering Firms for Wireless Communication Installations

A. Wireless Communication Carriers shall contact the NU Transmission Line and Civil Engineering Group (TL&CE) for a list of engineering consultants that have been approved to design the wireless communication addition, analyze, and reinforce the transmission structure.

1) Consulting engineering firms may be added to the list per request of the wireless communication carrier's contingent upon Northeast Utilities review of the consultants' qualifications and demonstration on the firm's expertise and proficiency in the use of the required software.
2) All engineering consultants shall be approved by Northeast Utilities.

B. Laminated Wood Systems, Inc. (1327 285th Road, PO Box 386, Seward NE 68434) shall be employed to analyze and design all engineered wood projects.

1) Analysis shall follow our current guidelines and procedures. Refer to OTRM 063.
2) Design and Procurement of Laminated pole structures shall be per OTRM 162 and OTRM 163.

4. Analysis Requirements for New Wireless Communication Facilities

A. All structural analyses shall be submitted to NU for review and acceptance. The submitted analysis package shall conform to all the requirements of this standard and must demonstrate that the proposed new addition is structurally adequate and will not compromise the structural adequacy of transmission structure.

B. Analysis packages that conclude the structure is failing shall also be submitted to NU.

C. Field Investigation

1) The Engineering Consultants shall conduct a field investigation to assess structural condition to determine if a structural strength reduction factor is necessary to justify all calculation assumptions made in structural analysis. The field investigation shall include anchor bolts, stub angle, and footing. The written justifications forming the basis for the assumptions shall be included in the calculations.

D. Approved Analysis Programs

1) It is preferred that the latest version of the below referenced programs be utilized. If a vendor utilizes an earlier version, the vendor is required to verify that the earlier version is compatible with the latest release version.

2) “PLS Caisson”, “M-FAD”, or “L-Pile” shall be used to analyze caisson foundations.

3) "PLS Tower" is required to analyze all transmission line lattice structures.

4) "PLS Pole" is required to analyze all transmission line steel poles, with the exception of "Finney" style poles.

5) "STAAD-3D" or "RISA-3D" is required to analyze all transmission line “Finney” (built-up box sections from rolled I beams or Channels and steel plates) poles.

6) "RISA Tower", "STAAD-3D", or "RISA-3D" analysis software is permitted for use in wireless communication mast design and analysis.

7) "MathCAD" worksheet calculations are required for preparation of calculations used in lieu of or to supplement the analysis results of the software above.

E. Analysis and Design

The analysis and design of the wireless communication mast and electric transmission structure shall be performed utilizing a three (3) step approach:

1) STEP 1 - The wireless communication mast and mount design shall be analyzed and designed to comply with TIA/EIA-222-F. This analysis and design does not consider the electric transmission structure.

The Wireless Communication Facility (Mast, antennas, trays, coax supports, including initial and any planned future support platforms, antennas, etc extending the full height above the top level of the electric transmission structure shall be designed in accordance with the provisions of TIA/EIA-222-F Standard with two exceptions:

a) An 85 MPH extreme wind speed shall be used for locations in all counties throughout the State of Connecticut.

b) The allowable stress increase of TIA Section 3.1.1.1allowed for mast section, but is disallowed for the mast to structure connection design.

To clarify, 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.

Shape Factor Criteria shall be per TIA Shape Factors.

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

   The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition

   Existing structures are to be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

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

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

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

   c) Electric Transmission Structure

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

      ii) Shape Factor Multiplier:

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

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

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

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

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

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

If the electric transmission structure is not sufficient to support the additional loadings of the wireless communication mast, reinforcement will be required to upgrade the strength of the overstressed members. Any reinforcement design will be reviewed by NU TL&CE to determine the feasibility of construction and its impact on the use of the structure as a transmission structure.

3) STEP 3 -The Foundation analysis and evaluation shall be performed in accordance with NU requirements (OTRM 051 and this standard).

a) The Foundation supporting the wireless communication antennas shall be evaluated for stability analysis per OTRM 051.

b) Existing foundations are exempt from evaluation if both of the following conditions are met:

i) Original foundations reactions are available, and the new imposed reactions are equal or less than original design reaction; and

ii) The foundation is observed to be structurally sound.

iii) Foundation reactions shall be tabulated showing original design foundation reactions (if available) and new imposed foundation reaction loads. Additionally, present differential reaction loads need to be provided.

c) Foundation calculations shall be performed in a "MathCAD" worksheet unless otherwise approved by NU.

d) Direct embedded steel poles:

i) Embedment depths should be provided in existing design drawings. If embedment depth is not indicated on design drawings, contact TL&CE.

e) Soil Boring

i) Soil boring information will be provided by NU if available.

ii) If soil boring report is unavailable:

(i) The Wireless Communication Carrier's consulting engineer shall coordinate with NU for Soil Boring exploration.

(ii) Soil properties may be assumed (with NU acceptance) where soil boring or soil report information is not available. Typically assumed values are:

- Soil unit weight (dry) - 100 pcf
- Rock unit weight (dry) - 160 pcf
- Soil angle of internal friction - 30 degrees
- Rock shear failure angle - 30 degrees (to vertical plane)
- Ultimate soil bearing capacity – 9,000 psf
- Ultimate bond stress for grout bonded to rock - 120 psi to 150 psi
- Water table - must be determined if not available
- Ultimate rock bearing capacity – 80,000 psf
- Ultimate rock subgrade modulus – 8,800,000 pcf

F. Weather Conditions

1) Extreme Weather Conditions are considered:

a) An extreme wind (hurricane) based upon a 50-year recurrence (2% annual probability). Refer to OTRM 060 for NESC Extreme Wind Design Zones (NESC Rule 250C)

b) Winter conditions combining wind and ice loadings (NESC Heavy Rule 250B).

c) For structures installed 2007 or later, Combined Extreme Ice and Wind Loadings (NESC Rule 250D).

5. Analysis Requirements for Modifications of Existing Wireless Communication Facilities

A. If a telecommunication carrier proposes changes to the carrier's aerial equipment installed on NU transmission structures, no re-analysis of the structure is required if all of the following condition are met:

1) The loads imposed by the proposed installation (i.e. wind and dead load and number of antennas and their center locations) are equal to or less than the loads imposed by the existing installation, as specified in the original report and construction documents.

2) The number and size of coaxial cables in the proposed installation are equal or less than the number and size of cables in the existing installation, and the arrangement of the cables in the proposed installation produces loads which are equal to or less than the loads from the existing installation, as specified in original report and construction documents.

3) Existing mast and mast mount brackets were installed as specified in the original report and construction documents and the proposed installation will not modify the existing mast and mast mount brackets.

4) Should the structural analysis with the antenna loads demonstrate that the existing tower fails to meet the applicable code, and then a recommendation should be submitted for strengthening the tower.

5) Should the structural analysis with no antenna load reveal a significant structural performance issue which degrades the transmission structure function, then Transmission Line & Civil Engineering Group (TL&CE) shall be informed.

B. The telecommunication carrier's engineer shall provide a letter to NU signed and sealed by a P.E. registered in the state where the project resides, along with documentation demonstrating that the above criteria has been met. (See Section 5.C if the above conditions are not met.)

C. If the above conditions are not met, the modification shall be treated as a new installation and a new analysis and/or design which meets the requirements specified in Section 4, utilizing wire loads provided by NU, will be required.

6. Submittal Requirements

A. All submittals shall comply with M7-EN-3016.

B. All Structural Reports, Calculations, Modification, and Construction Drawings shall be signed and sealed by a Professional Engineer. The engineer must be licensed in the state the project is located.

C. All submittals shall reference ownership as "Connecticut Light & Power" (CL&P). All references to standards, specifications, and requirements shall reference the Northeast Utilities Service Company (NUSCO).

1) Examples:
   a) CL&P Structure #XXXX
   b) NUSCO Drawing #XXXXX-XXXXX

D. The entire package, including the field information, photos, and equipment data sheets utilized for the preparation of the report shall be submitted at one time and must consist of all Reports, Drawings, Calculations, and Supporting Documentation. The package shall include:
   1) Hard copies
      a) Original stamped documents as described in section 4.A.
         i) Modification and Construction drawings shall be bound and in 11" x 17" format, non-construction sketches used in the report may be 8.5" x 11" format.
         ii) All Structural Reports and Calculations must be submitted as a bound report.
      b) Calculations
         i) "PLS", "RISA Tower", "STAAD-3D", "RISA-3D", "L-Pile, or "M-FAD" input and output.
         ii) All calculations not included in one of the approved programs listed in Section 5.A must be supplied with formulae in a "MathCAD" worksheet(s).
            (i) No hand calculations are permitted.
            (ii) All formulas shall reference the code & article number.
            (iii) Calculations performed in a spreadsheet shall not be used without prior NU approval.
               1. The formula for each cell must be shown.
               2. The formula used must be associated with the applicable code name and list the code section/reference number
         iii) Foundation Calculations and Evaluations.
      c) Supporting Documentation
         i) Reduced size of existing drawings provided for the analysis as well as any field information that was obtained, including photographs.
         ii) All equipment cut sheets
   2) Electronic copy on CD
      a) The CD shall include all files in the original format used to conduct the analysis.
         i) "RISA Tower", "STAAD-3D" or "RISA-3D" input and output files, "MathCAD", "L-Pile","M-FAD", "PLS", and "AutoCAD" files must be included.
         ii) Backup (.bak) or executable files are also required where applicable.
      b) The CD shall include a PDF version of all submitted documents listed above, excluding photographs, which shall be in JPG format.

E. The analysis, design & construction documents then shall be submitted to NU TL&CE for review and approval. Incomplete packages will be returned.

7. Deviations

This standard sets forth the current NU 'best practices' for most applications of this subject matter. Therefore, deviation from this standard is generally not permitted. However, in unique instances a user may submit a written deviation request including justification to the listed Subject Matter Expert (SME). The SME must approve or deny the request in writing prior to the user commencing any

non-standard activities. The SME may consult with his/her supervisor, co-SME if any and co-SME supervisor, and subsequently must copy any approval to them.

8. Cognizant Engineering Group

   Manager Transmission Line & Civil Engineering - (CT/WMA)

   Refer to Master Standards List (MSL) for the names of the current approving manager(s) and SME(s).

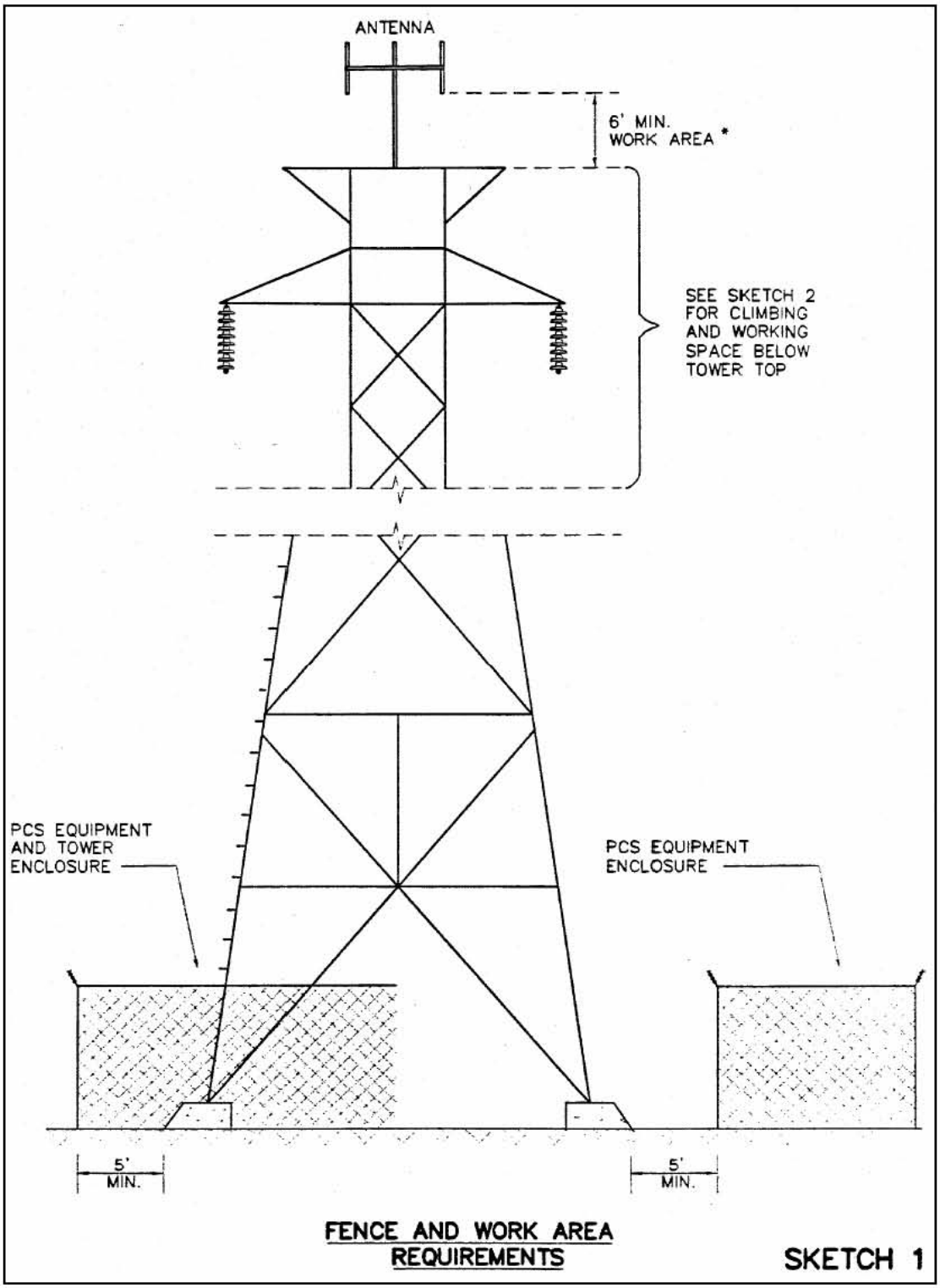
Revision History

Rev. 0 – Original Issue as OTRM 059 on 11/17/09) Split into OTRM 059.1 (CT Only) and OTRM 059.2 (WMA Only). Revised original Attachment A . Updated Section 4.C, 4.E.2, and 5.C. 04/16/2013
Rev. 1 – Updated Section 4.E. assumed soil property values. 03/12/2014

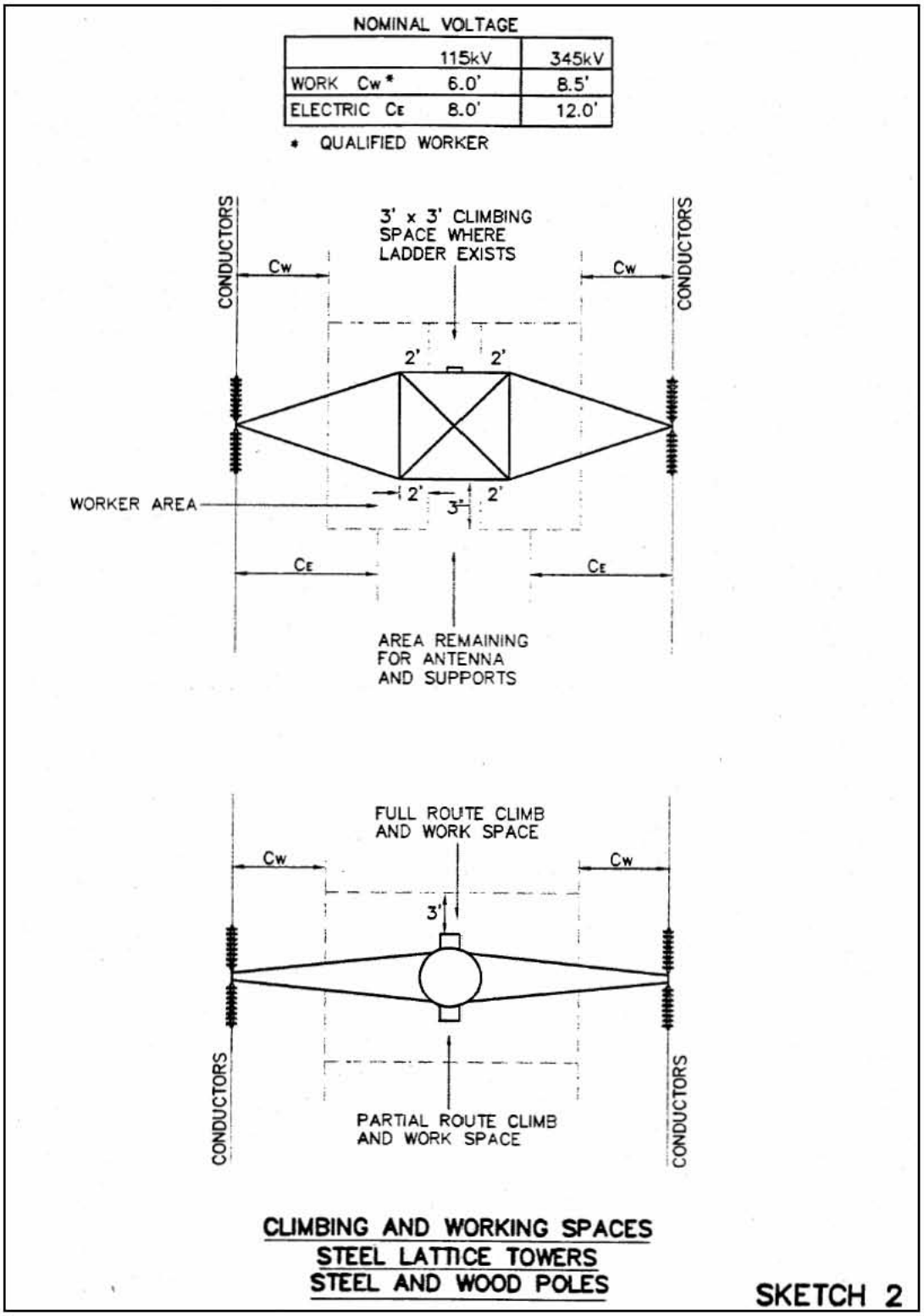
Attachment A

		Attachment A NU Design Criteria	Basic Wind Speed	Pressure	Height factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	____	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	____	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Conductors:	Conductor Loads Provided by NU					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
High Wind Condition	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
High Wind Condition	NESC Extreme Wind	Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
High Wind Condition	NESC Extreme Wind	Conductors:	Conductor Loads Provided by NU					
NESC Extreme Ice with Wind Condition *		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 X Gust Response Factor Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
NESC Extreme Ice with Wind Condition *		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
NESC Extreme Ice with Wind Condition *		Conductors:	Conductor Loads Provided by NU					
		* Only for structures installed after 2007						

Attachment B
Fence and Work Area Requirements



Attachment C
Climbing and Working Spaces



Network Modernization RFDS v3.0

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

Configuration
704BU

Approvals	
Market RF	
Market Development	

RFDS Revision		**Date**	05/23/2014
RFDS Final	X		
Work Order #		**NOC#**	(888) 218-6664

Site Information

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

	Relocate cabinet
	Add cabinet
	Swap cabinet
	Remove cabinet
	Make cabinet dark

Scope of Work

Swap DUL with DUS41.

ALPHA - Scope of Work

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

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

BETA - Scope of Work

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

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

GAMMA - Scope of Work

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

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

DELTA - Scope of Work

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

Network Modernization RFDS v3.0

T-Mobile

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

Configuration
704BU

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	X

Date 05/23/2014

ALPHA (view from behind)

Existing Configuration					Proposed Configuration				
				Mount	X				
GSM/UMTS	UMTS/LTE			Technology	GSM/UMTS	UMTS/LTE	LTE		
B2	B4			Band	B2	B4	B12		
P	P			Active/Passive	P	P	P		
Quad pole				Ant. Type	Hexpole				
APX16DWV_16DWVS				Ant. Model	SBNHH-1D65A				
RFS				Ant. Vendor	Commscope				
180				Ant. Height	180				
30				Azimuth	30				
Yes	Yes			RET deployed	Yes	Yes	Yes		
2	2			E-Tilt	2	2	2		
0	0			M-Tilt	0	0	0		
1	1			TMA #	1	1			
dd B2	dd B4			TMA Type	dd B2	dd B4			
				RRU #			1		
				RRU Type			RUS11_B		
2	2			Used Coax #	2	2	2		
1 5/8"	1 5/8"			Coax Type	1-5/8"	1-5/8"	1-5/8"		
200				Coax Length (ft)	200				
				Fiber (CPRI) #					
				Splitter #					
				Combiner #					
				Combiner Type					

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

Scope of work

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

BETA (view from behind)

Existing Configuration					Proposed Configuration				
					X				
GSM/UMTS	UMTS/LTE			Technology	GSM/UMTS	UMTS/LTE	LTE		
B2	B4			Band	B2	B4	B12		
P	P			Active/Passive	P	P	P		
Quad pole				Ant. Type	Hexpole				
APX16DWV_16DWVS				Ant. Model	SBNHH-1D65A				
RFS				Ant. Vendor	Commscope				
180				Ant. Height	180				
150				Azimuth	150				
Yes	Yes			RET deployed	Yes	Yes	Yes		
2	2			E-Tilt	2	2	2		
0	0			M-Tilt	0	0	0		
1	1			TMA #	1	1			
dd B2	dd B4			TMA Type	dd B2	dd B4			
				RRU #			1		
				RRU Type			RUS11_B		
2	2			Used Coax #	2	2	2		
1 5/8"	1 5/8"			Coax Type	1-5/8"	1-5/8"	1-5/8"		
200				Coax Length (ft)	200				
				Fiber (CPRI) #					
				Splitter #					
				Combiner #					
				Combiner Type					

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

Scope of work

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

Network Modernization RFDS v3.0

Site ID	**CT11036C**	**Latitude**	41.32033
		Longitude	-72.34406
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Configuration
704BU

Approvals	
Market RF	
Market Development	

RFDS Revision	
RFDS Final	X

Date 05/23/2014

GAMMA (view from behind)

Existing Configuration

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

Proposed Configuration

			X			
GSM/UMTS	UMTS/LTE	LTE		Technology		
B2	B4	B12		Band		
P	P	P		Active/Passive		
Hexpole				Ant. Type		
SBNHH-1D65A				Ant. Model		
Commscope				Ant. Vendor		
180				Ant. Height		
270				Azimuth		
Yes	Yes	Yes		RET deployed		
2	2	2		E-Tilt		
0	0	0		M-Tilt		
1	1			TMA #		
dd B2	dd B4			TMA Type		
		1		RRU #		
		RUS11_B		RRU Type		
2	2	2		Used Coax #		
1-5/8"	1-5/8"	1-5/8"		Coax Type		
200				Coax Length (ft)		
				Fiber (CPRI) #		
				Splitter #		
				Combiner #		
				Combiner Type		

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

Scope of work

Swap Existing Quadpole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T.

DELTA (view from behind)

Existing Configuration

				Technology		
				Band		
				Active/Passive		
				Ant. Type		
				Ant. Model		
				Ant. Vendor		
				Ant. Height		
				Azimuth		
				RET deployed		
				E-Tilt		
				M-Tilt		
				TMA #		
				TMA Type		
				RRU #		
				RRU Type		
				Used Coax #		
				Coax Type		
				Coax Length (ft)		
				Fiber (CPRI) #		
				Splitter #		
				Combiner #		
				Combiner Type		

Proposed Configuration

				Technology		
				Band		
				Active/Passive		
				Ant. Type		
				Ant. Model		
				Ant. Vendor		
				Ant. Height		
				Azimuth		
				RET deployed		
				E-Tilt		
				M-Tilt		
				TMA #		
				TMA Type		
				RRU #		
				RRU Type		
				Used Coax #		
				Coax Type		
				Coax Length (ft)		
				Fiber (CPRI) #		
				Splitter #		
				Combiner #		
				Combiner Type		

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

Scope of work

Product Specifications

COMMSCOPE®

POWERED BY ANDREW®

SBNHH-1D65A

Andrew® Tri-band Antenna, 1 x 698–896 MHz and 2 x 1710–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 13.4 9 ° | 13.1 18 ° | 12.7	0 ° | 13.4 9 ° | 13.1 18 ° | 12.7	0 ° | 16.0 5 ° | 16.2 10 ° | 16.1	0 ° | 16.3 5 ° | 16.5 10 ° | 16.5	0 ° | 16.5 5 ° | 16.8 10 ° | 16.6	0 ° | 17.0 5 ° | 17.3 10 ° | 16.9
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® tri-band
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2360 MHz | 698 – 896 MHz

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6

Product Specifications

SBNHH-1D65A

Wind Loading, maximum	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1398.0 mm | 55.0 in
Width	301.0 mm | 11.9 in
Net Weight	15.2 kg | 33.5 lb

Remote Electrical Tilt (RET) Information

Annual Failure Rate, maximum	0.01%
Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	11.0 W
Protocol	3GPP/AISG 2.0 Multi-RET
RET Interface	RS-485 Female (daisy chain port ,1) | RS-485 Male (input port, 1)
RET Interface, quantity	1 female | 1 male
RET System	Teletilt®

Regulatory Compliance/Certifications

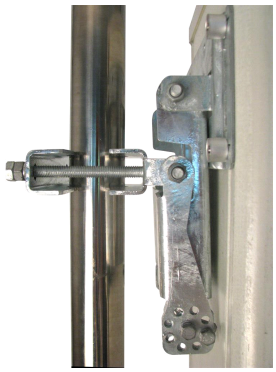
Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.5 - 4.5 in (64 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Product Specifications

POWERED BY ANDREW



BSAMNT-1

Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

General Specifications

Antenna Brand	Andrew®
Mount Type	Downtilt mounts
Application	Outdoor
Includes	Brackets | Hardware
Package Quantity	1

Mechanical Specifications

Color	Silver
Material Type	Galvanized steel

Dimensions

Compatible Diameter, maximum	115.0 mm | 4.5 in
Compatible Diameter, minimum	60.0 mm | 2.4 in
Net Weight	6.3 kg | 13.9 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant
China RoHS SJ/T 11364-2006	Below Maximum Concentration Value (MCV)
ISO 9001:2008	

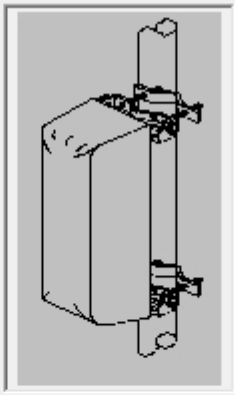
Appurtenance Section

US Name

KRY 112 489/2

SI Name

KRY 112 489/2



OK

Cancel

Help

Type

- Generic
- Flat Panel
- Triagonal (LPD)
- Cylindrical (Omni)

Height	11	in
Width	6.1	in
Depth	3.94	in
Weight	15.4	lb

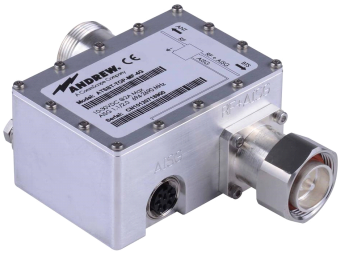
Mount

- 2" Pipe
- 2 1/2" Pipe
- 3" Pipe
- 3 1/2" Pipe

Length: 0 in

		No Ice	1/2" Ice	1" Ice	2" Ice	4" Ice
Weight	lb	15.4	20.472213	27.102574	45.815519	110.49474
CaAa (Front)	ft^2	0.652361	0.767515	0.891312	1.16483	1.815571
CaAa (Side)	ft^2	0.421361	0.522515	0.632312	0.87783	1.472571

Product Specifications



ATSBT-TOP-MF-4G

Teletilt® Top Smart Bias Tee

- Injects AISG power and control signals onto a coaxial cable line
- Reduces cable and site lease costs by eliminating the need for AISG home run cables
- AISG 1.1 and 2.0 compliant
- Operates at 10-30 Vdc
- Weatherproof AISG connectors
- Intuitive schematics simplify and ensure proper installation
- Enhanced lightning protection plus grounding stud for additional surge protection
- 7-16 DIN female connector (ANT)
- 7-16 DIN male connector (BTS)

General Specifications

Smart Bias Tee Type	10–30 V Top
Brand	Teletilt®
Operating Frequency Band	694 – 2690 MHz

Electrical Specifications

EU Certification	CE
Protocol	AISG 1.1 | AISG 2.0
Antenna Interface Signal	dc Blocked | RF
BTS Interface Signal	AISG data | dc | RF
Interface Protocol Signal	Data | dc
Voltage Range	10–30 Vdc
VSWR | Return Loss	1.17:1 | 22 dB, typical
Power Consumption, maximum	0.6 W
RF Power, maximum	250 W @ 1850 MHz 500 W @ 850 MHz
Impedance	50 ohm
Insertion Loss, typical	0.1 dB
3rd Order IMD	-158.0 dBc (relative to carrier)
3rd Order IMD Test Method	Two +43 dBm carriers
Electromagnetic Compatibility (EMC)	CFR 47 Part 15, Subpart B, Class B | EN 55022, Class B | ICES-003 Issue 4 CAN/CSA-CEI/IEC CISPR 22:02

Mechanical Specifications

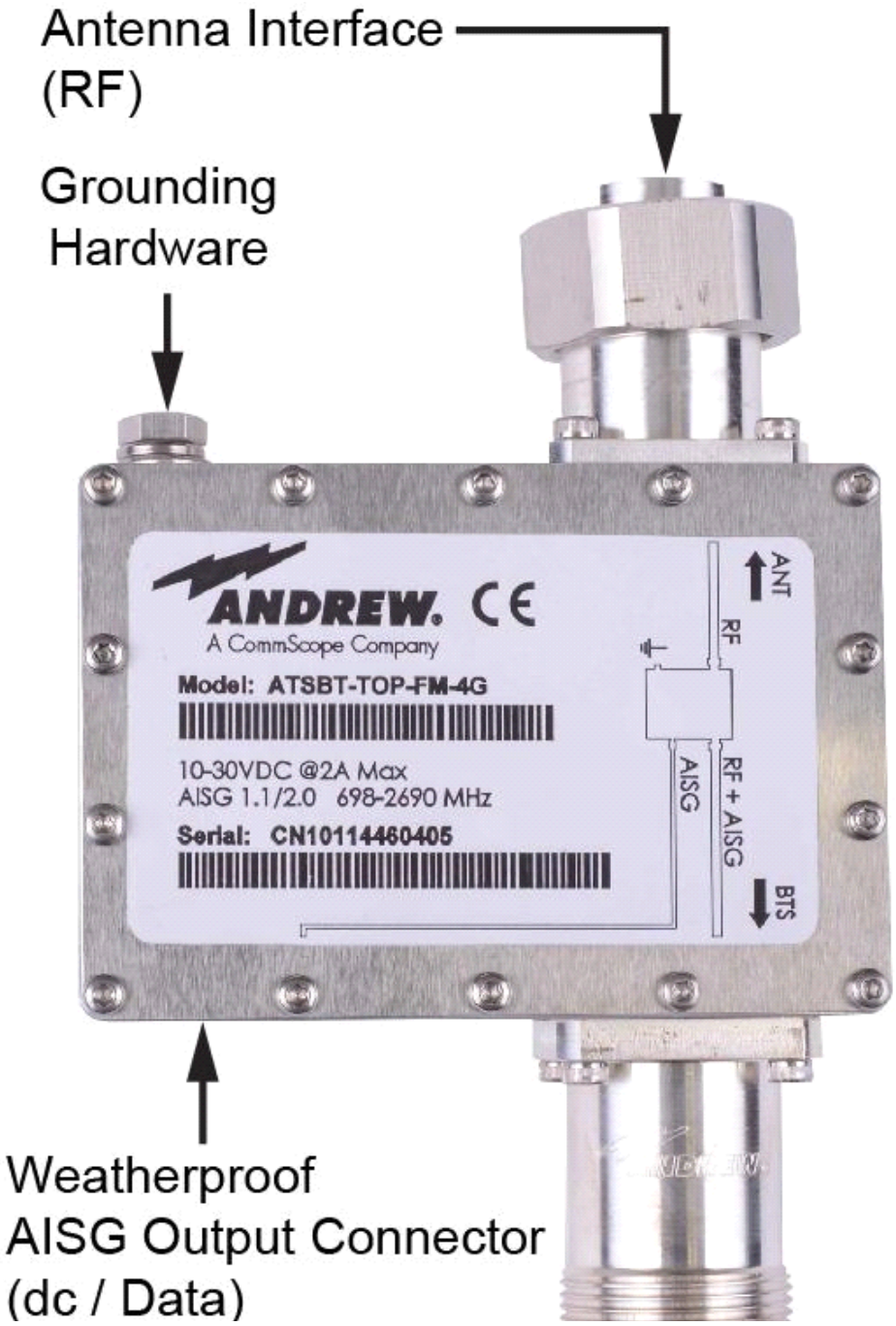
Antenna Interface	7-16 DIN Female
BTS Interface	7-16 DIN Male
AISG Input Connector	8-pin DIN Female
Color	Silver
Grounding Lug Thread Size	M8
Material Type	Aluminum
Lightning Surge Capability	5 times @ -3 kA 5 times @ 3 kA

Lightning Surge Capability Test Method	IEC 61000-4-5, Level X
Lightning Surge Capability Waveform	1.2/50 voltage and 8/20 current combination waveform

Environmental Specifications

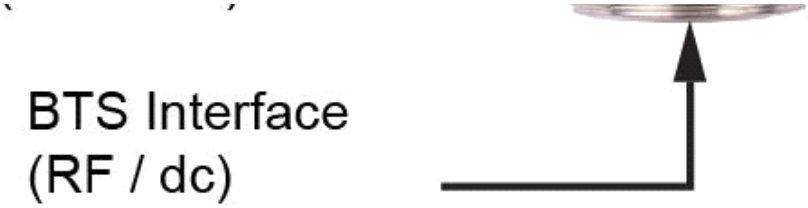
Ingress Protection Test Method	IEC 60529:2001, IP66
Operating Temperature	-40 °C to +70 °C (-40 °F to +158 °F)

Interface Port Drawing



Product Specifications

ATSBT-TOP-MF-4G



Dimensions

Width	94.0 mm | 3.7 in
Depth	50.0 mm | 2.0 in
Height	143.00 mm | 5.63 in
Net Weight	0.8 kg | 1.8 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

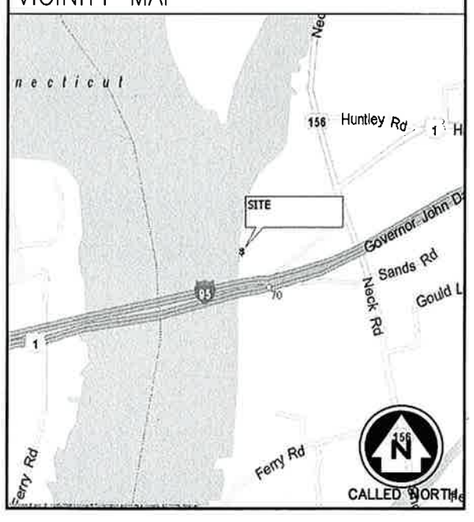
T-MOBILE NORTHEAST LLC

CT11036C
CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

(704BU CONFIGURATION)

VICINITY MAP



DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL:
"CALL BEFORE YOU DIG"
WWW.CBYD.COM
CALL 811, OR 1-800-922-4455
CALL THREE WORKING DAYS PRIOR TO DIGGING
SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC	– RED	SEWER	– GREEN
GAS/OIL	– YELLOW	SURVEY	– PINK
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T–MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T–MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T–MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.

PROJECT SUMMARY

SITE NUMBER:	CT11036C	APPLICANT:	T–MOBILE NORTHEAST LLC 103 MONARCH DRIVE LIVERPOOL, NY 13088
SITE NAME:	CT036/OLDLYME/ I–95/ X70		
SITE ADDRESS:	8 OLD BRIDGE ROAD (BTS SITE) OLD LYME, CT 06371	PROJECT MANAGER:	TRANSCEND WIRELESS 10 INDUSTRIAL AVE, SUITE 3 MAHWAH, NJ 07430
PROPERTY OWNER:	CONNECTICUT LIGHT & POWER		
		CONTACT:	JAMIE MARCHINI (973) 885–0660
PARCEL:	TBD		
ZONING:	TBD	ARCHITECT/ENGINEER:	INFINIGY ENGINEERING 1033 WATERVLIET SHAKER ROAD ALBANY, NY 12205
JURISDICTION:	TBD		
LAT./LONG.:	N 41.320326° / W –72.344057°		
CONSTRUCTION TYPE:	L700 UPGRADE	CONTACT:	ALEX WELLER 518–690–0790

PROJECT DESCRIPTION

☐ EXISTING MONOPOLE	▨ EXISTING CABINET(S)	▨ OUTDOOR
☐ EXISTING LATTICE TOWER	▨ EXISTING RBS 6102	☐ INDOOR
▨ EXISTING TRANSMISSION TOWER	☐ EXISTING RBS 3106	▨ EXISTING CONCRETE PAD
☐ EXISTING BILLBOARD	☐ EXISTING S8000	☐ EXISTING STEEL PLATFORM
☐ EXISTING ROOFTOP	☐ SITE SUPPORT KIT	▨ EXISTING PPC
☐ EXISTING FLAGPOLE	☐ SITE SUPPORT CABINET	☐ PANELBOARD
☐ EXISTING FORT WORTH	▨ GPS	

T–MOBILE NORTHEAST LLC PROPOSES THE MODIFICATION OF AN UNMANNED WIRELESS BROADBAND FACILITY. ADDITION OF PROPOSED LTE PANEL ANTENNAS, RRU'S AND FIBER CABLE. REUSE, GPS AND EXISTING 6102 EQUIPMENT CABINET. MOUNT MODIFICATION REQUIRED.

SHEET INDEX

SHEET	DESCRIPTION	REVISION
T–1	TITLE SHEET	C
C–1	SITE PLAN	C
C–2	COMPOUND PLAN & ELEVATION	C
C–3	ANTENNA DETAIL & RF SCHEDULE	C
C–4	EQUIPMENT SPECIFICATIONS	C
E–1	GROUNDING AND POWER DIAGRAMS	C
E–2	COAX/FIBER PLUMBING DIAGRAM	C
N–1	GENERAL AND ELECTRICAL NOTES	C

T-MOBILE NORTHEAST LLC
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INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

SUBMITTALS

DATE	DESCRIPTION	REVISION
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3/3/16	REVISED FOR REVIEW	B
4/19/16	REVISED FOR PERMIT	C

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	428-000
DRAWN BY:	JLM
CHECKED BY:	ASW

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER

PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NUMBER:
CT11036C

SITE NAME:
CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

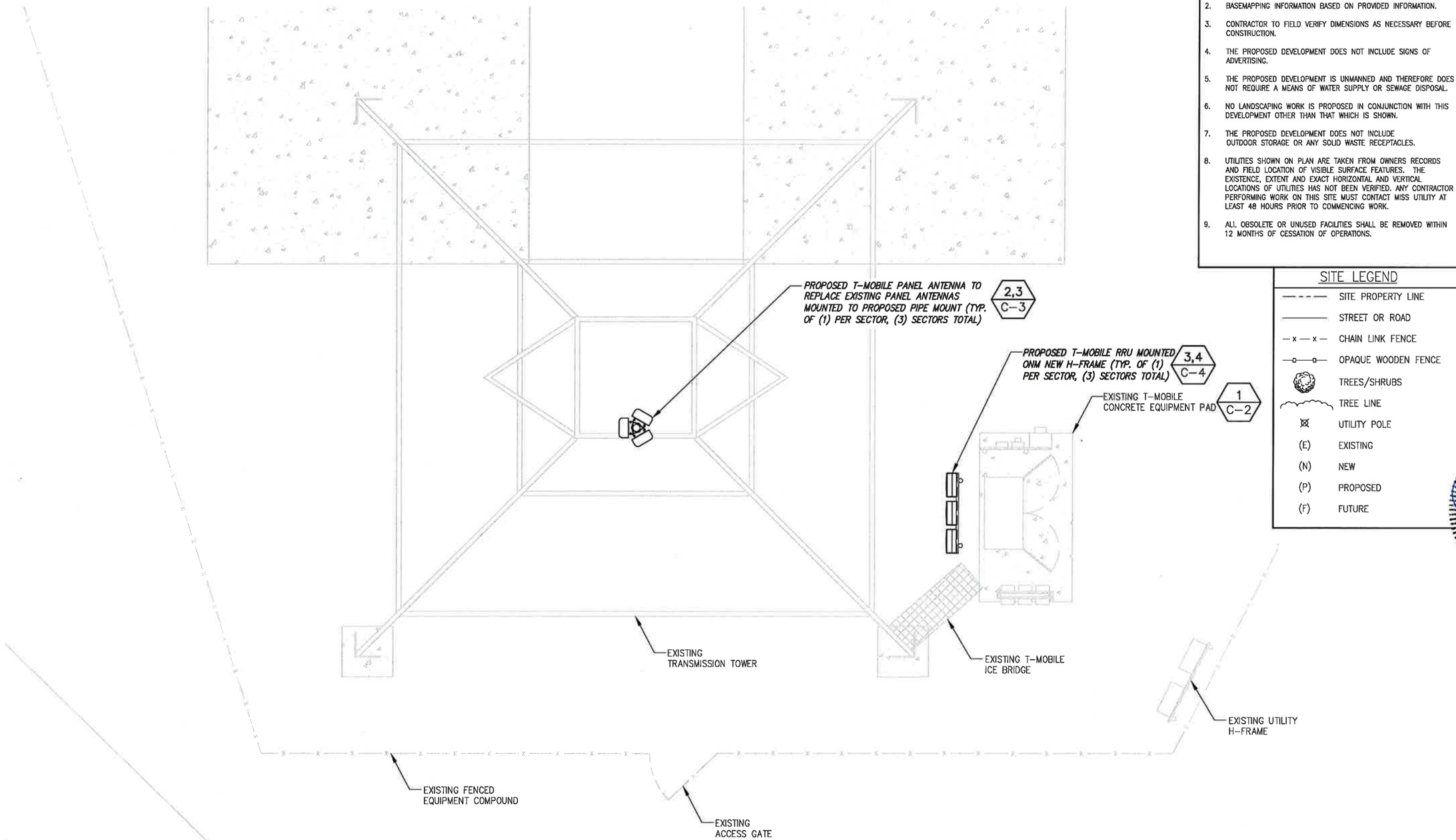
SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

SHEET 1 OF 8 SHEETS



GENERAL SITE NOTES:

1. A COMPLETE BOUNDARY SURVEY OF THE HOST PARCEL HAS NOT BEEN PERFORMED BY INFINIGY. BOUNDARY INFORMATION IF SHOWN WAS OBTAINED FROM INFORMATION PROVIDED BY OTHERS. PROPERTY IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
2. BASEMAPPING INFORMATION BASED ON PROVIDED INFORMATION.
3. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.
4. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.
5. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.
6. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.
7. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
8. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT MISS UTILITY AT LEAST 48 HOURS PRIOR TO COMMENCING WORK.
9. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE

CALLED NORTH

1 SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE

6' 3' 0 3' 6'

SCALE (11x17): 1" = 6'-0"
SCALE (22x34): 1" = 3'-0"

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RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

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CHECKED BY:	ASW

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CT11036C

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CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

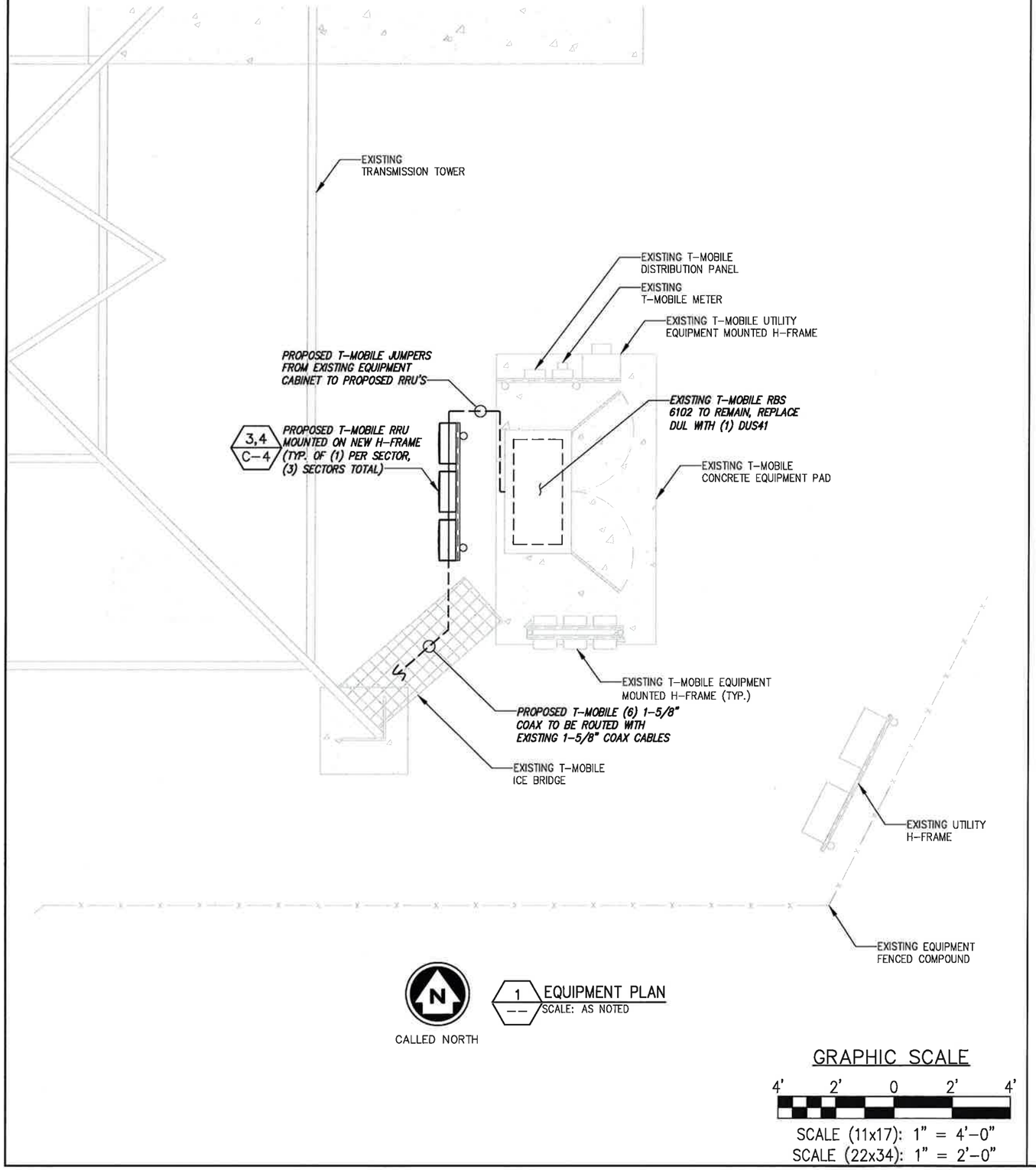
SHEET TITLE

SITE PLAN

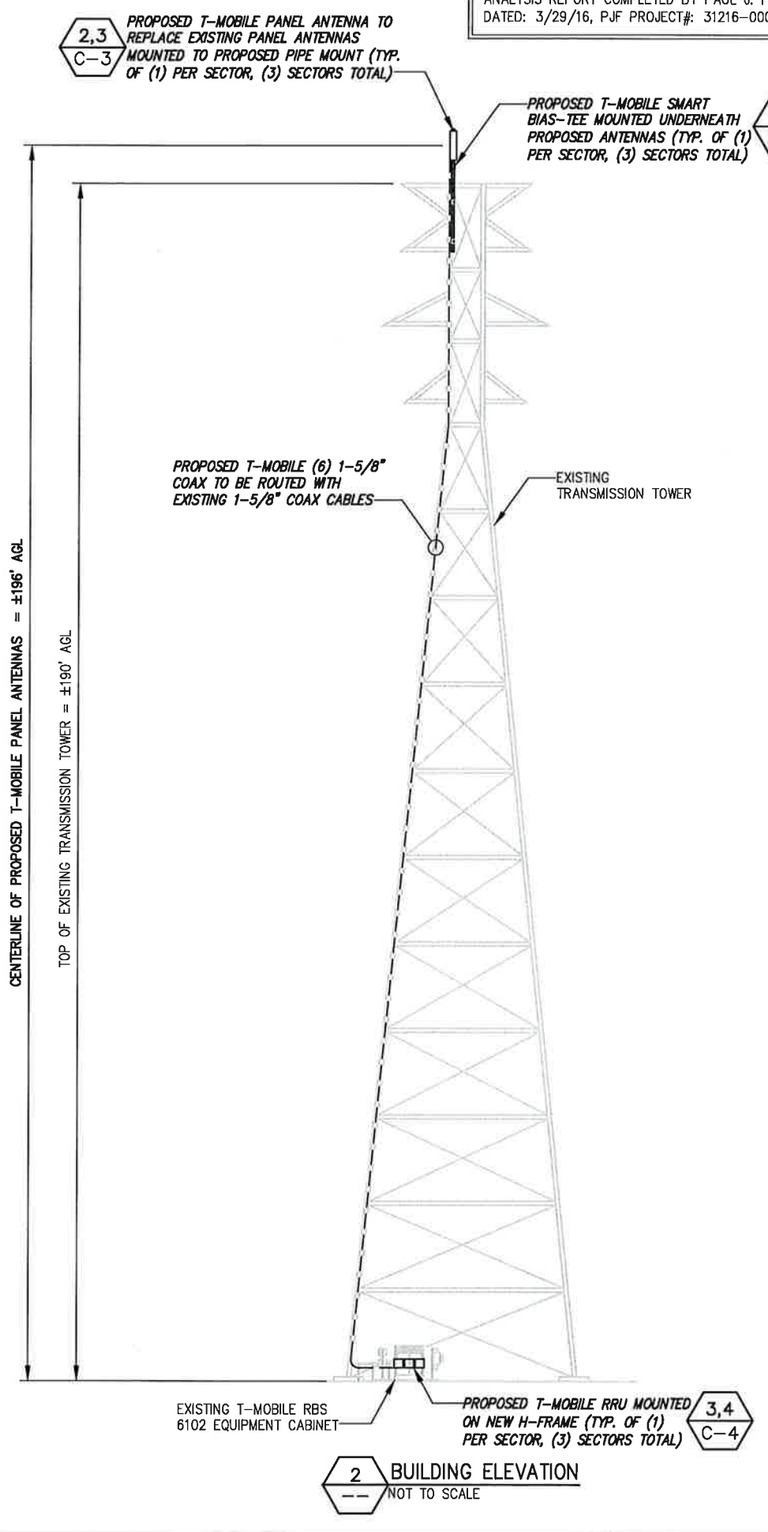
SHEET NUMBER

C-1

SHEET 2 OF **8** SHEETS



FOR ADDITIONAL STRUCTURAL INFORMATION PERTAINING TO THE TOWER AND MOUNT MODIFICATION, SEE STRUCTURAL ANALYSIS REPORT COMPLETED BY PAUL J. FORD & COMPANY, DATED: 3/29/16, PJF PROJECT#: 31216-0005.002.6125_6280



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8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

SHEET TITLE

COMPOUND PLAN & ELEVATION

SHEET NUMBER

C-2

SHEET 3 OF **8** SHEETS

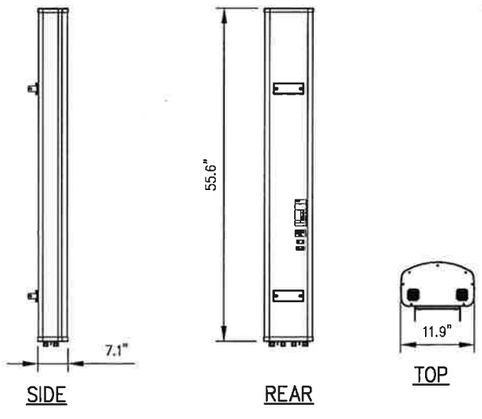
RF SYSTEM SCHEDULE (704Bu CONFIGURATION)

SECTOR	TECHNOLOGY	ANTENNA PORT	BAND	ANTENNA MODEL #	VENDOR	QTY (REMOVED)	QTY (NEW)	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA MODEL #	VENDOR	RRU MODEL #	VENDOR	CABLE LENGTH	CABLE DIAMETER	CABLE TYPE	CABLE MODEL #	VENDOR	CABLE TAGGING	COLOR CODING	JUMPER TYPE	JUMPER TAGGING	COLOR CODING
A	GSM/UMTS	OPTICAL #1	B2P	SBNHH-1D65A	COMMSCOPE	1	1	30°	0°	2°	196'-0"	-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	UMTS/LTE	OPTICAL #1	B4P						0°	2°		-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	LTE 700	TBD	B12P						0°	2°		-	-	(PROPOSED) RRUS 11	ERICSSON	(2) ±200'	1⅝"	COAX	EXISTING	N/A	-	-	COAX	LTE 700 COAX	-
B	GSM/UMTS	OPTICAL #1	B2P	SBNHH-1D65A	COMMSCOPE	1	1	150°	0°	2°	196'-0"	-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	UMTS/LTE	OPTICAL #1	B4P						0°	2°		-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	LTE 700	TBD	B12P						0°	2°		-	-	(PROPOSED) RRUS 11	ERICSSON	(2) ±200'	1⅝"	COAX	EXISTING	N/A	-	-	COAX	LTE 700 COAX	-
C	GSM/UMTS	OPTICAL #1	B2P	SBNHH-1D65A	COMMSCOPE	1	1	270°	0°	2°	196'-0"	-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	UMTS/LTE	OPTICAL #1	B4P						0°	2°		-	-	-	-	(2)EXISTING	1⅝"	COAX	EXISTING	N/A	-	-	COAX	-	-
	LTE 700	TBD	B12P						0°	2°		-	-	(PROPOSED) RRUS 11	ERICSSON	(2) ±200'	1⅝"	COAX	EXISTING	N/A	-	-	COAX	LTE 700 COAX	-

KEY	
EXISTING	R - RED - GSM
PROPOSED	G - GREEN - UMTS 1900
FIBER CONNECTION	B - BLUE - UMTS AWS
	Y - YELLOW - LTE
	O - ORANGE - FIBER CABLE

1 RF SCHEDULE
NOT TO SCALE

COMMSCOPE MODEL NO.:	SBNHH-1D65A
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	55.6"x11.9"x7.1" (1413 x 301 x 181 mm)
WEIGHT, W/ PRE-MOUNTED BRACKETS:	33.5 LBS (15.2 kg)
CONNECTOR:	8-PIN DIN FEMALE/8-PIN MALE



2 ANTENNA DETAIL
NOT TO SCALE

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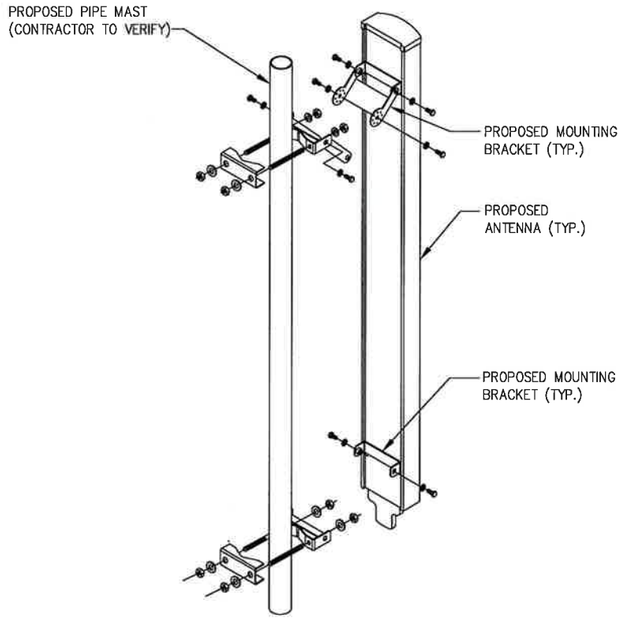
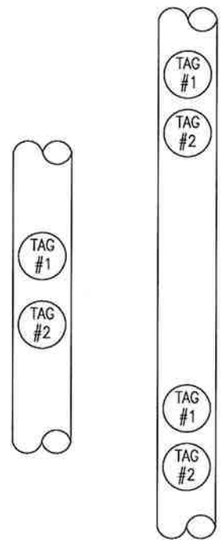


3 MOUNTING DETAIL
NOT TO SCALE



METALLIC TAG NOTES:

1. TWO METALLIC TAGS SHALL BE ATTACHED AT EACH END OF EVERY CABLE LONGER THAN (3) THREE FEET.
2. CABLES LESS THAN (3) THREE FEET WILL HAVE TWO METALLIC TAGS ATTACHED AT THE CENTER OF THE CABLE.
3. TAGS WILL BE FASTENED WITH STAINLESS STEEL ZIP TIES APPROPRIATE FOR CABLE DIAMETER.
4. STANDARDIZED METALLIC TAG KITS WILL BE ASSEMBLED WITH TAGS ALREADY ENGRAVED TO ACCOMODATE ALL CONFIGURATIONS.

4 METALLIC TAG DETAIL
NOT TO SCALE

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ZONING			
OPS			
CONSTR.			
SITE AC.			

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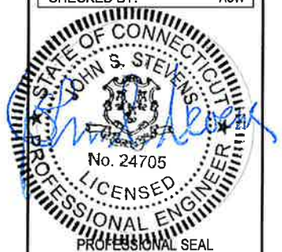

PROFESSIONAL SEAL

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SITE NUMBER:
CT11036C

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8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

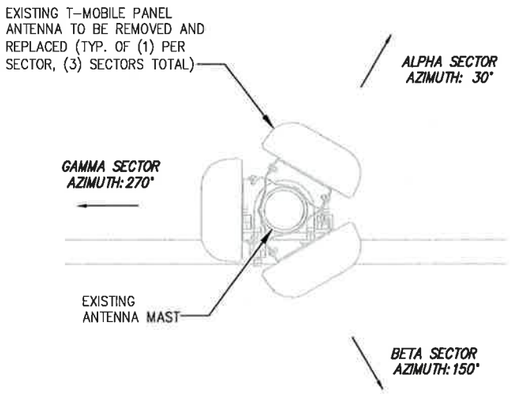
SHEET TITLE

ANTENNA DETAIL & RF SCHEDULE

SHEET NUMBER

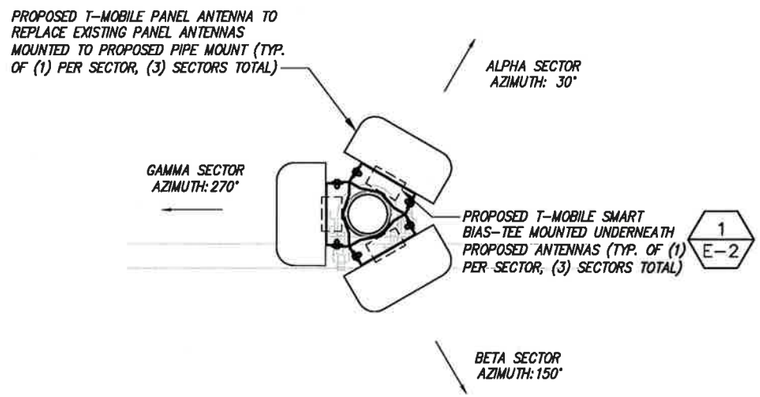
C-3

SHEET 4 OF **8** SHEETS



CALLED NORTH

1 / -- EXISTING ANTENNA ORIENTATION PLAN
NOT TO SCALE



CALLED NORTH

2 / -- PROPOSED ANTENNA ORIENTATION PLAN
NOT TO SCALE

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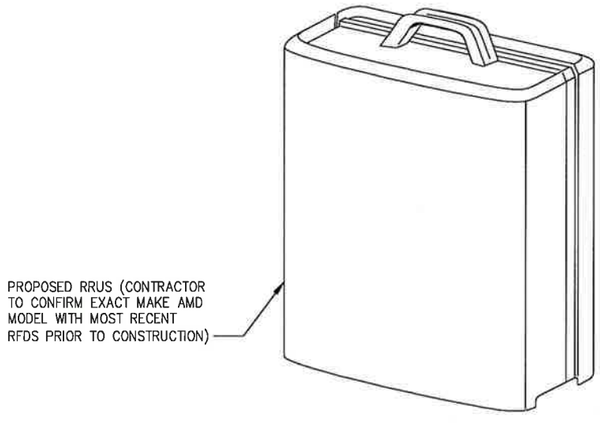
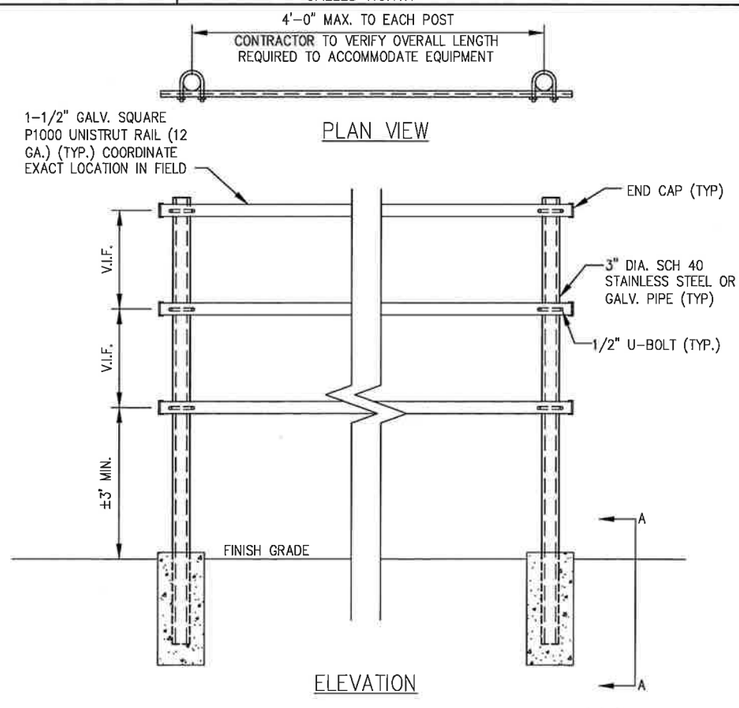
STRUCTURAL NOTES:

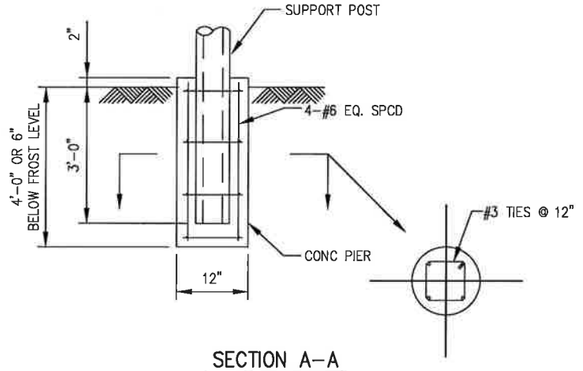
1. SPECIFICATIONS / CODES:
   - -CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE ACI CODE.
   - -STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 9th EDITION.
   - -WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.1-92 "STRUCTURAL WELDING" CODE-STEEL.
   - -REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI), "MANUAL OF STANDARD PRACTICE."
2. MATERIALS:
   - -CONCRETE: fc' - 3000psi. (MIN. U.N.O.)
   - -REINFORCING STEEL: ASTM A615, GRADE 60.
   - -WIRE MESH: ASTM A185.
   - -STRUCTURAL STEEL: ASTM A36.
   - -ELECTRODES FOR WELDING: E 70xx.
   - -GALVANIZING: ASTM A153 (BOLTS) OR ASTM A123 (SHAPES, PLATES).
   - -EXPANSION BOLTS: HILTI KWIK BOLT II, STAINLESS STEEL, 3/4"ø x 43/4" EMBEDMENT OR AN APPROVED EQUAL.

ERICSSON MODEL #:	RRUS11
COLOR:	GRAY
DIMENSIONS, HxWxD:	19.7"x17"x7.2" (500 x 431 x 182 mm)
WEIGHT:	50.71 LBS (23 kg)



3 / -- RRUS11 DETAIL
NOT TO SCALE





SECTION A-A
NOT TO SCALE

4 / -- H-FRAME FABRICATION DETAIL
NOT TO SCALE

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PROFESSIONAL ENGINEER
PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NUMBER:
CT11036C

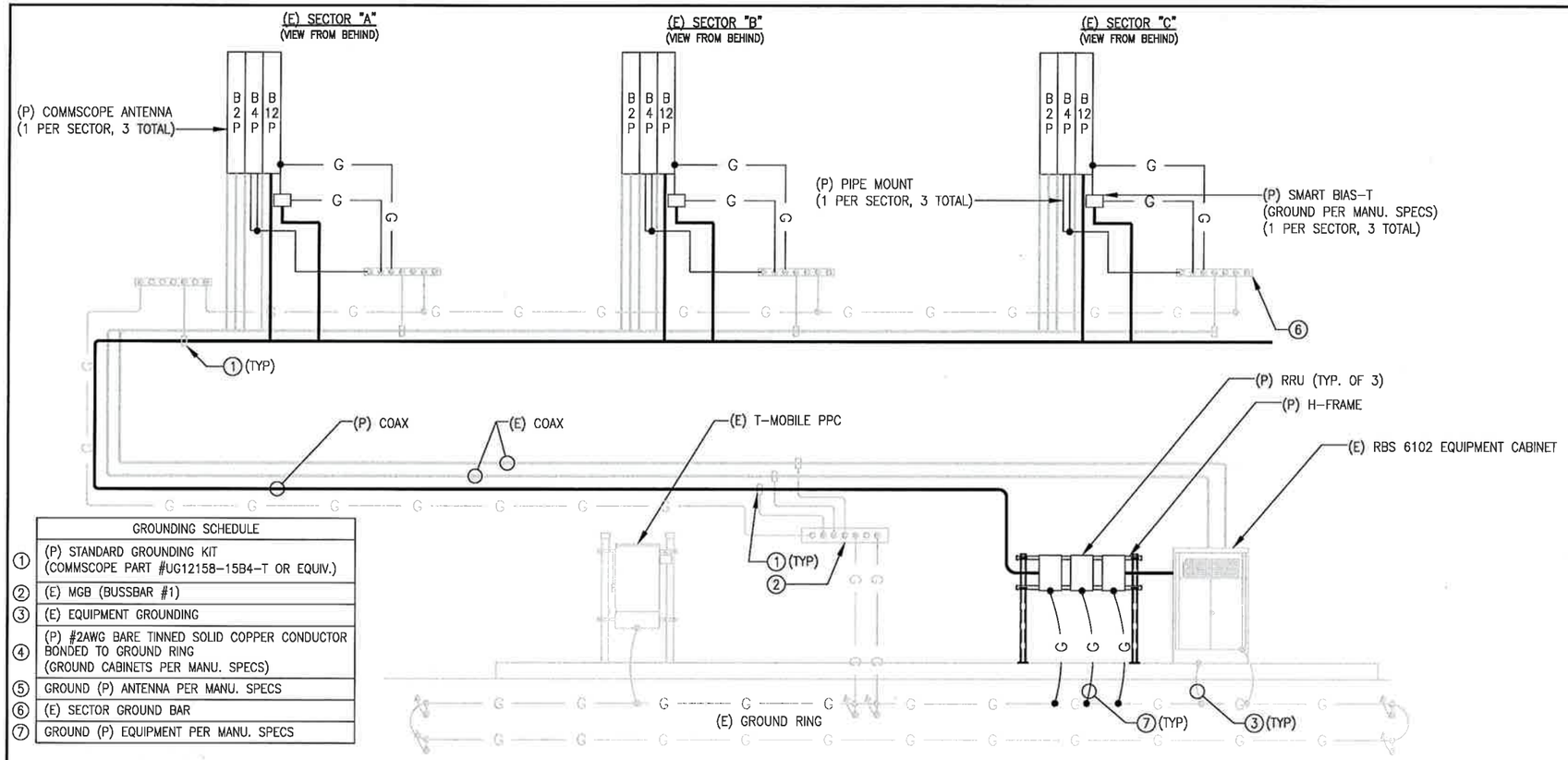
SITE NAME:
CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

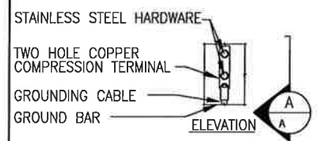
SHEET TITLE
EQUIPMENT SPECIFICATIONS

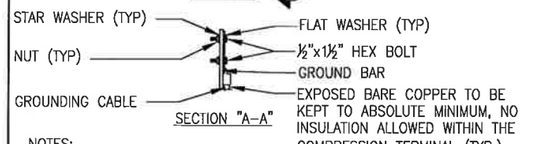
SHEET NUMBER
C-4

SHEET 5 OF 8 SHEETS

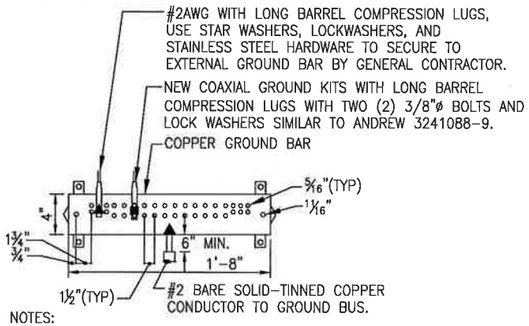


GROUNDING SCHEDULE	
1	(P) STANDARD GROUNDING KIT (COMMSCOPE PART #UG12158-15B4-T OR EQUIV.)
2	(E) MGB (BUSSBAR #1)
3	(E) EQUIPMENT GROUNDING
4	(P) #2AWG BARE TINNED SOLID COPPER CONDUCTOR BONDED TO GROUND RING (GROUND CABINETS PER MANU. SPECS)
5	GROUND (P) ANTENNA PER MANU. SPECS
6	(E) SECTOR GROUND BAR
7	GROUND (P) EQUIPMENT PER MANU. SPECS





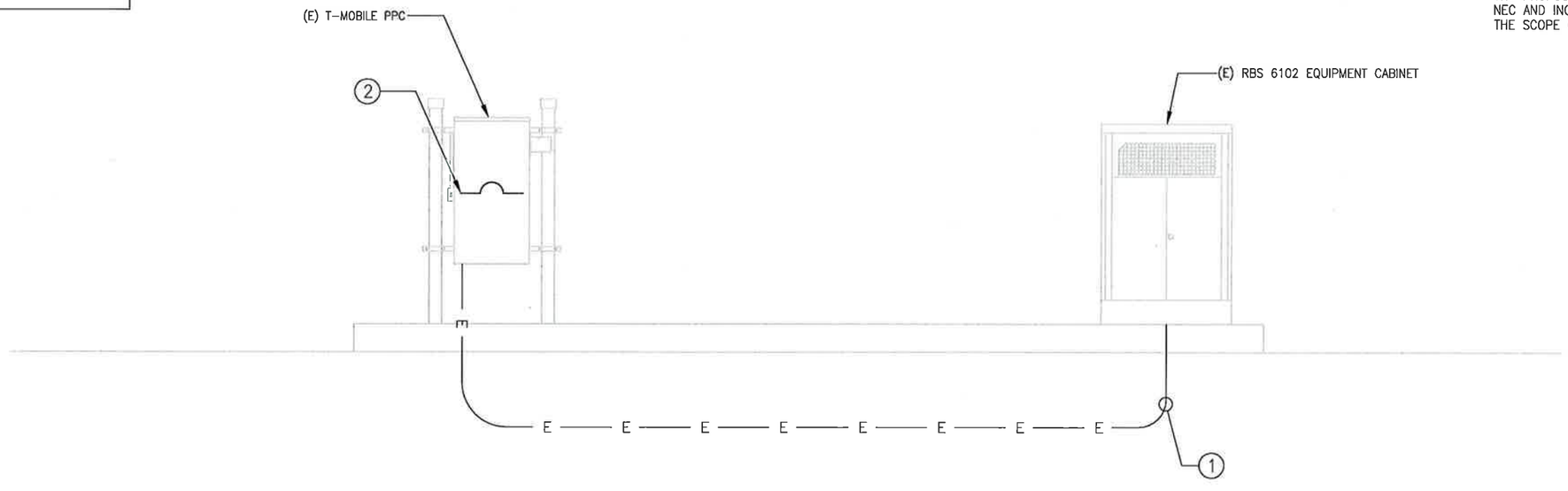
NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.



NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

2 GROUND BAR CONNECTION DETAILS
SCALE: NOT TO SCALE

CONDUIT SCHEDULE	
1	(P) WIRE AND CONDUIT UPGRADE FOR POWER
2	(P) BREAKER UPGRADE



3 POWER DIAGRAM
SCALE: NOT TO SCALE

CONTRACTOR NOTE:
CONTRACTOR TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSE LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

SUBMITTALS		
DATE	DESCRIPTION	REVISION
2/19/16	FOR REVIEW	A
3/3/16	REVISED FOR REVIEW	B
4/19/16	REVISED FOR PERMIT	C

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	428-000
DRAWN BY:	JLM
CHECKED BY:	ASW

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

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CT11036C

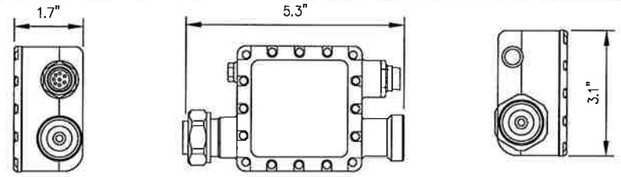
SITE NAME:
CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

SHEET TITLE
GROUNDING & POWER DIAGRAMS

SHEET NUMBER
E-1

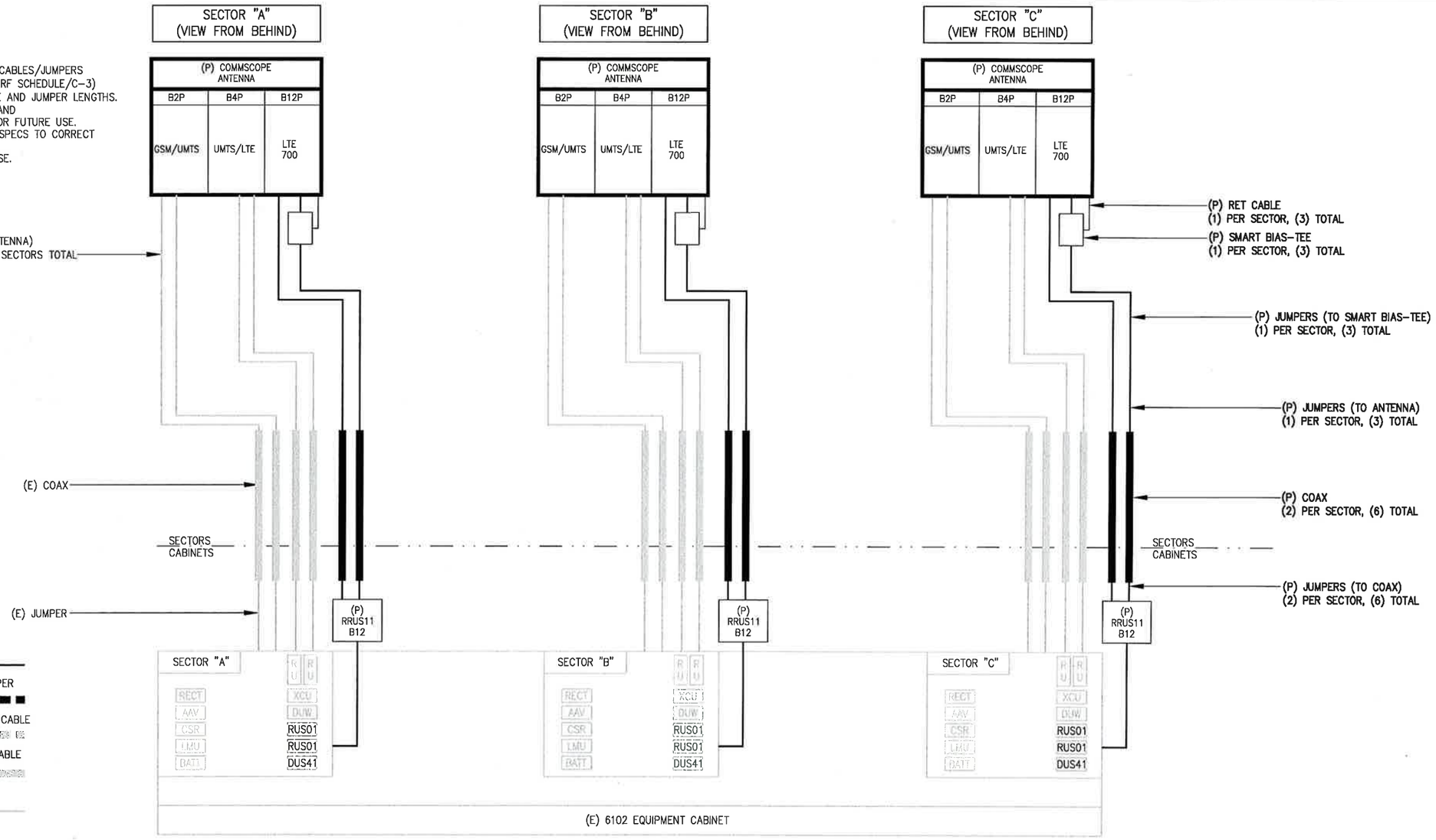
SHEET 6 OF **8** SHEETS



KATHREIN SCALA SMART BIAS-TEE
WEIGHT: 3.3 LBS

1 SMART BIAS-TEE DETAIL
NOT TO SCALE

NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS (SEE RF SCHEDULE/C-3)
2. SEE RF SCHEDULE/C-3 FOR CABLE AND JUMPER LENGTHS.
3. IF NEW GPS ADDED TO SITE, CAP AND WEATHERPROOF ANY UNUSED COAX FOR FUTURE USE.
4. TRIM POWER JUMPERS PER MANU. SPECS TO CORRECT LENGTH FOR CONNECTION.
5. COIL EXCESS FIBER IN CABINET BASE.



2 704Bu CONFIGURATION COAX/FIBER PLUMBING DIAGRAM
NOT TO SCALE

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SHEET TITLE
COAX/FIBER PLUMBING DIAGRAM

SHEET NUMBER
E-2

SHEET 7 OF 8 SHEETS

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
   B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
   E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
   B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
   B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
   C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
   E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
   A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
   A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
   B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

RACEWAYS CONT'D

   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
   A. GENERAL ELECTRIC COMPANY
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

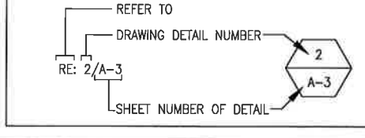
1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS

ROOM ###

(X) →

DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

T-Mobile

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

SUBMITTALS

DATE	DESCRIPTION	REVISION
2/19/16	FOR REVIEW	A
3/3/16	REVISED FOR REVIEW	B
4/19/16	REVISED FOR PERMIT	C

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	428-000
DRAWN BY:	JLM
CHECKED BY:	ASW

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NUMBER:
CT11036C

SITE NAME:
CT036/OLDLYME/ I-95/ X70

8 OLD BRIDGE ROAD (BTS SITE)
OLD LYME, CT 06371

SHEET TITLE

GENERAL AND ELECTRICAL NOTES

SHEET NUMBER

N-1

SHEET 8 OF 8 SHEETS