NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

January 17, 2017

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
Station Drive-Line #1750 –Pole#1280, Greenwich CT 06807
Latitude: 41.02998600
Longitude: -73.597948400
T-Mobile Site#: CT11241A_L700

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 153-foot and 161-foot level of the existing 140-foot transmission pole at Station Drive-Line# 1750, Greenwich CT 06807. The electric transmission pole is owned by CL&P d/b/a Eversource. The property is owned by CD Station LLC. T-Mobile now intends to install three (3) new 700 MHz. The new antennas would be installed at the 161-foot level of the tower. T-Mobile also intends to make the following modifications.

Planned Modifications:

Remove: NONE

Remove and Replace:
(3) ADFD1820-9090B-XDM **(Remove)** - (3) LNX-6512DS-A1M Flush Mounted **(Replace) – 161-foot RAD**

Install New:
(3) Smart Bias-T
(6) 1-5/8" Coax
(6) TMA 1A – Twin PCS GMA **Ground level Mounted**
(3) RRUS 11 B12 **Ground level Mounted**

Existing to Remain: (12) 1-5/8" Coax
(3) TMBXX-6516-A2M Antenna flush mounted – 153- Foot RAD

This facility was approved by the CT Siting Council. Petition No.466 –on June 20, 2000 T-Mobile Northeast LLC and Eversource received permission to modify a transmission structure for telecommunication use (pole #1280). Total height approved is164-feet. Please see attached.

NORTHEAST SITE SOLUTIONS

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Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor Peter Tesei, Elected Official and Katie DeLuca, Director for the Town of Greenwich, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in 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.

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,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Peter Tesei- Mayor - as elected official
Katie DeLuca- P&Z Director
CL&P d/b/a Eversource - as tower owner & property owner

Exhibit A

Petition No. 466
Voicestream Wireless
Greenwich, Connecticut
Staff Report
June 20, 2000

On June 16, 2000, Connecticut Siting Council (Council) member Edward S. Wilensky, and Fred Cunliffe of Council staff met Voicestream Wireless (Voicestream) representatives J. Brendan Sharkey, Esq., Chetan Dharduk, and Haider Syed for inspection of a Connecticut Light & Power Company (CL&P) electric transmission line structure (no. 1280) located off Sound Shore Drive in Greenwich. Voicestream, with the agreement of CL&P, proposes to modify the transmission structure for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Voicestream proposes to attach a 7-inch diameter pipe extending the existing lattice structure height of 140 feet by 23 feet four inches for a total height of approximately 164 feet. A structural analysis concludes no additional reinforcement is necessary. Voicestream proposes to install two low profile antenna cluster mounts with centers of radiation at 161 feet and 152 feet 4 inches on the pipe and a 2-foot by 2-foot microwave antenna at the approximate 140-foot level of the structure. Voicestream proposes to place associated equipment cabinets on a concrete foundation within a 10.5-foot by 11.5-foot compound secured by a six-foot chain link fence. Since CL&P transmission line easement is limited to an aerial right-of-way, Voicestream will need to obtain a lease agreement with the Connecticut Department of Rail Transportation (ConnDOT) for underlying land use. Access to the CL&P structure would be from Sound Shore Drive over a ConnDOT easement. Utilities would be placed underground within this easement from an existing distribution pole located approximately 350 feet west of the proposed site.

Surrounding land uses include a CL&P substation and transmission lines, Town-owned water tank and abandoned power station, railroad right-of-way, and Interstate 95. Other existing transmission line structures in the area range in height from 95 feet to 140 feet AGL.

The Council approved Petition No. 399 on July 23, 1998 for Sprint to use structure no. 1281 just west of the proposed site and approved Petition No. 443 on February 2, 2000 for AT&T to use structure no. 1292 adjacent to the Cos Cob Substation. The zoning of the proposed site is Residential R-6. The nearest home is approximately 350 north across the railroad right-of-way of the site.

The worst case power density for the telecommunications operations at the site has been calculated to be less than 1.8% of the applicable standard for uncontrolled environments.

Voicestream contends that the proposed installation will not cause a substantial adverse environmental effect, and for this reason would not require a Certificate.

Exhibit B

345

369

This map was produced from the Town of Greenwich Geographic Information System. The Town expressly disclaims any liability that may result from the use of this map. Aerial: 4/2/08. Data: 10/1/10. Map: 4/4/11. Copyright © 2005 by the Town of Greenwich.

TOWN OF GREENWICH TAX MAP 368

This map was produced from the Town of Greenwich GIS. The Town expressly disclaims any liability that may result from the use of this map. Basemap: 4/2/08. Parcels: 10/1/12.
Copyright 2005 Town of Greenwich

N

1:2400

1"=200'

1/9/2017 4:05:09 PM

02-1708/S CONN LIGHT & POWER CO SOUND SHORE DRIVE 0012

Tax ID 368/039 Printed 01/09/2017 Card No. 1 of 1

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
02-1708/S

Parent Parcel Number

Property Address
SOUND SHORE DRIVE 0012

Neighborhood
2300 EAST PUTNAM

Property Class
402 Electical Transformer Station

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	02	
Section & Plat	236	
Routing Number	7890S0004Z	

Site Description

Topography:

Public Utilities:
Electric

Street or Road:

Neighborhood:

Zoning:
WB Waterfront Business

Legal Acres:
1.5000

OWNERSHIP

CONN LIGHT & POWER CO
PO BOX 270
HARTFORD, CT 06101

LOT NO 15 & 18A SOUND SHORE DR S4Z

TRANSFER OF OWNERSHIP

Date			Bk/Pg: 626, 322
12/29/1959	NA		$0

UTILITY

VALUATION RECORD

Assessment Year		10/01/2005	10/01/2006	10/01/2010	10/01/2015	10/01/2015	10/01/2016
Reason for Change		2005 Reval	2006 List	2010 Reval	2015 Prelim	2015 Final	2016 List
VALUATION	I	2186700	2186700	2275300	2383100	2383100	2383100
Market	B	25300	150300	72000	93500	93500	93500
	T	2212000	2337000	2347300	2476600	2476600	2476600
VALUATION	I	1530690	1530690	1592710	1668170	1668170	1668170
70% Assessed	B	17710	105210	50400	65450	65450	65450
	T	1548400	1635900	1643110	1733620	1733620	1733620

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table 100 Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value		Influence Factor	Value
1 Primary Commercial				65340.00	104.21	104.21	6808900	1	-65%	2383100

GEN: CL&P Transformer Station.
Improved w/ Jet Generators owned by CT Jet Power
PP Acnt # 01-27287.
added 's' 2/27/14 per e-mail from c mandras
O/O: Owner-Occupied Commercial

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 2383100

Supplemental Cards
TOTAL LAND VALUE 2383100

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

	B	1	2	U
Frame				
Brick				
Metal				
Guard				

FRAMING

	B	1	2	U
F Res	0	240	0	0

FINISH

	UF	SF	FO	FD
1	0	0	0	240
Total	0	0	0	240

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	240	0	0

1 s Mas / Slab (240)

12 20

03

01

02

(LCM: 150.00)

SPECIAL FEATURES

Description	Value
03 : BW	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	HUTLSTOR	0.00		Good	2006	2006	GD	0.00	N	0.00	240	0	0	0	150	100	38900
01	UTLSHED	1.00	1	Fair	1980	1985	AV	44.50	N	30.26	20x 40	24210	13	0	100	100	21100
02	UTLSHED	1.00	1	Fair	1970	1985	AV	44.50	N	30.26	20x 36	21790	13	0	100	100	19000
03	FENCECL	6.00	51C	Avg	1970	1985	AV	18.50	Y	27.75	520	16680	13	0	100	100	14500

Data Collector/Date: bd 08/04/2006

Appraiser/Date: MVS 10/01/2010

Neighborhood: Neigh 2300 AV

Supplemental Cards

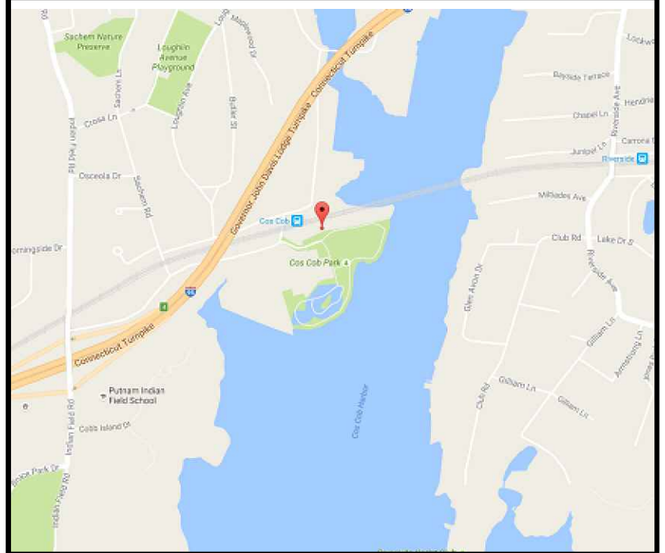
TOTAL IMPROVEMENT VALUE 93500

Exhibit C

GENERAL NOTES

1. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTORS SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
2. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
3. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
5. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
6. THE SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
7. THE SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
8. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWING MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. ALL SAFETY PRECAUTIONS MUCH BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

LOCATION MAP



DIRECTIONS

DIRECTIONS FROM BLOOMFIELD, CT:
GET ON I-91 S IN WINDSOR FROM CT-218 E, FOLLOW I-91 S, CT-15 S AND I-95 S TO INDIAN FIELD RD IN GREENWICH. TAKE EXIT 4 FROM I-95 S, TAKE SOUND SHORE DR TO YOUR DESTINATION, TURN RIGHT ONTO INDIAN FIELD RD, TURN RIGHT ONTO SOUND SHORE DR, TURN RIGHT

T-Mobile

2016 L700

T-MOBILE SITE NUMBER

CT11241A

140' UTILITY TOWER

SITE ADDRESS
STATION DR-LINE #1750 - POLE #1280
GREENWICH, CT 06807

RF CONFIG TYPE
1HP_704Bu

SITE SUMMARY

SITE TYPE:	EXISTING SITE OVERLAY
SITE ADDRESS:	STATION DR-LINE #1750 - POLE #1280 GREENWICH, CT 06807
SITE LATITUDE:	41° 01' 48.0"
SITE LONGITUDE:	-73° 35' 50.9"
JURISDICTION:	TOWN OF GREENWICH
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	FIBERTECH
TOWER OWNER/MANAGER:	CONNECTICUT LIGHT AND POWER 107 SELDEN ST BERLIN, CT 06037 1-860-947-2121
WIRELESS CARRIER:	T-MOBILE 35 GRIFFIN RD S BLOOMFIELD, CT 06002 OFFICE: 860-692-7100 FAX: 860-692-7159
ENGINEER:	SMW ENGINEERING GROUP N.C., PLLC 158 BUSINESS CENTER DRIVE BIRMINGHAM, AL 35244 CONTACT: V.G. DUVALL, JR., PE PHONE: 205-252-6985

APPROVALS

DEPARTMENT	NAME/SIGNATURE	DATE
DEVELOPMENT MANAGER		
PROPERTY/TOWER OWNER		
SITE ACQUISITION MANAGER		
CONSTRUCTION MANAGER		
RF ENGINEER		
OPERATIONS MANAGER		

SHEET INDEX

BUILDING CODES

ALL CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITION OF THE (AS ADOPTED BY LOCAL JURISDICTION):

- 2016 CONNECTICUT BUILDING CODE
- 2012 INTERNATIONAL BUILDING CODE W/AMENDMENTS
- 2009 ICC/ANSI A117.1 W/AMENDMENTS
- 2012 INTERNATIONAL EXISTING BUILDING CODE W/AMENDMENTS
- 2012 INTERNATIONAL PLUMBING CODE WITH AMENDMENTS
- 2012 INTERNATIONAL MECHANICAL CODE W/AMENDMENTS
- 2012 INTERNATIONAL ENERGY CONSERVATION CODE W/AMENDMENTS
- 2014 NFPA 70, NATIONAL ELECTRICAL CODE W/AMENDMENTS
- 2012 INTERNATIONAL RESIDENTIAL CODE W/AMENDMENTS

HANDICAP REQUIREMENTS

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS IS NOT REQUIRED.

PLUMBING REQUIREMENTS

FACILITY HAS NO SANITARY OR POTABLE WATER

CALL BEFORE YOU DIG

811 Know what's below. Call before you dig.

CONNECTICUT CALL BEFORE YOU DIG
STATE WIDE
1-800-922-4455 OR 811
HTTP://WWW.CBYD.COM/#

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

PRELIMINARY DRAWING
(NOT VALID UNLESS STAMPED AND SIGNED)

SITE INFORMATION:
CT11241A
STATION DR-LINE #1750
POLE #1280
GREENWICH, CT 06807

#	DATE	DESCRIPTION:
0	10/10/16	ISSUED FOR CLIENT REV.
1	10/24/16	ISSUED PER CLIENT COMMENT
2	01/04/17	ISSUED FOR CONSTRUCTION
3	01/17/17	REISSUED PER COMMENTS

T-MOBILE SITE ID: CT11241A

SHEET NAME: TITLE SHEET

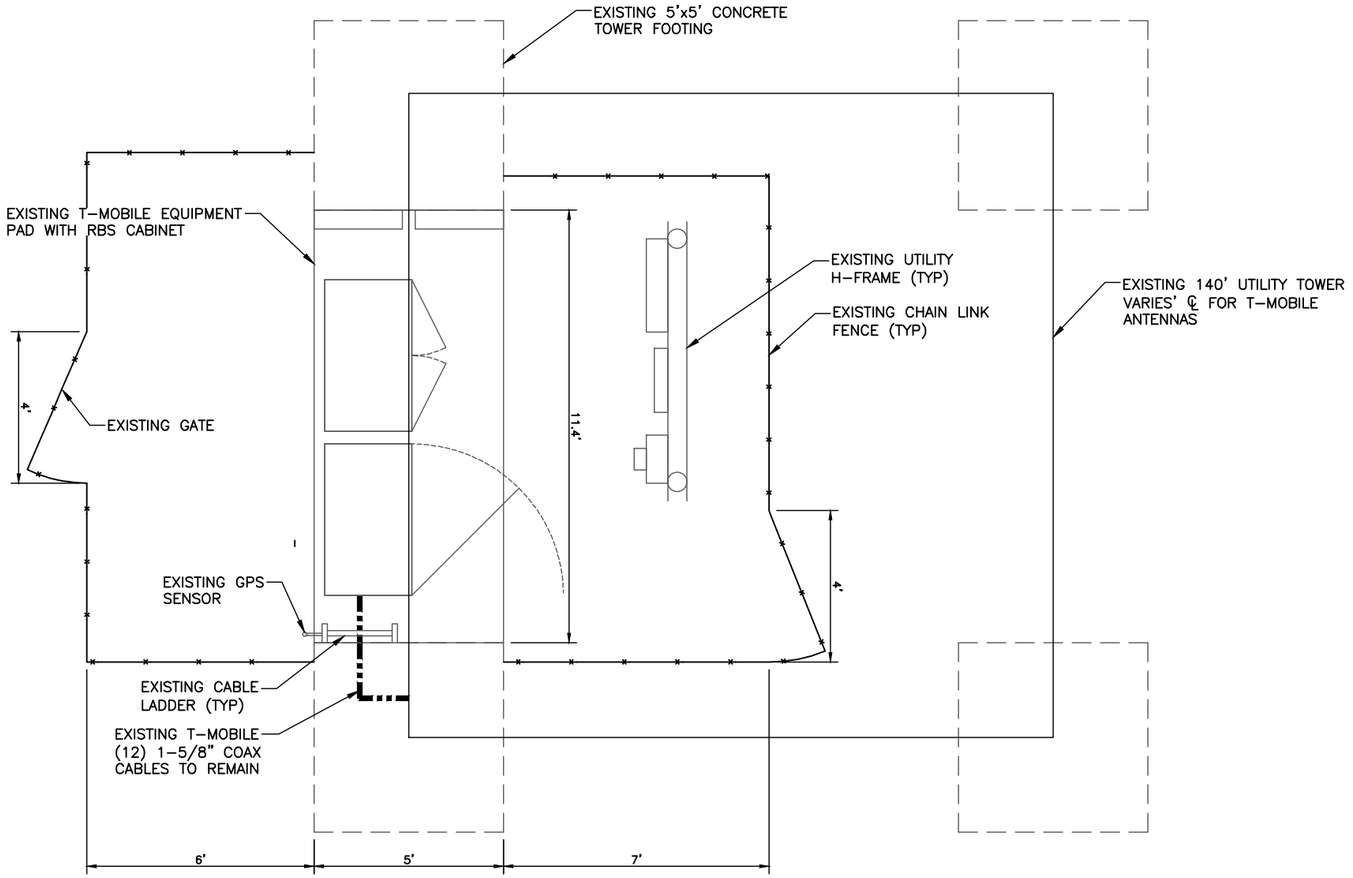
SMW #: 16-2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: T-1

SITE NOTES:

1. DIGGING AND/OR TRENCHING INSIDE COMPOUND, MUST BE DONE BY HAND.
2. EXISTING SITE INFORMATION AND LAYOUT SHOWN REPRESENT INFORMATION OBTAINED FROM NSS & T–MOBILE.
3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE EXACT LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH PROPOSED IMPROVEMENTS.
4. LOCATION OF UNDERGROUND UTILITIES WAS NOT PERFORMED.
5. THE ADEQUACY OF EXISTING SITE UTILITIES TO ACCOMMODATE NEW CO–LOCATION LOAD(S) WAS NOT VERIFIED.
6. ALL EXISTING VEGETATION AND IMPROVEMENTS SHOWN ARE TO REMAIN UNLESS OTHERWISE SHOWN IN THESE DRAWINGS.



1" = 4' (11"x17")

1 / C-1 EXISTING OVERALL SITE PLAN

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860–692–7100
FAX: 860–692–7159

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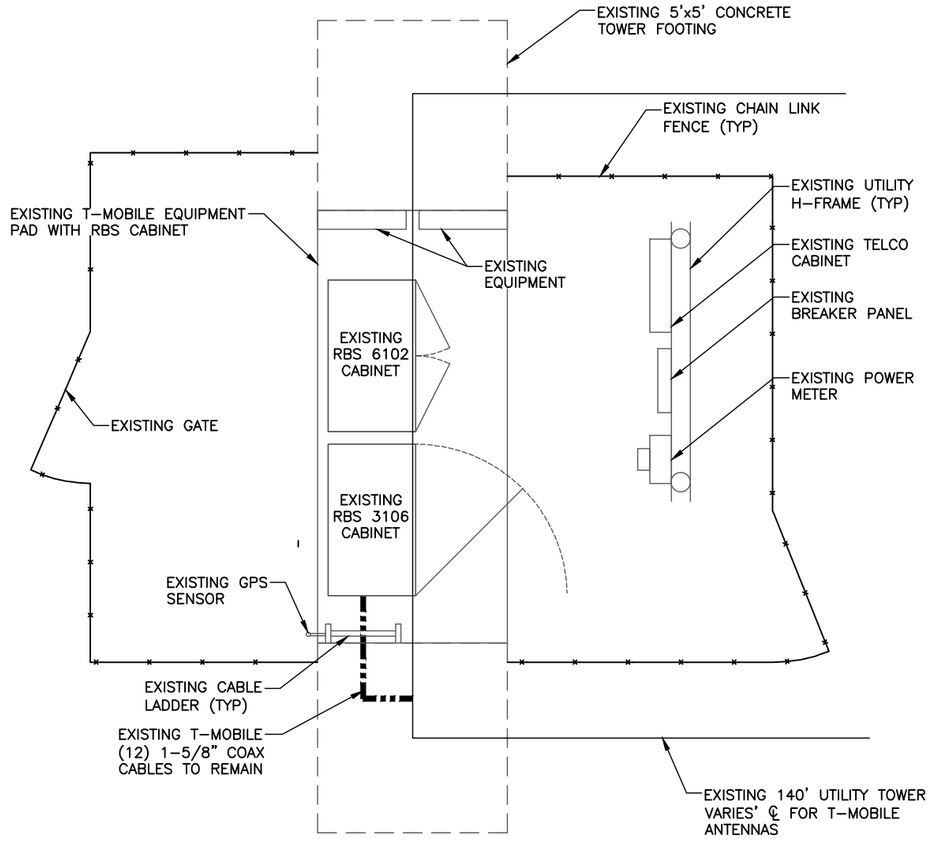
T-MOBILE SITE ID: CT11241A

SHEET NAME: OVERALL SITE PLAN

SMW #: 16–2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

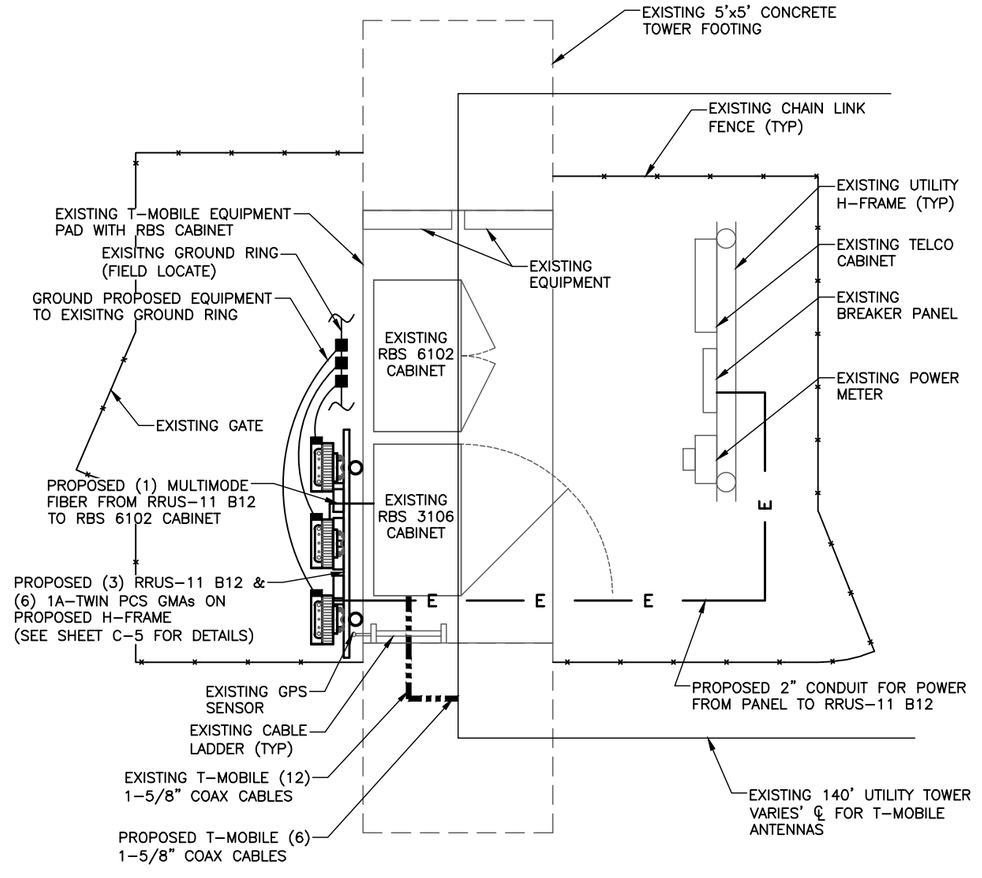
SHEET NUMBER: C-1



0' 4' 8' 12'

1" = 4' (11"x17")

1 C-2 EXISTING EQUIPMENT PLAN



0' 4' 8' 12'

1" = 4' (11"x17")

2 C-2 PROPOSED EQUIPMENT PLAN

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
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TOGETHER PLANNING A BETTER TOMORROW

PRELIMINARY DRAWING

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T-MOBILE SITE ID: CT11241A

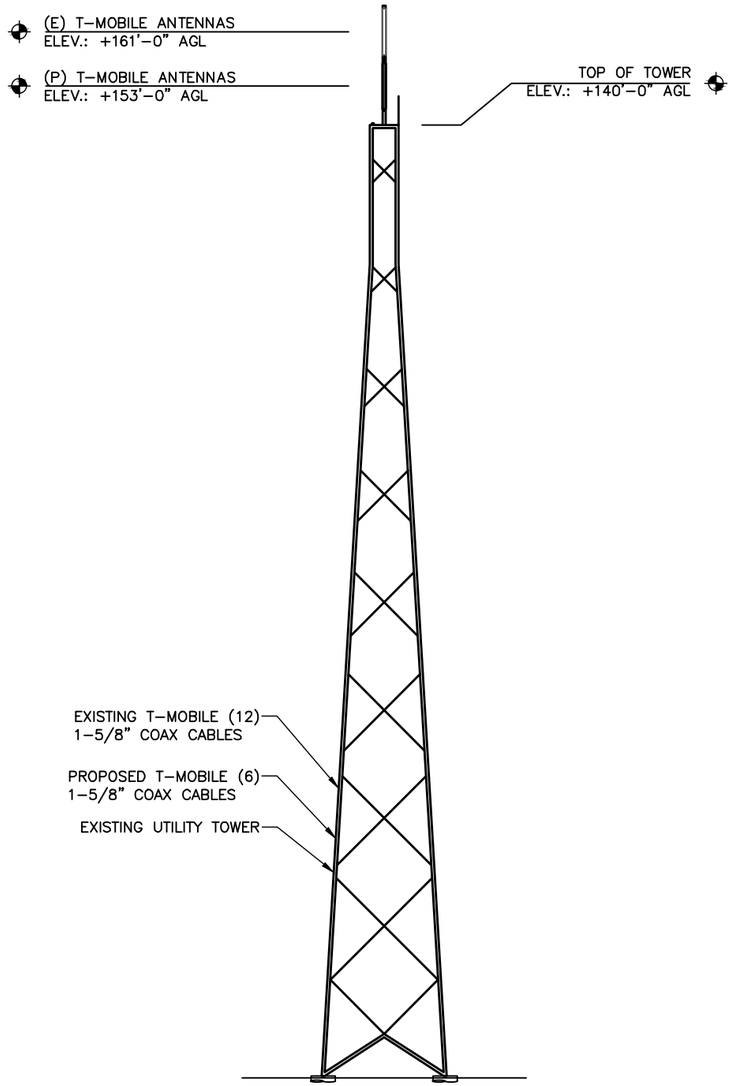
SHEET NAME:

EQUIPMENT PLAN

SMW #: 16-2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-2



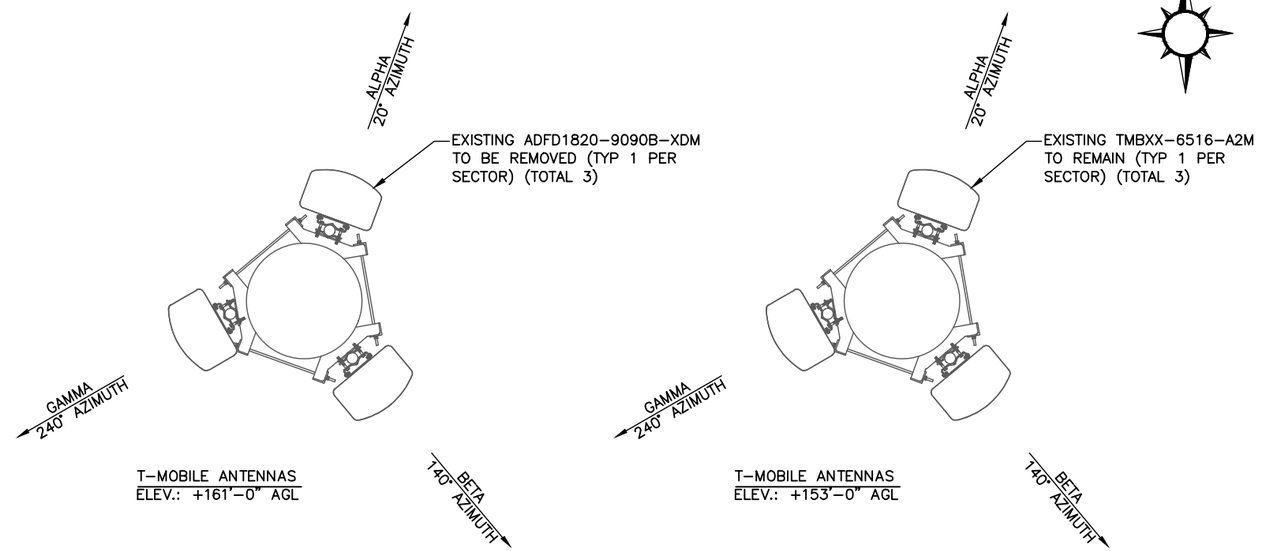
STRUCTURAL NOTES:

1. CENTEK ENGINEERING PERFORMED A STRUCTURAL ANALYSIS OF THE EXISTING TOWER AND ANTENNA MOUNT. REFER TO STRUCTURAL ANALYSIS ISSUED ON 12/15/16 FOR ADDITIONAL INFORMATION.
2. IF THE TOWER STRUCTURAL ANALYSIS SHOWS THE NEED FOR TOWER REINFORCEMENT REFER TO TOWER REINFORCEMENT DESIGN PRIOR TO THE INSTALLATION OF ANY PROPOSED EQUIPMENT.
3. REFER TO TOWER STRUCTURAL ANALYSIS FOR PROPOSED CABLE ROUTING AND ATTACHMENT DETAILS.
4. TOWER ELEVATION SHOWN IS NOT DRAWN TO SCALE AND IS INTENDED ONLY FOR REFERENCE PURPOSES. REFER TO ORIGINAL TOWER DESIGN FOR ADDITIONAL INFORMATION.

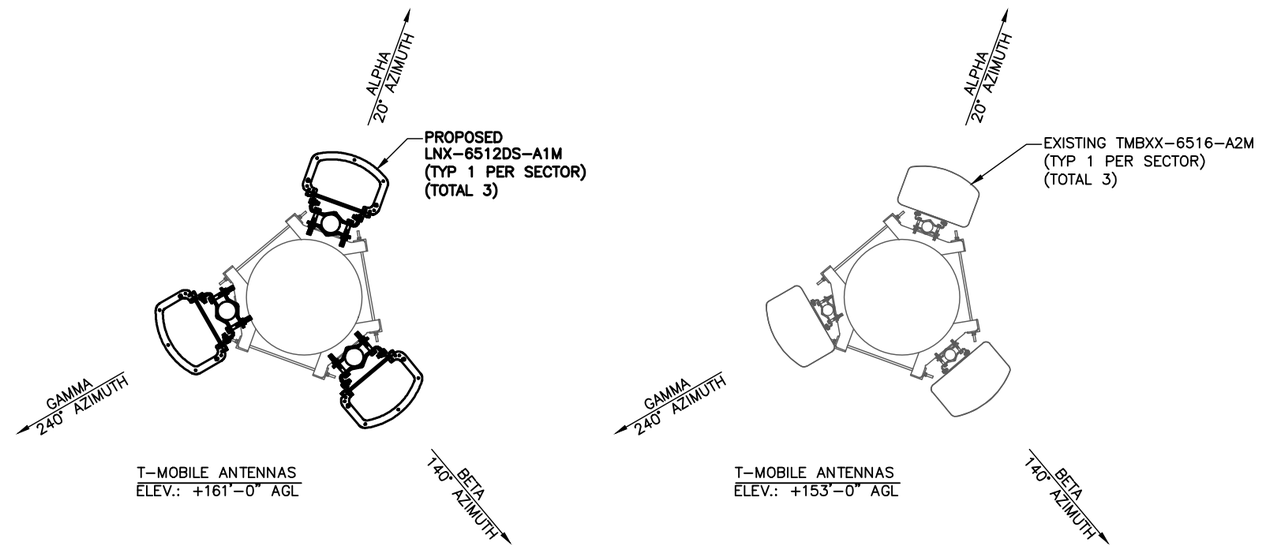
ANTENNA NOTES:

1. THE PRE-APPLICATION & LEASE DIRECTION OF THE ANTENNA SHALL BE ADJUSTED TO MEET SYSTEM REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY HEIGHT OF ANTENNA WITH T-MOBILE PCS PM.
3. CONTRACTOR SHALL VERIFY HEIGHT AND DIRECTION OF MICROWAVE DISHES WITH T-MOBILE PROJECT MANAGER (WHEN APPLICABLE).
4. ALL ANTENNA AZIMUTHS TO BE FROM MAGNETIC NORTH.
5. CONTRACTOR TO USE EXISTING ANTENNA TOP HAT.

1 C-3 TOWER ELEVATION
NOT TO SCALE



2 C-3 EXISTING ANTENNA ORIENTATION PLAN
NOT TO SCALE



3 C-3 PROPOSED ANTENNA ORIENTATION PLAN
NOT TO SCALE

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3	01/17/17	REISSUED PER COMMENTS

T-MOBILE SITE ID: CT11241A

SHEET NAME:
TOWER ELEVATION & ANTENNA PLAN

SMW #: 16-2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-3

TOWER EQUIPMENT SCHEDULE

ANTENNA MARK	SECTOR	ANTENNA MODEL	ANTENNA ORIENTATION	RAD CENTER	RADIO	TMA MODEL	EQUIPMENT	SURGE PROTECTION	COAX/CABLE	TECHNOLOGY
A1	ALPHA	(1) TMBXX-6516-A2M (E)	20°	153'		(2) Generic Style 1A – Twin PCS (P)			(2) 1-5/8" COAX (E) (2) 1-5/8" COAX (P)	U1900/G1900/ U1200/L2100
A2	ALPHA	(1) LNX-6512DS-A1M (P)	20°	161'			(1) ANDREW SMART BIAS T (P)		(2) 1-5/8" COAX (E)	L700
B1	BETA	(1) TMBXX-6516-A2M (E)	140°	153'		(2) Generic Style 1A – Twin PCS (P)			(2) 1-5/8" COAX (E) (2) 1-5/8" COAX (P)	U1900/G1900/ U1200/L2100
B2	BETA	(1) LNX-6512DS-A1M (P)	140°	161'			(1) ANDREW SMART BIAS T (P)		(2) 1-5/8" COAX (E)	L700
C1	GAMMA	(1) TMBXX-6516-A2M (E)	240°	153'		(2) Generic Style 1A – Twin PCS (P)			(2) 1-5/8" COAX (E) (2) 1-5/8" COAX (P)	U1900/G1900/ U1200/L2100
C2	GAMMA	(1) LNX-6512DS-A1M (P)	240°	161'			(1) ANDREW SMART BIAS T (P)		(2) 1-5/8" COAX (E)	L700

TABLE NOTE:
(P) DENOTES PROPOSED EQUIPMENT
(E) DENOTES EXISTING EQUIPMENT

EQUIPMENT NOTES:
1. THE HYBRID CABLE LENGTH SHOWN IS ONLY AN ESTIMATE & SHOULD NOT BE USED FOR ORDERING MATERIALS. CONFIRM THE REQUIRED HYBRID CABLE LENGTH W/T-MOBILE PRIOR TO ORDERING OR INSTALLATION.
2. THE CONTRACTOR SHALL TEST THE OPTICAL FIBER AFTER INSTALLATION IN ACCORDANCE W/T-MOBILE STANDARDS & SUPPLY THE RESULTS TO T-MOBILE.
3. THE CONTRACTOR SHALL CONFIRM THE TOWER TOP EQUIPMENT LIST ABOVE W/THE FINAL T-MOBILE RFDS PRIOR TO INSTALLATION.
4. ALL EXISTING & PROPOSED ANTENNA CABLES SHALL BE COLOR CODED PER T-MOBILE STANDARDS.
5. REFER TO NOKIA SIEMENS NETWORKS EQUIPMENT INSTALLATION STANDARDS FOR ADDITIONAL INFORMATION.
6. REFER TO EQUIPMENT MANUFACTURER'S SPECIFICATION SHEETS FOR ADDITIONAL INFORMATION NOT LISTED ABOVE.

TOWER LOADING SUMMARY

EXISTING QUANTITY	REMOVE QUANTITY	EQUIPMENT TYPE	ADD QUANTITY	TOTAL QUANTITY
6	3	PANEL ANTENNA	3	6
12	0	COAX CABLE	6	18
0	0	TMA	0	0
0	0	RRUS-11 B12 GROUND MOUNTED	3	3
0	0	SMART BIAS T	3	3

RFDS REFERENCE:
CT11241A-L700-rfds.eng.t-mobile 9-26-2016

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

PRELIMINARY DRAWING
(NOT VALID UNLESS STAMPED AND SIGNED)

SITE INFORMATION:
CT11241A
STATION DR-LINE #1750
POLE #1280
GREENWICH, CT 06807

#	DATE	DESCRIPTION:
0	10/10/16	ISSUED FOR CLIENT REV.
1	10/24/16	ISSUED PER CLIENT COMMENT
2	01/04/17	ISSUED FOR CONSTRUCTION
3	01/17/17	REISSUED PER COMMENTS

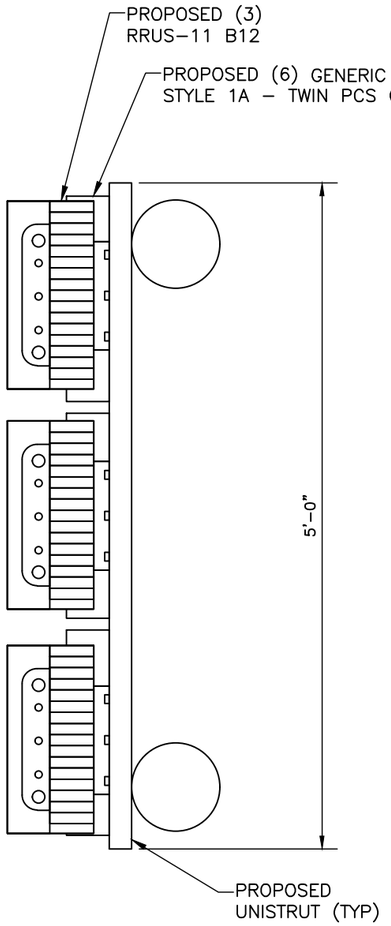
T-MOBILE SITE ID:
CT11241A

SHEET NAME:
TOWER EQUIPMENT SCHEDULE

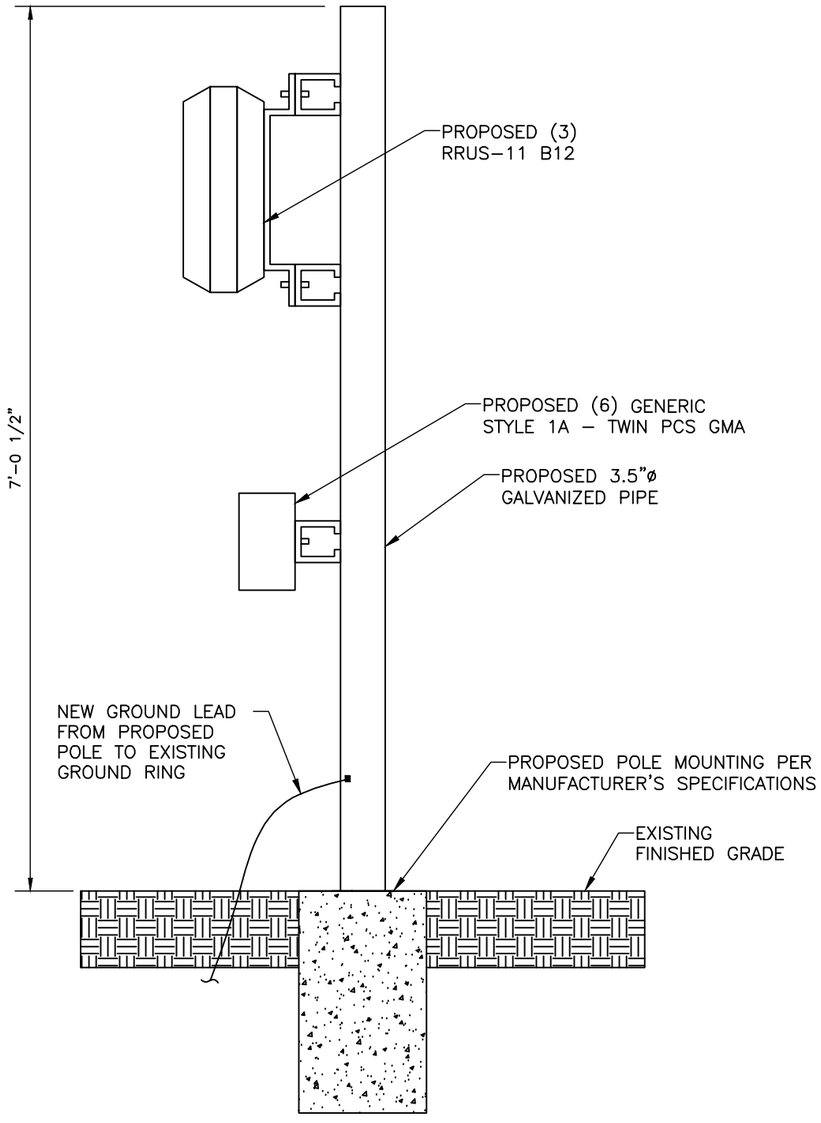
SMW #:
16-2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER:
C-4



TOP VIEW



SIDE VIEW

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
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FAX: 860–692–7159

PLANS PREPARED BY:
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T-MOBILE SITE ID: CT11241A

SHEET NAME: EQUIPMENT DETAIL

SMW #: 16–2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-5

GENERAL ELECTRICAL NOTES:

1. ALL WORK IS TO COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AND ANY LOCAL ORDINANCES, CODES, AND ALL OTHER ADMINISTRATIVE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL FURNISH AND PAY FOR ALL PERMITS AND RELATED FEES.

2. ALL EQUIPMENT AND MATERIAL FURNISHED AND INSTALLED UNDER THIS CONTRACT SHALL BE UNDERWRITERS LABORATORIES (U.L.) LISTED, NEW, FREE FROM DEFECTS, AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER OR HIS REPRESENTATIVE. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD DUE TO FAULTY WORKMANSHIP, MATERIAL, OR EQUIPMENT, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.

3. ALL WORK SHALL BE EXECUTED IN A WORKMAN LIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED. CONTRACTOR SHOULD AVOID DAMAGE TO EXISTING UTILITIES WHEREVER POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO ELECTRICAL WORK, AND SHALL RESTORE ALL EXISTING LANDSCAPING, SPRINKLER SYSTEMS, CONDUITS, WIRING, PIPING, ETC. DAMAGED BY THE ELECTRICAL WORK TO MATCH EXISTING CONDITIONS.

4. ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE ELECTRICAL POWER AND LIGHTING SYSTEMS, TELEPHONE AND COMMUNICATION SYSTEMS, PANELBOARDS, CONDUIT, CONTROL WIRING, GROUNDING, ETC. AS INDICATED ON ELECTRICAL DRAWINGS AND/OR AS REQUIRED BY GOVERNING CODES.

5. PRIOR TO INSTALLING ANY ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY EXISTING SITE LOCATIONS AND CONDITIONS AND UTILITY SERVICE REQUIREMENTS OF THE JOB, AND BY REFERENCE TO ENGINEERING AND EQUIPMENT SUPPLIERS' DRAWINGS. SHOULD THERE BE ANY QUESTION OR PROBLEM CONCERNING THE NECESSARY PROVISIONS TO BE MADE. PROPER DIRECTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH ANY WORK.

6. PROVIDE POWER AND TELEPHONE TO SERVICE POINTS PER UTILITY COMPANY REQUIREMENTS. CONTRACTOR SHALL CONTACT UTILITY SERVICE PLANNERS AND OBTAIN ALL SERVICE REQUIREMENTS AND INCLUDE COSTS FOR SUCH IN THEIR BID.

7. SERVICE EQUIPMENT SHALL HAVE A SHORT CIRCUIT WITHSTAND RATING EXCEEDING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SUPPLY TERMINAL ON THE UTILITY TRANSFORMER SECONDARY, THE INSULATION SHALL BE FREE FROM ANY SHORT CIRCUITS AND GROUNDS. CONTRACTOR TO OBTAIN THE AVAILABLE SHORT CIRCUIT CURRENT FROM THE ELECTRICAL SERVICE PROVIDER.

8. ALL WIRES SHALL BE STRANDED COPPER WITH THHN/THWN AND 600 VOLTS INSULATION. ALL GROUND CONDUCTORS TO BE PROPERLY SIZED COPPER. (STRANDED OR SOLID)

9. IN THE EVENT OF ANY CONFLICT OR INCONSISTENCY BETWEEN ITEMS SHOWN ON THE PLANS AND/OR SPECIFICATIONS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE HIGHEST STANDARD OF PERFORMANCE SHALL PREVAIL.

10. SERVICE CONDUITS SHALL HAVE NO MORE THAN (4) –50° BENDS IN ANY SINGLE RUN. THE CONTRACTOR SHALL PROVIDE PULL BOXES AS NEEDED WHERE CONDUIT REQUIREMENTS EXCEED THESE CONDITIONS. PULL WIRES AND CAPS SHALL BE PROVIDED AT ALL SPARE CONDUITS FOR FUTURE USE.

11. ALL ELECTRICAL EQUIPMENT SHALL BE ANCHORED TO WITHSTAND LOCAL WIND SPEED REQUIREMENTS AND DESIGNED FOR OUTDOOR EXPOSURE.

12. ALL COAX, POWER AND TELEPHONE SYSTEM CONDUITS SHALL HAVE A MINIMUM 24" SCH. 80 PVC RADIUS SWEEPS TO EQUIPMENT, PULLBOXES, GUY, ETC., UNLESS OTHERWISE NOTED, OR AS REQUIRED BY UTILITY COMPANIES.

13. FUSE TYPE SHALL BE BUSSMAN RKI LOW PEAK FUSE (LPN–RK–140).

14. UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL FURNISH AS–BUILT DRAWINGS TO THE OWNER.

15. GENERAL GROUNDING CRITERIA
    1ST STEP: GROUND TO EXISTING BUILDING STRUCTURAL STEEL AND TO THE EXISTING COLD WATER METAL PIPE LINE. (WHERE APPLICABLE) THEN TEST GROUNDING RESISTANCE FOR 5 OHMS OR LESS OVERALL GROUND RESISTANCE. WHERE THE EFFECTIVE RESISTANCE DOES NOT MEET THIS CRITERIA, PROVIDE SUPPLEMENTAL GROUNDING AND RE–TEST UNTIL GROUND RESISTANCE FALLS BELOW THIS LEVEL.

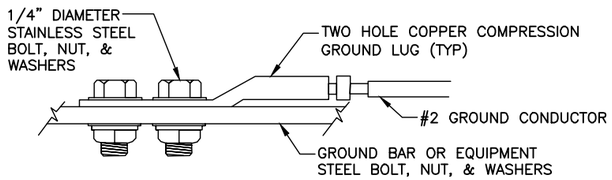
16. SUPPLEMENTAL GROUND MAY CONSIST OF ONE OR MORE OF THE FOLLOWING:
    COUNTERPOISE, USER GROUND, GROUND ROD AND/OR GROUND WELL IN EXTREMELY ADVERSE SOIL CONDITIONS. WHERE THE EXISTING BUILDING STEEL DOES NOT PROVIDE AN EFFECTIVE GROUND RESISTANCE, THEN THE CONTRACTOR SHALL PROVIDE A SEPARATE GROUND CONDUCTOR FROM ROOF MOUNTED BTS EQUIPMENT LOCATIONS EITHER DOWN THROUGH THE INSIDE OF THE BUILDING OR DOWN THE OUTSIDE OF THE BUILDING, DEPENDING UPON OWNER PREFERENCE. WHERE THE GROUND CONDUCTOR FROM THE ROOF MOUNTED EQUIPMENT IS ROUTED IN CONDUIT, THE CONDUIT SHALL BE EFFECTIVELY GROUNDED TO THE GROUND CONDUCTOR AT BOTH ENDS OF THE CONDUIT. (GUY INSTALLATIONS):

    FOR INSTALLATIONS WHERE WOODEN STRUCTURES, TOWERS, CONCRETE SILOS ETC. ARE ENCOUNTERED A PARATE DOWNLEAD SHALL BE PROVIDED FROM THE 3 ANTENNAS SEPARATED BY A MINIMUM OF 12 INCHES FROM THE COAXIAL CABLES. THE GROUND CONDUCTOR SHALL BE SECURELY FASTENED TO THE EXTERIOR OF OUTSIDE STRUCTURES WITH NONMETALLIC GROUND STRAPS EVERY 10 FEET. AGAIN, AS FOR TENANT IMPROVEMENT PROJECTS, TEST THE GROUND RESISTANCE FOR GUY INSTALLATIONS AND PROCEED PER THE ABOVE STEPS.

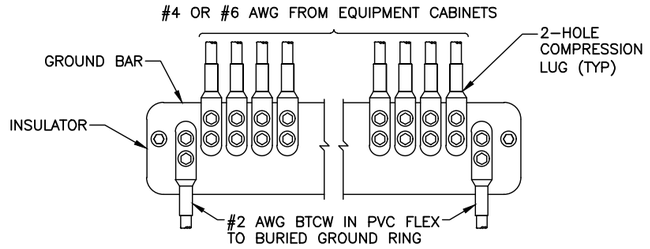
17. CONTRACTOR TO COLOR PHASE CONDUCTORS BLACK (B PHASE), RED (A PHASE), WHITE (NEUTRAL), AND GREEN (GROUND).

18. CONTRACTOR TO PROVIDE GUTTER TAP.

19. THERE SHALL BE A MINIMUM CLEARANCE OF 48" BETWEEN FRONT OF ELECTRICAL EQUIPMENT AND ANY WALL OR OBSTRUCTION.



1 / E-1 TWO HOLE LUG CONNECTION DETAIL
NOT TO SCALE



2 / E-1 GROUND BAR DETAIL
NOT TO SCALE

T-Mobile
35 GRIFFIN RD S
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FAX: 860-692-7159

PLANS PREPARED BY:
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Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
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T-MOBILE SITE ID: CT11241A

SHEET NAME:
ELECTRICAL & GROUNDING DETAILS

SMW #: 16–2084

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: E-1

Exhibit D

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

T-Mobile Site Ref: CT11241A

Eversource Structure No. 1280

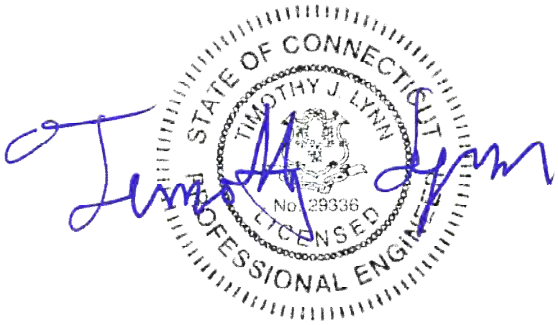
140' Electric Transmission Lattice Tower

Station Drive
Greenwich, CT

CENTEK Project No. 16162.03

~~Date: November 2, 2016~~

Rev 1: December 15, 2016



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

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

T a b l e o f C o n t e n t s

Introduction

The purpose of this report is to analyze the existing antenna mast and 140' utility tower located at Station Drive in Greenwich, CT for the proposed antenna and equipment upgrade by T-Mobile.

The existing and proposed loads consist of the following:

- T-MOBILE (Existing to Remain):
  Antennas: Three (3) Andrew TMBXX-6516 panel antennas flush mounted with a RAD center elevation of 153-ft above tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on a leg of the existing tower.
- T-MOBILE (Existing to Remove):
  Antennas: Three (3) Andrew ADFD1820-9090B panel antennas flush mounted with a RAD center elevation of 161-ft above tower base.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) Andrew LNX-6512DS panel antennas and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees flush mounted with a RAD center elevation of 161-ft above tower base.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on a leg of the existing tower.

Primary assumptions used in the analysis

- ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", defines steel stresses for evaluation of the utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed within the antenna mast unless specified otherwise.
- Antenna mast will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Antenna mast and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

A n a l y s i s

Structural analysis of the existing antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing antenna mast consisting of a 10" Sch.80 x 29'-0" long pipe flange connected to a 6" Sch.80 x 14'-0" long pipe conforming to ASTM A53 Grade B (Fy = 35ksi) connected at two points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA-222-G standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

Structural analysis of the existing utility tower structure was completed using the current version of PLS-Tower computer program licensed to CENTEK Engineering, Inc. The NESC program contains a library of all AISC angle shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing 140-ft tall lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the antenna mast and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

D e s i g n B a s i s

Our analysis was performed in accordance with TIA-222-G, ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2007 and Northeast Utilities Design Criteria.

- UTILITY TOWER ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the NU Design Criteria Table, NESC C2-2007 ~ Construction Grade B, and ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures".

  Load cases considered:

  Load Case 1: NESC Heavy

Wind Pressure……..	4.0 psf
Radial Ice Thickness……	0.5"
Vertical Overload Capacity Factor……	1.50
Wind Overload Capacity Factor……	2.50
Wire Tension Overload Capacity Factor……	1.65

  Load Case 2: NESC Extreme

Wind Speed……	110 mph [(1)]
Radial Ice Thickness……	0"

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

- MAST ASSEMBLY ANALYSIS

  Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-G and AISC standards.

  Load cases considered:

  Load Case 1:
  Wind Speed…….... 93 mph (2016 CSBC Appendix-N)
  Radial Ice Thickness…….. 0”

  Load Case 2:
  Wind Pressure…….. 50 mph wind pressure
  Radial Ice Thickness…….. 0.75”

R e s u l t s

- ANTENNA MAST

  The existing antenna mast was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
10” Pipe	Bending	61.3%	**PASS**
6” Pipe	Bending	54.2%	**PASS**
Flange Connection	Shear	42.6%	**PASS**

- UTILITY TOWER

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

  A maximum usage of **68.66%** occurs in the utility structure under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g89X	68.66%	**PASS**

- FOUNDATION AND ANCHORS

  The existing foundation consists of a 5-ft square x 12.5-ft long reinforced concrete pier with eight (8) rock anchor groups embedded 13-ft into rock The base of the tower is connected to the foundation by four (4) 2.50” Ø A36 bolts per leg. Foundation information was obtained from NUSCO drawing no. 01037-60010.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	14.98 kips	103.17 kips	145.36 kips
NESC Extreme Wind	21.78 kips	167.05 kips	190.91 kips

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

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Component	Design Check	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	48.4%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Check	Design Limit	Proposed Loading	Result
Reinf. Conc. Pier w/ Rock Anchors	Uplift	1.0 FS (2)	2.78 FS (2)	**PASS**
	OTM (1)	1.0 FS (2)	3.32 FS (2)	**PASS**
	Soil Bearing	50 ksf	24.65 ksf	**PASS**

Note 1: OTM denote overturning moment.
Note 2: FS denotes Factor of Safety.

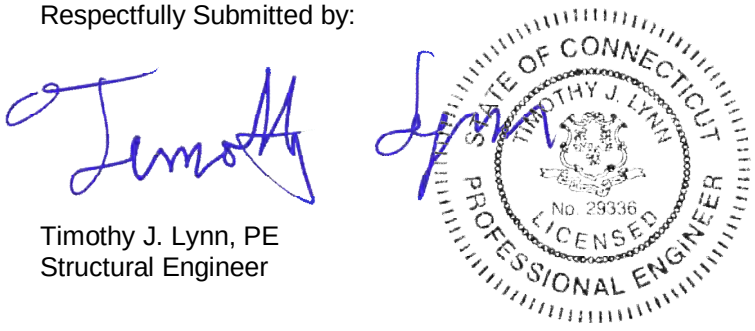
Conclusion

This analysis shows that the subject utility tower **is adequate** to support the proposed T-Mobile equipment upgrade.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

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

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

Results Features:

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

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

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

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

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

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

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

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

Attachment A

NU Design Criteria

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

Shape Factor Criteria shall be per TIA Shape Factors.

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

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

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

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

c) Electric Transmission Structure

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

ii) Shape Factor Multiplier:

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

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

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

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

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

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

Wire Ld

TITLE Omnipoint Site CT-241A Cockaponset CT. 03/09/2000
STRUCT # 1280

CONDUCTOR

	AHEAD		BACK	
	LINNET		LINNET	
	336		336	
	26/7 ACSR		26/7 ACSR	
DIAM =	0.720		0.720	
WEIGHT =	0.462		0.462	
TENSION (LBS)	AHEAD	2,908	BACK	2,908

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

STR	ANGLE	WND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	8.43	202	290	769	-3308	154
AHEAD	8.43	202	290	769	3308	154
TOTALS	**16.9**	**404**	**580**	~~1538~~	**0**	**308**

K629

Wire Ld

TITLE Omnipoint Site CT-2914 Cos Cob Ct. 03/09/2000
STRUCT # 1290

CONDUCTOR

	AHEAD		BACK	
	BITTERN		BITTERN	
	1272.000		1272.000	
	45/7 ACSR		45/7 ACSR	
DIAM =	1.345		1.345	
WEIGHT =	1.432		1.432	
TENSION (LBS)	AHEAD	4,865	BACK	4,865

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

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	8.43	202	290	1341	-5534	478
AHEAD	8.43	202	290	1341	5534	478
TOTALS	16.9	404	580	~~2682~~ 2840	0	955

Wire Ld

TITLE Omnipoint Site CT-241A Cos Cob, CT. 03/09/2000

STRUCT # 1290 Guard Wire CONDUCTOR

	AHEAD	BACK
	LINNET	LINNET
	336	336
	26/7 ACSR	26/7 ACSR
DIAM =	0.720	0.720
WEIGHT =	0.462	0.462
TENSION (LBS)	AHEAD 4,000	BACK 4,000

LOADCASE	NESC HEAVY
WIND (PSF)	4
ICE (IN)	0.50
OLF ANG	1.65
OLF WIND	2.50
OLF WT	1.50

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	8.43	202	290	1257	-6529	531
AHEAD	8.43	202	290	1257	6529	531
TOTALS	**16.9**	**404**	**580**	**2514**	**0**	**1062**

Wire Ld

TITLE Omnipoint Site CT-241A CosCob, CT. 03/09/2000

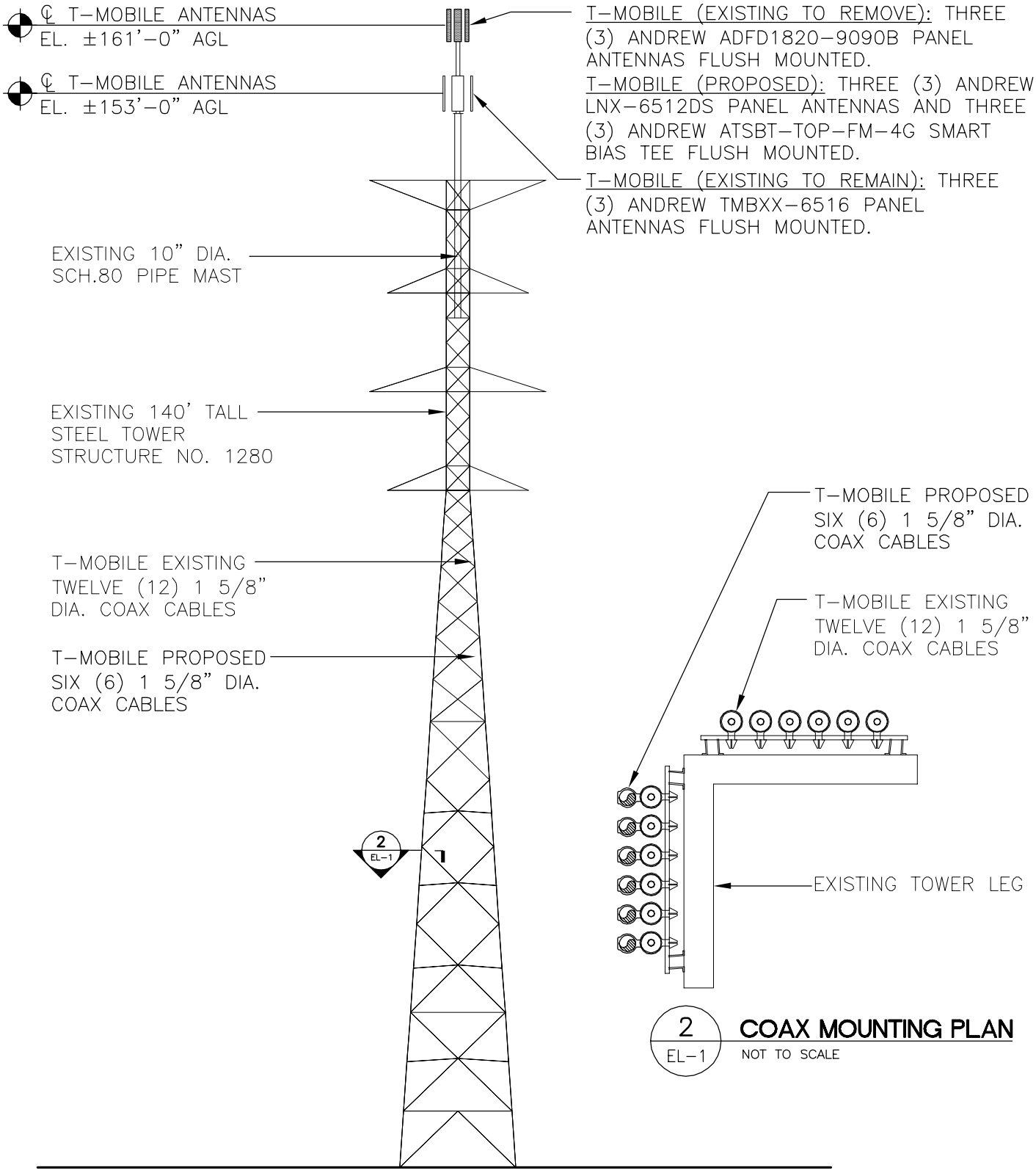
STRUCT #1250

CONDUCTOR

	AHEAD		BACK	
	BITTERN		BITTERN	
	1272.000		1272.000	
	45/7 ACSR		45/7 ACSR	
DIAM =	1.345		1.345	
WEIGHT =	1.432		1.432	
TENSION (LBS)	AHEAD	6,000	BACK	6,000

LOADCASE	NESC HEAVY
WIND (PSF)	4
ICE (IN)	0.50
OLF ANG	1.65
OLF WIND	2.50
OLF WT	1.50

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	8.43	202	290	1846	-9793	1122
AHEAD	8.43	202	290	1846	9793	1122
TOTALS	16.9	404	580	3692	0	2244



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

1 EL-1 **TOWER & MAST ELEVATION**
SCALE: NOT TO SCALE

REVISIONS		
0	11/2/16	ISSUED FOR REVIEW

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CT11241A
EVERSOURCE 1280

STATION DRIVE
GREENWICH, CT 06830

PROJECT NO:	16162.03
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	11/2/16

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

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Subject:	Loads on T-Mobile Equipmnet Structure # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed: $V := 93$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice: $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = $Structure\_Type := Lattice$ (User Input)

Structure Category = $SC := III$ (User Input)

Exposure Category = $Exp := C$ (User Input)

Structure Height = $h := 140$ ft (User Input)

Height to Center of Antennas = $z_{AT\&T} := 161$ ft (User Input)

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H := 1.35$ (User Input)

Output

Wind Direction Probability Factor = $K_d := \begin{cases} 0.95 & \text{if } Structure\_Type = Pole \\ 0.85 & \text{if } Structure\_Type = Lattice \end{cases} = 0.85$ (Per Table 2-2 of TIA-222-G)

Importance Factors = $I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1.15$ (Per Table 2-3 of TIA-222-G)

$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$

$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1.25$

$K_{iz} := \left(\frac{z_{AT\&T}}{33}\right)^{0.1} = 1.172$

$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.197$

Velocity Pressure Coefficient = $Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.399$

Velocity Pressure w/o Ice = $qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot K_{zt} \cdot V^2 \cdot I_{Wind} = 30.281$

Velocity Pressure with Ice = $qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot K_{zt} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.611$

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Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Wind & Ice Load on Mast

Mast Data: (Pipe 10" SCH. 80) (User Input)

Mast Shape = Round (User Input)

Mast Diameter = $D_{mast} := 10.75$ in (User Input)

Mast Length = $L_{mast} := 29$ ft (User Input)

Mast Thickness = $t_{mast} := 0.5$ in (User Input)

Mast Aspect Ratio = $Ar_{mast} := \frac{12 L_{mast}}{D_{mast}} = 32.4$

Mast Force Coefficient = $Ca_{mast} = 1.2$

Wind Load (without ice)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.896$ sf/ft

Total Mast Wind Force = $qz_{AT\&T} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 44$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{iz})}{12} = 1.262$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 16$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + t_{iz} \cdot 2)^2 - D_{mast}^2\right] = 89.4$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 35$ plf **BLC 3**

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Development of Wind & Ice Load on Mast

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

Mast Shape = Round (User Input)

Mast Diameter = $D_{mast} := 6.625$ in (User Input)

Mast Length = $L_{mast} := 14$ ft (User Input)

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

Mast Aspect Ratio = $Ar_{mast} := \frac{12 L_{mast}}{D_{mast}} = 25.4$

Mast Force Coefficient = $Ca_{mast} = 1.2$

Wind Load (without ice)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.552$ sf/ft

Total Mast Wind Force = $qz_{AT\&T} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 27$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot t_{iz}\right)}{12} = 0.918$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 11$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{iz} \cdot 2\right)^2 - D_{mast}^2\right] = 60.9$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 24$ plf **BLC 3**

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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew LNX-6512DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 48.5$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 28.2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.1$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 12$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 624$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 18$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 234$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 85$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4098$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5808$		cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 188$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 565$	lbs	**BLC 3**

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Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew TMBXX-6516		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 59$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 35$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.31$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14.6$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 783$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 7.2$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 21.5$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 289$	lbs	**BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4423$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 6623$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 215$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 644$	lbs	**BLC 3**

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Subject:	Loads on T-Mobile Equipmnet Structure # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew ATSBT-TOP-FM-4G			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)	
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.5$			
Antenna Force Coefficient =	$Ca_{ant} = 1.2$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 21$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 0.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.7$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 21$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 6$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 477$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 15$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 46$	lbs	**BLC 3**

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Subject:	Loads on T-Mobile Equipmnet Structure # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (140ft -151ft)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 11$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 18$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 5$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 66.7$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.8$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{AT\&T} \cdot G_H \cdot A_{coax} = 40$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{iz})}{12} = 1.2$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.AT\&T} \cdot G_H \cdot AICE_{coax} = 15$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 19$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2\right] = 28.8$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 202$ plf **BLC 3**

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Subject:	Loads on T-Mobile Equipmnet Structure # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (151ft -159ft)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 8$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 6$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 3$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 48.5$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.5$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{AT\&T} \cdot G_H \cdot A_{coax} = 24$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{iz})}{12} = 0.9$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.AT\&T} \cdot G_H \cdot AICE_{coax} = 11$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2\right] = 28.8$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 67$ plf **BLC 3**

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Mast Only**
Tabulated Load Cases
Location: **Greenwich, CT**
Date: 10/26/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	TIA Wind with Ice
5	TIA Wind

Footnotes:

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

Location: **Greenwich, CT**

Date: 10/26/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D + 1.6W		1	Y	1	1.2	2	1.2	5	1.6				
2	0.9D + 1.6W		1	Y	1	0.9	2	0.9	5	1.6				
3	1.2D + 1.0Di + 1.0Wi		1	Y	1	1.2	2	1.2	3	1.0	4	1.0		

Footnotes:
BLC = Basic Load Case
D = Dead Load
Di = Dead Load of Ice
W = Wind Load
W = Wind Load w/ Ice

Global

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

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

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
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, Continued

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

Footing Overturning Safety Factor	1.5
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lamda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp t...	Lcomp b...	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Mast1	29									Lateral
2	M2	Mast2	14									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast1	PIPE_10.0X	Beam	Pipe	A53 Gr. B	Typical	15.1	199	199	398
2	Mast2	PIPE_6.0X	Beam	Pipe	A53 Gr. B	Typical	7.83	38.3	38.3	76.6

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	BOTCO...	FLANGE			Mast1	Beam	Pipe	A53 Gr. B	Typical
2	M2	FLANGE	TOPMA...			Mast2	Beam	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
1	BOTCONNECTION	0	0	0	0	
2	TOPCONNECTION	0	15.25	0	0	
3	FLANGE	0	29	0	0	
4	TOPMAST	0	43	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	BOTCONNECTION	Reaction	Reaction	Reaction		Fixed		
2	TOPCONNECTION	Reaction		Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.085	11.5
2	M2	Y	-.105	3.5
3	M1	Y	-.006	11.5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.565	11.5
2	M2	Y	-.644	3.5
3	M1	Y	-.046	11.5

Member Point Loads (BLC 4 : TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.234	11.5
2	M2	X	.289	3.5
3	M1	X	.021	11.5

Member Point Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.624	11.5
2	M2	X	.783	3.5
3	M1	X	.021	11.5

Joint Loads and Enforced Displacements

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

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.019	-.019	19.5	29
2	M2	Y	-.019	-.019	0	1.5
3	M2	Y	-.006	-.006	1.5	9.5

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.035	-.035	0	0
2	M2	Y	-.024	-.024	0	0
3	M1	Y	-.202	-.202	19.5	29
4	M2	Y	-.202	-.202	0	1.5
5	M2	Y	-.067	-.067	1.5	9.5

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.016	.016	0	0
2	M2	X	.011	.011	0	0
3	M1	X	.015	.015	19.5	29
4	M2	X	.015	.015	0	1.5
5	M2	X	.011	.011	1.5	9.5

Member Distributed Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.044	.044	0	0
2	M2	X	.027	.027	0	0
3	M1	X	.04	.04	19.5	29
4	M2	X	.04	.04	0	1.5
5	M2	X	.024	.024	1.5	9.5

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gravity	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					3	3		
3	Weight of Ice Only	None					3	5		
4	TIA Wind with Ice	None					3	5		
5	TIA Wind	None					3	5		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	1.2D + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6										
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6										
3	1.2D + 1.0Di + 1.0Wi (X-di...	Yes	Y		1	1.2	2	1.2	3	1	4	1								

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo..	LC	z-z Mo...	LC
1	M1	1	max	8.143	3	-1.156	3	0	1	0	1	0	1	0	1
2			min	2.084	2	-4.668	1	0	1	0	1	0	1	0	1
3		2	max	7.443	3	-1.272	3	0	1	0	1	0	1	35.69	1
4			min	1.749	2	-5.178	1	0	1	0	1	0	1	8.801	3
5		3	max	6.689	3	-1.409	3	0	1	0	1	0	1	75.182	1
6			min	1.409	2	-5.722	1	0	1	0	1	0	1	18.505	3
7		4	max	5.482	3	4.266	1	0	1	0	1	0	1	49.503	1
8			min	1.035	2	1.042	3	0	1	0	1	0	1	12.273	3
9		5	max	3.151	3	3.292	1	0	1	0	1	0	1	22.106	1
10			min	.576	2	.817	3	0	1	0	1	0	1	5.531	3
11	M2	1	max	3.151	3	3.277	1	0	1	0	1	0	1	22.106	1
12			min	.576	2	.805	3	0	1	0	1	0	1	5.531	3
13		2	max	1.7	3	1.7	1	0	1	0	1	0	1	11.243	1
14			min	.361	2	.433	3	0	1	0	1	0	1	2.864	3
15		3	max	1.244	3	1.414	1	0	1	0	1	0	1	5.794	1
16			min	.258	2	.356	3	0	1	0	1	0	1	1.482	3
17		4	max	.863	3	1.167	1	0	1	0	1	0	1	1.324	1
18			min	.16	2	.29	3	0	1	0	1	0	1	.364	3
19		5	max	0	1	.018	3	0	1	0	1	0	1	0	1
20			min	0	1	.013	2	0	1	0	1	0	1	0	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	.539	3	-.153	3	0	1	0	1	0	1	0	1	0	1
2			min	.138	2	-.618	1	0	1	0	1	0	1	0	1	0	1
3		2	max	.493	3	-.168	3	0	1	-2.866	3	11.622	1	0	1	0	1
4			min	.116	2	-.686	1	0	1	-11.622	1	2.866	3	0	1	0	1
5		3	max	.443	3	-.187	3	0	1	-6.026	3	24.481	1	0	1	0	1
6			min	.093	2	-.758	1	0	1	-24.481	1	6.026	3	0	1	0	1
7		4	max	.363	3	.565	1	0	1	-3.996	3	16.12	1	0	1	0	1
8			min	.069	2	.138	3	0	1	-16.12	1	3.996	3	0	1	0	1
9		5	max	.209	3	.436	1	0	1	-1.801	3	7.198	1	0	1	0	1
10			min	.038	2	.108	3	0	1	-7.198	1	1.801	3	0	1	0	1
11	M2	1	max	.402	3	.837	1	0	1	-5.745	3	22.961	1	0	1	0	1
12			min	.074	2	.206	3	0	1	-22.961	1	5.745	3	0	1	0	1
13		2	max	.217	3	.434	1	0	1	-2.974	3	11.678	1	0	1	0	1
14			min	.046	2	.111	3	0	1	-11.678	1	2.974	3	0	1	0	1
15		3	max	.159	3	.361	1	0	1	-1.539	3	6.017	1	0	1	0	1
16			min	.033	2	.091	3	0	1	-6.017	1	1.539	3	0	1	0	1
17		4	max	.11	3	.298	1	0	1	-.378	3	1.375	1	0	1	0	1
18			min	.02	2	.074	3	0	1	-1.375	1	.378	3	0	1	0	1
19		5	max	0	1	.005	3	0	1	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
20			min	0	1	.003	2	0	1	0	1	0	1	0	1	0	1

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	BOTCONNE...	max	4.668	1	8.143	3	0	1	0	1	NC	NC	0	1
2		min	1.156	3	2.084	2	0	1	0	1	NC	NC	0	1
3	TOPCONNE...	max	-2.571	3	0	1	0	1	0	1	0	1	0	1
4		min	-10.61	1	0	1	0	1	0	1	0	1	0	1
5	Totals:	max	-1.415	3	8.143	3	0	1						
6		min	-5.942	1	2.084	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotatio...	LC	Z Rotation...	LC
1	BOTCONNE...	max	0	3	0	2	0	1	0	1	0	1	5.91e-3	1
2		min	0	1	0	3	0	1	0	1	0	1	1.457e-3	3
3	TOPCONNE...	max	0	1	0	2	0	1	0	1	0	1	-3.035e-3	3
4		min	0	3	-.003	3	0	1	0	1	0	1	-1.232e-2	1
5	FLANGE	max	4.112	1	-.001	2	0	1	0	1	0	1	-8.23e-3	3
6		min	1.014	3	-.005	3	0	1	0	1	0	1	-3.33e-2	1
7	TOPMAST	max	11.768	1	-.001	2	0	1	0	1	0	1	-1.238e-2	3
8		min	2.919	3	-.006	3	0	1	0	1	0	1	-4.961e-2	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc...	LC	Sh...	Loc[ft]	Dir	LC	phi*Pn...	phi*...	phi*...	phi*...	...	Eqn
1	M1	PIPE_10.0X	.613	15....	1	.040	15.104		1	297.185	475...	129...	129...	...	H1...
2	M2	PIPE_6.0X	.542	0	1	.044	0		1	183.575	246...	40.95	40.95	...	H1...

Joint Reactions

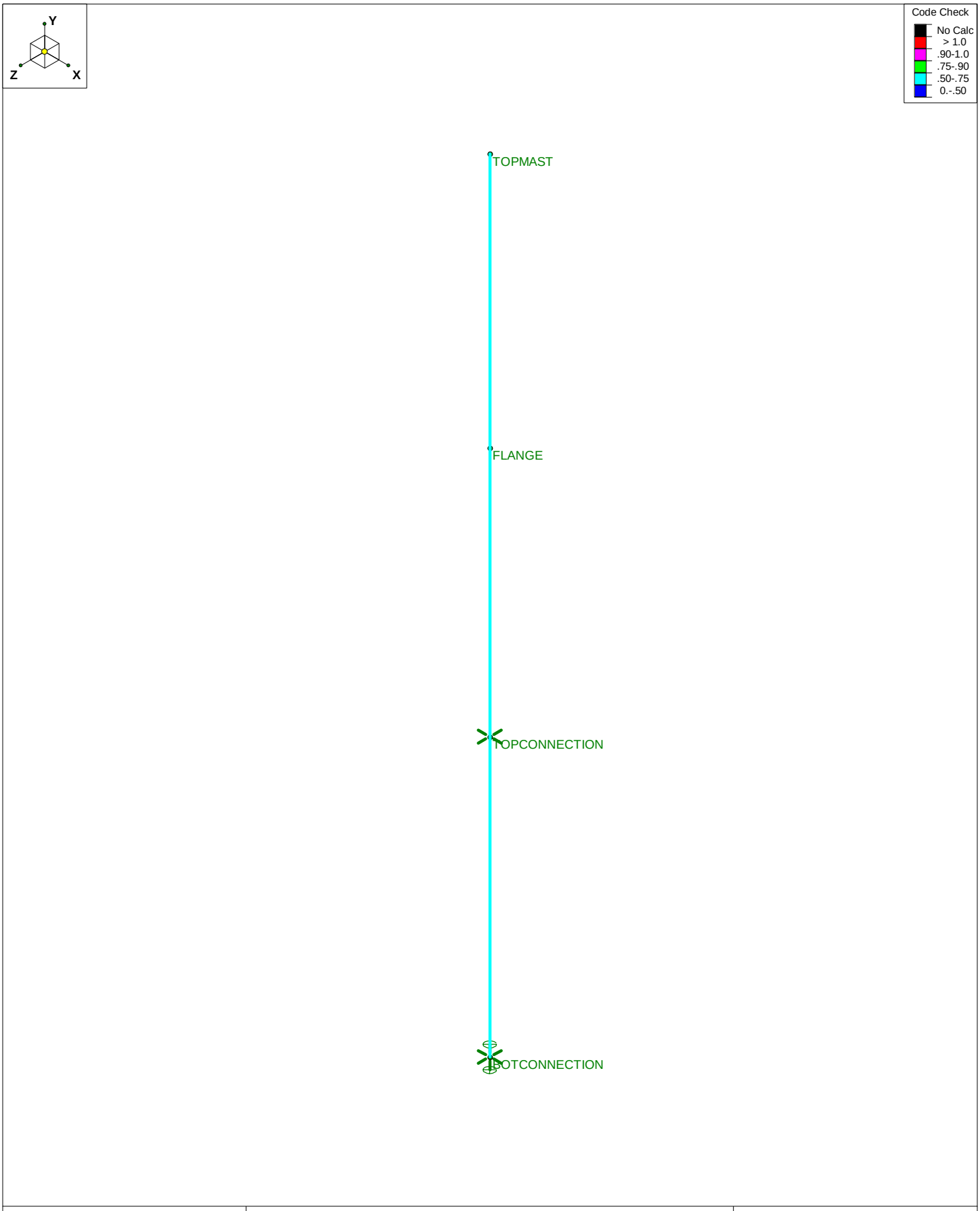
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	4.668	2.779	0	0	NC	0
2	1	TOPCONNECTION	-10.61	0	0	0	0	0
3	1	Totals:	-5.942	2.779	0			
4	1	COG (ft):	X: 0	Y: 21.087	Z: 0			

Joint Reactions

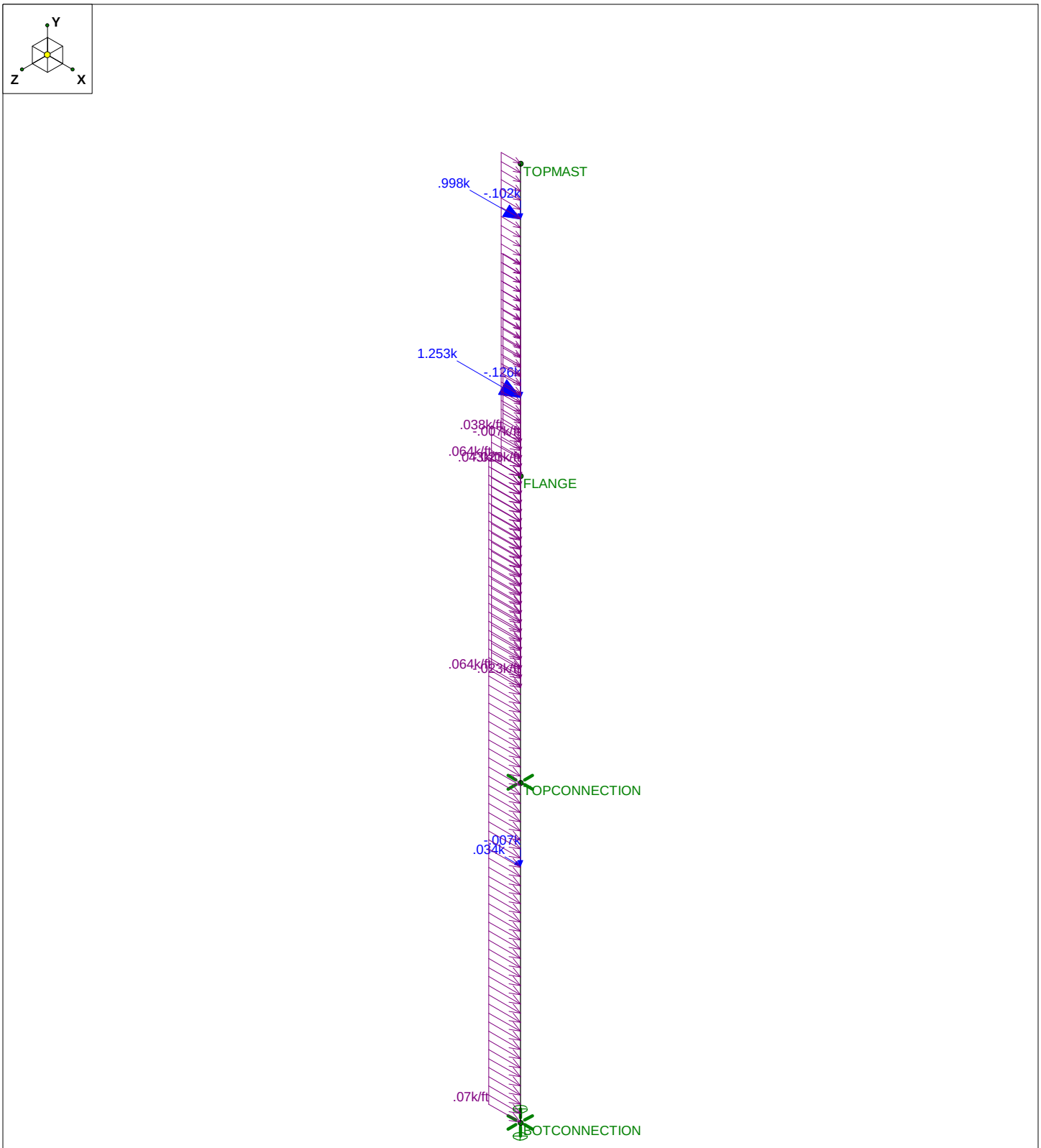
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	4.656	2.084	0	0	NC	0
2	2	TOPCONNECTION	-10.599	0	0	0	0	0
3	2	Totals:	-5.942	2.084	0			
4	2	COG (ft):	X: 0	Y: 21.087	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	BOTCONNECTION	1.156	8.143	0	0	NC	0
2	3	TOPCONNECTION	-2.571	0	0	0	0	0
3	3	Totals:	-1.415	8.143	0			
4	3	COG (ft):	X: 0	Y: 25.027	Z: 0			

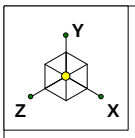


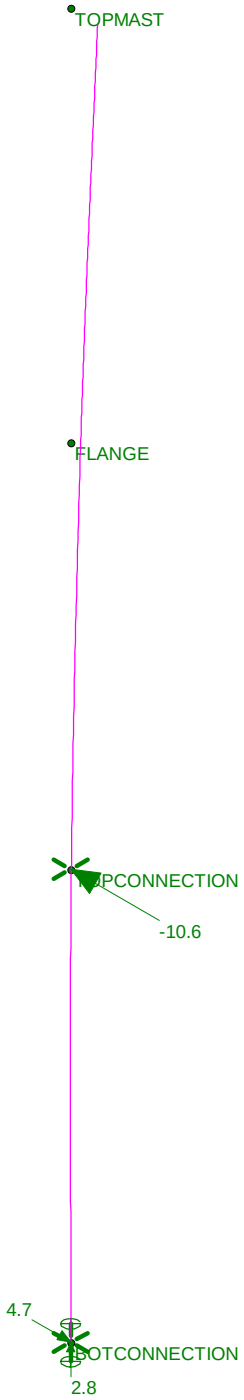
CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:44 PM
16162.03/T-Mobile CT1124...	Unity Check	TIA.r3d



Loads: LC 1, 1.2D + 1.6W (X-direction)

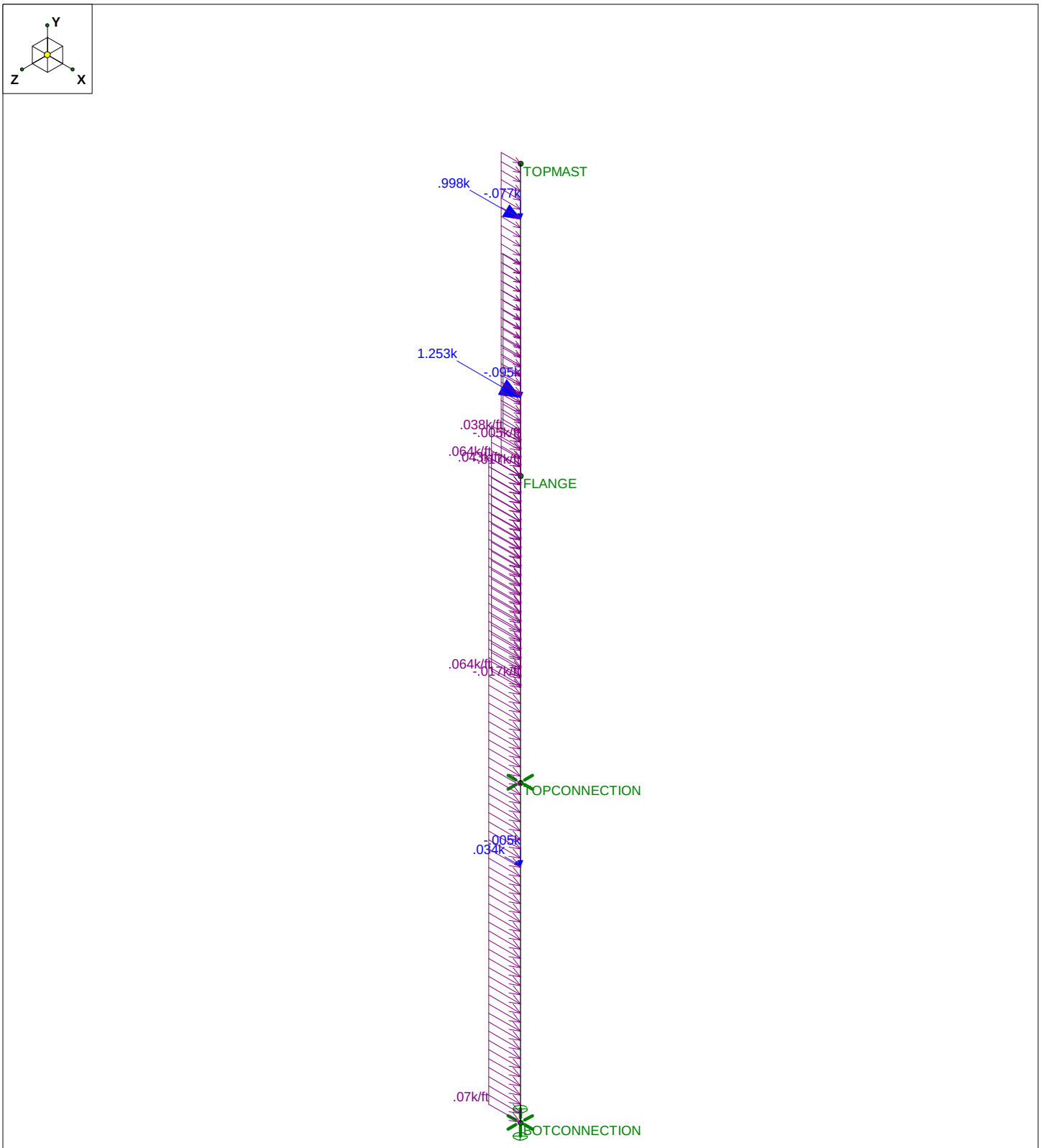
CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:36 PM
16162.03/T-Mobile CT1124...	LC #1 Loads	TIA.r3d





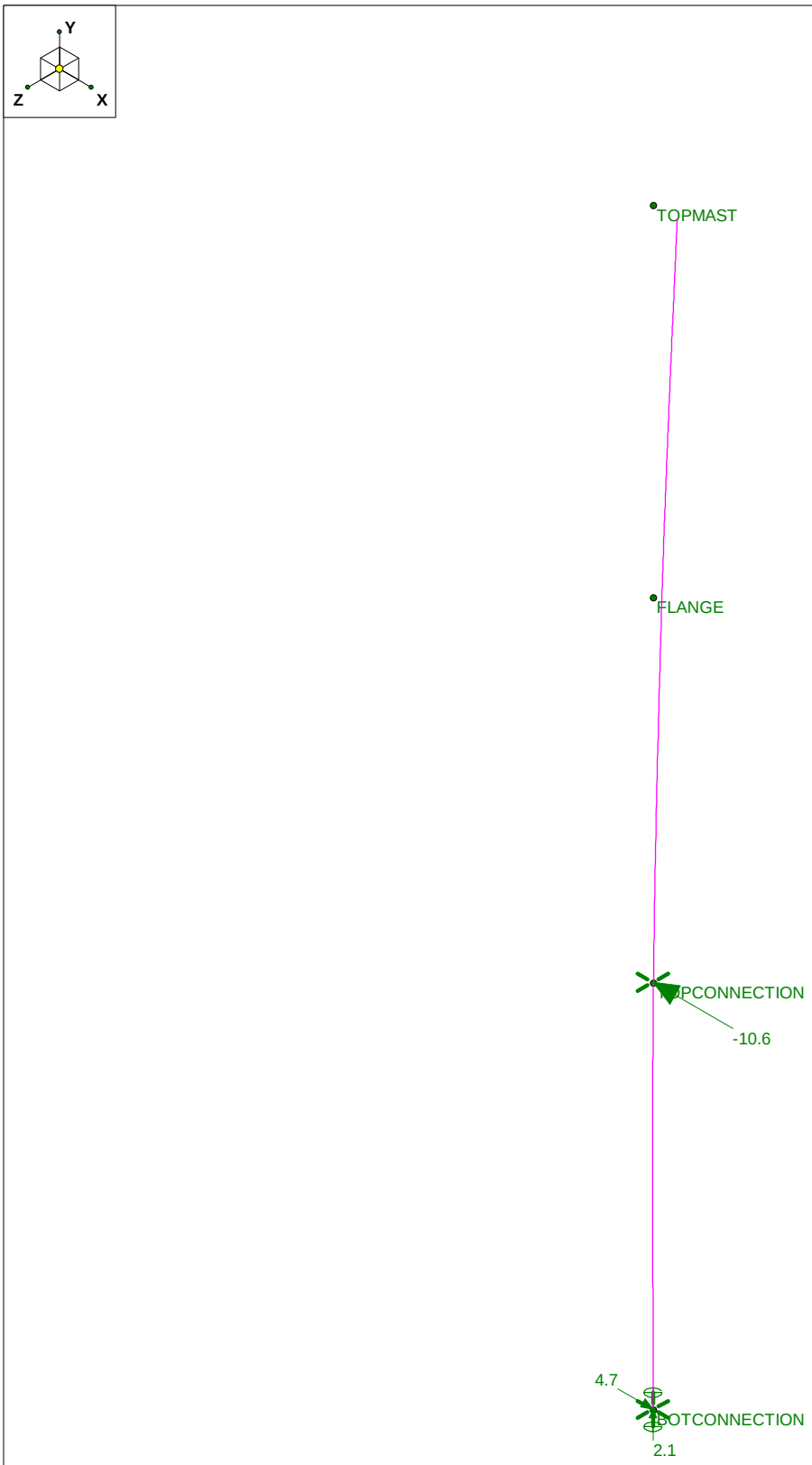
Results for LC 1, 1.2D + 1.6W (X-direction)
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:37 PM
16162.03/T-Mobile CT1124...	LC #1 Reactions and Deflected Shape	TIA.r3d



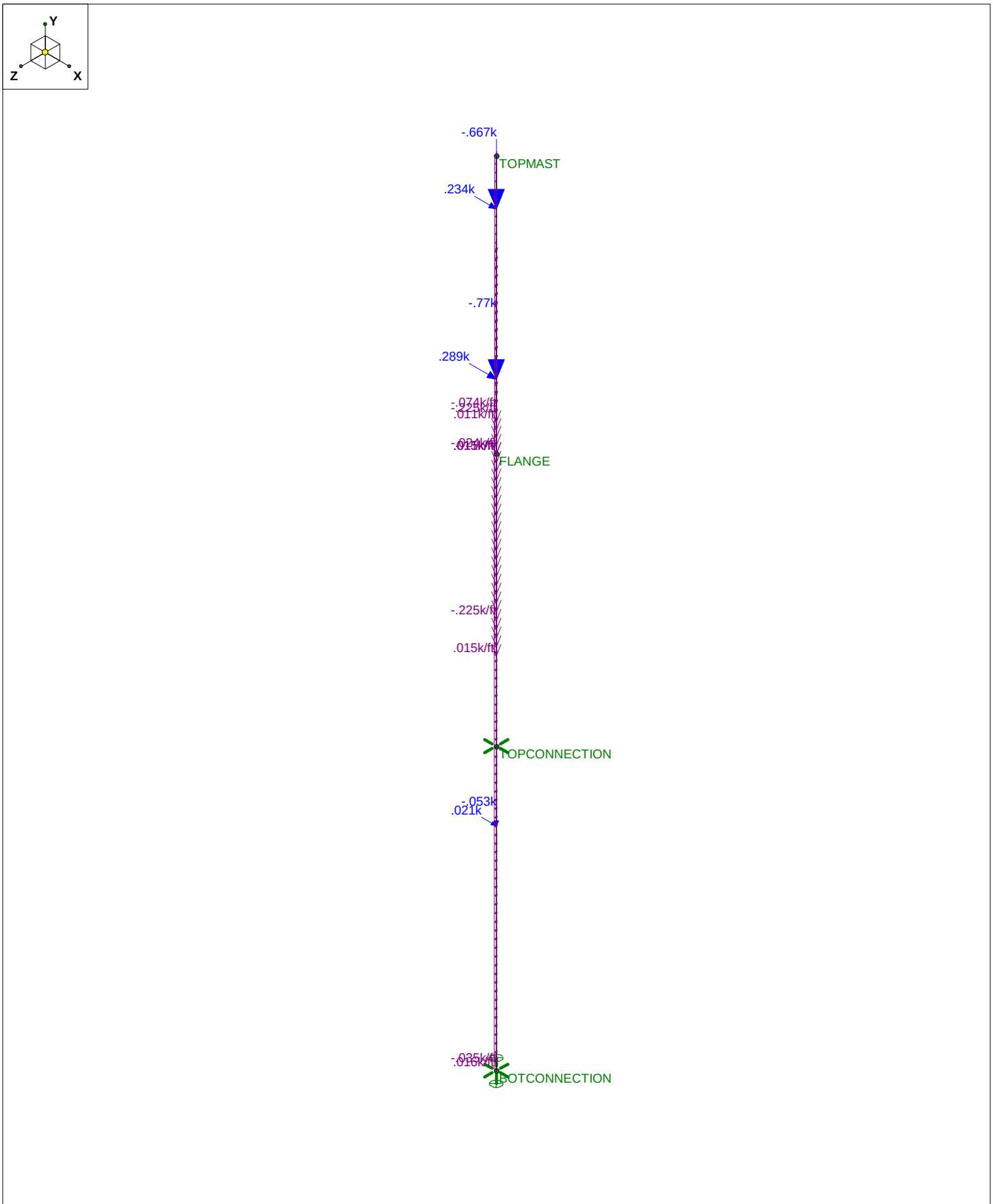
Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:36 PM
16162.03/T-Mobile CT1124...	LC #2 Loads	TIA.r3d



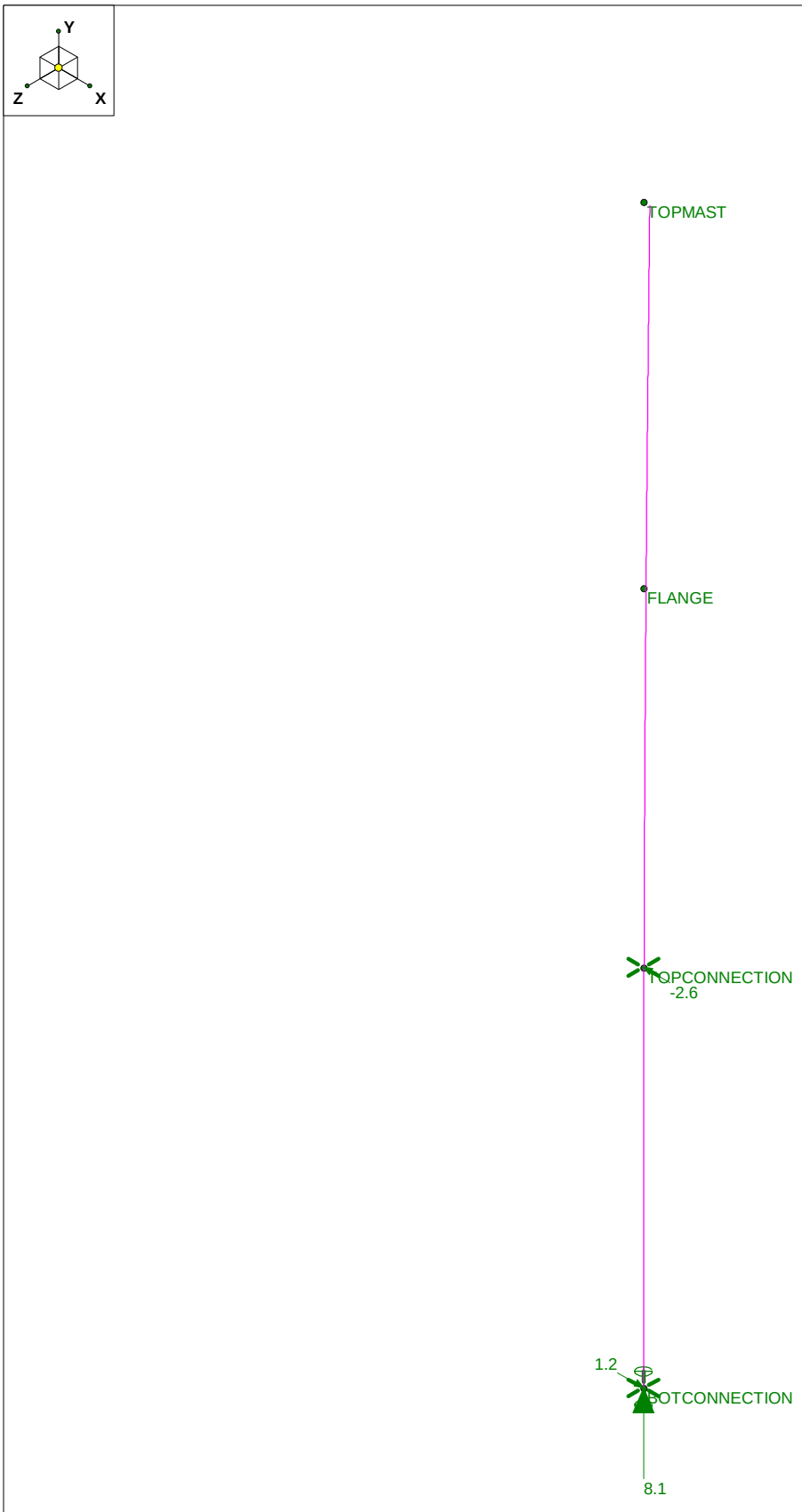
Results for LC 2, 0.9D + 1.6W (X-direction)
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:41 PM
16162.03/T-Mobile CT1124...	LC #2 Reactions and Deflected Shape	TIA.r3d



Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:36 PM
16162.03/T-Mobile CT1124...	LC #3 Loads	TIA.r3d

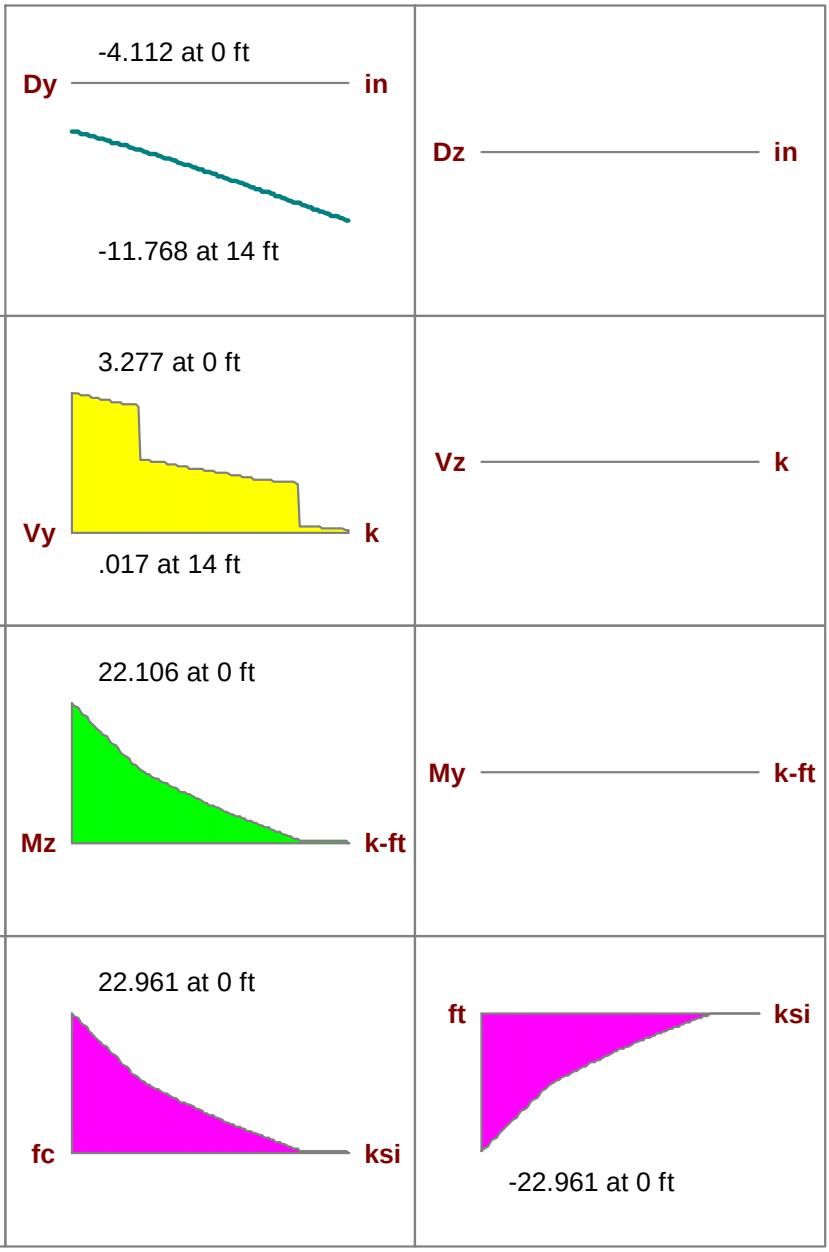


Results for LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:42 PM
16162.03/T-Mobile CT1124...	LC #3 Reactions and Deflected Shape	TIA.r3d

Beam: ***M2***

Shape: **PIPE_6.0X**
Material: **A53 Gr. B**
Length: **14 ft**
I Joint: **FLANGE**
J Joint: **TOPMAST**
LC 1: 1.2D + 1.6W (X-direction)
Code Check: **0.542 (bending)**
Report Based On 97 Sections



AISC 14th(360-10): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.542**	Max Shear Check	**0.044 (s)**
Location	**0 ft**	Location	**0 ft**
Equation	**H1-1b**	Max Defl Ratio	**L/22**
Bending Flange	**Compact**	Compression Flange	**Non-Slender**
Bending Web	**Compact**	Compression Web	**Non-Slender**

Fy	**35 ksi**
phi*Pnc	**183.575 k**
phi*Pnt	**246.645 k**
phi*Mny	**40.95 k-ft**
phi*Mnz	**40.95 k-ft**
phi*Vny	**73.994 k**
phi*Vnz	**73.994 k**
phi*Tn	**38.66 k-ft**
Cb	**2.379**

	y-y	z-z
Lb	**14 ft**	**14 ft**
KL/r	**75.961**	**75.961**

L Comp Flange	**14 ft**
Warp Length	**NC**
L-torque	**14 ft**
Tau_b	**1**

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Subject: Top Connection of Mast to Tower # 1280

Location: Greenwich, CT

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16162.03

Rev. 1: 12/15/16

Mast Top Connection to CL&P Tower:

Design Basis:

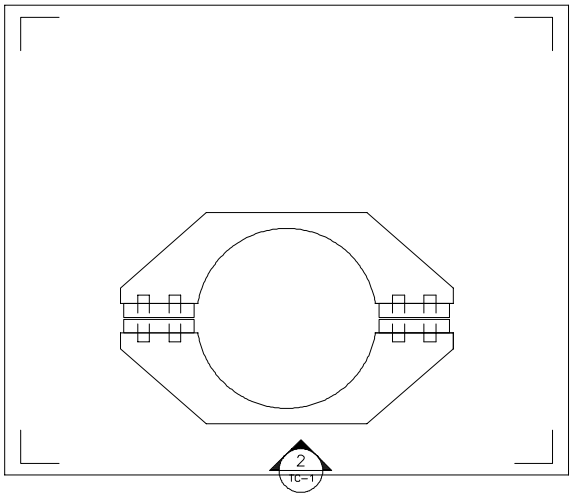
Analysis of the existing mast connection to the CL&P tower is based on the original connection design by Paul J. Ford and company project no. A01-T067 drawings S-1 to S-3.
The connection was assumed to be pinned horizontally but free vertically.
The bolts are checked for tension as a result of the horizontal force.

Reactions:

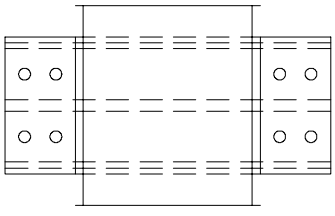
Moment =	M := 0·kips	(Input From Risa-3D LC #1)
Vertical =	V := 0·kips	(Input From Risa-3D LC #1)
Horizontal =	H := 10.6·kips	(Input From Risa-3D LC #1)

Bolt Data:

Bolt Type =	ASTM A325	
Number of Bolts =	N := 8	(User Input)
Bolt Diameter =	D := 0.75·in	(User Input)
Bolt Design Strength Tension =	T_{design} := 29.8·kips	(User Input)
Threads per Inch =	n := 10	(User Input)



1 TC-1 TOP CONNECTION PLAN
NOT TO SCALE



2 TC-1 TOP CONNECTION ELEVATION
NOT TO SCALE

Bolt Analysis:

Calculated Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.442 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.334 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.653 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.163 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.027 \cdot in^3$

Check Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := \frac{H}{N} = 1.3 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{design}} = 0.04$

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

Condition1 = "OK"

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Subject:	Bottom Connection of Mast to Tower # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Mast Bottom Connection to CL&P Tower:

Design Basis:

Analysis of the existing mast connection to the CL&P tower is based on the original connection design by Paul J. Ford and company project no. A01-T067 drawings S-1 to S-3.
The connection was assumed to be pinned horizontally and vertically.

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 0 \cdot ft \cdot kips$	(Input From Risa-3D LC #1)
Horizontal Force =	$H := 4.7 \cdot kips$	(Input From Risa-3D LC #1)
Vertical Force =	$V := 2.8 \cdot kips$	(Input From Risa-3D LC #1)

Anchor Bolt Data:

Use ASTM A394

Number of Bolts =	$N := 6$	(User Input)
Diameter of Bolt Circle =	$D_{bc} := 13.25 \cdot in$	(User Input)
Bolt "Column" Distance =	$l := 0 \cdot in$	(User Input)
Bolt Design Strength Tension =	$T_{design} := 24.7 \cdot kips$	(User Input)
Bolt Design Strength Shear =	$V_{design} := 13.6 \cdot kips$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Bolts =	$D := .75 \cdot in$	(User Input)
Threads per Inch =	$n := 8$	(User Input)

Base Plate Data:

Use ASTM A36

Plate Yield Strength =	$Fy_{bp} := 36 \cdot ksi$	(User Input)
Plate Thickness =	$t_{bp} := .375 \cdot in$	(User Input)
Plate Diameter =	$D_{bp} := 15.75 \cdot in$	(User Input)
Outer Pole Diameter =	$D_{pole} := 10.75 \cdot in$	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 6.625 \cdot in$

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

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

$d_1 = 5.74 \cdot in$ $d_4 = -5.74 \cdot in$

$d_2 = 5.74 \cdot in$ $d_5 = -5.74 \cdot in$

$d_3 = 0.00 \cdot in$ $d_6 = -0.00 \cdot in$

Critical Distances For Bending in Plate:

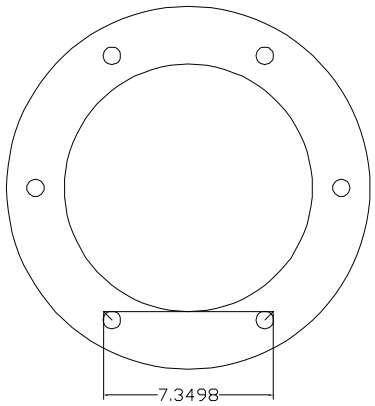
Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 5.4 \cdot in$

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

$MA_1 = 0.36 \cdot in$ $MA_4 = 0.00 \cdot in$

$MA_2 = 0.36 \cdot in$ $MA_5 = 0.00 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_6 = 0.00 \cdot in$



Bottom Connection

Effective Width = $W_{eff} := 7.35 \cdot in$

Bolt Analysis:

Calculated Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 131.67 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.442 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.31 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.628 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.157 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.024 \cdot in^3$

Check Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := \frac{V}{N} = 0.5 \cdot kips$

Maximum Shear Force = $V_{Max} := \frac{H}{N} = 0.8 \cdot kips$

Bolt % of Capacity = $\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} = 0.076$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Plate Analysis:

Force from Bolts = $C_i := \frac{V}{N}$

$C_1 = 0.5 \cdot kips$ $C_4 = 0.5 \cdot kips$

$C_2 = 0.5 \cdot kips$ $C_5 = 0.5 \cdot kips$

$C_3 = 0.5 \cdot kips$ $C_6 = 0.5 \cdot kips$

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

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 32.4 \cdot ksi$

Plate Bending Stresse % of Capacity = $\frac{f_{bp}}{F_{bp}} = 0.061$

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

Condition2 = "Ok"

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 22.1 \cdot ft \cdot kips$	(Input From Risa-3D LC #1)
Shear Force =	$Shear := 3.3 \cdot kips$	(Input From Risa-3D LC #1)
Axial Force =	$Axial := 0.8 \cdot kips$	(Input From Risa-3D LC #1)

Flange Bolt Data:

Use ASTM A325

Number of Flange Bolts =	$N := 10$	(User Input)
Diameter of Bolt Circle =	$D_{bc} := 13.5 \cdot in$	(User Input)
Bolt "Column" Distance =	$l := 0 \cdot in$	(User Input)
Bolt Design Strength Tension =	$T_{design} := 29.8 \cdot kips$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Flange Bolts =	$D := .75 \cdot in$	(User Input)
Threads per Inch =	$n := 10$	(User Input)

Flange Plate Data:

Use ASTM A36

Plate Yield Strength =	$Fy_{bp} := 36 \cdot ksi$	(User Input)
Base Plate Thickness =	$t_{bp} := 0.75 \cdot in$	(User Input)
Base Plate Diameter =	$D_{bp} := 16 \cdot in$	(User Input)
Outer Pole Diameter =	$D_{pole} := 6.63 \cdot in$	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 6.75 \cdot in$

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

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

$d_1 = 3.97 \cdot in$ $d_6 = -3.97 \cdot in$

$d_2 = 6.42 \cdot in$ $d_7 = -6.42 \cdot in$

$d_3 = 6.42 \cdot in$ $d_8 = -6.42 \cdot in$

$d_4 = 3.97 \cdot in$ $d_9 = -3.97 \cdot in$

$d_5 = 0.00 \cdot in$ $d_{10} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 3.3 \cdot in$

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

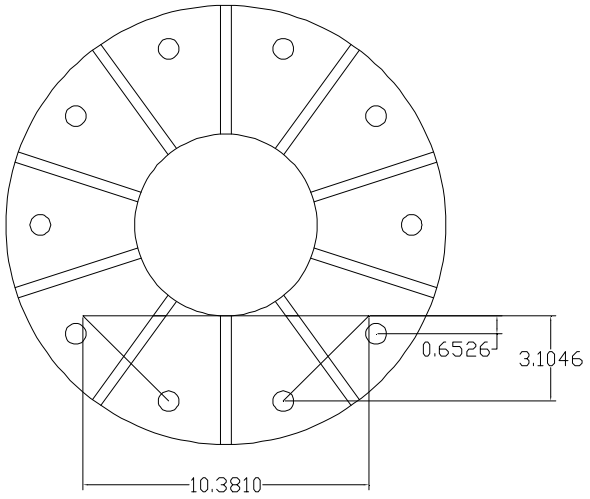
$MA_1 = 0.65 \cdot in$ $MA_6 = 0.00 \cdot in$

$MA_2 = 3.10 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_3 = 3.10 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_4 = 0.65 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{10} = 0.00 \cdot in$



Effective Width = $W_{eff} := 10.38 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 227.81 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.442 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.334 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.653 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.163 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.027 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 7.8 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{design}} = 0.261$

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

Condition1 = "OK"

Flange Plate Analysis:

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

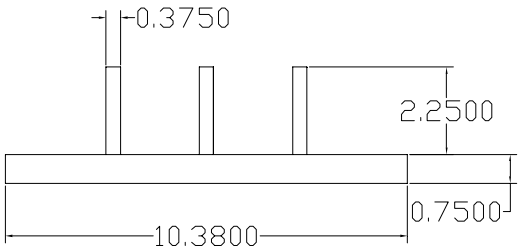
$C_1 = 4.7 \cdot kips$ $C_6 = -4.5 \cdot kips$

$C_2 = 7.6 \cdot kips$ $C_7 = -7.4 \cdot kips$

$C_3 = 7.6 \cdot kips$ $C_8 = -7.4 \cdot kips$

$C_4 = 4.7 \cdot kips$ $C_9 = -4.5 \cdot kips$

$C_5 = 0.1 \cdot kips$ $C_{10} = 0.1 \cdot kips$



Section Modulus of Base Plate w/ Gusset Plates = $S_{xplt} := 3.84 \cdot in^3$

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{C_i \cdot MA_i}{(S_{xplt})} = 13.8 \cdot ksi$

Design Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 32.4 \cdot ksi$

Plate Bending Stresse % of Capacity = $\frac{f_{bp}}{F_{bp}} = 0.426$

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

Condition2 = "Ok"

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Subject:	Load Analysis of T-Mobile Equipment on Structure #6076
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16162.03

Basic Components

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

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	TME := 163.5	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.25		(User Input - Only for NESC Extreme wind case)
NESC Factor =	kv := 1.43		(User Input from NESC 2007 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2007 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01\cdot\left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.404$		(NESC 2007 Table 250-2)
Exposure Factor =	$Es := 0.346\left[\frac{33}{(0.67\cdot TME)}\right]^{\frac{1}{7}} = 0.291$		(NESC 2007 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375\cdot\frac{TME}{220}\right)} = 0.782$		(NESC 2007 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7\cdot Es\cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.829$		(NESC 2007 Table 250-3)
Wind Pressure =	$qz := 0.00256\cdot Kz\cdot V^2\cdot Grf\cdot I = 36.1$	psf	(NESC 2007 Section 250.C.2)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

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Subject:	Load Analysis of T-Mobile Equipment on Structure #6076
Location:	Greenwich, CT
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Development of Wind & Ice Load on Mast

Mast Data: (Pipe 10.0" SCH. 80)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 10.75$	in	(User Input)
Mast Length =	$L_{mast} := 29$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.5$	in	(User Input)

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.896$

Total Mast Wind Force (Above NU Structure) =	$qz \cdot Cd_R \cdot A_{mast} \cdot m = 52$	plf	**BLC 5**
Total Mast Wind Force (Below NU Structure) =	$qz \cdot Cd_R \cdot A_{mast} = 42$	plf	**BLC 5**

Wind Load (NESE Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 0.979$

Total Mast Wind Force w/ Ice =	$p \cdot Cd_R \cdot AICE_{mast} = 5$	plf	**BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 17.7$ sq in

Weight of Ice on Mast =	$W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 7$	plf	**BLC 3**

Development of Wind & Ice Load on Mast

Mast Data: (Pipe 6.0" SCH. 80)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 6.625$	in	(User Input)
Mast Length =	$L_{mast} := 14$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.432$	in	(User Input)

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.552$

Total Mast Wind Force (Above NU Structure) = $qz \cdot Cd_R \cdot A_{mast} \cdot m = 32$ plf **BLC 5**

Wind Load (NESE Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 0.635$

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

Gravity Loads (without ice)

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

Gravity Loads (ice only)

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

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

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew LNX-6512DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 48.5$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 28.2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 12$	sf	
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 867$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.4$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 13.3$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 85$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 85$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4098$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1074$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 35$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 104$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew TMBXX-6516		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 59$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 35$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.9$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 14.6$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1055$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.4$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 103$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4423$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1227$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 40$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 119$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew ATSBT-TOP-FM-4G		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf	
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 31$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.2$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 4$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 6$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 52$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 5$	lbs	**BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (140ft - 151ft)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 11$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 18$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 5$		(User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.8$ ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 54$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot Ir)}{12} = 0.9$ ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 5$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 19$ plf **BLC 2**

Gravity Load (ice only)

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

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 27$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (151ft - 159ft)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 8$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 6$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 3$		(User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.5$ ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 32$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot Ir)}{12} = 0.6$ ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 3$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Load (ice only)

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

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 9$ plf **BLC 3**

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Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining Reactions Applied to Utility Pole Tabulated Load Cases**

Location: **Greenwich, CT**

Date: 10/26/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	NESC Heavy Wind
5	NESC Extreme Wind

Footnotes:

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Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining Reactions Applied to Utility Pole Load Combinations Table**

Location: **Greenwich, CT**

Date: 10/26/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

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

Footnotes:
(1) BLC = Basic Load Case

Global

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

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

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
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, Continued

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

Footing Overturning Safety Factor	1.5
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lamda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Mast1	29												Lateral
2	M2	Mast2	14												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast1	PIPE_10.0X	Beam	Pipe	A53 Gr. B	Typical	15.1	199	199	398
2	Mast2	PIPE_6.0X	Beam	Pipe	A53 Gr. B	Typical	7.83	38.3	38.3	76.6

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	BOTCO...	FLANGE			Mast1	Beam	Pipe	A53 Gr. B	Typical
2	M2	FLANGE	TOPMA...			Mast2	Beam	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
1	BOTCONNECTION	0	0	0	0	
2	TOPCONNECTION	0	15.25	0	0	
3	FLANGE	0	29	0	0	
4	TOPMAST	0	43	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	BOTCONNECTION	Reaction	Reaction	Reaction		Fixed		
2	TOPCONNECTION	Reaction		Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.085	11.5
2	M2	Y	-.105	3.5
3	M1	Y	-.006	11.5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.104	11.5
2	M2	Y	-.119	3.5
3	M1	Y	-.005	11.5

Member Point Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.085	11.5
2	M2	X	.103	3.5
3	M1	X	.004	11.5

Member Point Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.867	11.5
2	M2	X	1.055	3.5
3	M1	X	.031	11.5

Joint Loads and Enforced Displacements

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

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.019	-.019	19.5	29
2	M2	Y	-.019	-.019	0	1.5
3	M2	Y	-.006	-.006	1.5	9.5

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.007	-.007	0	0
2	M2	Y	-.004	-.004	0	0
3	M1	Y	-.027	-.027	19.5	29
4	M2	Y	-.027	-.027	0	1.5
5	M2	Y	-.009	-.009	1.5	9.5

Member Distributed Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.005	.005	0	0
2	M2	X	.003	.003	0	0
3	M1	X	.005	.005	19.5	29
4	M2	X	.005	.005	0	1.5
5	M2	X	.003	.003	1.5	9.5

Member Distributed Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.042	.042	0	19.5
2	M1	X	.052	.052	19.5	29
3	M2	X	.032	.032	0	0
4	M1	X	.054	.054	19.5	29
5	M2	X	.054	.054	0	1.5
6	M2	X	.032	.032	1.5	9.5

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gravity	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					3	3		
3	Weight of Ice Only	None					3	5		
4	NESC Heavy Wind	None					3	5		
5	NESC Extreme Wind	None					3	6		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	NESC Heavy Wind	Yes			1	1.5	2	1.5	3	1.5	4	2.5								
2	NESC Extreme Wind	Yes			1	1	2	1	5	1										

Envelope Joint Reactions

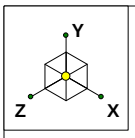
	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	BOTCONNE...	max	3.93	2	4.758	1	0	1	0	1	NC	NC	0	1
2		min	.929	1	2.316	2	0	1	0	1	NC	NC	0	1
3	TOPCONNE...	max	-2.074	1	0	1	0	1	0	1	0	1	0	1
4		min	-8.494	2	0	1	0	1	0	1	0	1	0	1
5	Totals:	max	-1.145	1	4.758	1	0	1						
6		min	-4.564	2	2.316	2	0	1						

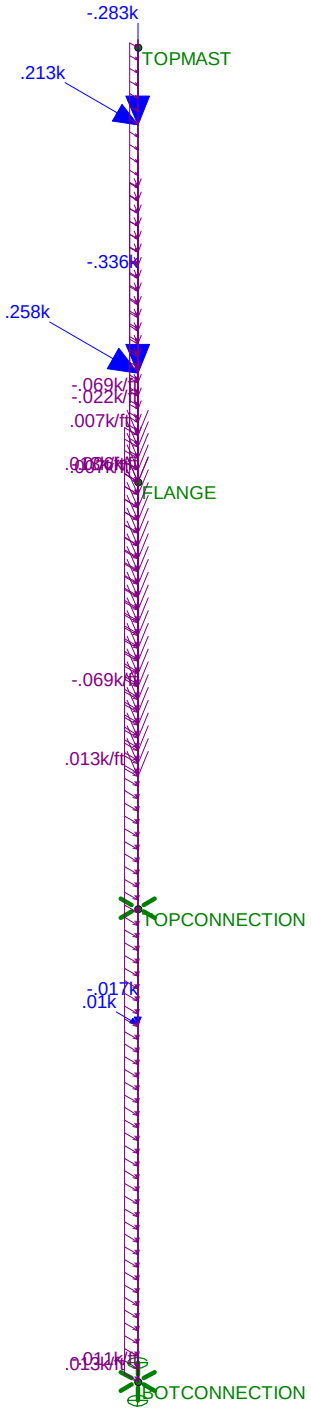
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	.929	4.758	0	0	NC	0
2	1	TOPCONNECTION	-2.074	0	0	0	0	0
3	1	Totals:	-1.145	4.758	0			
4	1	COG (ft):	X: 0	Y: 22.649	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	3.93	2.316	0	0	NC	0
2	2	TOPCONNECTION	-8.494	0	0	0	0	0
3	2	Totals:	-4.564	2.316	0			
4	2	COG (ft):	X: 0	Y: 21.087	Z: 0			





Loads: LC 1, NESC Heavy Wind

CENTEK Engineering, Inc.		
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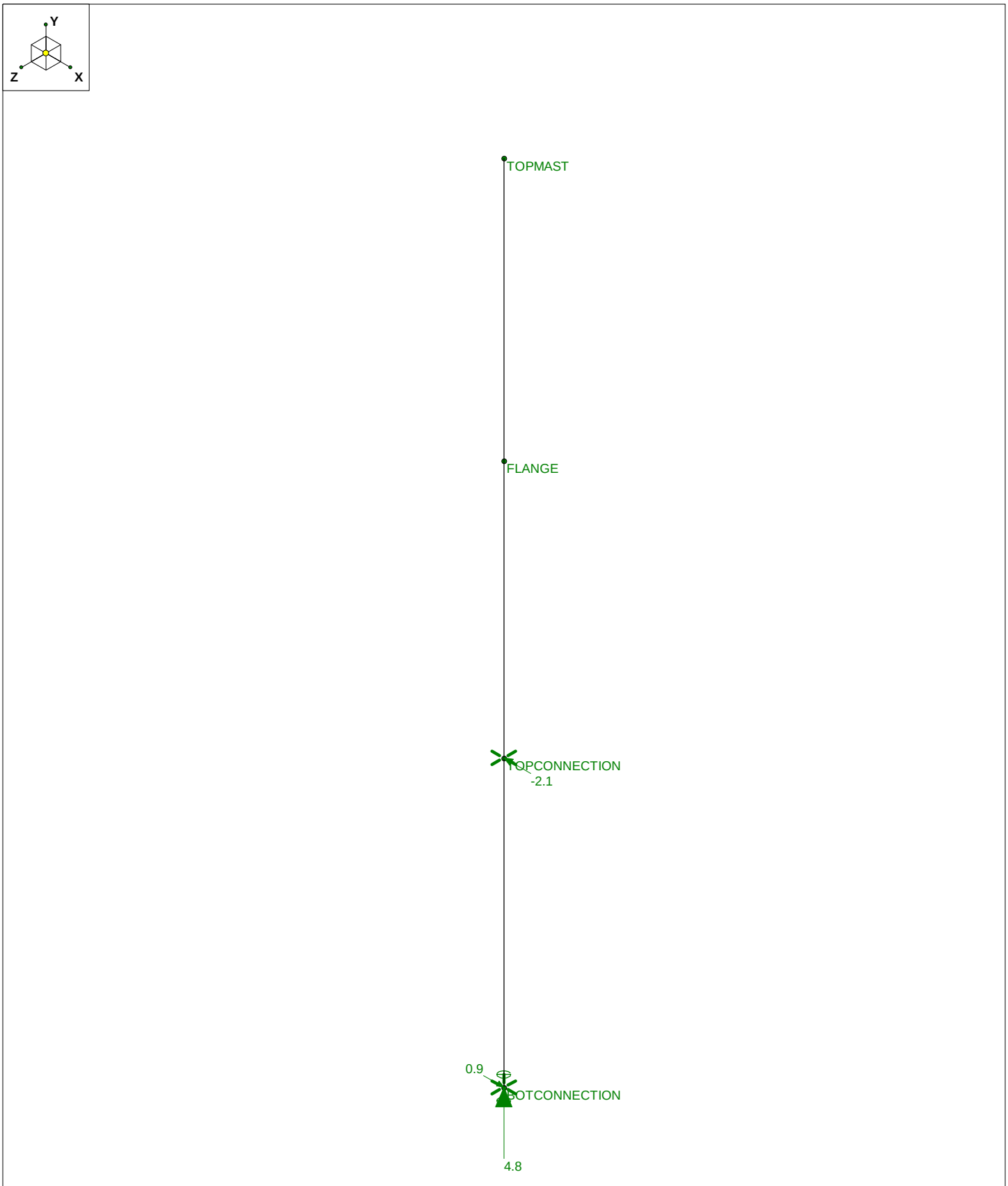
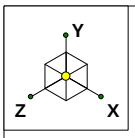
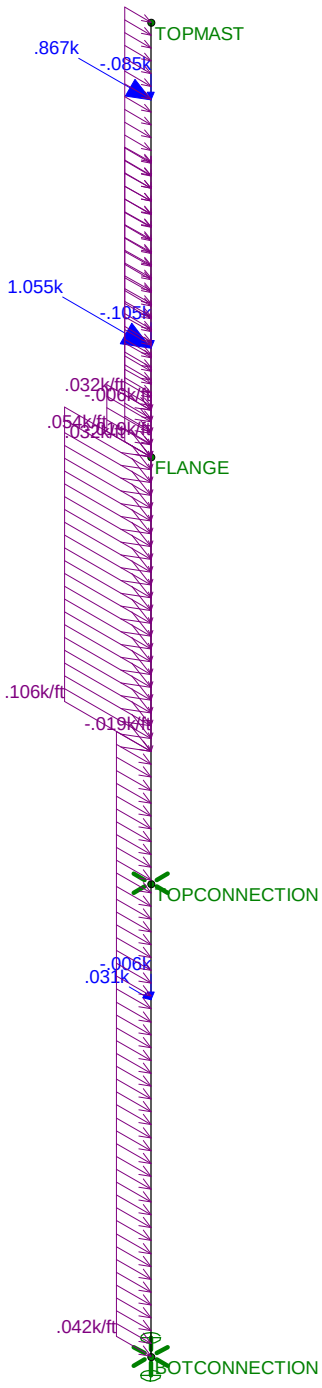
16162.03/T-Mobile CT1124...	LC #1 Loads	NESC.r3d



Results for LC 1, NESC Heavy Wind
Z-direction Reaction Units are k and k-ft

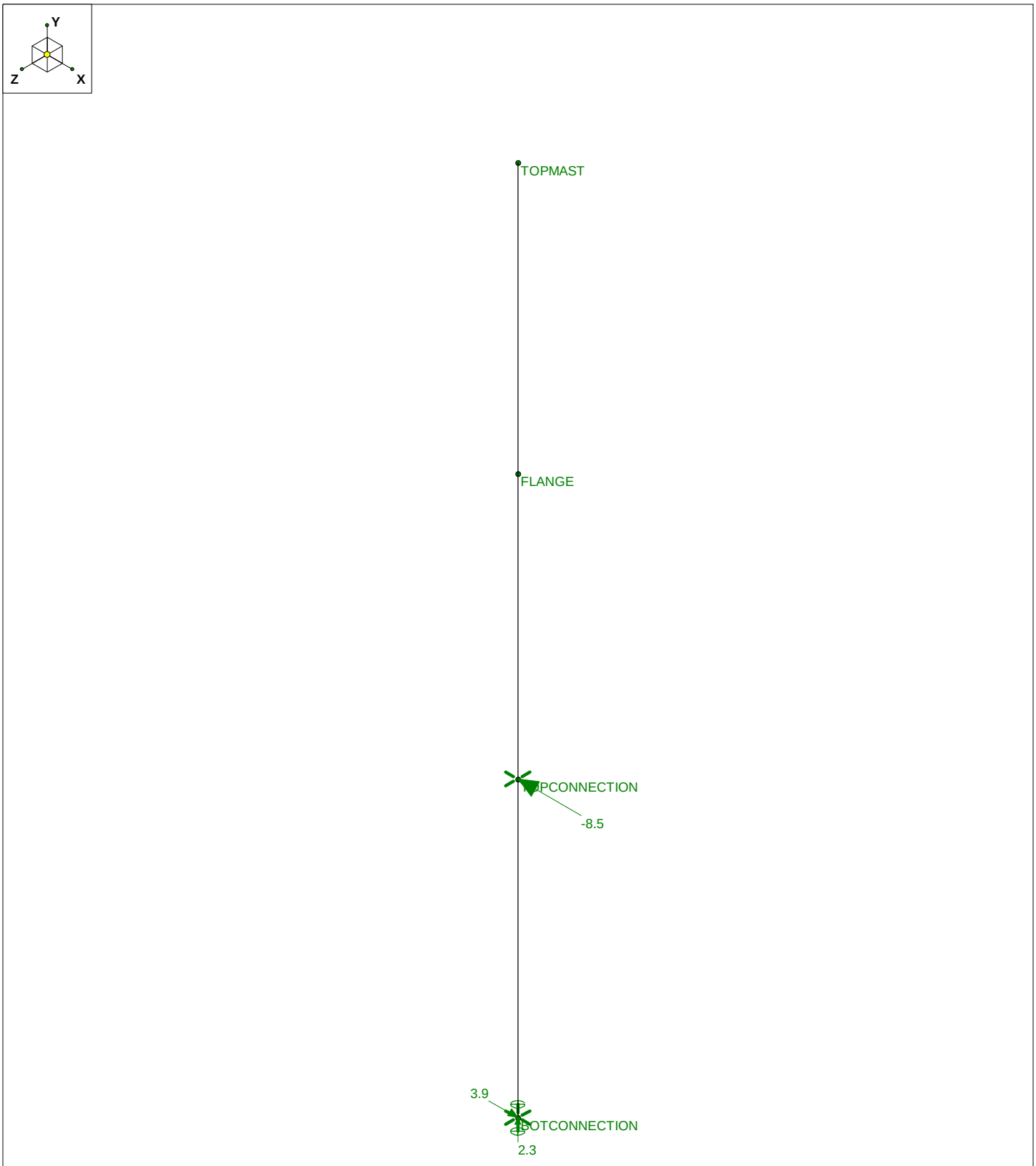
CENTEK Engineering, Inc.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:32 PM
16162.03/T-Mobile CT1124...	LC#1 Reactions	NESC.r3d





Loads: LC 2, NESC Extreme Wind

CENTEK Engineering, Inc.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:31 PM
16162.03/T-Mobile CT1124...	LC #2 Loads	NESC.r3d



Results for LC 2, NESC Extreme Wind
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	Structure #1280 Mast	Dec 15, 2016 at 3:33 PM
16162.03/T-Mobile CT1124...	LC #2 Reactions	NESC.r3d

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

Subject:	Coax Cable on Tower # 1280
Location:	Greenwich, CT
Rev. 0: 10/26/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16162.03

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 6.25 \\ 11.5 \\ 10.5 \\ 10.5 \\ 10.625 \\ 10.375 \\ 11 \\ 12.5 \\ 11.625 \\ 11 \\ 12.5 \\ 14.125 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

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

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

Extreme Wind Pressure = $qz := 36.1 \cdot psf$ *(User Input)*

Heavy Wind Pressure = $p := 4 \cdot psf$ *(User Input)*

Radial Ice Thickness = $Ir := 0.5 \cdot in$ *(User Input)*

Radial Ice Density = $Id := 56 \cdot pcf$ *(User Input)*

Shape Factor = $Cd_{coax} := 1.6$ *(User Input)*

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

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

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

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

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

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

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

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 27.269 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$Heavy_{Vert}$ =

	0
0	431
1	793
2	724
3	724
4	733
5	716
6	759
7	862
8	802
9	759
10	862
11	974

lb

$Heavy_{Trans}$ =

	0
0	107
1	197
2	180
3	180
4	182
5	178
6	189
7	215
8	200
9	189
10	215
11	243

lb

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$Extreme_{Vert}$ =

	0
0	117
1	215
2	197
3	197
4	199
5	194
6	206
7	234
8	218
9	206
10	234
11	264

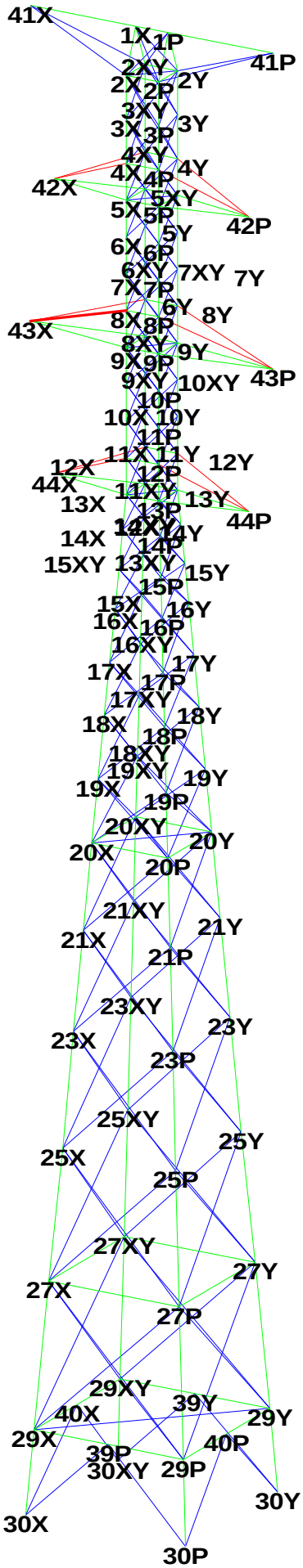
lb

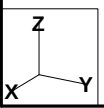
$Extreme_{Trans}$ =

	0
0	357
1	658
2	600
3	600
4	608
5	593
6	629
7	715
8	665
9	629
10	715
11	808

lb

Centek Engineering Inc, Project: "cl&p tower # 1280"
Tower Version 12.50, 9:52:20 AM Wednesday, November 02, 2016
Undeformed geometry displayed





Project Name :
Project Notes:
Project File : J:\Jobs\1616200.WI\03_CT11241A\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p tower # 1280.tow
Date run : 4:59:37 PM Thursday, December 15, 2016
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g29Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g86P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g88P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g88Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g91P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g94Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g95Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g98P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g98Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106P" ??
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106X" ??
The model has 144 warnings. ??

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

Loads from file: j:\jobs\1616200.wi\03_ct11241a\04_structural\backup documentation\calcs\rev (1)\pls tower\cl&p tower # 1280.lca

*** Analysis Results:

Maximum element usage is 68.66% for Angle "g89X" in load case "NESC Extreme"
Maximum insulator usage is 8.92% for Clamp "C5" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	30P	-9.77	-11.35	-145.36	14.98	-0.02	-0.13	0.13	0.03	0.00
NESC Heavy	30X	6.82	-8.28	101.93	10.73	-0.04	0.19	0.20	0.04	0.00
NESC Heavy	30XY	-7.02	-8.09	103.17	10.71	-0.15	-0.24	0.28	-0.06	0.00
NESC Heavy	30Y	9.97	-10.88	-142.40	14.76	-0.15	0.33	0.36	-0.03	0.00
NESC Extreme	30P	-12.82	-17.60	-190.91	21.78	0.93	-0.16	0.95	0.48	0.00
NESC Extreme	30X	10.90	-15.71	167.05	19.12	0.86	0.20	0.88	0.55	0.00
NESC Extreme	30XY	-11.48	-14.60	166.05	18.58	0.44	-0.51	0.67	-0.59	0.00
NESC Extreme	30Y	13.40	-16.43	-188.78	21.20	0.43	0.52	0.67	-0.52	0.00

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

Load Case	Support Joint	Origin Joint	Member Leg Dir.	Leg Force In (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	30P	29P	g89X	146.117	1.540	1.543	-0.041	1.543	-9.77	-11.35	-145.36
NESC Heavy	30X	29X	g89P	-102.482	1.398	1.401	0.055	1.400	6.82	-8.28	101.93
NESC Heavy	30XY	29XY	g89Y	-103.715	1.130	1.132	0.056	1.131	-7.02	-8.09	103.17
NESC Heavy	30Y	29Y	g89XY	143.158	1.316	1.320	-0.353	1.272	9.97	-10.88	-142.40
NESC Extreme	30P	29P	g89X	192.094	4.706	4.717	-0.064	4.716	-12.82	-17.60	-190.91
NESC Extreme	30X	29X	g89P	-168.080	4.438	4.446	0.373	4.430	10.90	-15.71	167.05
NESC Extreme	30XY	29XY	g89Y	-167.052	3.395	3.404	0.276	3.393	-11.48	-14.60	166.05
NESC Extreme	30Y	29Y	g89XY	189.930	3.732	3.743	-0.661	3.684	13.40	-16.43	-188.78

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC Heavy	4056.160	34.492	4056.307

NESC Extreme 5866.281 9.354 5866.288

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)
2	140.000	96.000	58	201	0.00	3.34	139.996	25.00	20.00	288.336
1	96.000	0.000	60	176	3.34	16.46	949.193	3.34	16.46	949.193

*** 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 Cont-rol In Comp. %	Comp. 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 (ft)	Curve No.	Comp. No.	No. Of Bolts
Diag1	Diagonal 1	SAU	2X1.5X0.1875	36.0	17.15	Comp	17.15	g1P	-2.212	NESC Hea	12.897	27.200	24.469	0.500	0.750	0.500	114.50	115.87	5.598	2	2
Diag2	Diagonal 2	SAE	2X2X0.1875	36.0	42.16	Tens	28.88	g5XY	-5.459	NESC Ext	18.901	27.200	24.469	0.750	0.500	0.500	81.36	91.02	5.343	2	2
Diag3	Diagonal 3	SAU	3X2.5X0.25	36.0	12.35	Comp	12.35	g37X	-3.345	NESC Ext	27.075	40.800	48.937	0.765	0.531	0.531	115.17	116.38	9.543	2	3
Diag4	Diagonal 4	SAE	3X3X0.25	36.0	24.11	Tens	17.90	g9X	-7.979	NESC Ext	44.572	54.400	65.250	0.750	0.500	0.500	49.03	66.77	4.838	2	4
Diag5	Diagonal 5	SAU	3.5X3X0.25	36.0	20.00	Tens	15.15	g41X	-3.790	NESC Ext	25.026	27.200	32.625	0.768	0.536	0.536	137.76	133.57	13.514	5	2
Diag6	Diagonal 6	SAE	3.5X3.5X0.25	36.0	20.75	Tens	20.59	g43X	-5.197	NESC Ext	25.243	27.200	32.625	0.768	0.537	0.537	144.13	138.43	15.522	5	2
Diag7	Diagonal 7	SAU	4X3.5X0.25	36.0	43.87	Cross	43.87	g48Y	-8.541	NESC Ext	19.469	27.200	32.625	1.000	0.533	0.533	190.12	163.12	20.121	6	2
Diag8	Diagonal 8	SAE	4X4X0.25	36.0	30.87	Comp	30.87	g49X	-6.633	NESC Ext	21.486	27.200	32.625	1.000	1.000	1.000	173.44	160.76	11.490	5	2
Diag9	Diagonal 9	SAU	5X3X0.3125	36.0	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
Diag10	Diagonal 10	SAU	5X3.5X0.3125	36.0	16.75	Tens	12.76	g21X	-10.324	NESC Ext	80.889	81.600	122.344	0.500	0.750	0.500	42.27	61.70	4.838	2	6
Diag11	Diagonal 11	SAU	5X3.5X0.375	36.0	13.09	Tens	12.61	g23X	-10.288	NESC Ext	96.521	81.600	146.812	0.500	0.750	0.500	42.69	62.02	4.838	2	6
Horz1	Horizontal 1	SAU	2X1.5X0.1875	36.0	34.20	Tens	0.00	g57Y	0.000		11.446	13.600	12.234	1.000	1.000	1.000	124.47	124.47	3.340	4	1
Horz2	Horizontal 2	SAE	2X2X0.1875	36.0	47.45	Comp	47.45	g60X	-2.597	NESC Ext	5.474	27.200	24.469	1.000	1.000	1.000	238.17	192.68	7.820	6	2
Horz3	Horizontal 3	SAU	2.5X2X0.1875	36.0	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

Horz4	Horizontal 4	SAE	2.5X2.5X0.1875	36.0	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
Horz5	Horizontal 5	SAU	3X2X0.25	36.0	7.15	Tens	4.58	g51Y	-1.245	NESC Hea	27.684	27.200	32.625	1.000	1.000	1.000	92.14	106.07	3.340	3	2
Horz6	Horizontal 6	SAU	3X2.5X0.25	36.0	15.54	Tens	12.60	g56X	-3.429	NESC Ext	32.931	27.200	32.625	1.000	1.000	1.000	75.91	97.95	3.340	3	2
Horz7	Horizontal 7	SAU	3.5X3X0.25	36.0	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
Horz8	Horizontal 8	SAE	3.5X3.5X0.25	36.0	61.12	Comp	61.12	g62X	-8.248	NESC Ext	13.494	27.200	32.625	1.000	1.000	1.000	232.74	189.33	13.460	6	2
Horz9	Horizontal 9	SAE	3X3X0.1875	36.0	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
Horz 10	Horizontal 10	SAU	4X3.5X0.3125	36.0	21.45	Tens	19.54	g64XY	-5.316	NESC Ext	41.251	27.200	40.781	1.000	1.000	1.000	126.41	124.93	7.690	5	2
Leg 1	Leg 1	SAE	4X4X0.25	50.0	40.98	Tens	32.15	g68X	-24.231	NESC Ext	75.378	81.600	109.687	1.000	1.000	1.000	52.83	52.83	3.500	1	6
Leg 2	Leg 2	SAE	6X6X0.5	50.0	34.40	Comp	34.40	g72X	-65.489	NESC Ext	271.593	190.400	511.874	1.000	1.000	1.000	35.59	35.59	3.500	1	14
Leg 3	Leg 3	SAE	8X8X0.75	50.0	55.14	Comp	55.14	g76X	-119.987	NESC Ext	554.347	217.600	877.499	1.000	1.000	1.000	26.58	26.58	3.500	1	16
Leg 4	Leg 4	SAE	8X8X0.875	50.0	68.66	Comp	68.66	g89X	-186.747	NESC Ext	552.500	272.000	1279.686	1.000	1.000	1.000	61.42	61.42	8.036	1	20
Horz 11	Horizontal 11	SAU	5X3X0.25	36.0	5.06	Comp	5.06	g92Y	-2.277	NESC Hea	44.997	54.400	65.250	1.000	1.000	1.000	60.45	90.23	3.340	3	4
Horz 12	Horizontal 12	SAU	5X3X0.3125	36.0	4.09	Comp	4.09	g98Y	-2.616	NESC Hea	64.028	68.000	101.953	1.000	1.000	1.000	60.91	90.46	3.340	3	5
Horz 13	Horizontal 13	SAU	5X3.5X0.375	36.0	9.34	Comp	9.34	g94P	-4.787	NESC Hea	51.221	54.400	97.875	1.000	1.000	1.000	133.79	130.55	8.496	5	4
Arm	Arm	SAE	2X2X0.1875	36.0	18.57	Tens	0.00	g96Y	0.000		3.474	27.200	24.469	1.000	1.000	1.000	279.85	241.85	9.188	5	2
top	top	DAL	4X3.5X0.375	36.0	21.50	Tens	2.33	g100P	-0.634	NESC Ext	116.434	27.200	97.875	1.000	1.000	1.000	103.97	111.98	10.830	3	2
Arm2	Arm2	SAE	2.5X2.5X0.1875	36.0	20.59	Tens	0.00	g99Y	0.000		4.441	27.200	24.469	1.000	1.000	1.000	278.87	241.10	11.503	5	2
Inner1	Inner 1	SAU	2X1.5X0.25	36.0	2.10	Cross	2.10	g102P	-0.283	NESC Hea	13.467	13.600	16.312	0.500	1.000	0.500	131.21	131.21	4.723	4	1
Inner2	Inner 2	SAU	2X1.5X0.1875	36.0	7.52	Comp	7.52	g106P	-0.261	NESC Ext	3.468	13.600	12.234	0.500	0.750	0.500	226.21	226.21	11.059	4	1
Inner3	Inner 3	SAE	2X2X0.1875	36.0	1.13	Cross	1.13	g105P	-0.187	NESC Hea	16.541	27.200	24.469	1.000	0.500	0.500	91.87	105.93	4.723	3	2
Inner4	Inner 4	SAE	3X3X0.1875	36.0	1.45	Tens	1.24	g107P	-0.101	NESC Ext	8.167	27.200	24.469	0.750	0.500	0.500	218.97	195.45	21.751	5	2
Diag12	Diagonal 5	SAU	3.5X3X0.25	36.0	5.43	Comp	5.43	g90P	-1.813	NESC Hea	33.365	40.800	48.937	0.500	0.500	0.500	111.49	113.61	11.725	2	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)
Diag1	Diagonal 1	SAU	2X1.5X0.1875	36.0	17.15	Comp	16.03	g1X	2.043	NESC Hea	14.772	27.200	24.469	12.741	5.598	2	1.000	

Diag2	Diagonal 2	SAE	2X2X0.1875	36.0	42.16	Tens	42.16	g5Y	5.715	NESC Ext	17.688	27.200	24.469	13.556	5.343	2	1.000	0.875
Diag3	Diagonal 3	SAU	3X2.5X0.25	36.0	12.35	Comp	10.29	g37P	3.222	NESC Ext	31.306	40.800	48.937	34.228	9.543	3	1.000	0.875
Diag4	Diagonal 4	SAE	3X3X0.25	36.0	24.11	Tens	24.11	g13P	7.832	NESC Ext	32.481	54.400	65.250	49.755	4.838	4	2.000	0.875
Diag5	Diagonal 5	SAU	3.5X3X0.25	36.0	20.00	Tens	20.00	g15P	7.273	NESC Ext	36.369	54.400	65.250	55.885	4.838	4	2.000	0.875
Diag6	Diagonal 6	SAE	3.5X3.5X0.25	36.0	20.75	Tens	20.75	g43P	5.645	NESC Ext	47.668	27.200	32.625	27.943	15.522	2	1.000	0.875
Diag7	Diagonal 7	SAU	4X3.5X0.25	36.0	43.87	Cross	27.60	g48XY	7.508	NESC Ext	47.506	27.200	32.625	27.943	20.121	2	1.000	0.875
Diag8	Diagonal 8	SAE	4X4X0.25	36.0	30.87	Comp	22.07	g49P	6.000	NESC Ext	55.768	27.200	32.625	27.187	11.490	2	1.000	0.875
Diag9	Diagonal 9	SAU	5X3X0.3125	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Diag10	Diagonal 10	SAU	5X3.5X0.3125	36.0	16.75	Tens	16.75	g21P	10.925	NESC Ext	65.225	81.600	122.344	101.953	4.838	6	2.000	0.875
Diag11	Diagonal 11	SAU	5X3.5X0.375	36.0	13.09	Tens	13.09	g23P	10.149	NESC Ext	77.557	81.600	146.812	125.742	4.838	6	2.000	0.875
Horz1	Horizontal 1	SAU	2X1.5X0.1875	36.0	34.20	Tens	34.20	g53P	2.544	NESC Hea	14.772	13.600	12.234	7.439	3.340	1	1.000	0.875
Horz2	Horizontal 2	SAE	2X2X0.1875	36.0	47.45	Comp	15.30	g60P	2.706	NESC Ext	17.688	27.200	24.469	18.658	7.820	2	1.000	0.875
Horz3	Horizontal 3	SAU	2.5X2X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz4	Horizontal 4	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz5	Horizontal 5	SAU	3X2X0.25	36.0	7.15	Tens	7.15	g52P	1.945	NESC Hea	31.468	27.200	32.625	27.187	3.340	2	1.000	0.875
Horz6	Horizontal 6	SAU	3X2.5X0.25	36.0	15.54	Tens	15.54	g56P	4.225	NESC Ext	35.356	27.200	32.625	27.187	3.340	2	1.000	0.875
Horz7	Horizontal 7	SAU	3.5X3X0.25	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz8	Horizontal 8	SAE	3.5X3.5X0.25	36.0	61.12	Comp	33.95	g62P	9.229	NESC Ext	47.668	27.200	32.625	27.187	13.460	2	1.000	0.875
Horz9	Horizontal 9	SAE	3X3X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz 10	Horizontal 10	SAU	4X3.5X0.3125	36.0	21.45	Tens	21.45	g64Y	5.834	NESC Ext	58.978	27.200	40.781	33.984	7.690	2	1.000	0.875
Leg 1	Leg 1	SAE	4X4X0.25	50.0	40.98	Tens	40.98	g68Y	21.824	NESC Ext	53.250	81.600	109.687	95.588	3.500	6	4.000	0.875
Leg 2	Leg 2	SAE	6X6X0.5	50.0	34.40	Comp	31.12	g72Y	59.247	NESC Ext	200.000	190.400	511.874	473.958	3.500	14	4.000	0.875
Leg 3	Leg 3	SAE	8X8X0.75	50.0	55.14	Comp	51.14	g76P	111.281	NESC Ext	375.124	217.600	877.499	812.499	3.500	16	6.000	0.875
Leg 4	Leg 4	SAE	8X8X0.875	50.0	68.66	Comp	60.48	g89P	164.499	NESC Ext	508.374	272.000	1279.686	1184.894	8.036	20	4.000	0.875
Horz 11	Horizontal 11	SAU	5X3X0.25	36.0	5.06	Comp	0.00	g95Y	0.000		41.593	54.400	65.250	71.078	3.340	4	3.000	0.875
Horz 12	Horizontal 12	SAU	5X3X0.3125	36.0	4.09	Comp	0.00	g98Y	0.000		51.182	68.000	101.953	111.060	3.340	5	3.000	0.875
Horz 13	Horizontal 13	SAU	5X3.5X0.375	36.0	9.34	Comp	0.84	g91X	0.457	NESC Ext	77.557	54.400	97.875	95.156	8.496	4	2.000	0.875
Arm	Arm	SAE	2X2X0.1875	36.0	18.57	Tens	18.57	g96P	3.123	NESC Hea	17.688	27.200	24.469	16.819	9.188	2	1.000	0.875
top	top	DAL	4X3.5X0.375	36.0	21.50	Tens	21.50	g100X	5.849	NESC Hea	139.603	27.200	97.875	90.625	10.830	2	2.000	0.875
Arm2	Arm2	SAE	2.5X2.5X0.1875	36.0	20.59	Tens	20.59	g99P	3.985	NESC Hea	23.909	27.200	24.469	19.350	11.503	2	1.000	0.875

0.875																
Inner1	Inner 1	SAU	2X1.5X0.25	36.0	2.10	Cross	0.00	g102X	0.000	19.156	13.600	16.312	9.919	4.723	1	1.000
0.875																
Inner2	Inner 2	SAU	2X1.5X0.1875	36.0	7.52	Comp	6.33	g106X	0.471NESC Ext	14.772	13.600	12.234	7.439	11.059	1	1.000
0.875																
Inner3	Inner 3	SAE	2X2X0.1875	36.0	1.13	Cross	0.34	g105X	0.060NESC Ext	17.688	27.200	24.469	18.658	4.723	2	1.000
0.875																
Inner4	Inner 4	SAE	3X3X0.1875	36.0	1.45	Tens	1.45	g107X	0.276NESC Ext	30.000	27.200	24.469	18.998	21.751	2	1.000
0.875																
Diag12	Diagonal 5	SAU	3.5X3X0.25	36.0	5.43	Comp	0.00	g90Y	0.000	39.406	40.800	48.937	31.639	11.725	3	1.000
0.875																

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	52.90	g89X	Angle
NESC Extreme	68.66	g89X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	5.70	NESC Heavy	0.0
C2	Clamp	5.70	NESC Heavy	0.0
C3	Clamp	8.85	NESC Heavy	0.0
C4	Clamp	8.85	NESC Heavy	0.0
C5	Clamp	8.92	NESC Heavy	0.0
C6	Clamp	8.92	NESC Heavy	0.0
C7	Clamp	8.85	NESC Heavy	0.0
C8	Clamp	8.85	NESC Heavy	0.0
C9	Clamp	4.56	NESC Extreme	0.0
C10	Clamp	4.56	NESC Extreme	0.0
C11	Clamp	4.56	NESC Extreme	0.0
C12	Clamp	4.56	NESC Extreme	0.0
C13	Clamp	2.77	NESC Heavy	0.0
C14	Clamp	2.77	NESC Heavy	0.0
C15	Clamp	2.77	NESC Heavy	0.0
C16	Clamp	2.77	NESC Heavy	0.0
C17	Clamp	1.42	NESC Heavy	0.0
C18	Clamp	1.85	NESC Heavy	0.0
C19	Clamp	1.87	NESC Heavy	0.0
C20	Clamp	2.19	NESC Heavy	0.0
C21	Clamp	2.79	NESC Extreme	0.0
C22	Clamp	2.33	NESC Extreme	0.0
C23	Clamp	2.61	NESC Heavy	0.0
C24	Clamp	3.22	NESC Heavy	0.0
C25	Clamp	3.64	NESC Heavy	0.0
C26	Clamp	3.86	NESC Heavy	0.0
C27	Clamp	4.65	NESC Heavy	0.0

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       C28     Clamp    4.30   NESC Heavy    0.0

*** Weight of structure (lbs):
    Weight of Angles*Section DLF:     35451.7
    Total:                            35451.7

*** End of Report
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*                                                                           *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2011 *
*                                                                           *
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Project Name :
Project Notes:
Project File : J:\Jobs\1616200.WI\03_CT11241A\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p tower # 1280.tow
Date run     : 4:59:37 PM Thursday, December 15, 2016
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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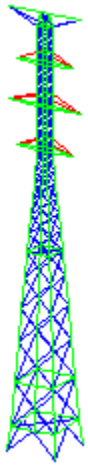
Member "g68P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g68Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g76Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g83X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g83Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g86Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g88P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g88X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g88XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g88Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g89Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g91P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g91X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g91XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g91Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g92P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g92Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g94P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g94X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g94XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g94Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g95P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g95Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g97XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g97Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g98P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g98Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106P" ??
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106X" ??
The model has 144 warnings. ??



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

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	X-Symmetry	0	1.67	140	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	1.67	1.67	135.8	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	1.67	1.67	131.7	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	1.67	1.67	127.5	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	1.67	1.67	124	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	1.67	1.67	120.5	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	1.67	1.67	117	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	1.67	1.67	113.5	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	1.67	1.67	110	Free	Free	Free	Free	Free	Free

10P	XY-Symmetry	1.67	1.67	106.5	Free	Free	Free	Free	Free	Free
11P	XY-Symmetry	1.67	1.67	103	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	1.67	1.67	99.5	Free	Free	Free	Free	Free	Free
13P	XY-Symmetry	1.67	1.67	96	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	1.89	1.89	92.75	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	2.15	2.15	89	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	2.4	2.4	85.25	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	2.75	2.75	80.25	Free	Free	Free	Free	Free	Free
18P	XY-Symmetry	3.09	3.09	75.25	Free	Free	Free	Free	Free	Free
19P	XY-Symmetry	3.5	3.5	69.25	Free	Free	Free	Free	Free	Free
20P	XY-Symmetry	3.91	3.91	63.25	Free	Free	Free	Free	Free	Free
21P	XY-Symmetry	4.47	4.47	55	Free	Free	Free	Free	Free	Free
23P	XY-Symmetry	5.12	5.12	45.5	Free	Free	Free	Free	Free	Free
25P	XY-Symmetry	5.81	5.81	34.5	Free	Free	Free	Free	Free	Free
27P	XY-Symmetry	6.73	6.73	22	Free	Free	Free	Free	Free	Free
29P	XY-Symmetry	7.69	7.69	8	Free	Free	Free	Free	Free	Free
30P	XY-Symmetry	8.23	8.23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
39P	Y-Symmetry	7.69	0	8	Free	Free	Free	Free	Free	Free
40P	X-Symmetry	0	7.69	8	Free	Free	Free	Free	Free	Free
41P	X-Symmetry	0	12.5	140	Free	Free	Free	Free	Free	Free
42P	X-Symmetry	0	10	124	Free	Free	Free	Free	Free	Free
43P	X-Symmetry	0	12.5	110	Free	Free	Free	Free	Free	Free
44P	X-Symmetry	0	10	96	Free	Free	Free	Free	Free	Free
1X	X-Gen	0	-1.67	140	Free	Free	Free	Free	Free	Free
2X	X-GenXY	1.67	-1.67	135.8	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-1.67	-1.67	135.8	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-1.67	1.67	135.8	Free	Free	Free	Free	Free	Free
3X	X-GenXY	1.67	-1.67	131.7	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-1.67	-1.67	131.7	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-1.67	1.67	131.7	Free	Free	Free	Free	Free	Free
4X	X-GenXY	1.67	-1.67	127.5	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-1.67	-1.67	127.5	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-1.67	1.67	127.5	Free	Free	Free	Free	Free	Free
5X	X-GenXY	1.67	-1.67	124	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-1.67	-1.67	124	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-1.67	1.67	124	Free	Free	Free	Free	Free	Free
6X	X-GenXY	1.67	-1.67	120.5	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-1.67	-1.67	120.5	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-1.67	1.67	120.5	Free	Free	Free	Free	Free	Free
7X	X-GenXY	1.67	-1.67	117	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-1.67	-1.67	117	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-1.67	1.67	117	Free	Free	Free	Free	Free	Free
8X	X-GenXY	1.67	-1.67	113.5	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-1.67	-1.67	113.5	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-1.67	1.67	113.5	Free	Free	Free	Free	Free	Free
9X	X-GenXY	1.67	-1.67	110	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-1.67	-1.67	110	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-1.67	1.67	110	Free	Free	Free	Free	Free	Free
10X	X-GenXY	1.67	-1.67	106.5	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-1.67	-1.67	106.5	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-1.67	1.67	106.5	Free	Free	Free	Free	Free	Free
11X	X-GenXY	1.67	-1.67	103	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	-1.67	-1.67	103	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	-1.67	1.67	103	Free	Free	Free	Free	Free	Free
12X	X-GenXY	1.67	-1.67	99.5	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-1.67	-1.67	99.5	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-1.67	1.67	99.5	Free	Free	Free	Free	Free	Free
13X	X-GenXY	1.67	-1.67	96	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	-1.67	-1.67	96	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	-1.67	1.67	96	Free	Free	Free	Free	Free	Free

14X	X-GenXY	1.89	-1.89	92.75	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	-1.89	-1.89	92.75	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	-1.89	1.89	92.75	Free	Free	Free	Free	Free	Free
15X	X-GenXY	2.15	-2.15	89	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-2.15	-2.15	89	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-2.15	2.15	89	Free	Free	Free	Free	Free	Free
16X	X-GenXY	2.4	-2.4	85.25	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	-2.4	-2.4	85.25	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	-2.4	2.4	85.25	Free	Free	Free	Free	Free	Free
17X	X-GenXY	2.75	-2.75	80.25	Free	Free	Free	Free	Free	Free
17XY	XY-GenXY	-2.75	-2.75	80.25	Free	Free	Free	Free	Free	Free
17Y	Y-GenXY	-2.75	2.75	80.25	Free	Free	Free	Free	Free	Free
18X	X-GenXY	3.09	-3.09	75.25	Free	Free	Free	Free	Free	Free
18XY	XY-GenXY	-3.09	-3.09	75.25	Free	Free	Free	Free	Free	Free
18Y	Y-GenXY	-3.09	3.09	75.25	Free	Free	Free	Free	Free	Free
19X	X-GenXY	3.5	-3.5	69.25	Free	Free	Free	Free	Free	Free
19XY	XY-GenXY	-3.5	-3.5	69.25	Free	Free	Free	Free	Free	Free
19Y	Y-GenXY	-3.5	3.5	69.25	Free	Free	Free	Free	Free	Free
20X	X-GenXY	3.91	-3.91	63.25	Free	Free	Free	Free	Free	Free
20XY	XY-GenXY	-3.91	-3.91	63.25	Free	Free	Free	Free	Free	Free
20Y	Y-GenXY	-3.91	3.91	63.25	Free	Free	Free	Free	Free	Free
21X	X-GenXY	4.47	-4.47	55	Free	Free	Free	Free	Free	Free
21XY	XY-GenXY	-4.47	-4.47	55	Free	Free	Free	Free	Free	Free
21Y	Y-GenXY	-4.47	4.47	55	Free	Free	Free	Free	Free	Free
23X	X-GenXY	5.12	-5.12	45.5	Free	Free	Free	Free	Free	Free
23XY	XY-GenXY	-5.12	-5.12	45.5	Free	Free	Free	Free	Free	Free
23Y	Y-GenXY	-5.12	5.12	45.5	Free	Free	Free	Free	Free	Free
25X	X-GenXY	5.81	-5.81	34.5	Free	Free	Free	Free	Free	Free
25XY	XY-GenXY	-5.81	-5.81	34.5	Free	Free	Free	Free	Free	Free
25Y	Y-GenXY	-5.81	5.81	34.5	Free	Free	Free	Free	Free	Free
27X	X-GenXY	6.73	-6.73	22	Free	Free	Free	Free	Free	Free
27XY	XY-GenXY	-6.73	-6.73	22	Free	Free	Free	Free	Free	Free
27Y	Y-GenXY	-6.73	6.73	22	Free	Free	Free	Free	Free	Free
29X	X-GenXY	7.69	-7.69	8	Free	Free	Free	Free	Free	Free
29XY	XY-GenXY	-7.69	-7.69	8	Free	Free	Free	Free	Free	Free
29Y	Y-GenXY	-7.69	7.69	8	Free	Free	Free	Free	Free	Free
30X	X-GenXY	8.23	-8.23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
30XY	XY-GenXY	-8.23	-8.23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
30Y	Y-GenXY	-8.23	8.23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
39Y	Y-Gen	-7.69	0	8	Free	Free	Free	Free	Free	Free
40X	X-Gen	0	-7.69	8	Free	Free	Free	Free	Free	Free
41X	X-Gen	0	-12.5	140	Free	Free	Free	Free	Free	Free
42X	X-Gen	0	-10	124	Free	Free	Free	Free	Free	Free
43X	X-Gen	0	-12.5	110	Free	Free	Free	Free	Free	Free
44X	X-Gen	0	-10	96	Free	Free	Free	Free	Free	Free

The model contains 114 primary and 0 secondary joints for a total of 114 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)
A 36	2.9e+004	36	58	0	0	0	0	0	0
A572-50	2.9e+004	50	65	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
3/4 A394	0.75	0.875	13.6	1.35	1.8	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394	1358

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	8X8X0.875	8	8	0.875	45	13.23	7.43	2.45	2.45	1.57	1	8	4	0	1.0000	0
SAE	8X8X0.75	8	8	0.75	38.9	11.44	8.83	2.47	2.47	1.58	1	8	4	0	1.0000	0
SAE	6X6X0.5	6	6	0.5	19.6	5.75	10	1.86	1.86	1.18	1	6	3	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAU	5X3.5X0.375	5	3.5	0.375	10.4	3.05	11	1.6	1.02	0.762	1	5	1.75	0	1.0000	0
SAU	5X3.5X0.3125	5	3.5	0.3125	8.7	2.56	13.4	1.61	1.03	0.766	1	5	1.75	0	1.0000	0
SAU	5X3X0.3125	5	3	0.3125	8.2	2.4	13.4	1.61	0.853	0.658	1	5	1.5	0	1.0000	0
SAU	5X3X0.25	5	3	0.25	6.6	1.94	17	1.62	0.861	0.663	1	5	1.5	0	1.0000	0
SAU	4X3.5X0.3125	4	3.5	0.3125	7.7	2.25	10.4	1.26	1.07	0.73	1	4	1.75	0	1.0000	0
SAU	4X3.5X0.25	4	3.5	0.25	6.2	1.81	13.25	1.27	1.07	0.734	1	4	1.75	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
SAU	2X1.5X0.25	2	1.5	0.25	2.77	0.81	6	0.623	0.432	0.32	1	2	0.75	0	1.0000	0
SAU	2X1.5X0.1875	2	1.5	0.1875	2.12	0.62	8.33	0.632	0.44	0.322	1	2	0.75	0	1.0000	0
DAL	4X3.5X0.375	4	3.5	0.375	18.2	5.34	8.5	1.25	1.56	1.25	2	4	1.75	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)
Diag1	Diagonal 1	SAU	2X1.5X0.1875	A 36	Truss Crossing Diagonal		None	0.000
Diag2	Diagonal 2	SAE	2X2X0.1875	A 36	Truss Crossing Diagonal		None	0.000
Diag3	Diagonal 3	SAU	3X2.5X0.25	A 36	Truss Crossing Diagonal		None	0.000
Diag4	Diagonal 4	SAE	3X3X0.25	A 36	Truss Crossing Diagonal		None	0.000
Diag5	Diagonal 5	SAU	3.5X3X0.25	A 36	Truss Crossing Diagonal		None	0.000
Diag6	Diagonal 6	SAE	3.5X3.5X0.25	A 36	Truss Crossing Diagonal		None	0.000
Diag7	Diagonal 7	SAU	4X3.5X0.25	A 36	Truss Crossing Diagonal		None	0.000

Diag8	Diagonal 8	SAE	4X4X0.25	A 36	Truss	Other	None	0.000
Diag9	Diagonal 9	SAU	5X3X0.3125	A 36	Truss Crossing Diagonal		None	0.000
Diag10	Diagonal 10	SAU	5X3.5X0.3125	A 36	Truss Crossing Diagonal		None	0.000
Diag11	Diagonal 11	SAU	5X3.5X0.375	A 36	Truss Crossing Diagonal		None	0.000
Horz1	Horizontal 1	SAU	2X1.5X0.1875	A 36	Beam	Other	None	0.000
Horz2	Horizontal 2	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
Horz3	Horizontal 3	SAU	2.5X2X0.1875	A 36	Beam	Other	None	0.000
Horz4	Horizontal 4	SAE	2.5X2.5X0.1875	A 36	Beam	Other	None	0.000
Horz5	Horizontal 5	SAU	3X2X0.25	A 36	Beam	Other	None	0.000
Horz6	Horizontal 6	SAU	3X2.5X0.25	A 36	Truss	Other	None	0.000
Horz7	Horizontal 7	SAU	3.5X3X0.25	A 36	Beam	Other	None	0.000
Horz8	Horizontal 8	SAE	3.5X3.5X0.25	A 36	Beam	Other	None	0.000
Horz9	Horizontal 9	SAE	3X3X0.1875	A 36	Beam	Other	None	0.000
Horz 10	Horizontal 10	SAU	4X3.5X0.3125	A 36	Beam	Other	None	0.000
Leg 1	Leg 1	SAE	4X4X0.25	A572-50	Beam	Leg	None	0.000
Leg 2	Leg 2	SAE	6X6X0.5	A572-50	Beam	Leg	None	0.000
Leg 3	Leg 3	SAE	8X8X0.75	A572-50	Beam	Leg	None	0.000
Leg 4	Leg 4	SAE	8X8X0.875	A572-50	Beam	Leg	None	0.000
Horz 11	Horizontal 11	SAU	5X3X0.25	A 36	Beam	Other	None	0.000
Horz 12	Horizontal 12	SAU	5X3X0.3125	A 36	Beam	Other	None	0.000
Horz 13	Horizontal 13	SAU	5X3.5X0.375	A 36	Beam	Other	None	0.000
Arm	Arm	SAE	2X2X0.1875	A 36	T-Only	Other	None	0.000
top	top	DAL	4X3.5X0.375	A 36	Beam	Other	None	0.000
Arm2	Arm2	SAE	2.5X2.5X0.1875	A 36	T-Only	Other	None	0.000
Inner1	Inner 1	SAU	2X1.5X0.25	A 36	Truss Crossing Diagonal		None	0.000
Inner2	Inner 2	SAU	2X1.5X0.1875	A 36	Truss Crossing Diagonal		None	0.000
Inner3	Inner 3	SAE	2X2X0.1875	A 36	Truss Crossing Diagonal		None	0.000
Inner4	Inner 4	SAE	3X3X0.1875	A 36	Truss Crossing Diagonal		None	0.000
Diag12	Diagonal 5	SAU	3.5X3X0.25	A 36	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)
SAU	2X1.5X0.1875	A 36	83.44	48.67	176.90
SAE	2X2X0.1875	A 36	238.36	158.91	581.60
SAE	3X3X0.25	A 36	343.23	343.23	1681.83
SAU	3.5X3X0.25	A 36	298.42	323.29	1611.47
SAU	5X3.5X0.3125	A 36	198.86	281.72	1730.08
SAU	5X3.5X0.375	A 36	150.50	213.21	1565.22
SAU	3X2.5X0.25	A 36	96.39	88.35	433.74
SAE	3.5X3.5X0.25	A 36	319.86	373.17	1855.17
SAU	4X3.5X0.25	A 36	160.97	201.21	998.01
SAE	4X4X0.25	A 36	91.92	122.56	606.68
SAU	3X2X0.25	A 36	13.36	11.13	54.78
SAU	4X3.5X0.3125	A 36	61.52	76.90	473.70
SAE	4X4X0.25	A572-50	65.29	87.05	430.90
SAE	6X6X0.5	A572-50	56.00	112.00	1097.60
SAE	8X8X0.75	A572-50	56.00	149.33	2178.40
SAE	8X8X0.875	A572-50	385.79	1028.78	17360.63
SAU	5X3X0.25	A 36	13.36	17.81	88.18
SAU	5X3X0.3125	A 36	6.68	8.91	54.78
SAE	2.5X2.5X0.1875	A 36	46.01	38.34	141.26
DAL	4X3.5X0.375	A 36	25.00	31.25	455.00

SAU	2X1.5X0.25	A 36	9.45	5.51	26.17
SAE	3X3X0.1875	A 36	43.50	43.50	161.39

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
2	13P	1.050	3.300	3.300	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	None
1	30P	1.050	3.300	3.300	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
g1P	Diag1		X-Symmetry	1X	2P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	0.875	0	1	1.8125	0	0	0
g1X	Diag1		X-Gen	1P	2X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	0.875	0	1	1.8125	0	0	0
g2P	Diag1		X-Symmetry	2XY	1P	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	0.875	0	1	1.8125	0	0	0
g2X	Diag1		X-Gen	2Y	1X	2	5	0.5	0.75	0.5	3/4 A394	2	1	1	Long only	0.875	0	1	1.8125	0	0	0
g3P	Diag2		XY-Symmetry	2X	3P	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g3X	Diag2		X-GenXY	2P	3X	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g3XY	Diag2		XY-GenXY	2Y	3XY	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g3Y	Diag2		Y-GenXY	2XY	3Y	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g4P	Diag2		XY-Symmetry	3P	2Y	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g4X	Diag2		X-GenXY	3X	2XY	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g4XY	Diag2		XY-GenXY	3XY	2X	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g4Y	Diag2		Y-GenXY	3Y	2P	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.875	0	0	0
g5P	Diag2		XY-Symmetry	4X	3P	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0
g5X	Diag2		X-GenXY	4P	3X	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0
g5XY	Diag2		XY-GenXY	4Y	3XY	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0
g5Y	Diag2		Y-GenXY	4XY	3Y	2	5	0.75	0.5	0.5	3/4 A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0

g6P	Diag2	XY-Symmetry	4P	3Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0	0
g6X	Diag2	X-GenXY	4X	3XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0	0
g6XY	Diag2	XY-GenXY	4XY	3X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0	0
g6Y	Diag2	Y-GenXY	4Y	3P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	1.8125	0	0	0	0
g7P	Diag2	XY-Symmetry	5X	4P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g7X	Diag2	X-GenXY	5P	4X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g7XY	Diag2	XY-GenXY	5Y	4XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g7Y	Diag2	Y-GenXY	5XY	4Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g8P	Diag2	XY-Symmetry	5P	4Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g8X	Diag2	X-GenXY	5X	4XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g8XY	Diag2	XY-GenXY	5XY	4X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g8Y	Diag2	Y-GenXY	5Y	4P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.15625	1.8125	0	0	0	0
g9P	Diag4	XY-Symmetry	6X	5P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g9X	Diag4	X-GenXY	6P	5X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g9XY	Diag4	XY-GenXY	6Y	5XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g9Y	Diag4	Y-GenXY	6XY	5Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g10P	Diag4	XY-Symmetry	6P	5Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g10X	Diag4	X-GenXY	6X	5XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g10XY	Diag4	XY-GenXY	6XY	5X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g10Y	Diag4	Y-GenXY	6Y	5P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.125	3.5	0	0	0	0
g11P	Diag4	XY-Symmetry	7X	6P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g11X	Diag4	X-GenXY	7P	6X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g11XY	Diag4	XY-GenXY	7Y	6XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g11Y	Diag4	Y-GenXY	7XY	6Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g12P	Diag4	XY-Symmetry	7P	6Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g12X	Diag4	X-GenXY	7X	6XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g12XY	Diag4	XY-GenXY	7XY	6X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g12Y	Diag4	Y-GenXY	7Y	6P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g13P	Diag4	XY-Symmetry	8X	7P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0
g13X	Diag4	X-GenXY	8P	7X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25	0	0	0	0

g13XY	Diag4	XY-GenXY	8Y	7XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g13Y	Diag4	Y-GenXY	8XY	7Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g14P	Diag4	XY-Symmetry	8P	7Y	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g14X	Diag4	X-GenXY	8X	7XY	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g14XY	Diag4	XY-GenXY	8XY	7X	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g14Y	Diag4	Y-GenXY	8Y	7P	2	5	0.75	0.5	0.5	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.25
0	0	0																	
g15P	Diag5	XY-Symmetry	9X	8P	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g15X	Diag5	X-GenXY	9P	8X	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g15XY	Diag5	XY-GenXY	9Y	8XY	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g15Y	Diag5	Y-GenXY	9XY	8Y	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g16P	Diag5	XY-Symmetry	9P	8Y	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g16X	Diag5	X-GenXY	9X	8XY	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g16XY	Diag5	XY-GenXY	9XY	8X	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g16Y	Diag5	Y-GenXY	9Y	8P	2	5	0.5	0.75	0.5	3/4	A394	4	2	1	Long only	1.375	2.25	1.15625	3
0	0	0																	
g17P	Diag10	XY-Symmetry	10X	9P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g17X	Diag10	X-GenXY	10P	9X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g17XY	Diag10	XY-GenXY	10Y	9XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g17Y	Diag10	Y-GenXY	10XY	9Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g18P	Diag10	XY-Symmetry	10P	9Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g18X	Diag10	X-GenXY	10X	9XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g18XY	Diag10	XY-GenXY	10XY	9X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g18Y	Diag10	Y-GenXY	10Y	9P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	4.5
0	0	0																	
g19P	Diag10	XY-Symmetry	11X	10P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g19X	Diag10	X-GenXY	11P	10X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g19XY	Diag10	XY-GenXY	11Y	10XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g19Y	Diag10	Y-GenXY	11XY	10Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g20P	Diag10	XY-Symmetry	11P	10Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g20X	Diag10	X-GenXY	11X	10XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g20XY	Diag10	XY-GenXY	11XY	10X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	
g20Y	Diag10	Y-GenXY	11Y	10P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125
0	0	0																	

g21P	Diag10	XY-Symmetry	12X	11P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g21X	Diag10	X-GenXY	12P	11X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g21XY	Diag10	XY-GenXY	12Y	11XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g21Y	Diag10	Y-GenXY	12XY	11Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g22P	Diag10	XY-Symmetry	12P	11Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g22X	Diag10	X-GenXY	12X	11XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g22XY	Diag10	XY-GenXY	12XY	11X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g22Y	Diag10	Y-GenXY	12Y	11P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.125	4.125	0	0	0
g23P	Diag11	XY-Symmetry	13X	12P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g23X	Diag11	X-GenXY	13P	12X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g23XY	Diag11	XY-GenXY	13Y	12XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g23Y	Diag11	Y-GenXY	13XY	12Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g24P	Diag11	XY-Symmetry	13P	12Y	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g24X	Diag11	X-GenXY	13X	12XY	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g24XY	Diag11	XY-GenXY	13XY	12X	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g24Y	Diag11	Y-GenXY	13Y	12P	2	5	0.5	0.75	0.5	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	3.625	0	0	0
g25P	Diag10	XY-Symmetry	14X	13P	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g25X	Diag10	X-GenXY	14P	13X	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g25XY	Diag10	XY-GenXY	14Y	13XY	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g25Y	Diag10	Y-GenXY	14XY	13Y	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g26P	Diag10	XY-Symmetry	14P	13Y	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g26X	Diag10	X-GenXY	14X	13XY	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g26XY	Diag10	XY-GenXY	14XY	13X	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g26Y	Diag10	Y-GenXY	14Y	13P	2	5	0.555	0.778	0.555	3/4	A394	6	2	1	Long only	1.25	3.25	1.15625	2.75	0	0	0
g27P	Diag10	XY-Symmetry	15X	14P	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g27X	Diag10	X-GenXY	15P	14X	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g27XY	Diag10	XY-GenXY	15Y	14XY	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g27Y	Diag10	Y-GenXY	15XY	14Y	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g28P	Diag10	XY-Symmetry	15P	14Y	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g28X	Diag10	X-GenXY	15X	14XY	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0

g28XY	Diag10	XY-GenXY	15XY	14X	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g28Y	Diag10	Y-GenXY	15Y	14P	2	5	0.539	0.77	0.539	3/4	A394	5	2	1	Long only	1.25	3.25	1.15625	3	0	0	0
g29P	Diag5	XY-Symmetry	16X	15P	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g29X	Diag5	X-GenXY	16P	15X	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g29XY	Diag5	XY-GenXY	16Y	15XY	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g29Y	Diag5	Y-GenXY	16XY	15Y	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g30P	Diag5	XY-Symmetry	16P	15Y	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g30X	Diag5	X-GenXY	16X	15XY	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g30XY	Diag5	XY-GenXY	16XY	15X	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g30Y	Diag5	Y-GenXY	16Y	15P	2	5	0.768	0.537	0.537	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	2.5	0	0	0
g31P	Diag5	XY-Symmetry	17X	16P	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g31X	Diag5	X-GenXY	17P	16X	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g31XY	Diag5	XY-GenXY	17Y	16XY	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g31Y	Diag5	Y-GenXY	17XY	16Y	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g32P	Diag5	XY-Symmetry	17P	16Y	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g32X	Diag5	X-GenXY	17X	16XY	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g32XY	Diag5	XY-GenXY	17XY	16X	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g32Y	Diag5	Y-GenXY	17Y	16P	2	5	0.771	0.541	0.541	3/4	A394	4	2	1	Short only	0.875	1.75	1.15625	3.5	0	0	0
g33P	Diag4	XY-Symmetry	18X	17P	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g33X	Diag4	X-GenXY	18P	17X	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g33XY	Diag4	XY-GenXY	18Y	17XY	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g33Y	Diag4	Y-GenXY	18XY	17Y	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g34P	Diag4	XY-Symmetry	18P	17Y	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g34X	Diag4	X-GenXY	18X	17XY	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g34XY	Diag4	XY-GenXY	18XY	17X	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g34Y	Diag4	Y-GenXY	18Y	17P	2	5	0.766	0.531	0.531	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.125	0	0	0
g35P	Diag4	XY-Symmetry	19X	18P	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g35X	Diag4	X-GenXY	19P	18X	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g35XY	Diag4	XY-GenXY	19Y	18XY	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g35Y	Diag4	Y-GenXY	19XY	18Y	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0

g36P	Diag4	XY-Symmetry	19P	18Y	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g36X	Diag4	X-GenXY	19X	18XY	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g36XY	Diag4	XY-GenXY	19XY	18X	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g36Y	Diag4	Y-GenXY	19Y	18P	2	5	0.767	0.534	0.534	3/4	A394	3	1	1	Short only	1.5	0	1.125	2.1875	0	0	0
g37P	Diag3	XY-Symmetry	20X	19P	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g37X	Diag3	X-GenXY	20P	19X	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g37XY	Diag3	XY-GenXY	20Y	19XY	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g37Y	Diag3	Y-GenXY	20XY	19Y	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g38P	Diag3	XY-Symmetry	20P	19Y	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g38X	Diag3	X-GenXY	20X	19XY	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g38XY	Diag3	XY-GenXY	20XY	19X	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g38Y	Diag3	Y-GenXY	20Y	19P	2	5	0.765	0.531	0.531	3/4	A394	3	1	1	Short only	1.25	0	1.15625	2.0625	0	0	0
g39P	Diag4	XY-Symmetry	21X	20P	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g39X	Diag4	X-GenXY	21P	20X	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g39XY	Diag4	XY-GenXY	21Y	20XY	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g39Y	Diag4	Y-GenXY	21XY	20Y	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g40P	Diag4	XY-Symmetry	21P	20Y	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g40X	Diag4	X-GenXY	21X	20XY	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g40XY	Diag4	XY-GenXY	21XY	20X	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g40Y	Diag4	Y-GenXY	21Y	20P	2	5	0.768	0.535	0.535	3/4	A394	3	1	1	Short only	1.5	0	1.15625	2	0	0	0
g41P	Diag5	XY-Symmetry	23X	21P	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g41X	Diag5	X-GenXY	23P	21X	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g41XY	Diag5	XY-GenXY	23Y	21XY	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g41Y	Diag5	Y-GenXY	23XY	21Y	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g42P	Diag5	XY-Symmetry	23P	21Y	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g42X	Diag5	X-GenXY	23X	21XY	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g42XY	Diag5	XY-GenXY	23XY	21X	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g42Y	Diag5	Y-GenXY	23Y	21P	2	5	0.768	0.536	0.536	3/4	A394	2	1	1	Short only	1.5	0	1.15625	4.0625	0	0	0
g43P	Diag6	XY-Symmetry	25X	23P	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g43X	Diag6	X-GenXY	25P	23X	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0

g43XY	Diag6	XY-GenXY	25Y	23XY	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g43Y	Diag6	Y-GenXY	25XY	23Y	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g44P	Diag6	XY-Symmetry	25P	23Y	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g44X	Diag6	X-GenXY	25X	23XY	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g44XY	Diag6	XY-GenXY	25XY	23X	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g44Y	Diag6	Y-GenXY	25Y	23P	2	5	0.768	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.15625	4.0625	0	0	0
g45P	Diag6	XY-Symmetry	27X	25P	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g45X	Diag6	X-GenXY	27P	25X	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g45XY	Diag6	XY-GenXY	27Y	25XY	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g45Y	Diag6	Y-GenXY	27XY	25Y	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g46P	Diag6	XY-Symmetry	27P	25Y	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g46X	Diag6	X-GenXY	27X	25XY	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g46XY	Diag6	XY-GenXY	27XY	25X	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g46Y	Diag6	Y-GenXY	27Y	25P	2	5	0.766	0.537	0.537	3/4	A394	2	1	1	Short only	1.75	0	1.125	3.9375	0	0	0
g47P	Diag7	XY-Symmetry	29X	27P	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g47X	Diag7	X-GenXY	29P	27X	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g47XY	Diag7	XY-GenXY	29Y	27XY	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g47Y	Diag7	Y-GenXY	29XY	27Y	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g48P	Diag7	XY-Symmetry	29P	27Y	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g48X	Diag7	X-GenXY	29X	27XY	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g48XY	Diag7	XY-GenXY	29XY	27X	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g48Y	Diag7	Y-GenXY	29Y	27P	2	5	0.767	0.533	0.533	3/4	A394	2	1	1	Short only	1.75	0	1.15625	3.875	0	0	0
g49P	Diag8	XY-Symmetry	30X	39P	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g49X	Diag8	X-GenXY	30P	39P	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g49XY	Diag8	XY-GenXY	30Y	39Y	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g49Y	Diag8	Y-GenXY	30XY	39Y	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g50P	Diag8	XY-Symmetry	30P	40P	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g50X	Diag8	X-GenXY	30X	40X	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g50XY	Diag8	XY-GenXY	30XY	40X	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0
g50Y	Diag8	Y-GenXY	30Y	40P	2	5	1	1	1	3/4	A394	2	1	1	Short only	2.5	0	1.125	2	0	0	0

g51P	Horz5	Y-Symmetry	2X	2P	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.25	0	0	0
g51Y	Horz5	Y-Gen	2XY	2Y	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.25	0	0	0
g52P	Horz5	X-Symmetry	2P	2Y	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.25	0	0	0
g52X	Horz5	X-Gen	2X	2XY	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.25	0	0	0
g53P	Horz1	Y-Symmetry	4X	4P	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g53Y	Horz1	Y-Gen	4XY	4Y	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g54P	Horz6	X-Symmetry	5P	5Y	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g54X	Horz6	X-Gen	5X	5XY	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g55P	Horz1	Y-Symmetry	8X	8P	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g55Y	Horz1	Y-Gen	8XY	8Y	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g56P	Horz6	X-Symmetry	9P	9Y	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g56X	Horz6	X-Gen	9X	9XY	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g57P	Horz1	Y-Symmetry	12X	12P	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g57Y	Horz1	Y-Gen	12XY	12Y	3	4	1	1	1 3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g58P	Horz6	X-Symmetry	13P	13Y	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g58X	Horz6	X-Gen	13X	13XY	3	6	1	1	1 3/4	A394	2	1	1	Long only	1.5	0	1.125	2.75	0	0	0
g59P	Horz2	Y-Symmetry	20X	20P	3	6	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.125	3	0	0	0
g59Y	Horz2	Y-Gen	20XY	20Y	3	6	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.125	3	0	0	0
g60P	Horz2	X-Symmetry	20P	20Y	3	6	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.125	3	0	0	0
g60X	Horz2	X-Gen	20X	20XY	3	6	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.125	3	0	0	0
g61P	Horz8	Y-Symmetry	27X	27P	3	6	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g61Y	Horz8	Y-Gen	27XY	27Y	3	6	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g62P	Horz8	X-Symmetry	27P	27Y	3	6	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g62X	Horz8	X-Gen	27X	27XY	3	6	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g63P	Horz 10	XY-Symmetry	29X	39P	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g63X	Horz 10	X-GenXY	29P	39P	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g63XY	Horz 10	XY-GenXY	29Y	39Y	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g63Y	Horz 10	Y-GenXY	29XY	39Y	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g64P	Horz 10	XY-Symmetry	29P	40P	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g64X	Horz 10	X-GenXY	29X	40X	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0

g64XY	Horz	10	XY-GenXY	29XY	40X	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g64Y	Horz	10	Y-GenXY	29Y	40P	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.125	3	0	0	0
g65P	Leg	1	XY-Symmetry	1X	2X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g65X	Leg	1	X-GenXY	1P	2P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g65XY	Leg	1	XY-GenXY	1P	2Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g65Y	Leg	1	Y-GenXY	1X	2XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g66P	Leg	1	XY-Symmetry	2X	3X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g66X	Leg	1	X-GenXY	2P	3P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g66XY	Leg	1	XY-GenXY	2Y	3Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g66Y	Leg	1	Y-GenXY	2XY	3XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g67P	Leg	1	XY-Symmetry	3X	4X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g67X	Leg	1	X-GenXY	3P	4P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g67XY	Leg	1	XY-GenXY	3Y	4Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g67Y	Leg	1	Y-GenXY	3XY	4XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g68P	Leg	1	XY-Symmetry	4X	5X	1	4	1	1	1 3/4	A394	6	4	1	Both	1	2.25	1.25	6	0	0	0
g68X	Leg	1	X-GenXY	4P	5P	1	4	1	1	1 3/4	A394	6	4	1	Both	1	2.25	1.25	6	0	0	0
g68XY	Leg	1	XY-GenXY	4Y	5Y	1	4	1	1	1 3/4	A394	6	4	1	Both	1	2.25	1.25	6	0	0	0
g68Y	Leg	1	Y-GenXY	4XY	5XY	1	4	1	1	1 3/4	A394	6	4	1	Both	1	2.25	1.25	6	0	0	0
g69P	Leg	2	XY-Symmetry	5X	6X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g69X	Leg	2	X-GenXY	5P	6P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g69XY	Leg	2	XY-GenXY	5Y	6Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g69Y	Leg	2	Y-GenXY	5XY	6XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g70P	Leg	2	XY-Symmetry	6X	7X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g70X	Leg	2	X-GenXY	6P	7P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g70XY	Leg	2	XY-GenXY	6Y	7Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g70Y	Leg	2	Y-GenXY	6XY	7XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g71P	Leg	2	XY-Symmetry	7X	8X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g71X	Leg	2	X-GenXY	7P	8P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g71XY	Leg	2	XY-GenXY	7Y	8Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g71Y	Leg	2	Y-GenXY	7XY	8XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0

g72P	Leg 2	XY-Symmetry	8X	9X	1	4	1	1	1 3/4	A394	14	4	1	Both	1.125	3.875	1.25	0	0	0	0
g72X	Leg 2	X-GenXY	8P	9P	1	4	1	1	1 3/4	A394	14	4	1	Both	1.125	3.875	1.25	0	0	0	0
g72XY	Leg 2	XY-GenXY	8Y	9Y	1	4	1	1	1 3/4	A394	14	4	1	Both	1.125	3.875	1.25	0	0	0	0
g72Y	Leg 2	Y-GenXY	8XY	9XY	1	4	1	1	1 3/4	A394	14	4	1	Both	1.125	3.875	1.25	0	0	0	0
g73P	Leg 3	XY-Symmetry	9X	10X	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g73X	Leg 3	X-GenXY	9P	10P	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g73XY	Leg 3	XY-GenXY	9Y	10Y	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g73Y	Leg 3	Y-GenXY	9XY	10XY	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g74P	Leg 3	XY-Symmetry	10X	11X	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g74X	Leg 3	X-GenXY	10P	11P	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g74XY	Leg 3	XY-GenXY	10Y	11Y	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g74Y	Leg 3	Y-GenXY	10XY	11XY	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g75P	Leg 3	XY-Symmetry	11X	12X	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g75X	Leg 3	X-GenXY	11P	12P	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g75XY	Leg 3	XY-GenXY	11Y	12Y	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g75Y	Leg 3	Y-GenXY	11XY	12XY	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g76P	Leg 3	XY-Symmetry	12X	13X	1	4	1	1	1 3/4	A394	16	6	1	Both	1.5	4.5	1.25	3.5	0	0	0
g76X	Leg 3	X-GenXY	12P	13P	1	4	1	1	1 3/4	A394	16	6	1	Both	1.5	4.5	1.25	3.5	0	0	0
g76XY	Leg 3	XY-GenXY	12Y	13Y	1	4	1	1	1 3/4	A394	16	6	1	Both	1.5	4.5	1.25	3.5	0	0	0
g76Y	Leg 3	Y-GenXY	12XY	13XY	1	4	1	1	1 3/4	A394	16	6	1	Both	1.5	4.5	1.25	3.5	0	0	0
g77P	Leg 4	XY-Symmetry	13X	14X	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g77X	Leg 4	X-GenXY	13P	14P	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g77XY	Leg 4	XY-GenXY	13Y	14Y	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g77Y	Leg 4	Y-GenXY	13XY	14XY	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g78P	Leg 4	XY-Symmetry	14X	15X	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g78X	Leg 4	X-GenXY	14P	15P	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g78XY	Leg 4	XY-GenXY	14Y	15Y	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g78Y	Leg 4	Y-GenXY	14XY	15XY	1	4	1	1	1 3/4	A394	0	6	0		0	0	0	0	0	0	0
g79P	Leg 4	XY-Symmetry	15X	16X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g79X	Leg 4	X-GenXY	15P	16P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0

g79XY	Leg	4	XY-GenXY	15Y	16Y	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g79Y	Leg	4	Y-GenXY	15XY	16XY	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g80P	Leg	4	XY-Symmetry	16X	17X	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g80X	Leg	4	X-GenXY	16P	17P	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g80XY	Leg	4	XY-GenXY	16Y	17Y	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g80Y	Leg	4	Y-GenXY	16XY	17XY	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	0
g81P	Leg	4	XY-Symmetry	17X	18X	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g81X	Leg	4	X-GenXY	17P	18P	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g81XY	Leg	4	XY-GenXY	17Y	18Y	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g81Y	Leg	4	Y-GenXY	17XY	18XY	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g82P	Leg	4	XY-Symmetry	18X	19X	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g82X	Leg	4	X-GenXY	18P	19P	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g82XY	Leg	4	XY-GenXY	18Y	19Y	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g82Y	Leg	4	Y-GenXY	18XY	19XY	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g83P	Leg	4	XY-Symmetry	19X	20X	1	4	1	1	1	3/4	A394	18	6	1	Both	1.5	4.5	1.25	2	0
g83X	Leg	4	X-GenXY	19P	20P	1	4	1	1	1	3/4	A394	18	6	1	Both	1.5	4.5	1.25	2	0
g83XY	Leg	4	XY-GenXY	19Y	20Y	1	4	1	1	1	3/4	A394	18	6	1	Both	1.5	4.5	1.25	2	0
g83Y	Leg	4	Y-GenXY	19XY	20XY	1	4	1	1	1	3/4	A394	18	6	1	Both	1.5	4.5	1.25	2	0
g84P	Leg	4	XY-Symmetry	20X	21X	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g84X	Leg	4	X-GenXY	20P	21P	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g84XY	Leg	4	XY-GenXY	20Y	21Y	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g84Y	Leg	4	Y-GenXY	20XY	21XY	1	4	1	1	1	3/4	A394	0	6	0		0	0	0	0	0
g85P	Leg	4	XY-Symmetry	21X	23X	1	4	0.5	0.5	0.5	3/4	A394	0	4	0		0	0	0	0	0
g85X	Leg	4	X-GenXY	21P	23P	1	4	0.5	0.5	0.5	3/4	A394	0	4	0		0	0	0	0	0
g85XY	Leg	4	XY-GenXY	21Y	23Y	1	4	0.5	0.5	0.5	3/4	A394	0	4	0		0	0	0	0	0
g85Y	Leg	4	Y-GenXY	21XY	23XY	1	4	0.5	0.5	0.5	3/4	A394	0	4	0		0	0	0	0	0
g86P	Leg	4	XY-Symmetry	23X	25X	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both	1.5	4.5	1.25	2	0
g86X	Leg	4	X-GenXY	23P	25P	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both	1.5	4.5	1.25	2	0
g86XY	Leg	4	XY-GenXY	23Y	25Y	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both	1.5	4.5	1.25	2	0
g86Y	Leg	4	Y-GenXY	23XY	25XY	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both	1.5	4.5	1.25	2	0

g87P	Leg 4	XY-Symmetry	25X	27X	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0	0	0	0
g87X	Leg 4	X-GenXY	25P	27P	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0	0	0	0
g87XY	Leg 4	XY-GenXY	25Y	27Y	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0	0	0	0
g87Y	Leg 4	Y-GenXY	25XY	27XY	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0	0	0	0
g88P	Leg 4	XY-Symmetry	27X	29X	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g88X	Leg 4	X-GenXY	27P	29P	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g88XY	Leg 4	XY-GenXY	27Y	29Y	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g88Y	Leg 4	Y-GenXY	27XY	29XY	1	4	0.5	0.5	0.5	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g89P	Leg 4	XY-Symmetry	29X	30X	1	4	1	1	1	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g89X	Leg 4	X-GenXY	29P	30P	1	4	1	1	1	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g89XY	Leg 4	XY-GenXY	29Y	30Y	1	4	1	1	1	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g89Y	Leg 4	Y-GenXY	29XY	30XY	1	4	1	1	1	3/4	A394	20	4	1	Both		1.5	4.5	1.25	2	0	0	0
g90P	Diag12	XY-Symmetry	41X	2X	2	5	0.5	0.5	0.5	3/4	A394	3	1	1	Short	only	1.5	0	1.125	0	0	0	0
g90X	Diag12	X-GenXY	41P	2P	2	5	0.5	0.5	0.5	3/4	A394	3	1	1	Short	only	1.5	0	1.125	0	0	0	0
g90XY	Diag12	XY-GenXY	41P	2Y	2	5	0.5	0.5	0.5	3/4	A394	3	1	1	Short	only	1.5	0	1.125	0	0	0	0
g90Y	Diag12	Y-GenXY	41X	2XY	2	5	0.5	0.5	0.5	3/4	A394	3	1	1	Short	only	1.5	0	1.125	0	0	0	0
g91P	Horz 13	XY-Symmetry	42X	5X	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	2.75	0	0	0
g91X	Horz 13	X-GenXY	42P	5P	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	2.75	0	0	0
g91XY	Horz 13	XY-GenXY	42P	5Y	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	2.75	0	0	0
g91Y	Horz 13	Y-GenXY	42X	5XY	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	2.75	0	0	0
g92P	Horz 11	Y-Symmetry	5X	5P	3	6	1	1	1	3/4	A394	4	3	1	Long	only	1.25	3.25	1.125	2.75	0	0	0
g92Y	Horz 11	Y-Gen	5XY	5Y	3	6	1	1	1	3/4	A394	4	3	1	Long	only	1.25	3.25	1.125	2.75	0	0	0
g93P	Arm	XY-Symmetry	42X	4X	3	5	1	1	1	3/4	A394	2	1	1	Short	only	0.875	0	1.1875	2.25	0	0	0
g93X	Arm	X-GenXY	42P	4P	3	5	1	1	1	3/4	A394	2	1	1	Short	only	0.875	0	1.1875	2.25	0	0	0
g93XY	Arm	XY-GenXY	42P	4Y	3	5	1	1	1	3/4	A394	2	1	1	Short	only	0.875	0	1.1875	2.25	0	0	0
g93Y	Arm	Y-GenXY	42X	4XY	3	5	1	1	1	3/4	A394	2	1	1	Short	only	0.875	0	1.1875	2.25	0	0	0
g94P	Horz 13	XY-Symmetry	44X	13X	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	3	0	0	0
g94X	Horz 13	X-GenXY	44P	13P	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	3	0	0	0
g94XY	Horz 13	XY-GenXY	44P	13Y	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	3	0	0	0
g94Y	Horz 13	Y-GenXY	44X	13XY	3	5	1	1	1	3/4	A394	4	2	1	Long	only	1.25	3.25	1.3125	3	0	0	0

g95P	Horz 11	Y-Symmetry	13X	13P	3	6	1	1	1	3/4	A394	4	3	1	Long only	1.25	3.25	1.75	3	0	0	0
g95Y	Horz 11	Y-Gen	13XY	13Y	3	6	1	1	1	3/4	A394	4	3	1	Long only	1.25	3.25	1.75	3	0	0	0
g96P	Arm	XY-Symmetry	44X	12X	3	5	1	1	1	3/4	A394	2	1	1	Short only	0.875	0	1.1875	2.25	0	0	0
g96X	Arm	X-GenXY	44P	12P	3	5	1	1	1	3/4	A394	2	1	1	Short only	0.875	0	1.1875	2.25	0	0	0
g96XY	Arm	XY-GenXY	44P	12Y	3	5	1	1	1	3/4	A394	2	1	1	Short only	0.875	0	1.1875	2.25	0	0	0
g96Y	Arm	Y-GenXY	44X	12XY	3	5	1	1	1	3/4	A394	2	1	1	Short only	0.875	0	1.1875	2.25	0	0	0
g97P	Horz 13	XY-Symmetry	43X	9X	3	5	1	0.5	0.5	3/4	A394	5	3	1	Long only	1.25	3.25	1.3125	3	0	0	0
g97X	Horz 13	X-GenXY	43P	9P	3	5	1	0.5	0.5	3/4	A394	5	3	1	Long only	1.25	3.25	1.3125	3	0	0	0
g97XY	Horz 13	XY-GenXY	43P	9Y	3	5	1	0.5	0.5	3/4	A394	5	3	1	Long only	1.25	3.25	1.3125	3	0	0	0
g97Y	Horz 13	Y-GenXY	43X	9XY	3	5	1	0.5	0.5	3/4	A394	5	3	1	Long only	1.25	3.25	1.3125	3	0	0	0
g98P	Horz 12	Y-Symmetry	9X	9P	3	6	1	1	1	3/4	A394	5	3	1	Long only	1.25	3.25	1.875	3	0	0	0
g98Y	Horz 12	Y-Gen	9XY	9Y	3	6	1	1	1	3/4	A394	5	3	1	Long only	1.25	3.25	1.875	3	0	0	0
g99P	Arm2	XY-Symmetry	43X	8X	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.1875	2.25	0	0	0
g99X	Arm2	X-GenXY	43P	8P	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.1875	2.25	0	0	0
g99XY	Arm2	XY-GenXY	43P	8Y	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.1875	2.25	0	0	0
g99Y	Arm2	Y-GenXY	43X	8XY	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.1875	2.25	0	0	0
g100P	top	X-Symmetry	41X	1X	3	4	1	1	1	3/4	A394	2	2	1	Short only	2	0	1.25	2.25	0	0	0
g100X	top	X-Gen	41P	1P	3	4	1	1	1	3/4	A394	2	2	1	Short only	2	0	1.25	2.25	0	0	0
g101P	top	None	1X	1P	3	4	1	1	1	3/4	A394	2	2	1	Short only	2	0	1.25	2.25	0	0	0
g102P	Inner1	X-Symmetry	2X	2Y	2	4	0.5	0.75	0.5	3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g102X	Inner1	X-Gen	2P	2XY	2	4	0.5	0.75	0.5	3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g103P	Inner2	X-Symmetry	5X	5Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	0.875	0	1.125	2.75	0	0	0
g103X	Inner2	X-Gen	5P	5XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	0.875	0	1.125	2.75	0	0	0
g104P	Inner2	X-Symmetry	13X	13Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	0.875	0	1.125	2.75	0	0	0
g104X	Inner2	X-Gen	13P	13XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	0.875	0	1.125	2.75	0	0	0
g105P	Inner3	X-Symmetry	9X	9Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	2.75	0	0	0
g105X	Inner3	X-Gen	9P	9XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	0.875	0	1.125	2.75	0	0	0
g106P	Inner2	X-Symmetry	20X	20Y	2	4	0.5	0.75	0.5	3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g106X	Inner2	X-Gen	20P	20XY	2	4	0.5	0.75	0.5	3/4	A394	1	1	1	Long only	0.875	0	1.125	0	0	0	0
g107P	Inner4	X-Symmetry	29X	29Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	1.5	0	1.125	2	0	0	0

g107X	Inner4	X-Gen	29P	29XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1	Short only	1.5	0	1.125	2	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 Member ship	Warnings or Errors
g1P	Diag1	12.897	L/r	12.741	Rupture	114	5.60	12.897	27.200	24.469	14.772	12.741	0.000	0.000	0.000	0.000	0.000		Automatic		
g1X	Diag1	12.897	L/r	12.741	Rupture	114	5.60	12.897	27.200	24.469	14.772	12.741	0.000	0.000	0.000	0.000	0.000		Automatic		
g2P	Diag1	12.897	L/r	12.741	Rupture	114	5.60	12.897	27.200	24.469	14.772	12.741	0.000	0.000	0.000	0.000	0.000		Automatic		
g2X	Diag1	12.897	L/r	12.741	Rupture	114	5.60	12.897	27.200	24.469	14.772	12.741	0.000	0.000	0.000	0.000	0.000		Automatic		
g3P	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g3X	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g3XY	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g3Y	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g4P	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g4X	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g4XY	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g4Y	Diag2	18.914	L/r	13.964	Rupture	81	5.33	18.914	27.200	24.469	17.688	13.964	0.000	0.000	0.000	0.000	0.000		Automatic		
g5P	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g5X	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g5XY	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g5Y	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g6P	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g6X	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g6XY	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000	0.000		Automatic		
g6Y	Diag2	18.901	L/r	13.556	Rupture	81	5.34	18.901	27.200	24.469	17.688	13.556	0.000	0.000	0.000	0.000					

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0.000          Automatic
    g7P   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g7X   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
   g7XY   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g7Y   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g8P   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g8X   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
   g8XY   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g8Y   Diag2   19.718       L/r   13.760   Rupture   74   4.84   19.718     27.200     24.469   17.688   13.760    0.000    0.000    0.000    0.000
0.000          Automatic
    g9P   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic   Member "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    g9X   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic   Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g9XY   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
    g9Y   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic   Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g10P   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g10X   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
  g10XY   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g10Y   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g11P   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g11X   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
  g11XY   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g11Y   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g12P   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked.  ??
   g12X   Diag4   44.572       L/r   32.481  Net Sect   49   4.84   44.572     54.400     65.250   32.481   49.755    0.000    0.000    0.000    0.000
0.000          Automatic  Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
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zero); however, end, edge and spacing distances will be checked. ??
g12XY Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g12Y Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g13P Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g13X Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g13XY Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g13Y Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g14P Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g14X Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g14XY Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g14Y Diag4 44.572 L/r 32.481 Net Sect 49 4.84 44.572 54.400 65.250 32.481 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g15P Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g15X Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g15XY Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g15Y Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g16P Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g16X Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g16XY Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g16Y Diag5 48.531 L/r 36.369 Net Sect 48 4.84 48.531 54.400 65.250 36.369 55.885 0.000 0.000 0.000 0.000
0.000 Automatic Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g17P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??

g17X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g17XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g17Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g18P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g18X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g18XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g18Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g19P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g19X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g19XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g19Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g20P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g20X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g20XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g20Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g21P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g21X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g21XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g21Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g22P Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000

0.000 Automatic Member "g22P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22X Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g22X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22XY Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22Y Diag10 80.889 L/r 65.225 Net Sect 42 4.84 80.889 81.600 122.344 65.225 101.953 0.000 0.000 0.000 0.000
0.000 Automatic Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g23P Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g23P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g23X Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g23X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g23XY Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g23Y Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24P Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g24P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24X Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g24X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24XY Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24Y Diag11 81.600 Shear 77.557 Net Sect 43 4.84 96.521 81.600 146.812 77.557 125.742 0.000 0.000 0.000 0.000
0.000 Automatic Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g25P Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g25P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g25X Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g25X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g25XY Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g25XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g25Y Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g25Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g26P Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g26P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g26X Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g26X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g26XY Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g26XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g26Y Diag10 80.495 L/r 65.225 Net Sect 44 4.83 80.495 81.600 122.344 65.225 104.785 0.000 0.000 0.000 0.000
0.000 Automatic Member "g26Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than

zero); however, end, edge and spacing distances will be checked. ??
g27P Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g27P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g27X Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g27X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g27XY Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g27XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g27Y Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g27Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g28P Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g28P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g28X Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g28X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g28XY Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g28XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g28Y Diag10 68.000 Shear 65.225 Net Sect 50 5.52 78.878 68.000 101.953 65.225 87.321 0.000 0.000 0.000 0.000
0.000 Automatic Member "g28Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g29P Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g29P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g29X Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g29X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g29XY Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g29XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g29Y Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g29Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g30P Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g30P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g30X Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g30X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g30XY Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g30XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g30Y Diag5 46.173 L/r 32.319 Net Sect 60 5.90 46.173 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g30Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g31P Diag5 43.265 L/r 32.319 Net Sect 74 7.19 43.265 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g31P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g31X Diag5 43.265 L/r 32.319 Net Sect 74 7.19 43.265 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g31X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??
g31XY Diag5 43.265 L/r 32.319 Net Sect 74 7.19 43.265 54.400 65.250 32.319 49.755 0.000 0.000 0.000 0.000
0.000 Automatic Member "g31XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than
zero); however, end, edge and spacing distances will be checked. ??

g31Y	Diag5	43.265	L/r	32.319	Net Sect	74	7.19	43.265	54.400	65.250	32.319	49.755	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g31Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g32P	Diag5	43.265	L/r	32.319	Net Sect	74	7.19	43.265	54.400	65.250	32.319	49.755	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g32P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g32X	Diag5	43.265	L/r	32.319	Net Sect	74	7.19	43.265	54.400	65.250	32.319	49.755	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g32X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g32XY	Diag5	43.265	L/r	32.319	Net Sect	74	7.19	43.265	54.400	65.250	32.319	49.755	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g32XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g32Y	Diag5	43.265	L/r	32.319	Net Sect	74	7.19	43.265	54.400	65.250	32.319	49.755	0.000	0.000	0.000	0.000
0.000	Automatic	Member "g32Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
g33P	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g33X	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g33XY	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g33Y	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g34P	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g34X	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g34XY	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g34Y	Diag4	38.006	L/r	37.294	Rupture	83	7.70	38.006	40.800	48.937	39.568	37.294	0.000	0.000	0.000	0.000
0.000	Automatic															
g35P	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g35X	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g35XY	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g35Y	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g36P	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g36X	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g36XY	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g36Y	Diag4	34.738	L/r	38.381	Rupture	97	8.92	34.738	40.800	48.937	39.568	38.381	0.000	0.000	0.000	0.000
0.000	Automatic															
g37P	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															
g37X	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															
g37XY	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															
g37Y	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															
g38P	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															
g38X	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000	Automatic															

g38XY	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000		Automatic														
g38Y	Diag3	27.075	L/r	31.306	Net Sect	115	9.54	27.075	40.800	48.937	31.306	34.228	0.000	0.000	0.000	0.000
0.000		Automatic														
g39P	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g39X	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g39XY	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g39Y	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g40P	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g40X	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g40XY	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g40Y	Diag4	26.008	L/r	35.391	Rupture	128	11.77	26.008	40.800	48.937	39.568	35.391	0.000	0.000	0.000	0.000
0.000		Automatic														
g41P	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g41X	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g41XY	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g41Y	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g42P	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g42X	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g42XY	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g42Y	Diag5	25.026	L/r	27.200	Shear	138	13.51	25.026	27.200	32.625	39.406	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g43P	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g43X	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g43XY	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g43Y	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g44P	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g44X	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g44XY	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g44Y	Diag6	25.243	L/r	27.200	Shear	144	15.52	25.243	27.200	32.625	47.668	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g45P	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g45X	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g45XY	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g45Y	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														

g46P	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g46X	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g46XY	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g46Y	Diag6	20.384	L/r	27.187	Rupture	165	17.73	20.384	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g47P	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g47X	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g47XY	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g47Y	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g48P	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g48X	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g48XY	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g48Y	Diag7	19.690	L/r	27.200	Shear	175	20.12	19.690	27.200	32.625	47.506	27.943	0.000	0.000	0.000	0.000
0.000		Automatic														
g49P	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g49X	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g49XY	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g49Y	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g50P	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g50X	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g50XY	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g50Y	Diag8	21.486	L/r	27.187	Rupture	173	11.49	21.486	27.200	32.625	55.768	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g51P	Horz5	27.200	Shear	27.187	Rupture	92	3.34	27.684	27.200	32.625	31.468	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g51Y	Horz5	27.200	Shear	27.187	Rupture	92	3.34	27.684	27.200	32.625	31.468	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g52P	Horz5	27.200	Shear	27.187	Rupture	92	3.34	27.684	27.200	32.625	31.468	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g52X	Horz5	27.200	Shear	27.187	Rupture	92	3.34	27.684	27.200	32.625	31.468	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53P	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														
g53Y	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														
g54P	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g54X	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g55P	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														
g55Y	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														

g56P	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g56X	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g57P	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														
g57Y	Horz1	11.446	L/r	7.439	Rupture	124	3.34	11.446	13.600	12.234	14.772	7.439	0.000	0.000	0.000	0.000
0.000		Automatic														
g58P	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g58X	Horz6	27.200	Shear	27.187	Rupture	76	3.34	32.931	27.200	32.625	35.356	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g59P	Horz2	5.474	L/r	17.688	Net Sect	238	7.82	5.474	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g59Y	Horz2	5.474	L/r	17.688	Net Sect	238	7.82	5.474	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g60P	Horz2	5.474	L/r	17.688	Net Sect	238	7.82	5.474	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g60X	Horz2	5.474	L/r	17.688	Net Sect	238	7.82	5.474	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g61P	Horz8	13.494	L/r	27.187	Rupture	233	13.46	13.494	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g61Y	Horz8	13.494	L/r	27.187	Rupture	233	13.46	13.494	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g62P	Horz8	13.494	L/r	27.187	Rupture	233	13.46	13.494	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g62X	Horz8	13.494	L/r	27.187	Rupture	233	13.46	13.494	27.200	32.625	47.668	27.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g63P	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g63X	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g63XY	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g63Y	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g64P	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g64X	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g64XY	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g64Y	Horz 10	27.200	Shear	27.200	Shear	126	7.69	41.251	27.200	40.781	58.978	33.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g65P	Leg 1	69.597	L/r	53.250	Net Sect	68	4.49	69.597	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g65X	Leg 1	69.597	L/r	53.250	Net Sect	68	4.49	69.597	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g65XY	Leg 1	69.597	L/r	53.250	Net Sect	68	4.49	69.597	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g65Y	Leg 1	69.597	L/r	53.250	Net Sect	68	4.49	69.597	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g66P	Leg 1	71.691	L/r	53.250	Net Sect	63	4.16	71.691	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g66X	Leg 1	71.691	L/r	53.250	Net Sect	63	4.16	71.691	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g66XY	Leg 1	71.691	L/r	53.250	Net Sect	63	4.16	71.691	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g66Y	Leg 1	71.691	L/r	53.250	Net Sect	63	4.16	71.691	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														

g67P	Leg 1	71.630	L/r	53.250	Net Sect	63	4.17	71.630	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g67X	Leg 1	71.630	L/r	53.250	Net Sect	63	4.17	71.630	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g67XY	Leg 1	71.630	L/r	53.250	Net Sect	63	4.17	71.630	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g67Y	Leg 1	71.630	L/r	53.250	Net Sect	63	4.17	71.630	0.000	0.000	53.250	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g68P	**Leg 1**	**75.378**	**L/r**	**53.250**	**Net Sect**	**53**	**3.50**	**75.378**	**81.600**	**109.687**	**53.250**	**95.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g68P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g68X	**Leg 1**	**75.378**	**L/r**	**53.250**	**Net Sect**	**53**	**3.50**	**75.378**	**81.600**	**109.687**	**53.250**	**95.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g68X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g68XY	**Leg 1**	**75.378**	**L/r**	**53.250**	**Net Sect**	**53**	**3.50**	**75.378**	**81.600**	**109.687**	**53.250**	**95.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g68XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g68Y	**Leg 1**	**75.378**	**L/r**	**53.250**	**Net Sect**	**53**	**3.50**	**75.378**	**81.600**	**109.687**	**53.250**	**95.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g68Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g69P	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g69X	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g69XY	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g69Y	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g70P	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g70X	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g70XY	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g70Y	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g71P	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g71X	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g71XY	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g71Y	Leg 2	271.593	L/r	200.000	Net Sect	36	3.50	271.593	0.000	0.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g72P	**Leg 2**	**190.400**	**Shear**	**190.400**	**Shear**	**36**	**3.50**	**271.593**	**190.400**	**511.874**	**200.000**	**473.958**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g72P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g72X	**Leg 2**	**190.400**	**Shear**	**190.400**	**Shear**	**36**	**3.50**	**271.593**	**190.400**	**511.874**	**200.000**	**473.958**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g72X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g72XY	**Leg 2**	**190.400**	**Shear**	**190.400**	**Shear**	**36**	**3.50**	**271.593**	**190.400**	**511.874**	**200.000**	**473.958**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g72XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g72Y	**Leg 2**	**190.400**	**Shear**	**190.400**	**Shear**	**36**	**3.50**	**271.593**	**190.400**	**511.874**	**200.000**	**473.958**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000 Automatic Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**
g73P	Leg 3	554.347	L/r	375.124	Net Sect	27	3.50	554.347	0.000	0.000	375.124	0.000	0.000	0.000	0.000	0.000	0.000 Automatic
g73X	Leg 3	554.347	L/r	375.124	Net Sect	27	3.50	554.347	0.000	0.000	375.124	0.000	0.000	0.000	0.000	0.000	0.000

0.000 Automatic
g73XY Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g73Y Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g74P Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g74X Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g74XY Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g74Y Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g75P Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g75X Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g75XY Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g75Y Leg 3 554.347 L/r 375.124 Net Sect 27 3.50 554.347 0.000 0.000 375.124 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g76P Leg 3 217.600 Shear 217.600 Shear 27 3.50 554.347 217.600 877.499 375.124 812.499 0.000 0.000 0.000 0.000
0.000 Automatic Member "g76P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g76X Leg 3 217.600 Shear 217.600 Shear 27 3.50 554.347 217.600 877.499 375.124 812.499 0.000 0.000 0.000 0.000
0.000 Automatic Member "g76X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g76XY Leg 3 217.600 Shear 217.600 Shear 27 3.50 554.347 217.600 877.499 375.124 812.499 0.000 0.000 0.000 0.000
0.000 Automatic Member "g76XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g76Y Leg 3 217.600 Shear 217.600 Shear 27 3.50 554.347 217.600 877.499 375.124 812.499 0.000 0.000 0.000 0.000
0.000 Automatic Member "g76Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g77P Leg 4 643.509 L/r 431.812 Net Sect 25 3.26 643.509 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g77X Leg 4 643.509 L/r 431.812 Net Sect 25 3.26 643.509 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g77XY Leg 4 643.509 L/r 431.812 Net Sect 25 3.26 643.509 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g77Y Leg 4 643.509 L/r 431.812 Net Sect 25 3.26 643.509 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g78P Leg 4 637.537 L/r 431.812 Net Sect 29 3.77 637.537 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g78X Leg 4 637.537 L/r 431.812 Net Sect 29 3.77 637.537 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g78XY Leg 4 637.537 L/r 431.812 Net Sect 29 3.77 637.537 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g78Y Leg 4 637.537 L/r 431.812 Net Sect 29 3.77 637.537 0.000 0.000 431.812 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g79P Leg 4 637.554 L/r 508.374 Net Sect 29 3.77 637.554 0.000 0.000 508.374 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g79X Leg 4 637.554 L/r 508.374 Net Sect 29 3.77 637.554 0.000 0.000 508.374 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g79XY Leg 4 637.554 L/r 508.374 Net Sect 29 3.77 637.554 0.000 0.000 508.374 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g79Y Leg 4 637.554 L/r 508.374 Net Sect 29 3.77 637.554 0.000 0.000 508.374 0.000 0.000 0.000 0.000 0.000
0.000 Automatic
g80P Leg 4 618.892 L/r 508.374 Net Sect 38 5.02 618.892 0.000 0.000 508.374 0.000 0.000 0.000 0.000 0.000
0.000 Automatic

g80X	Leg 4	618.892	L/r	508.374	Net Sect	38	5.02	618.892	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g80XY	Leg 4	618.892	L/r	508.374	Net Sect	38	5.02	618.892	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g80Y	Leg 4	618.892	L/r	508.374	Net Sect	38	5.02	618.892	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g81P	Leg 4	618.915	L/r	431.812	Net Sect	38	5.02	618.915	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g81X	Leg 4	618.915	L/r	431.812	Net Sect	38	5.02	618.915	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g81XY	Leg 4	618.915	L/r	431.812	Net Sect	38	5.02	618.915	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g81Y	Leg 4	618.915	L/r	431.812	Net Sect	38	5.02	618.915	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g82P	Leg 4	600.173	L/r	431.812	Net Sect	46	6.03	600.173	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g82X	Leg 4	600.173	L/r	431.812	Net Sect	46	6.03	600.173	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g82XY	Leg 4	600.173	L/r	431.812	Net Sect	46	6.03	600.173	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g82Y	Leg 4	600.173	L/r	431.812	Net Sect	46	6.03	600.173	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g83P	**Leg 4**	**244.800**	**Shear**	**244.800**	**Shear**	**46**	**6.03**	**600.173**	**244.800**	**1151.717**	**431.812**	**1066.405**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g83P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g83X	**Leg 4**	**244.800**	**Shear**	**244.800**	**Shear**	**46**	**6.03**	**600.173**	**244.800**	**1151.717**	**431.812**	**1066.405**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g83X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g83XY	**Leg 4**	**244.800**	**Shear**	**244.800**	**Shear**	**46**	**6.03**	**600.173**	**244.800**	**1151.717**	**431.812**	**1066.405**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g83XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g83Y	**Leg 4**	**244.800**	**Shear**	**244.800**	**Shear**	**46**	**6.03**	**600.173**	**244.800**	**1151.717**	**431.812**	**1066.405**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g83Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g84P	Leg 4	545.569	L/r	431.812	Net Sect	63	8.29	545.569	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g84X	Leg 4	545.569	L/r	431.812	Net Sect	63	8.29	545.569	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g84XY	Leg 4	545.569	L/r	431.812	Net Sect	63	8.29	545.569	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g84Y	Leg 4	545.569	L/r	431.812	Net Sect	63	8.29	545.569	0.000	0.000	431.812	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g85P	Leg 4	623.063	L/r	508.374	Net Sect	36	9.54	623.063	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g85X	Leg 4	623.063	L/r	508.374	Net Sect	36	9.54	623.063	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g85XY	Leg 4	623.063	L/r	508.374	Net Sect	36	9.54	623.063	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g85Y	Leg 4	623.063	L/r	508.374	Net Sect	36	9.54	623.063	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
0.000	Automatic																
g86P	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**42**	**11.04**	**610.043**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g86P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g86X	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**42**	**11.04**	**610.043**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g86X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															
g86XY	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**42**	**11.04**	**610.043**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	
0.000	**Automatic**	**Member "g86XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**															

g86Y	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**42**	**11.04**	**610.043**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g86Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g87P	Leg 4	594.858	L/r	508.374	Net Sect	48	12.57	594.858	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g87X	Leg 4	594.858	L/r	508.374	Net Sect	48	12.57	594.858	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g87XY	Leg 4	594.858	L/r	508.374	Net Sect	48	12.57	594.858	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g87Y	Leg 4	594.858	L/r	508.374	Net Sect	48	12.57	594.858	0.000	0.000	508.374	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g88P	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**54**	**14.07**	**578.022**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g88P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g88X	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**54**	**14.07**	**578.022**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g88X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g88XY	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**54**	**14.07**	**578.022**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g88XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g88Y	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**54**	**14.07**	**578.022**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g88Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g89P	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**61**	**8.04**	**552.500**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g89P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g89X	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**61**	**8.04**	**552.500**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g89X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g89XY	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**61**	**8.04**	**552.500**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g89XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g89Y	**Leg 4**	**272.000**	**Shear**	**272.000**	**Shear**	**61**	**8.04**	**552.500**	**272.000**	**1279.686**	**508.374**	**1184.894**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g89Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g90P	Diag12	33.365	L/r	31.639	Rupture	111	11.72	33.365	40.800	48.937	39.406	31.639	0.000	0.000	0.000	0.000	0.000
Automatic																	
g90X	Diag12	33.365	L/r	31.639	Rupture	111	11.72	33.365	40.800	48.937	39.406	31.639	0.000	0.000	0.000	0.000	0.000
Automatic																	
g90XY	Diag12	33.365	L/r	31.639	Rupture	111	11.72	33.365	40.800	48.937	39.406	31.639	0.000	0.000	0.000	0.000	0.000
Automatic																	
g90Y	Diag12	33.365	L/r	31.639	Rupture	111	11.72	33.365	40.800	48.937	39.406	31.639	0.000	0.000	0.000	0.000	0.000
Automatic																	
g91P	**Horz 13**	**51.221**	**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g91P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g91X	**Horz 13**	**51.221**	**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g91X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g91XY	**Horz 13**	**51.221**	**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g91XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g91Y	**Horz 13**	**51.221**	**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g91Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	
g92P	**Horz 11**	**44.997**	**L/r**	**41.593**	**Net Sect**	**60**	**3.34**	**44.997**	**54.400**	**65.250**	**41.593**	**54.375**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic Member "g92P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																	

g92Y	**Horz**	**11**	**44.997**		**L/r**	**41.593**	**Net Sect**	**60**	**3.34**	**44.997**	**54.400**	**65.250**	**41.593**	**54.375**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g92Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g93P	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g93X	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g93XY	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g93Y	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g94P	**Horz**	**13**	**51.221**		**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g94P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g94X	**Horz**	**13**	**51.221**		**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g94X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g94XY	**Horz**	**13**	**51.221**		**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g94XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g94Y	**Horz**	**13**	**51.221**		**L/r**	**54.400**	**Shear**	**134**	**8.50**	**51.221**	**54.400**	**97.875**	**77.557**	**95.156**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g94Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g95P	**Horz**	**11**	**44.997**		**L/r**	**41.593**	**Net Sect**	**60**	**3.34**	**44.997**	**54.400**	**65.250**	**41.593**	**71.078**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g95P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g95Y	**Horz**	**11**	**44.997**		**L/r**	**41.593**	**Net Sect**	**60**	**3.34**	**44.997**	**54.400**	**65.250**	**41.593**	**71.078**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g95Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g96P	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g96X	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g96XY	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g96Y	Arm		3.474		L/r	16.819	Rupture	280	9.19	3.474	27.200	24.469	17.688	16.819	0.000	0.000	0.000	0.000
0.000			Automatic															
g97P	**Horz**	**13**	**68.000**		**Shear**	**66.926**	**Net Sect**	**86**	**10.96**	**73.070**	**68.000**	**122.344**	**66.926**	**118.945**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g97P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g97X	**Horz**	**13**	**68.000**		**Shear**	**66.926**	**Net Sect**	**86**	**10.96**	**73.070**	**68.000**	**122.344**	**66.926**	**118.945**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g97X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g97XY	**Horz**	**13**	**68.000**		**Shear**	**66.926**	**Net Sect**	**86**	**10.96**	**73.070**	**68.000**	**122.344**	**66.926**	**118.945**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g97XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g97Y	**Horz**	**13**	**68.000**		**Shear**	**66.926**	**Net Sect**	**86**	**10.96**	**73.070**	**68.000**	**122.344**	**66.926**	**118.945**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g97Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g98P	**Horz**	**12**	**64.028**		**L/r**	**51.182**	**Net Sect**	**61**	**3.34**	**64.028**	**68.000**	**101.953**	**51.182**	**111.060**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g98P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g98Y	**Horz**	**12**	**64.028**		**L/r**	**51.182**	**Net Sect**	**61**	**3.34**	**64.028**	**68.000**	**101.953**	**51.182**	**111.060**	**0.000**	**0.000**	**0.000**	**0.000**
0.000			**Automatic**	**Member "g98Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**														
g99P	Arm2		4.441		L/r	19.350	Rupture	279	11.50	4.441	27.200	24.469	23.909	19.350	0.000	0.000	0.000	0.000
0.000			Automatic															
g99X	Arm2		4.441		L/r	19.350	Rupture	279	11.50	4.441	27.200	24.469	23.909	19.350	0.000	0.000	0.000	0.000

0.000		Automatic														
g99XY	Arm2	4.441	L/r	19.350	Rupture	279	11.50	4.441	27.200	24.469	23.909	19.350	0.000	0.000	0.000	0.000
0.000		Automatic														
g99Y	Arm2	4.441	L/r	19.350	Rupture	279	11.50	4.441	27.200	24.469	23.909	19.350	0.000	0.000	0.000	0.000
0.000		Automatic														
g100P	top	27.200	Shear	27.200	Shear	104	10.83	116.434	27.200	97.875	139.603	90.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g100X	top	27.200	Shear	27.200	Shear	104	10.83	116.434	27.200	97.875	139.603	90.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g101P	top	27.200	Shear	27.200	Shear	32	3.34	157.295	27.200	97.875	139.603	90.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g102P	Inner1	13.600	Shear	9.919	Rupture	98	4.72	19.280	13.600	16.312	19.156	9.919	0.000	0.000	0.000	0.000
0.000		Automatic														
g102X	Inner1	13.600	Shear	9.919	Rupture	98	4.72	19.280	13.600	16.312	19.156	9.919	0.000	0.000	0.000	0.000
0.000		Automatic														
g103P	Inner2	14.952	L/r	14.772	Net Sect	97	4.72	14.952	27.200	24.469	14.772	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g103X	Inner2	14.952	L/r	14.772	Net Sect	97	4.72	14.952	27.200	24.469	14.772	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g104P	Inner2	14.952	L/r	14.772	Net Sect	97	4.72	14.952	27.200	24.469	14.772	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g104X	Inner2	14.952	L/r	14.772	Net Sect	97	4.72	14.952	27.200	24.469	14.772	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g105P	Inner3	19.896	L/r	17.688	Net Sect	72	4.72	19.896	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g105X	Inner3	19.896	L/r	17.688	Net Sect	72	4.72	19.896	27.200	24.469	17.688	18.658	0.000	0.000	0.000	0.000
0.000		Automatic														
g106P	**Inner2**	**3.468**	**L/r**	**7.439**	**Rupture**	**226**	**11.06**	**3.468**	**13.600**	**12.234**	**14.772**	**7.439**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106P" ??																
g106X	**Inner2**	**3.468**	**L/r**	**7.439**	**Rupture**	**226**	**11.06**	**3.468**	**13.600**	**12.234**	**14.772**	**7.439**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 226.21 exceeds maximum of 200.00 for member "g106X" ??																
g107P	Inner4	8.167	L/r	18.998	Rupture	219	21.75	8.167	27.200	24.469	30.000	18.998	0.000	0.000	0.000	0.000
0.000		Automatic														
g107X	Inner4	8.167	L/r	18.998	Rupture	219	21.75	8.167	27.200	24.469	30.000	18.998	0.000	0.000	0.000	0.000
0.000		Automatic														

The model contains 377 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	0.17	4.642	2.246
2P	0.0994	5.013	3.958
3P	0.0535	2.972	2.972
4P	0.0649	3.797	3.089
5P	0.149	5.905	4.239
6P	0.116	3.834	3.834
7P	0.116	3.834	3.834
8P	0.14	5.472	4.412
9P	0.255	8.225	6.038
10P	0.22	5.807	5.807
11P	0.22	5.807	5.807
12P	0.243	6.839	6.131
13P	0.302	8.382	6.716

14P	0.248	5.953	5.953
15P	0.249	5.845	5.845
16P	0.268	6.109	6.109
17P	0.303	6.706	6.706
18P	0.33	7.128	7.128
19P	0.358	7.819	7.819
20P	0.454	10.511	10.511
21P	0.532	11.791	11.791
23P	0.626	14.074	14.074
25P	0.724	16.131	16.131
27P	0.905	20.917	20.917
29P	0.722	16.243	16.243
30P	0.257	5.922	5.922
39P	0.135	6.389	2.673
40P	0.135	2.673	6.389
41P	0.162	5.190	1.310
42P	0.111	4.977	1.342
43P	0.149	6.884	1.504
44P	0.111	4.977	1.342
1X	0.17	4.642	2.246
2X	0.0994	5.013	3.958
2XY	0.0994	5.013	3.958
2Y	0.0994	5.013	3.958
3X	0.0535	2.972	2.972
3XY	0.0535	2.972	2.972
3Y	0.0535	2.972	2.972
4X	0.0649	3.797	3.089
4XY	0.0649	3.797	3.089
4Y	0.0649	3.797	3.089
5X	0.149	5.905	4.239
5XY	0.149	5.905	4.239
5Y	0.149	5.905	4.239
6X	0.116	3.834	3.834
6XY	0.116	3.834	3.834
6Y	0.116	3.834	3.834
7X	0.116	3.834	3.834
7XY	0.116	3.834	3.834
7Y	0.116	3.834	3.834
8X	0.14	5.472	4.412
8XY	0.14	5.472	4.412
8Y	0.14	5.472	4.412
9X	0.255	8.225	6.038
9XY	0.255	8.225	6.038
9Y	0.255	8.225	6.038
10X	0.22	5.807	5.807
10XY	0.22	5.807	5.807
10Y	0.22	5.807	5.807
11X	0.22	5.807	5.807
11XY	0.22	5.807	5.807
11Y	0.22	5.807	5.807
12X	0.243	6.839	6.131
12XY	0.243	6.839	6.131
12Y	0.243	6.839	6.131
13X	0.302	8.382	6.716
13XY	0.302	8.382	6.716
13Y	0.302	8.382	6.716
14X	0.248	5.953	5.953
14XY	0.248	5.953	5.953
14Y	0.248	5.953	5.953
15X	0.249	5.845	5.845

15XY	0.249	5.845	5.845
15Y	0.249	5.845	5.845
16X	0.268	6.109	6.109
16XY	0.268	6.109	6.109
16Y	0.268	6.109	6.109
17X	0.303	6.706	6.706
17XY	0.303	6.706	6.706
17Y	0.303	6.706	6.706
18X	0.33	7.128	7.128
18XY	0.33	7.128	7.128
18Y	0.33	7.128	7.128
19X	0.358	7.819	7.819
19XY	0.358	7.819	7.819
19Y	0.358	7.819	7.819
20X	0.454	10.511	10.511
20XY	0.454	10.511	10.511
20Y	0.454	10.511	10.511
21X	0.532	11.791	11.791
21XY	0.532	11.791	11.791
21Y	0.532	11.791	11.791
23X	0.626	14.074	14.074
23XY	0.626	14.074	14.074
23Y	0.626	14.074	14.074
25X	0.724	16.131	16.131
25XY	0.724	16.131	16.131
25Y	0.724	16.131	16.131
27X	0.905	20.917	20.917
27XY	0.905	20.917	20.917
27Y	0.905	20.917	20.917
29X	0.722	16.243	16.243
29XY	0.722	16.243	16.243
29Y	0.722	16.243	16.243
30X	0.257	5.922	5.922
30XY	0.257	5.922	5.922
30Y	0.257	5.922	5.922
39Y	0.135	6.389	2.673
40X	0.135	2.673	6.389
41X	0.162	5.190	1.310
42X	0.111	4.977	1.342
43X	0.149	6.884	1.504
44X	0.111	4.977	1.342
Total	33.8	875.620	801.574

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)
2	8.859	305.821	231.775	131.949	83.762
1	24.904	569.800	569.800	222.138	222.138
Total	33.763	875.620	801.574	354.087	305.900

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)

2	8.859	9.302	1240.084	1302.088
1	24.904	26.150	2524.763	2651.001
Total	33.763	35.452	3764.846	3953.089

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
2	1X	140.000
2	2P	135.830
2	1P	140.000
2	2X	135.830
2	2XY	135.830
2	2Y	135.830
2	3P	131.670
2	3X	131.670
2	3XY	131.670
2	3Y	131.670
2	4X	127.500
2	4P	127.500
2	4Y	127.500
2	4XY	127.500
2	5X	124.000
2	5P	124.000
2	5Y	124.000
2	5XY	124.000
2	6X	120.500
2	6P	120.500
2	6Y	120.500
2	6XY	120.500
2	7X	117.000
2	7P	117.000
2	7Y	117.000
2	7XY	117.000
2	8X	113.500
2	8P	113.500
2	8Y	113.500
2	8XY	113.500
2	9X	110.000
2	9P	110.000
2	9Y	110.000
2	9XY	110.000
2	10X	106.500
2	10P	106.500
2	10Y	106.500
2	10XY	106.500
2	11X	103.000
2	11P	103.000
2	11Y	103.000
2	11XY	103.000
2	12X	99.500
2	12P	99.500
2	12Y	99.500
2	12XY	99.500
2	13X	96.000
2	13P	96.000
2	13Y	96.000

2	13XY	96.000
2	41X	140.000
2	41P	140.000
2	42X	124.000
2	42P	124.000
2	44X	96.000
2	44P	96.000
2	43X	110.000
2	43P	110.000
1	14X	92.750
1	13P	96.000
1	14P	92.750
1	13X	96.000
1	14Y	92.750
1	13XY	96.000
1	14XY	92.750
1	13Y	96.000
1	15X	89.000
1	15P	89.000
1	15Y	89.000
1	15XY	89.000
1	16X	85.250
1	16P	85.250
1	16Y	85.250
1	16XY	85.250
1	17X	80.250
1	17P	80.250
1	17Y	80.250
1	17XY	80.250
1	18X	75.250
1	18P	75.250
1	18Y	75.250
1	18XY	75.250
1	19X	69.250
1	19P	69.250
1	19Y	69.250
1	19XY	69.250
1	20X	63.250
1	20P	63.250
1	20Y	63.250
1	20XY	63.250
1	21X	55.000
1	21P	55.000
1	21Y	55.000
1	21XY	55.000
1	23X	45.500
1	23P	45.500
1	23Y	45.500
1	23XY	45.500
1	25X	34.500
1	25P	34.500
1	25Y	34.500
1	25XY	34.500
1	27X	22.000
1	27P	22.000
1	27Y	22.000
1	27XY	22.000
1	29X	8.000
1	29P	8.000
1	29Y	8.000

1	29XY	8.000
1	30X	0.000
1	39P	8.000
1	30P	0.000
1	30Y	0.000
1	39Y	8.000
1	30XY	0.000
1	40P	8.000
1	40X	8.000

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)
2	140.000	96.000	58	201	0.00	3.34	139.996	25.00	20.00	288.336
1	96.000	0.000	60	176	3.34	16.46	949.193	3.34	16.46	949.193

*** Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
C1	41X	C-EX1	No Limit
C2	41P	C-EX1	No Limit
C3	42X	C-EX1	No Limit
C4	42P	C-EX1	No Limit
C5	43X	C-EX1	No Limit
C6	43P	C-EX1	No Limit
C7	44X	C-EX1	No Limit
C8	44P	C-EX1	No Limit
C9	2P	C-EX1	No Limit
C10	2X	C-EX1	No Limit
C11	2XY	C-EX1	No Limit
C12	2Y	C-EX1	No Limit
C13	6P	C-EX1	No Limit
C14	6X	C-EX1	No Limit
C15	6XY	C-EX1	No Limit
C16	6Y	C-EX1	No Limit
C17	1P	C-EX1	No Limit
C18	4P	C-EX1	No Limit
C19	7P	C-EX1	No Limit
C20	10P	C-EX1	No Limit
C21	13P	C-EX1	No Limit
C22	16P	C-EX1	No Limit
C23	18P	C-EX1	No Limit

C24	20P	C-EX1	No Limit
C25	23P	C-EX1	No Limit
C26	25P	C-EX1	No Limit
C27	27P	C-EX1	No Limit
C28	29P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1616200.wi\03_ct11241a\04_structural\backup documentation\calcs\rev (1)\pls tower\cl&p tower # 1280.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)	140.00 (ft)	
Structure height	140.00 (ft)	
Structure height above ground	140.00 (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 and Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	28 loads	Wind on All	4	0	0.000	0.000	60.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	28 loads	NESC 2012	31	0	0.000	0.000	60.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
41P	1062	2514	0	Shield Wire
41X	1062	2514	0	Shield Wire
42P	2244	3692	0	Conductor Wire
42X	2244	3692	0	Conductor Wire
43P	2244	3692	0	Conductor Wire
43X	2244	3692	0	Conductor Wire
44P	2244	3692	0	Conductor Wire
44X	2244	3692	0	Conductor Wire
2P	0	518.5	0	Top Connection
2X	0	518.5	0	Top Connection
2XY	0	518.5	0	Top Connection
2Y	0	518.5	0	Top Connection
6P	1189.5	-232.75	0	Bottom Connection
6X	1189.5	-232.75	0	Bottom Connection
6XY	1189.5	-232.75	0	Bottom Connection
6Y	1189.5	-232.75	0	Bottom Connection
1P	431	107	0	Coax Cable
4P	793	197	0	Coax Cable
7P	724	180	0	Coax Cable
10P	724	180	0	Coax Cable

13P	733	182	0	Coax Cable
16P	716	178	0	Coax Cable
18P	759	189	0	Coax Cable
20P	862	215	0	Coax Cable
23P	802	200	0	Coax Cable
25P	759	189	0	Coax Cable
27P	862	215	0	Coax Cable
29P	974	243	0	Coax Cable

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
2	140.00	96.00	118.00	10.00	10.00	1.000	2317.7	0.00	1.000	0.0	0	13953
1	96.00	0.00	48.00	10.00	10.00	1.000	5698.0	0.00	1.000	0.0	0	39224

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
41P	308	1629	0	Shield Wire
41X	308	1629	0	Shield Wire
42P	955	2840	0	Conductor Wire
42X	955	2840	0	Conductor Wire
43P	955	2840	0	Conductor Wire
43X	955	2840	0	Conductor Wire
44P	955	2840	0	Conductor Wire
44X	955	2840	0	Conductor Wire
2P	0	2123.5	0	Top Connection
2X	0	2123.5	0	Top Connection
2XY	0	2123.5	0	Top Connection
2Y	0	2123.5	0	Top Connection
6P	579	-982.5	0	Bottom Connection
6X	579	-982.5	0	Bottom Connection
6XY	579	-982.5	0	Bottom Connection
6Y	579	-982.5	0	Bottom Connection
1P	117	357	0	Coax Cable
4P	215	658	0	Coax Cable
7P	197	600	0	Coax Cable
10P	197	600	0	Coax Cable
13P	199	608	0	Coax Cable
16P	194	593	0	Coax Cable
18P	206	629	0	Coax Cable
20P	234	715	0	Coax Cable
23P	218	665	0	Coax Cable
25P	206	629	0	Coax Cable
27P	234	715	0	Coax Cable
29P	264	808	0	Coax Cable

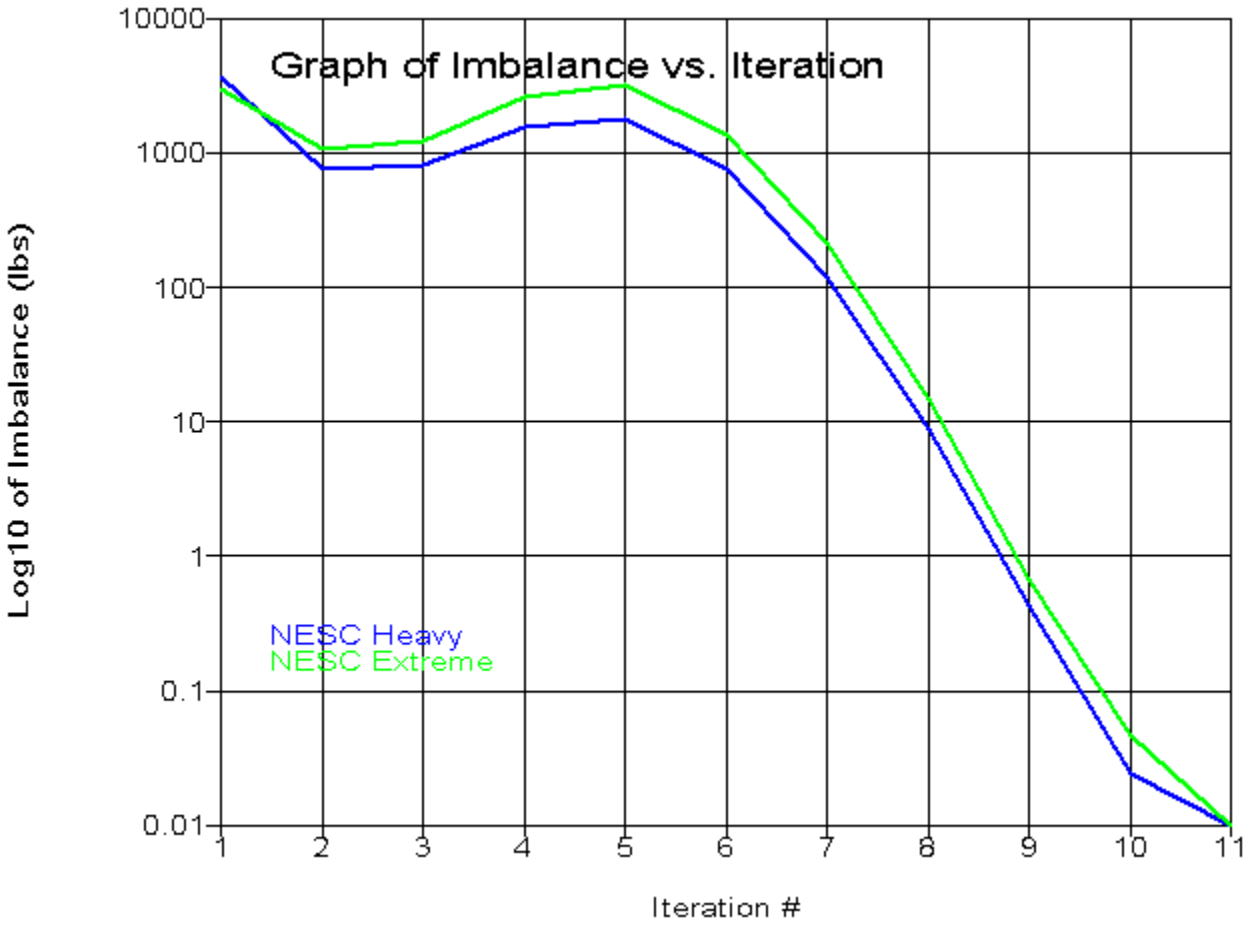
Section Load Case Information (Code) for "NESC Extreme":

Section Label	Z of	Z of	Ave. Elev.	Res. Adj.	Tran Adj.	Tran Angle	Tran Gross	Tran Soli-	Tran Angle	Tran Wind	Long Adj.	Long Angle	Long Gross	Long Soli-	Long Angle	Long Wind	Ice Weight	Total Weight

	Top (ft)	Bottom (ft)	Above Ground (ft)	Wind Pres. (psf)	Wind Pres. (psf)	Face Area (ft^2)	Area (ft^2)	dity Ratio	Drag Coef	Load (lbs)	Wind Pres. (psf)	Face Area (ft^2)	Area (ft^2)	dity Ratio	Drag Coef	Load (lbs)	(lbs)	(lbs)
2	140.00	96.00	118.00	32.59	32.59	83.76	140.00	0.598	3.200	8734.5	0.00	131.95	288.34	0.458	3.200	0.0	0	9302
1	96.00	0.00	48.00	32.59	32.59	222.14	949.19	0.234	3.200	23163.9	0.00	222.14	949.19	0.234	3.200	0.0	0	26150

*** Analysis Results:

Maximum element usage is 68.66% for Angle "g89X" in load case "NESC Extreme"
Maximum insulator usage is 8.92% for Clamp "C5" in load case "NESC Heavy"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Diag1	g1P	17.15	0.000	-2.212	-2.212	-1.781
Diag1	g1X	16.03	2.043	0.000	2.043	1.720
Diag1	g2P	15.97	2.035	0.000	2.035	1.694
Diag1	g2X	17.10	0.000	-2.205	-2.205	-1.755

Diag2	g3P	28.42	0.000	-5.375	-3.248	-5.375
Diag2	g3X	36.52	5.099	0.000	2.637	5.099
Diag2	g3XY	36.96	5.161	0.000	2.686	5.161
Diag2	g3Y	28.53	0.000	-5.396	-3.281	-5.396
Diag2	g4P	1.49	0.000	-0.231	-0.063	-0.231
Diag2	g4X	2.45	0.342	0.000	0.342	0.320
Diag2	g4XY	2.74	0.383	0.000	0.383	0.362
Diag2	g4Y	1.71	0.000	-0.266	-0.102	-0.266
Diag2	g5P	42.07	5.703	0.000	3.344	5.703
Diag2	g5X	28.55	0.000	-5.396	-2.673	-5.396
Diag2	g5XY	28.88	0.000	-5.459	-2.724	-5.459
Diag2	g5Y	42.16	5.715	0.000	3.374	5.715
Diag2	g6P	2.76	0.374	0.000	0.133	0.374
Diag2	g6X	3.50	0.000	-0.542	-0.519	-0.542
Diag2	g6XY	3.21	0.000	-0.498	-0.477	-0.498
Diag2	g6Y	2.52	0.342	0.000	0.093	0.342
Diag2	g7P	39.54	5.441	0.000	2.821	5.441
Diag2	g7X	27.13	0.000	-5.349	-2.740	-5.349
Diag2	g7XY	26.12	0.000	-5.151	-2.668	-5.151
Diag2	g7Y	37.50	5.159	0.000	2.824	5.159
Diag2	g8P	6.25	0.000	-1.023	-1.023	-0.958
Diag2	g8X	3.44	0.474	-0.096	-0.096	0.474
Diag2	g8XY	3.57	0.491	-0.065	-0.065	0.491
Diag2	g8Y	6.37	0.000	-1.041	-1.041	-0.944
Diag4	g9P	23.09	7.499	0.000	5.097	7.499
Diag4	g9X	17.90	0.000	-7.979	-5.829	-7.979
Diag4	g9XY	17.44	0.000	-7.772	-5.788	-7.772
Diag4	g9Y	22.92	7.446	0.000	5.132	7.446
Diag4	g10P	1.84	0.000	-0.705	-0.438	-0.705
Diag4	g10X	2.38	0.772	0.000	0.583	0.772
Diag4	g10XY	3.35	1.090	0.000	0.719	1.090
Diag4	g10Y	2.64	0.000	-1.011	-0.572	-1.011
Diag4	g11P	21.20	6.885	0.000	5.256	6.885
Diag4	g11X	15.14	0.000	-6.749	-5.483	-6.749
Diag4	g11XY	15.14	0.000	-6.750	-5.540	-6.750
Diag4	g11Y	20.25	6.579	0.000	5.184	6.579
Diag4	g12P	1.10	0.358	0.000	0.225	0.358
Diag4	g12X	0.85	0.000	-0.325	-0.126	-0.325
Diag4	g12XY	0.04	0.014	-0.000	0.014	-0.000
Diag4	g12Y	0.27	0.087	0.000	0.087	0.043
Diag4	g13P	24.11	7.832	0.000	6.263	7.832
Diag4	g13X	15.43	0.000	-6.878	-4.753	-6.878
Diag4	g13XY	14.63	0.000	-6.519	-4.661	-6.519
Diag4	g13Y	21.86	7.100	0.000	6.095	7.100
Diag4	g14P	2.75	0.893	0.000	0.466	0.893
Diag4	g14X	2.72	0.000	-1.043	-0.827	-1.043
Diag4	g14XY	1.88	0.000	-0.719	-0.686	-0.719
Diag4	g14Y	1.79	0.582	0.000	0.329	0.582
Diag5	g15P	20.00	7.273	0.000	5.647	7.273
Diag5	g15X	14.92	0.000	-7.242	-5.176	-7.242
Diag5	g15XY	13.98	0.000	-6.784	-5.013	-6.784
Diag5	g15Y	19.09	6.943	0.000	5.637	6.943
Diag5	g16P	5.68	0.000	-2.344	-2.056	-2.344
Diag5	g16X	5.19	1.886	0.000	1.028	1.886
Diag5	g16XY	6.01	2.184	0.000	1.161	2.184
Diag5	g16Y	6.39	0.000	-2.637	-2.183	-2.637
Diag10	g17P	14.22	9.274	0.000	7.157	9.274
Diag10	g17X	12.09	0.000	-9.782	-8.855	-9.782
Diag10	g17XY	11.89	0.000	-9.616	-8.840	-9.616
Diag10	g17Y	13.45	8.770	0.000	7.058	8.770

Diag10	g18P	2.43	0.000	-1.687	-1.236	-1.687
Diag10	g18X	2.64	1.721	0.000	1.410	1.721
Diag10	g18XY	3.47	2.261	0.000	1.621	2.261
Diag10	g18Y	3.19	0.000	-2.217	-1.452	-2.217
Diag10	g19P	16.15	10.534	0.000	8.512	10.534
Diag10	g19X	12.73	0.000	-10.301	-8.459	-10.301
Diag10	g19XY	12.04	0.000	-9.740	-8.339	-9.740
Diag10	g19Y	14.82	9.670	0.000	8.285	9.670
Diag10	g20P	1.11	0.723	0.000	0.461	0.723
Diag10	g20X	0.99	0.000	-0.690	-0.374	-0.690
Diag10	g20XY	0.22	0.000	-0.156	-0.156	-0.138
Diag10	g20Y	0.38	0.246	0.000	0.246	0.186
Diag10	g21P	16.75	10.925	0.000	9.374	10.925
Diag10	g21X	12.76	0.000	-10.324	-7.689	-10.324
Diag10	g21XY	11.79	0.000	-9.539	-7.484	-9.539
Diag10	g21Y	15.71	10.247	0.000	9.216	10.247
Diag10	g22P	2.96	1.930	0.000	1.263	1.930
Diag10	g22X	2.94	0.000	-2.039	-1.590	-2.039
Diag10	g22XY	2.16	0.000	-1.501	-1.375	-1.501
Diag10	g22Y	2.16	1.406	0.000	1.060	1.406
Diag11	g23P	13.09	10.149	0.000	8.076	10.149
Diag11	g23X	12.61	0.000	-10.288	-8.357	-10.288
Diag11	g23XY	11.85	0.000	-9.666	-8.141	-9.666
Diag11	g23Y	12.21	9.468	0.000	7.996	9.468
Diag11	g24P	6.92	0.000	-5.643	-4.814	-5.643
Diag11	g24X	6.56	5.084	0.000	3.647	5.084
Diag11	g24XY	7.28	5.645	0.000	3.862	5.645
Diag11	g24Y	7.60	0.000	-6.203	-5.046	-6.203
Diag10	g25P	2.61	1.705	0.000	1.331	1.705
Diag10	g25X	4.01	0.000	-3.227	-3.227	-2.615
Diag10	g25XY	3.83	0.000	-3.086	-3.086	-2.117
Diag10	g25Y	1.92	1.250	0.000	1.250	1.161
Diag10	g26P	4.98	0.000	-3.463	-2.845	-3.463
Diag10	g26X	5.19	3.382	0.000	2.829	3.382
Diag10	g26XY	6.56	4.276	0.000	3.051	4.276
Diag10	g26Y	6.37	0.000	-4.426	-3.298	-4.426
Diag10	g27P	2.47	1.613	0.000	1.613	1.547
Diag10	g27X	2.50	0.000	-1.702	-1.536	-1.702
Diag10	g27XY	2.10	0.000	-1.428	-1.428	-1.177
Diag10	g27Y	2.32	1.515	0.000	1.515	1.109
Diag10	g28P	1.17	0.763	0.000	0.424	0.763
Diag10	g28X	1.12	0.000	-0.754	-0.378	-0.754
Diag10	g28XY	0.25	0.111	-0.171	-0.171	0.111
Diag10	g28Y	0.25	0.000	-0.172	-0.018	-0.172
Diag5	g29P	6.82	2.204	0.000	1.628	2.204
Diag5	g29X	4.23	0.000	-1.954	-1.467	-1.954
Diag5	g29XY	3.66	0.000	-1.689	-1.424	-1.689
Diag5	g29Y	5.08	1.643	0.000	1.499	1.643
Diag5	g30P	3.81	1.233	0.000	0.877	1.233
Diag5	g30X	2.89	0.000	-1.191	-0.708	-1.191
Diag5	g30XY	1.31	0.000	-0.542	-0.542	-0.513
Diag5	g30Y	1.61	0.521	0.000	0.521	0.497
Diag5	g31P	7.32	2.367	0.000	1.193	2.367
Diag5	g31X	5.79	0.000	-2.503	-1.504	-2.503
Diag5	g31XY	4.27	0.000	-1.847	-1.348	-1.847
Diag5	g31Y	4.89	1.579	0.000	1.035	1.579
Diag5	g32P	2.15	0.000	-0.836	-0.792	-0.836
Diag5	g32X	2.27	0.735	0.000	0.699	0.735
Diag5	g32XY	4.35	1.405	0.000	0.860	1.405
Diag5	g32Y	4.06	0.000	-1.580	-1.199	-1.580

Diag4	g33P	7.62	2.843	0.000	1.411	2.843
Diag4	g33X	7.03	0.000	-2.673	-1.326	-2.673
Diag4	g33XY	5.65	0.000	-2.149	-1.225	-2.149
Diag4	g33Y	5.53	2.063	0.000	1.230	2.063
Diag4	g34P	3.03	1.131	0.000	0.831	1.131
Diag4	g34X	3.34	0.000	-1.076	-0.660	-1.076
Diag4	g34XY	1.62	0.000	-0.523	-0.523	-0.517
Diag4	g34Y	1.37	0.510	0.000	0.482	0.510
Diag4	g35P	8.78	3.369	0.000	1.358	3.369
Diag4	g35X	9.58	0.000	-3.328	-1.458	-3.328
Diag4	g35XY	7.16	0.000	-2.489	-1.269	-2.489
Diag4	g35Y	6.04	2.320	0.000	1.132	2.320
Diag4	g36P	0.19	0.073	-0.009	-0.009	0.073
Diag4	g36X	0.19	0.071	-0.066	0.071	-0.066
Diag4	g36XY	1.15	0.440	0.000	0.195	0.440
Diag4	g36Y	1.72	0.000	-0.505	-0.384	-0.505
Diag3	g37P	10.29	3.222	0.000	1.148	3.222
Diag3	g37X	12.35	0.000	-3.345	-1.379	-3.345
Diag3	g37XY	9.57	0.000	-2.591	-1.213	-2.591
Diag3	g37Y	7.56	2.367	0.000	0.962	2.367
Diag3	g38P	1.75	0.000	-0.446	-0.414	-0.446
Diag3	g38X	1.09	0.342	0.000	0.322	0.342
Diag3	g38XY	2.55	0.799	0.000	0.435	0.799
Diag3	g38Y	3.79	0.000	-0.968	-0.747	-0.968
Diag4	g39P	10.29	3.641	0.000	1.152	3.641
Diag4	g39X	15.69	0.000	-4.082	-1.705	-4.082
Diag4	g39XY	13.42	0.000	-3.491	-1.558	-3.491
Diag4	g39Y	8.70	3.081	0.000	1.054	3.081
Diag4	g40P	6.94	0.000	-1.467	-1.394	-1.467
Diag4	g40X	3.57	1.263	0.000	1.104	1.263
Diag4	g40XY	6.57	2.326	0.000	1.357	2.326
Diag4	g40Y	12.41	0.000	-2.625	-1.930	-2.625
Diag5	g41P	14.28	3.884	0.000	1.399	3.884
Diag5	g41X	15.15	0.000	-3.790	-1.313	-3.790
Diag5	g41XY	13.50	0.000	-3.378	-1.239	-3.378
Diag5	g41Y	12.13	3.300	0.000	1.261	3.300
Diag5	g42P	6.07	1.651	0.000	1.116	1.651
Diag5	g42X	6.26	0.000	-1.509	-0.861	-1.509
Diag5	g42XY	2.62	0.000	-0.632	-0.632	-0.547
Diag5	g42Y	2.32	0.632	0.000	0.632	0.605
Diag6	g43P	20.75	5.645	0.000	2.284	5.645
Diag6	g43X	20.59	0.000	-5.197	-2.259	-5.197
Diag6	g43XY	18.44	0.000	-4.654	-2.146	-4.654
Diag6	g43Y	16.36	4.450	0.000	2.018	4.450
Diag6	g44P	3.50	0.951	0.000	0.545	0.951
Diag6	g44X	4.28	0.000	-0.904	-0.447	-0.904
Diag6	g44XY	1.10	0.000	-0.232	-0.232	-0.048
Diag6	g44Y	0.20	0.056	0.000	0.056	0.008
Diag6	g45P	11.87	3.227	0.000	0.286	3.227
Diag6	g45X	17.33	0.000	-3.532	-1.046	-3.532
Diag6	g45XY	12.29	0.000	-2.504	-0.794	-2.504
Diag6	g45Y	7.09	1.929	0.000	0.028	1.929
Diag6	g46P	15.33	0.000	-2.683	-2.184	-2.683
Diag6	g46X	8.86	2.409	0.000	1.684	2.409
Diag6	g46XY	11.53	3.134	0.000	1.848	3.134
Diag6	g46Y	20.07	0.000	-3.512	-2.696	-3.512
Diag7	g47P	16.34	4.445	0.000	0.715	4.445
Diag7	g47X	26.66	0.000	-5.250	-2.498	-5.250
Diag7	g47XY	19.64	0.000	-3.867	-2.114	-3.867
Diag7	g47Y	10.63	2.893	0.000	0.452	2.893

Diag7	g48P	40.01	0.000	-7.789	-6.002	-7.789
Diag7	g48X	25.23	6.863	0.000	4.461	6.863
Diag7	g48XY	27.60	7.508	0.000	4.613	7.508
Diag7	g48Y	43.87	0.000	-8.541	-6.522	-8.541
Diag8	g49P	22.07	6.000	0.000	2.155	6.000
Diag8	g49X	30.87	0.000	-6.633	-2.481	-6.633
Diag8	g49XY	24.17	0.000	-5.194	-2.104	-5.194
Diag8	g49Y	16.78	4.562	0.000	1.781	4.562
Diag8	g50P	0.25	0.068	0.000	0.039	0.068
Diag8	g50X	2.98	0.000	-0.641	-0.173	-0.641
Diag8	g50XY	0.88	0.240	-0.016	-0.016	0.240
Diag8	g50Y	4.36	0.000	-0.936	-0.502	-0.936
Horz5	g51P	4.57	0.000	-1.244	-1.244	-0.413
Horz5	g51Y	4.58	0.000	-1.245	-1.245	-0.418
Horz5	g52P	7.15	1.945	0.000	1.945	1.408
Horz5	g52X	3.86	0.000	-1.051	-0.990	-1.051
Horz1	g53P	34.20	2.544	0.000	2.544	1.381
Horz1	g53Y	32.83	2.442	0.000	2.442	1.134
Horz6	g54P	5.72	1.556	0.000	1.502	1.556
Horz6	g54X	2.87	0.327	-0.780	0.327	-0.780
Horz1	g55P	33.97	2.527	0.000	2.527	1.081
Horz1	g55Y	33.55	2.496	0.000	2.496	1.123
Horz6	g56P	15.54	4.225	0.000	3.500	4.225
Horz6	g56X	12.60	0.000	-3.429	-1.745	-3.429
Horz1	g57P	19.82	1.474	0.000	1.474	0.660
Horz1	g57Y	19.23	1.431	0.000	1.431	0.653
Horz6	g58P	5.96	1.621	0.000	1.511	1.621
Horz6	g58X	4.59	0.000	-1.248	-0.520	-1.248
Horz2	g59P	1.72	0.305	0.000	0.218	0.305
Horz2	g59Y	0.79	0.140	0.000	0.140	0.068
Horz2	g60P	15.30	2.706	0.000	2.123	2.706
Horz2	g60X	47.45	0.000	-2.597	-1.853	-2.597
Horz8	g61P	3.45	0.937	0.000	0.937	0.643
Horz8	g61Y	2.96	0.805	0.000	0.805	0.442
Horz8	g62P	33.95	9.229	0.000	7.015	9.229
Horz8	g62X	61.12	0.000	-8.248	-5.304	-8.248
Horz 10	g63P	14.34	0.000	-3.900	-1.220	-3.900
Horz 10	g63X	17.51	4.763	0.000	2.074	4.763
Horz 10	g63XY	12.51	3.402	0.000	1.676	3.402
Horz 10	g63Y	11.76	0.000	-3.199	-1.080	-3.199
Horz 10	g64P	18.80	5.115	0.000	3.845	5.115
Horz 10	g64X	17.22	0.000	-4.685	-3.236	-4.685
Horz 10	g64XY	19.54	0.000	-5.316	-3.348	-5.316
Horz 10	g64Y	21.45	5.834	0.000	4.232	5.834
Leg 1	g65P	3.19	1.700	0.000	1.700	1.395
Leg 1	g65X	3.02	0.000	-2.101	-2.101	-1.588
Leg 1	g65XY	3.01	0.000	-2.093	-2.093	-1.561
Leg 1	g65Y	3.18	1.692	0.000	1.692	1.368
Leg 1	g66P	11.65	6.206	0.000	4.593	6.206
Leg 1	g66X	9.73	0.000	-6.974	-6.409	-6.974
Leg 1	g66XY	9.76	0.000	-6.999	-6.463	-6.999
Leg 1	g66Y	11.67	6.215	0.000	4.640	6.215
Leg 1	g67P	27.93	14.872	0.000	9.290	14.872
Leg 1	g67X	22.65	0.000	-16.222	-11.757	-16.222
Leg 1	g67XY	22.79	0.000	-16.326	-11.922	-16.326
Leg 1	g67Y	28.25	15.045	0.000	9.479	15.045
Leg 1	g68P	40.75	21.698	0.000	12.253	21.698
Leg 1	g68X	32.15	0.000	-24.231	-17.051	-24.231
Leg 1	g68XY	31.92	0.000	-24.058	-16.542	-24.058
Leg 1	g68Y	40.98	21.824	0.000	12.481	21.824

Leg 2	g69P	15.57	31.143	0.000	17.871	31.143
Leg 2	g69X	12.53	0.000	-34.027	-23.542	-34.027
Leg 2	g69XY	12.47	0.000	-33.878	-23.116	-33.878
Leg 2	g69Y	15.58	31.153	0.000	18.193	31.153
Leg 2	g70P	20.63	41.257	0.000	24.562	41.257
Leg 2	g70X	16.96	0.000	-46.075	-33.316	-46.075
Leg 2	g70XY	16.94	0.000	-46.003	-33.005	-46.003
Leg 2	g70Y	20.85	41.693	0.000	25.150	41.693
Leg 2	g71P	25.67	51.337	0.000	32.025	51.337
Leg 2	g71X	21.04	0.000	-57.136	-42.795	-57.136
Leg 2	g71XY	20.91	0.000	-56.798	-41.880	-56.798
Leg 2	g71Y	25.88	51.761	0.000	32.696	51.761
Leg 2	g72P	31.09	59.196	0.000	37.438	59.196
Leg 2	g72X	34.40	0.000	-65.489	-49.813	-65.489
Leg 2	g72XY	34.20	0.000	-65.125	-49.029	-65.125
Leg 2	g72Y	31.12	59.247	0.000	38.077	59.247
Leg 3	g73P	19.02	71.363	0.000	47.298	71.363
Leg 3	g73X	14.07	0.000	-77.982	-59.828	-77.982
Leg 3	g73XY	13.98	0.000	-77.508	-59.100	-77.508
Leg 3	g73Y	19.10	71.654	0.000	48.165	71.654
Leg 3	g74P	23.11	86.708	0.000	59.380	86.708
Leg 3	g74X	17.03	0.000	-94.387	-74.535	-94.387
Leg 3	g74XY	16.91	0.000	-93.749	-73.222	-93.749
Leg 3	g74Y	23.20	87.018	0.000	60.399	87.018
Leg 3	g75P	27.25	102.221	0.000	71.476	102.221
Leg 3	g75X	19.92	0.000	-110.399	-88.219	-110.399
Leg 3	g75XY	19.78	0.000	-109.633	-87.008	-109.633
Leg 3	g75Y	27.22	102.127	0.000	72.495	102.127
Leg 3	g76P	51.14	111.281	0.000	78.792	111.281
Leg 3	g76X	55.14	0.000	-119.987	-96.587	-119.987
Leg 3	g76XY	54.67	0.000	-118.967	-95.497	-118.967
Leg 3	g76Y	51.04	111.070	0.000	79.859	111.070
Leg 4	g77P	28.05	121.135	0.000	87.323	121.135
Leg 4	g77X	20.37	0.000	-131.078	-106.511	-131.078
Leg 4	g77XY	20.21	0.000	-130.085	-104.943	-130.085
Leg 4	g77Y	28.04	121.095	0.000	88.546	121.095
Leg 4	g78P	29.04	125.413	0.000	91.023	125.413
Leg 4	g78X	21.46	0.000	-136.798	-112.301	-136.798
Leg 4	g78XY	21.40	0.000	-136.454	-111.177	-136.454
Leg 4	g78Y	29.14	125.841	0.000	92.411	125.841
Leg 4	g79P	24.99	127.025	0.000	92.707	127.025
Leg 4	g79X	21.88	0.000	-139.516	-114.760	-139.516
Leg 4	g79XY	21.89	0.000	-139.572	-114.012	-139.572
Leg 4	g79Y	25.18	128.004	0.000	94.247	128.004
Leg 4	g80P	25.18	128.026	0.000	93.339	128.026
Leg 4	g80X	22.82	0.000	-141.209	-116.311	-141.209
Leg 4	g80XY	22.84	0.000	-141.331	-115.216	-141.331
Leg 4	g80Y	25.39	129.095	0.000	94.908	129.095
Leg 4	g81P	30.53	131.838	0.000	95.385	131.838
Leg 4	g81X	23.62	0.000	-146.159	-119.632	-146.159
Leg 4	g81XY	23.63	0.000	-146.252	-118.824	-146.252
Leg 4	g81Y	30.76	132.840	0.000	96.977	132.840
Leg 4	g82P	31.14	134.467	0.000	96.185	134.467
Leg 4	g82X	24.95	0.000	-149.726	-121.877	-149.726
Leg 4	g82XY	24.88	0.000	-149.350	-120.567	-149.350
Leg 4	g82Y	31.29	135.107	0.000	97.706	135.107
Leg 4	g83P	56.34	137.914	0.000	97.206	137.914
Leg 4	g83X	62.84	0.000	-153.836	-123.735	-153.836
Leg 4	g83XY	62.53	0.000	-153.079	-122.643	-153.079
Leg 4	g83Y	56.37	137.991	0.000	98.622	137.991

Leg 4	g84P	32.63	140.900	0.000	97.625	140.900
Leg 4	g84X	28.88	0.000	-157.574	-125.861	-157.574
Leg 4	g84XY	28.75	0.000	-156.856	-124.317	-156.856
Leg 4	g84Y	32.67	141.070	0.000	99.071	141.070
Leg 4	g85P	28.92	147.006	0.000	99.763	147.006
Leg 4	g85X	26.50	0.000	-165.129	-130.354	-165.129
Leg 4	g85XY	26.50	0.000	-165.138	-129.327	-165.138
Leg 4	g85Y	29.10	147.913	0.000	101.427	147.913
Leg 4	g86P	55.83	151.850	0.000	100.844	151.850
Leg 4	g86X	62.94	0.000	-171.197	-133.855	-171.197
Leg 4	g86XY	62.96	0.000	-171.255	-132.472	-171.255
Leg 4	g86Y	56.34	153.249	0.000	102.643	153.249
Leg 4	g87P	30.55	155.285	0.000	100.580	155.285
Leg 4	g87X	29.41	0.000	-174.930	-135.482	-174.930
Leg 4	g87XY	29.37	0.000	-174.734	-133.783	-174.734
Leg 4	g87Y	30.73	156.231	0.000	102.284	156.231
Leg 4	g88P	57.77	157.141	0.000	98.991	157.141
Leg 4	g88X	65.09	0.000	-177.032	-135.920	-177.032
Leg 4	g88XY	64.67	0.000	-175.901	-133.720	-175.901
Leg 4	g88Y	57.78	157.163	0.000	100.465	157.163
Leg 4	g89P	60.48	164.499	0.000	101.405	164.499
Leg 4	g89X	68.66	0.000	-186.747	-143.893	-186.747
Leg 4	g89XY	67.98	0.000	-184.906	-140.812	-184.906
Leg 4	g89Y	60.25	163.886	0.000	102.799	163.886
Diag12	g90P	5.43	0.000	-1.813	-1.813	-0.628
Diag12	g90X	5.37	0.000	-1.791	-1.791	-0.610
Diag12	g90XY	5.36	0.000	-1.788	-1.788	-0.604
Diag12	g90Y	5.42	0.000	-1.809	-1.809	-0.620
Horz 13	g91P	9.31	0.000	-4.771	-4.771	-2.948
Horz 13	g91X	1.57	0.457	-0.805	-0.805	0.457
Horz 13	g91XY	1.70	0.303	-0.869	-0.869	0.303
Horz 13	g91Y	9.25	0.000	-4.738	-4.738	-2.851
Horz 11	g92P	4.92	0.000	-2.215	-2.215	-0.982
Horz 11	g92Y	5.06	0.000	-2.277	-2.277	-1.018
Arm	g93P	18.44	3.102	0.000	3.102	1.529
Arm	g93X	17.39	2.925	0.000	2.925	1.155
Arm	g93XY	17.85	3.002	0.000	3.002	1.340
Arm	g93Y	18.24	3.067	0.000	3.067	1.424
Horz 13	g94P	9.34	0.000	-4.787	-4.787	-2.930
Horz 13	g94X	1.65	0.356	-0.845	-0.845	0.356
Horz 13	g94XY	1.70	0.314	-0.869	-0.869	0.314
Horz 13	g94Y	9.31	0.000	-4.770	-4.770	-2.862
Horz 11	g95P	3.70	0.000	-1.666	-1.666	-0.615
Horz 11	g95Y	3.89	0.000	-1.751	-1.751	-0.822
Arm	g96P	18.57	3.123	0.000	3.123	1.514
Arm	g96X	17.63	2.964	0.000	2.964	1.262
Arm	g96XY	17.82	2.997	0.000	2.997	1.326
Arm	g96Y	18.46	3.105	0.000	3.105	1.437
Horz 13	g97P	8.36	0.000	-5.683	-5.683	-3.295
Horz 13	g97X	2.63	0.000	-1.789	-1.789	-0.013
Horz 13	g97XY	2.68	0.000	-1.825	-1.825	-0.113
Horz 13	g97Y	8.31	0.000	-5.654	-5.654	-3.175
Horz 12	g98P	4.03	0.000	-2.578	-2.578	-1.181
Horz 12	g98Y	4.09	0.000	-2.616	-2.616	-1.122
Arm2	g99P	20.59	3.985	0.000	3.985	1.863
Arm2	g99X	19.92	3.855	0.000	3.855	1.600
Arm2	g99XY	20.16	3.901	0.000	3.901	1.724
Arm2	g99Y	20.45	3.956	0.000	3.956	1.737
top	g100P	2.95	0.803	-0.634	0.803	-0.634
top	g100X	21.50	5.849	0.000	5.849	2.908

top	g101P	12.82	3.487	0.000	3.487	1.355
Inner1	g102P	2.10	0.000	-0.283	-0.283	-0.111
Inner1	g102X	1.78	0.000	-0.239	-0.239	-0.051
Inner2	g103P	1.71	0.000	-0.212	-0.193	-0.212
Inner2	g103X	0.81	0.076	-0.092	-0.092	0.076
Inner2	g104P	2.09	0.000	-0.312	-0.230	-0.312
Inner2	g104X	1.15	0.170	-0.081	-0.081	0.170
Inner3	g105P	1.13	0.000	-0.187	-0.187	-0.185
Inner3	g105X	0.64	0.060	-0.106	-0.106	0.060
Inner2	g106P	7.52	0.053	-0.261	0.053	-0.261
Inner2	g106X	6.33	0.471	0.000	0.221	0.471
Inner4	g107P	1.24	0.166	-0.101	0.166	-0.101
Inner4	g107X	1.45	0.276	0.000	0.186	0.276

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 11

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.00447	0.6836	-0.02661	-0.6688	0.0049	0.0093	0.00447	2.354	140
2P	0.004223	0.6347	-0.02624	-0.6672	0.0031	0.0026	1.674	2.305	135.8
3P	0.004258	0.5866	-0.02549	-0.6541	-0.0029	0.0021	1.674	2.257	131.6
4P	0.004126	0.5399	-0.02435	-0.6315	0.0131	0.0015	1.674	2.21	127.5
5P	0.00323	0.5021	-0.02309	-0.5955	-0.0002	0.0072	1.673	2.172	124
6P	0.003271	0.4662	-0.02241	-0.5822	0.0022	0.0067	1.673	2.136	120.5
7P	0.003055	0.4312	-0.02154	-0.5590	0.0007	0.0063	1.673	2.101	117
8P	0.003034	0.3979	-0.02048	-0.5362	0.0077	0.0058	1.673	2.068	113.5
9P	0.002366	0.3659	-0.01929	-0.4989	0.0022	0.0062	1.672	2.036	110
10P	0.002385	0.336	-0.01853	-0.4810	0.0006	0.0064	1.672	2.006	106.5
11P	0.002289	0.3073	-0.01763	-0.4567	-0.0003	0.0065	1.672	1.977	103
12P	0.00224	0.2803	-0.01659	-0.4298	0.0087	0.0066	1.672	1.95	99.48
13P	0.001534	0.255	-0.01548	-0.3916	0.0019	0.0070	1.672	1.925	95.98
14P	0.001825	0.2339	-0.01591	-0.3565	-0.0055	0.0076	1.892	2.124	92.73
15P	0.001668	0.2114	-0.01631	-0.3322	0.0029	0.0082	2.152	2.361	88.98
16P	0.001508	0.1904	-0.01653	-0.3067	-0.0013	0.0082	2.402	2.59	85.23
17P	0.001565	0.165	-0.01671	-0.2756	-0.0007	0.0082	2.752	2.915	80.23
18P	0.001389	0.1421	-0.01665	-0.2488	-0.0015	0.0080	3.091	3.232	75.23
19P	0.001422	0.1175	-0.01635	-0.2196	0.0028	0.0078	3.501	3.618	69.23
20P	0.0007206	0.09585	-0.01589	-0.1928	-0.0008	0.0069	3.911	4.006	63.23
21P	0.001876	0.07055	-0.01476	-0.1579	-0.0087	0.0056	4.472	4.541	54.99
23P	0.001942	0.04699	-0.01308	-0.1261	-0.0009	0.0046	5.122	5.167	45.49
25P	0.002056	0.02589	-0.01051	-0.0898	0.0007	0.0029	5.812	5.836	34.49
27P	0.0008412	0.01032	-0.007273	-0.0544	0.0029	0.0001	6.731	6.74	21.99
29P	0.0003752	0.0009048	-0.002941	-0.0153	0.0020	-0.0023	7.69	7.691	7.997
30P	0	0	0	0.0000	0.0000	0.0000	8.23	8.23	0
39P	-0.0005217	0.000661	-8.296e-005	-0.0204	-0.0000	-0.0028	7.689	0.000661	8
40P	-7.71e-005	0.002497	0.0001003	-0.0146	0.0008	0.0007	-7.71e-005	7.692	8
41P	0.002705	0.6832	-0.1564	-0.6957	0.0049	0.0093	0.002705	13.18	139.8
42P	0.001794	0.5012	-0.1173	-0.6742	0.0045	0.0097	0.001794	10.5	123.9
43P	0.0006546	0.3649	-0.1251	-0.5906	0.0035	0.0086	0.0006546	12.86	109.9
44P	0.0004149	0.2545	-0.08002	-0.4701	0.0027	0.0076	0.0004149	10.25	95.92
1X	0.005018	0.6837	0.01195	-0.6630	0.0049	0.0093	0.005018	-0.9863	140
2X	0.004619	0.6351	0.01193	-0.6664	0.0065	0.0020	1.675	-1.035	135.8
2XY	0.004715	0.6345	0.01221	-0.6666	0.0035	0.0164	-1.665	-1.035	135.8
2Y	0.004034	0.6342	-0.02596	-0.6673	0.0064	0.0159	-1.666	2.304	135.8
3X	0.004083	0.5867	0.01187	-0.6615	0.0151	0.0012	1.674	-1.083	131.7
3XY	0.004537	0.5862	0.01215	-0.6617	-0.0050	0.0168	-1.665	-1.084	131.7
3Y	0.003329	0.586	-0.0252	-0.6545	0.0125	0.0159	-1.667	2.256	131.6
4X	0.003114	0.5396	0.01144	-0.6270	-0.0045	0.0007	1.673	-1.13	127.5
4XY	0.00481	0.539	0.01172	-0.6265	0.0140	0.0169	-1.665	-1.131	127.5
4Y	0.00277	0.5393	-0.02406	-0.6311	-0.0032	0.0162	-1.667	2.209	127.5
5X	0.003701	0.5024	0.01088	-0.5920	0.0077	0.0060	1.674	-1.168	124
5XY	0.003672	0.5018	0.01114	-0.5920	0.0015	0.0114	-1.666	-1.168	124
5Y	0.003098	0.5015	-0.02283	-0.5952	0.0089	0.0102	-1.667	2.172	124
6X	0.003114	0.4662	0.01069	-0.5839	0.0062	0.0048	1.673	-1.204	120.5
6XY	0.003717	0.4657	0.01094	-0.5836	0.0028	0.0119	-1.666	-1.204	120.5
6Y	0.002547	0.4656	-0.02216	-0.5824	0.0063	0.0101	-1.667	2.136	120.5
7X	0.002899	0.4313	0.01035	-0.5632	0.0082	0.0036	1.673	-1.239	117
7XY	0.003408	0.4308	0.01059	-0.5628	0.0004	0.0125	-1.667	-1.239	117

7Y	0.002269	0.4306	-0.02129	-0.5587	0.0074	0.0098	-1.668	2.101	117
8X	0.002322	0.3975	0.009841	-0.5338	0.0008	0.0025	1.672	-1.272	113.5
8XY	0.003491	0.3971	0.01006	-0.5336	0.0073	0.0130	-1.667	-1.273	113.5
8Y	0.001824	0.3974	-0.02025	-0.5354	-0.0001	0.0097	-1.668	2.067	113.5
9X	0.002597	0.3662	0.009195	-0.4975	0.0046	0.0022	1.673	-1.304	110
9XY	0.00275	0.3657	0.009405	-0.4972	0.0029	0.0128	-1.667	-1.304	110
9Y	0.002058	0.3655	-0.01908	-0.4990	0.0048	0.0086	-1.668	2.035	110
10X	0.002145	0.3361	0.008826	-0.4832	0.0062	0.0015	1.672	-1.334	106.5
10XY	0.002761	0.3356	0.009026	-0.4829	0.0010	0.0130	-1.667	-1.334	106.5
10Y	0.001632	0.3356	-0.01833	-0.4808	0.0061	0.0080	-1.668	2.006	106.5
11X	0.001864	0.3073	0.008318	-0.4587	0.0069	0.0008	1.672	-1.363	103
11XY	0.002622	0.3069	0.008507	-0.4584	-0.0001	0.0132	-1.667	-1.363	103
11Y	0.001342	0.3069	-0.01743	-0.4563	0.0066	0.0074	-1.669	1.977	103
12X	0.001487	0.2801	0.007669	-0.4280	-0.0018	0.0003	1.671	-1.39	99.51
12XY	0.002601	0.2797	0.007848	-0.4278	0.0082	0.0133	-1.667	-1.39	99.51
12Y	0.001031	0.2799	-0.01641	-0.4295	-0.0028	0.0069	-1.669	1.95	99.48
13X	0.001835	0.2552	0.006927	-0.3886	0.0027	-0.0002	1.672	-1.415	96.01
13XY	0.00188	0.2548	0.007094	-0.3884	0.0034	0.0133	-1.668	-1.415	96.01
13Y	0.001402	0.2546	-0.01531	-0.3915	0.0033	0.0060	-1.669	1.925	95.98
14X	0.00129	0.2339	0.007654	-0.3598	0.0097	0.0002	1.891	-1.656	92.76
14XY	0.002149	0.2335	0.007832	-0.3597	-0.0040	0.0125	-1.888	-1.657	92.76
14Y	0.0007935	0.2335	-0.01574	-0.3564	0.0101	0.0049	-1.889	2.123	92.73
15X	0.001133	0.2113	0.00838	-0.3311	0.0015	0.0015	2.151	-1.939	89.01
15XY	0.002012	0.2108	0.008569	-0.3309	0.0038	0.0106	-2.148	-1.939	89.01
15Y	0.0006107	0.2108	-0.01613	-0.3322	0.0012	0.0037	-2.149	2.361	88.98
16X	0.001006	0.1904	0.008912	-0.3067	0.0048	0.0017	2.401	-2.21	85.26
16XY	0.001857	0.1898	0.009106	-0.3063	0.0002	0.0099	-2.398	-2.21	85.26
16Y	0.0004715	0.1898	-0.01634	-0.3064	0.0049	0.0032	-2.4	2.59	85.23
17X	0.0006449	0.1649	0.009504	-0.2759	0.0040	0.0022	2.751	-2.585	80.26
17XY	0.00188	0.1644	0.009704	-0.2753	0.0005	0.0087	-2.748	-2.586	80.26
17Y	5.339e-005	0.1644	-0.01651	-0.2752	0.0040	0.0024	-2.75	2.914	80.23
18X	0.0005006	0.142	0.009854	-0.2491	0.0040	0.0023	3.091	-2.948	75.26
18XY	0.001719	0.1414	0.01005	-0.2484	0.0001	0.0078	-3.088	-2.949	75.26
18Y	-0.0001012	0.1415	-0.01644	-0.2482	0.0044	0.0020	-3.09	3.231	75.23
19X	0.0001932	0.1174	0.01004	-0.2189	0.0005	0.0026	3.5	-3.383	69.26
19XY	0.001703	0.1168	0.01024	-0.2180	0.0030	0.0067	-3.498	-3.383	69.26
19Y	-0.000483	0.1169	-0.01614	-0.2188	-0.0002	0.0013	-3.5	3.617	69.23
20X	0.0004521	0.09581	0.01004	-0.1928	0.0029	0.0023	3.91	-3.814	63.26
20XY	0.001156	0.09526	0.01023	-0.1920	0.0004	0.0062	-3.909	-3.815	63.26
20Y	-8.567e-005	0.09527	-0.01567	-0.1921	0.0027	0.0014	-3.91	4.005	63.23
21X	-0.0007242	0.07026	0.009616	-0.1598	0.0084	0.0015	4.469	-4.4	55.01
21XY	0.001931	0.06972	0.009805	-0.1592	-0.0053	0.0058	-4.468	-4.4	55.01
21Y	-0.001518	0.06999	-0.01455	-0.1575	0.0099	0.0015	-4.472	4.54	54.99
23X	-0.001075	0.04653	0.008752	-0.1267	0.0022	0.0012	5.119	-5.073	45.51
23XY	0.001902	0.04603	0.008922	-0.1259	0.0002	0.0048	-5.118	-5.074	45.51
23Y	-0.001854	0.04641	-0.01288	-0.1257	0.0020	0.0013	-5.122	5.166	45.49
25X	-0.001391	0.02542	0.007162	-0.0893	0.0002	0.0003	5.809	-5.785	34.51
25XY	0.001874	0.025	0.007297	-0.0886	0.0016	0.0041	-5.808	-5.785	34.51
25Y	-0.002188	0.02539	-0.01033	-0.0889	-0.0002	0.0015	-5.812	5.835	34.49
27X	-0.0006133	0.01007	0.005046	-0.0537	-0.0016	-0.0016	6.729	-6.72	22.01
27XY	0.0008434	0.009756	0.005135	-0.0530	0.0027	0.0043	-6.729	-6.72	22.01
27Y	-0.001085	0.009972	-0.007134	-0.0536	-0.0027	0.0026	-6.731	6.74	21.99
29X	-0.0003599	0.0008051	0.002055	-0.0147	-0.0021	-0.0031	7.69	-7.689	8.002
29XY	0.000418	0.0006814	0.002089	-0.0135	0.0027	0.0040	-7.69	-7.689	8.002
29Y	-0.0005751	0.0007509	-0.002873	-0.0139	-0.0036	0.0031	-7.691	7.691	7.997
30X	0	0	0	0.0000	0.0000	0.0000	8.23	-8.23	0
30XY	0	0	0	0.0000	0.0000	0.0000	-8.23	-8.23	0
30Y	0	0	0	0.0000	0.0000	0.0000	-8.23	8.23	0
39Y	0.000443	0.0005539	-7.729e-005	-0.0209	-0.0004	0.0038	-7.69	0.0005539	8
40X	2.237e-005	0.003746	-0.0002815	-0.0141	0.0000	0.0005	2.237e-005	-7.686	8

41X	0.00679	0.6844	0.1374	-0.6644	0.0049	0.0093	0.00679	-11.82	140.1
42X	0.005039	0.503	0.09515	-0.5719	0.0045	0.0095	0.005039	-9.497	124.1
43X	0.004222	0.367	0.09889	-0.4624	0.0036	0.0085	0.004222	-12.13	110.1
44X	0.002896	0.2556	0.06211	-0.3744	0.0029	0.0074	0.002896	-9.744	96.06

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. 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 %
30P	-9.77	0.0	-11.35	0.0	0.0	-145.36	0.0	0.0	146.12	0.0	-0.02	0.0	-0.1	0.0	0.0	0.03	0.0	0.0
30X	6.82	0.0	-8.28	0.0	0.0	101.93	0.0	0.0	102.49	0.0	-0.04	0.0	0.2	0.0	0.0	0.04	0.0	0.0
30XY	-7.02	0.0	-8.09	0.0	0.0	103.17	0.0	0.0	103.72	0.0	-0.15	0.0	-0.2	0.0	0.0	-0.06	0.0	0.0
30Y	9.97	0.0	-10.88	0.0	0.0	-142.40	0.0	0.0	143.16	0.0	-0.15	0.0	0.3	0.0	0.0	-0.03	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.1295	-0.6995	-0.0000	-0.1295	0.6995	0.0045	0.6836	-0.0266
2P	0.0000	0.5581	-0.1565	0.0000	-0.5581	0.1565	0.0042	0.6347	-0.0262
3P	0.0000	0.0297	-0.0843	-0.0000	-0.0297	0.0843	0.0043	0.5866	-0.0255
4P	0.0000	0.2279	-0.8952	0.0000	-0.2279	0.8952	0.0041	0.5399	-0.0244
5P	0.0000	0.0424	-0.2348	0.0000	-0.0424	0.2348	0.0032	0.5021	-0.0231
6P	0.0000	-0.1944	-1.3722	0.0000	0.1944	1.3722	0.0033	0.4662	-0.0224
7P	0.0000	0.2183	-0.9067	-0.0000	-0.2183	0.9067	0.0031	0.4312	-0.0215
8P	0.0000	0.0441	-0.2199	0.0000	-0.0441	0.2199	0.0030	0.3979	-0.0205
9P	0.0000	0.0604	-0.4009	-0.0000	-0.0604	0.4009	0.0024	0.3659	-0.0193
10P	0.0000	0.2381	-1.0710	-0.0000	-0.2381	1.0710	0.0024	0.3360	-0.0185
11P	0.0000	0.0581	-0.3470	-0.0000	-0.0581	0.3470	0.0023	0.3073	-0.0176
12P	0.0000	0.0613	-0.3832	0.0000	-0.0613	0.3832	0.0022	0.2803	-0.0166
13P	0.0000	0.2492	-1.2079	-0.0000	-0.2492	1.2079	0.0015	0.2550	-0.0155
14P	0.0000	0.0595	-0.3910	-0.0000	-0.0595	0.3910	0.0018	0.2339	-0.0159
15P	0.0000	0.0585	-0.3928	0.0000	-0.0585	0.3928	0.0017	0.2114	-0.0163
16P	0.0000	0.2391	-1.1388	0.0000	-0.2391	1.1388	0.0015	0.1904	-0.0165
17P	0.0000	0.0671	-0.4766	0.0000	-0.0671	0.4766	0.0016	0.1650	-0.0167
18P	0.0000	0.2603	-1.2789	0.0000	-0.2603	1.2789	0.0014	0.1421	-0.0167
19P	0.0000	0.0782	-0.5637	0.0000	-0.0782	0.5637	0.0014	0.1175	-0.0164
20P	0.0000	0.3201	-1.5763	0.0000	-0.3201	1.5763	0.0007	0.0958	-0.0159
21P	0.0000	0.1179	-0.8377	0.0000	-0.1179	0.8377	0.0019	0.0705	-0.0148
23P	0.0000	0.3407	-1.7883	0.0000	-0.3407	1.7883	0.0019	0.0470	-0.0131
25P	0.0000	0.3503	-1.8995	0.0000	-0.3503	1.8995	0.0021	0.0259	-0.0105
27P	0.0000	0.4242	-2.2872	0.0000	-0.4242	2.2872	0.0008	0.0103	-0.0073
29P	0.0000	0.4054	-2.1105	0.0000	-0.4054	2.1105	0.0004	0.0009	-0.0029
30P	0.0000	0.0592	-0.4042	9.7707	11.2950	-144.9508	0.0000	0.0000	0.0000
39P	0.0000	0.0267	-0.2127	0.0000	-0.0267	0.2127	-0.0005	0.0007	-0.0001
40P	0.0000	0.0639	-0.2127	0.0000	-0.0639	0.2127	-0.0001	0.0025	0.0001
41P	0.0000	2.5271	-1.3169	0.0000	-2.5271	1.3169	0.0027	0.6832	-0.1564
42P	0.0000	3.7054	-2.4185	0.0000	-3.7054	2.4185	0.0018	0.5012	-0.1173
43P	0.0000	3.7070	-2.4791	0.0000	-3.7070	2.4791	0.0007	0.3649	-0.1251
44P	0.0000	3.7054	-2.4185	0.0000	-3.7054	2.4185	0.0004	0.2545	-0.0800
1X	0.0000	0.0225	-0.2685	0.0000	-0.0225	0.2685	0.0050	0.6837	0.0119
2X	0.0000	0.5581	-0.1565	0.0000	-0.5581	0.1565	0.0046	0.6351	0.0119
2XY	0.0000	0.5581	-0.1565	-0.0000	-0.5581	0.1565	0.0047	0.6345	0.0122
2Y	0.0000	0.5581	-0.1565	-0.0000	-0.5581	0.1565	0.0040	0.6342	-0.0260

3X	0.0000	0.0297	-0.0843	0.0000	-0.0297	0.0843	0.0041	0.5867	0.0119
3XY	0.0000	0.0297	-0.0843	-0.0000	-0.0297	0.0843	0.0045	0.5862	0.0122
3Y	0.0000	0.0297	-0.0843	0.0000	-0.0297	0.0843	0.0033	0.5860	-0.0252
4X	0.0000	0.0309	-0.1022	0.0000	-0.0309	0.1022	0.0031	0.5396	0.0114
4XY	0.0000	0.0309	-0.1022	-0.0000	-0.0309	0.1022	0.0048	0.5390	0.0117
4Y	0.0000	0.0309	-0.1022	-0.0000	-0.0309	0.1022	0.0028	0.5393	-0.0241
5X	0.0000	0.0424	-0.2348	-0.0000	-0.0424	0.2348	0.0037	0.5024	0.0109
5XY	0.0000	0.0424	-0.2348	0.0000	-0.0424	0.2348	0.0037	0.5018	0.0111
5Y	0.0000	0.0424	-0.2348	-0.0000	-0.0424	0.2348	0.0031	0.5015	-0.0228
6X	0.0000	-0.1944	-1.3722	-0.0000	0.1944	1.3722	0.0031	0.4662	0.0107
6XY	0.0000	-0.1944	-1.3722	0.0000	0.1944	1.3722	0.0037	0.4657	0.0109
6Y	0.0000	-0.1944	-1.3722	-0.0000	0.1944	1.3722	0.0025	0.4656	-0.0222
7X	0.0000	0.0383	-0.1827	0.0000	-0.0383	0.1827	0.0029	0.4313	0.0104
7XY	0.0000	0.0383	-0.1827	-0.0000	-0.0383	0.1827	0.0034	0.4308	0.0106
7Y	0.0000	0.0383	-0.1827	0.0000	-0.0383	0.1827	0.0023	0.4306	-0.0213
8X	0.0000	0.0441	-0.2199	0.0000	-0.0441	0.2199	0.0023	0.3975	0.0098
8XY	0.0000	0.0441	-0.2199	0.0000	-0.0441	0.2199	0.0035	0.3971	0.0101
8Y	0.0000	0.0441	-0.2199	-0.0000	-0.0441	0.2199	0.0018	0.3974	-0.0203
9X	0.0000	0.0604	-0.4009	0.0000	-0.0604	0.4009	0.0026	0.3662	0.0092
9XY	0.0000	0.0604	-0.4009	-0.0000	-0.0604	0.4009	0.0028	0.3657	0.0094
9Y	0.0000	0.0604	-0.4009	-0.0000	-0.0604	0.4009	0.0021	0.3655	-0.0191
10X	0.0000	0.0581	-0.3470	0.0000	-0.0581	0.3470	0.0021	0.3361	0.0088
10XY	0.0000	0.0581	-0.3470	-0.0000	-0.0581	0.3470	0.0028	0.3356	0.0090
10Y	0.0000	0.0581	-0.3470	0.0000	-0.0581	0.3470	0.0016	0.3356	-0.0183
11X	0.0000	0.0581	-0.3470	0.0000	-0.0581	0.3470	0.0019	0.3073	0.0083
11XY	0.0000	0.0581	-0.3470	-0.0000	-0.0581	0.3470	0.0026	0.3069	0.0085
11Y	0.0000	0.0581	-0.3470	0.0000	-0.0581	0.3470	0.0013	0.3069	-0.0174
12X	0.0000	0.0613	-0.3832	-0.0000	-0.0613	0.3832	0.0015	0.2801	0.0077
12XY	0.0000	0.0613	-0.3832	0.0000	-0.0613	0.3832	0.0026	0.2797	0.0078
12Y	0.0000	0.0613	-0.3832	-0.0000	-0.0613	0.3832	0.0010	0.2799	-0.0164
13X	0.0000	0.0672	-0.4749	-0.0000	-0.0672	0.4749	0.0018	0.2552	0.0069
13XY	0.0000	0.0672	-0.4749	0.0000	-0.0672	0.4749	0.0019	0.2548	0.0071
13Y	0.0000	0.0672	-0.4749	0.0000	-0.0672	0.4749	0.0014	0.2546	-0.0153
14X	0.0000	0.0595	-0.3910	0.0000	-0.0595	0.3910	0.0013	0.2339	0.0077
14XY	0.0000	0.0595	-0.3910	-0.0000	-0.0595	0.3910	0.0021	0.2335	0.0078
14Y	0.0000	0.0595	-0.3910	0.0000	-0.0595	0.3910	0.0008	0.2335	-0.0157
15X	0.0000	0.0585	-0.3928	-0.0000	-0.0585	0.3928	0.0011	0.2113	0.0084
15XY	0.0000	0.0585	-0.3928	0.0000	-0.0585	0.3928	0.0020	0.2108	0.0086
15Y	0.0000	0.0585	-0.3928	-0.0000	-0.0585	0.3928	0.0006	0.2108	-0.0161
16X	0.0000	0.0611	-0.4228	0.0000	-0.0611	0.4228	0.0010	0.1904	0.0089
16XY	0.0000	0.0611	-0.4228	-0.0000	-0.0611	0.4228	0.0019	0.1898	0.0091
16Y	0.0000	0.0611	-0.4228	-0.0000	-0.0611	0.4228	0.0005	0.1898	-0.0163
17X	0.0000	0.0671	-0.4766	0.0000	-0.0671	0.4766	0.0006	0.1649	0.0095
17XY	0.0000	0.0671	-0.4766	-0.0000	-0.0671	0.4766	0.0019	0.1644	0.0097
17Y	0.0000	0.0671	-0.4766	-0.0000	-0.0671	0.4766	0.0001	0.1644	-0.0165
18X	0.0000	0.0713	-0.5199	0.0000	-0.0713	0.5199	0.0005	0.1420	0.0099
18XY	0.0000	0.0713	-0.5199	-0.0000	-0.0713	0.5199	0.0017	0.1414	0.0101
18Y	0.0000	0.0713	-0.5199	-0.0000	-0.0713	0.5199	-0.0001	0.1415	-0.0164
19X	0.0000	0.0782	-0.5637	0.0000	-0.0782	0.5637	0.0002	0.1174	0.0100
19XY	0.0000	0.0782	-0.5637	-0.0000	-0.0782	0.5637	0.0017	0.1168	0.0102
19Y	0.0000	0.0782	-0.5637	-0.0000	-0.0782	0.5637	-0.0005	0.1169	-0.0161
20X	0.0000	0.1051	-0.7143	0.0000	-0.1051	0.7143	0.0005	0.0958	0.0100
20XY	0.0000	0.1051	-0.7143	-0.0000	-0.1051	0.7143	0.0012	0.0953	0.0102
20Y	0.0000	0.1051	-0.7143	-0.0000	-0.1051	0.7143	-0.0001	0.0953	-0.0157
21X	0.0000	0.1179	-0.8377	0.0000	-0.1179	0.8377	-0.0007	0.0703	0.0096
21XY	0.0000	0.1179	-0.8377	-0.0000	-0.1179	0.8377	0.0019	0.0697	0.0098
21Y	0.0000	0.1179	-0.8377	-0.0000	-0.1179	0.8377	-0.0015	0.0700	-0.0146
23X	0.0000	0.1407	-0.9863	0.0000	-0.1407	0.9863	-0.0011	0.0465	0.0088
23XY	0.0000	0.1407	-0.9863	-0.0000	-0.1407	0.9863	0.0019	0.0460	0.0089
23Y	0.0000	0.1407	-0.9863	-0.0000	-0.1407	0.9863	-0.0019	0.0464	-0.0129

25X	0.0000	0.1613	-1.1405	0.0000	-0.1613	1.1405	-0.0014	0.0254	0.0072
25XY	0.0000	0.1613	-1.1405	-0.0000	-0.1613	1.1405	0.0019	0.0250	0.0073
25Y	0.0000	0.1613	-1.1405	-0.0000	-0.1613	1.1405	-0.0022	0.0254	-0.0103
27X	0.0000	0.2092	-1.4252	0.0000	-0.2092	1.4252	-0.0006	0.0101	0.0050
27XY	0.0000	0.2092	-1.4252	-0.0000	-0.2092	1.4252	0.0008	0.0098	0.0051
27Y	0.0000	0.2092	-1.4252	-0.0000	-0.2092	1.4252	-0.0011	0.0100	-0.0071
29X	0.0000	0.1624	-1.1365	-0.0000	-0.1624	1.1365	-0.0004	0.0008	0.0021
29XY	0.0000	0.1624	-1.1365	0.0000	-0.1624	1.1365	0.0004	0.0007	0.0021
29Y	0.0000	0.1624	-1.1365	0.0000	-0.1624	1.1365	-0.0006	0.0008	-0.0029
30X	0.0000	0.0592	-0.4042	-6.8249	8.2211	102.3325	0.0000	0.0000	0.0000
30XY	0.0000	0.0592	-0.4042	7.0196	8.0355	103.5700	0.0000	0.0000	0.0000
30Y	0.0000	0.0592	-0.4042	-9.9655	10.8251	-141.9973	0.0000	0.0000	0.0000
39Y	0.0000	0.0267	-0.2127	-0.0000	-0.0267	0.2127	0.0004	0.0006	-0.0001
40X	0.0000	0.0639	-0.2127	0.0000	-0.0639	0.2127	0.0000	0.0037	-0.0003
41X	0.0000	2.5271	-1.3169	0.0000	-2.5271	1.3169	0.0068	0.6844	0.1374
42X	0.0000	3.7054	-2.4185	0.0000	-3.7054	2.4185	0.0050	0.5030	0.0951
43X	0.0000	3.7070	-2.4791	0.0000	-3.7070	2.4791	0.0042	0.3670	0.0989
44X	0.0000	3.7054	-2.4185	0.0000	-3.7054	2.4185	0.0029	0.2556	0.0621

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g4P	g4Y	Short only	-0.06	-0.10	18.91	0.750	0.500	0.500	81.24	90.93	2	15.50	1.000	103.76	111.88	3
g4Y	g4P	Short only	-0.10	-0.06	18.91	0.750	0.500	0.500	81.24	90.93	2	15.50	1.000	103.76	111.88	3
g6X	g6XY	Short only	-0.52	-0.48	18.90	0.750	0.500	0.500	81.36	91.02	2	15.49	1.000	103.91	111.95	3
g6XY	g6X	Short only	-0.48	-0.52	18.90	0.750	0.500	0.500	81.36	91.02	2	15.49	1.000	103.91	111.95	3
g8P	g8Y	Short only	-1.02	-1.04	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g8X	g8XY	Short only	-0.10	-0.07	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g8XY	g8X	Short only	-0.07	-0.10	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g8Y	g8P	Short only	-1.04	-1.02	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g10P	g10Y	Short only	-0.44	-0.57	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g10Y	g10P	Short only	-0.57	-0.44	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g12X	g12XY	Short only	-0.13	0.01	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g14X	g14XY	Short only	-0.83	-0.69	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g14XY	g14X	Short only	-0.69	-0.83	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g16P	g16Y	Long only	-2.06	-2.18	48.53	0.500	0.750	0.500	47.64	65.73	2	41.29	1.000	63.52	91.76	3
g16Y	g16P	Long only	-2.18	-2.06	48.53	0.500	0.750	0.500	47.64	65.73	2	41.29	1.000	63.52	91.76	3
g18P	g18Y	Long only	-1.24	-1.45	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g18Y	g18P	Long only	-1.45	-1.24	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g20X	g20XY	Long only	-0.37	-0.16	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g20XY	g20X	Long only	-0.16	-0.37	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g22X	g22XY	Long only	-1.59	-1.37	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g22XY	g22X	Long only	-1.37	-1.59	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g24P	g24Y	Long only	-4.81	-5.05	96.52	0.500	0.750	0.500	42.69	62.02	2	82.78	1.000	56.92	88.46	3
g24Y	g24P	Long only	-5.05	-4.81	96.52	0.500	0.750	0.500	42.69	62.02	2	82.78	1.000	56.92	88.46	3
g26P	g26Y	Long only	-2.84	-3.30	80.49	0.555	0.778	0.555	43.74	62.80	2	69.50	1.000	56.22	88.11	3
g26Y	g26P	Long only	-3.30	-2.84	80.49	0.555	0.778	0.555	43.74	62.80	2	69.50	1.000	56.22	88.11	3
g28X	g28XY	Long only	-0.38	-0.17	78.88	0.539	0.770	0.539	49.50	67.13	2	67.41	1.000	64.29	92.15	3
g28XY	g28X	Long only	-0.17	-0.38	78.88	0.539	0.770	0.539	49.50	67.13	2	67.41	1.000	64.29	92.15	3
g30X	g30XY	Short only	-0.71	-0.54	46.17	0.768	0.537	0.537	60.27	75.20	2	41.25	1.000	63.80	91.90	3
g30XY	g30X	Short only	-0.54	-0.71	46.17	0.768	0.537	0.537	60.27	75.20	2	41.25	1.000	63.80	91.90	3
g32P	g32Y	Short only	-0.79	-1.20	43.26	0.771	0.541	0.541	73.94	85.45	2	38.91	1.000	77.69	98.85	3
g32Y	g32P	Short only	-1.20	-0.79	43.26	0.771	0.541	0.541	73.94	85.45	2	38.91	1.000	77.69	98.85	3
g34X	g34XY	Short only	-0.66	-0.52	38.01	0.766	0.531	0.531	82.83	92.12	2	32.24	1.000	99.30	109.65	3

g34XY	g34X	Short only	-0.52	-0.66	38.01	0.766	0.531	0.531	82.83	92.12	2	32.24	1.000	99.30	109.65	3
g36P	g36Y	Short only	-0.01	-0.38	34.74	0.767	0.534	0.534	96.57	102.43	2	29.31	1.000	115.12	117.56	3
g36Y	g36P	Short only	-0.38	-0.01	34.74	0.767	0.534	0.534	96.57	102.43	2	29.31	1.000	115.12	117.56	3
g38P	g38Y	Short only	-0.41	-0.75	27.08	0.765	0.531	0.531	115.17	116.38	2	25.55	1.000	121.19	120.73	6
g38Y	g38P	Short only	-0.75	-0.41	27.08	0.765	0.531	0.531	115.17	116.38	2	25.55	1.000	121.19	120.73	6
g40P	g40Y	Short only	-1.39	-1.93	26.01	0.768	0.535	0.535	127.67	125.89	5	21.14	1.000	151.91	139.62	6
g40Y	g40P	Short only	-1.93	-1.39	26.01	0.768	0.535	0.535	127.67	125.89	5	21.14	1.000	151.91	139.62	6
g42X	g42XY	Short only	-0.86	-0.63	25.03	0.768	0.536	0.536	137.76	133.57	5	24.12	1.000	146.10	136.05	6
g42XY	g42X	Short only	-0.63	-0.86	25.03	0.768	0.536	0.536	137.76	133.57	5	24.12	1.000	146.10	136.05	6
g44X	g44XY	Short only	-0.45	-0.23	25.24	0.768	0.537	0.537	144.13	138.43	5	21.13	1.000	170.89	151.30	6
g44XY	g44X	Short only	-0.23	-0.45	25.24	0.768	0.537	0.537	144.13	138.43	5	21.13	1.000	170.89	151.30	6
g45XY	g45Y	Short only	-0.79	0.03	20.38	0.766	0.537	0.537	164.63	154.05	5	17.50	1.000	195.19	166.24	6
g46P	g46Y	Short only	-2.18	-2.70	20.38	0.766	0.537	0.537	164.63	154.05	5	17.50	1.000	195.19	166.24	6
g46Y	g46P	Short only	-2.70	-2.18	20.38	0.766	0.537	0.537	164.63	154.05	5	17.50	1.000	195.19	166.24	6
g48P	g48Y	Short only	-6.00	-6.52	19.69	0.767	0.533	0.533	175.33	162.20	5	19.47	1.000	190.12	163.12	6
g48Y	g48P	Short only	-6.52	-6.00	19.69	0.767	0.533	0.533	175.33	162.20	5	19.47	1.000	190.12	163.12	6
g102P	g102X	Long only	-0.28	-0.24	19.28	0.500	0.750	0.500	98.41	103.80	2	13.47	1.000	131.21	131.21	4
g102X	g102P	Long only	-0.24	-0.28	19.28	0.500	0.750	0.500	98.41	103.80	2	13.47	1.000	131.21	131.21	4
g103P	g103X	Long only	-0.19	-0.09	14.95	0.500	0.750	0.500	96.62	102.46	2	11.28	1.000	128.82	125.43	6
g103X	g103P	Long only	-0.09	-0.19	14.95	0.500	0.750	0.500	96.62	102.46	2	11.28	1.000	128.82	125.43	6
g104P	g104X	Long only	-0.23	-0.08	14.95	0.500	0.750	0.500	96.62	102.46	2	11.28	1.000	128.82	125.43	6
g104X	g104P	Long only	-0.08	-0.23	14.95	0.500	0.750	0.500	96.62	102.46	2	11.28	1.000	128.82	125.43	6
g105P	g105X	Short only	-0.19	-0.11	19.90	0.750	0.500	0.500	71.93	83.95	2	16.54	1.000	91.87	105.93	3
g105X	g105P	Short only	-0.11	-0.19	19.90	0.750	0.500	0.500	71.93	83.95	2	16.54	1.000	91.87	105.93	3

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	2.850	50.00	50.00	5.70
C2	2.850	50.00	50.00	5.70
C3	4.425	50.00	50.00	8.85
C4	4.425	50.00	50.00	8.85
C5	4.460	50.00	50.00	8.92
C6	4.460	50.00	50.00	8.92
C7	4.425	50.00	50.00	8.85
C8	4.425	50.00	50.00	8.85
C9	0.580	50.00	50.00	1.16
C10	0.580	50.00	50.00	1.16
C11	0.580	50.00	50.00	1.16
C12	0.580	50.00	50.00	1.16
C13	1.386	50.00	50.00	2.77
C14	1.386	50.00	50.00	2.77
C15	1.386	50.00	50.00	2.77
C16	1.386	50.00	50.00	2.77
C17	0.711	50.00	50.00	1.42
C18	0.924	50.00	50.00	1.85
C19	0.933	50.00	50.00	1.87
C20	1.097	50.00	50.00	2.19
C21	1.233	50.00	50.00	2.47
C22	1.164	50.00	50.00	2.33
C23	1.305	50.00	50.00	2.61
C24	1.609	50.00	50.00	3.22
C25	1.820	50.00	50.00	3.64

C26	1.931	50.00	50.00	3.86
C27	2.326	50.00	50.00	4.65
C28	2.149	50.00	50.00	4.30

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 11

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.0005514	0.9309	-0.03372	-0.9039	0.0019	0.0304	0.0005514	2.601	140
2P	0.000523	0.8656	-0.03308	-0.9104	0.0021	0.0259	1.671	2.536	135.8
3P	0.0008404	0.7991	-0.03203	-0.9077	-0.0118	0.0222	1.671	2.469	131.6
4P	0.001455	0.7345	-0.03033	-0.8689	0.0138	0.0180	1.671	2.404	127.5
5P	0.0002544	0.6828	-0.02844	-0.8078	-0.0048	0.0248	1.67	2.353	124
6P	0.0006668	0.6341	-0.02739	-0.7848	-0.0013	0.0233	1.671	2.304	120.5
7P	0.000593	0.5872	-0.0261	-0.7513	-0.0032	0.0218	1.671	2.257	117
8P	0.0008977	0.5424	-0.02462	-0.7168	0.0065	0.0202	1.671	2.212	113.5
9P	0.0001738	0.5	-0.02299	-0.6617	-0.0003	0.0199	1.67	2.17	110
10P	0.0004402	0.4603	-0.02194	-0.6383	-0.0027	0.0193	1.67	2.13	106.5
11P	0.0005124	0.4222	-0.02074	-0.6060	-0.0036	0.0187	1.671	2.092	103
12P	0.0006739	0.3864	-0.01939	-0.5683	0.0079	0.0179	1.671	2.056	99.48
13P	-5.399e-005	0.3531	-0.01796	-0.5173	0.0002	0.0176	1.67	2.023	95.98
14P	0.000435	0.3251	-0.01858	-0.4740	-0.0093	0.0176	1.89	2.215	92.73
15P	0.0003678	0.2952	-0.01919	-0.4410	0.0014	0.0177	2.15	2.445	88.98
16P	0.0003	0.2673	-0.01958	-0.4103	-0.0037	0.0166	2.4	2.667	85.23
17P	0.0005214	0.2332	-0.01998	-0.3717	-0.0028	0.0155	2.751	2.983	80.23
18P	0.0004522	0.2022	-0.02007	-0.3384	-0.0035	0.0139	3.09	3.292	75.23
19P	0.000637	0.1686	-0.0199	-0.3020	0.0021	0.0123	3.501	3.669	69.23
20P	-8.843e-005	0.1388	-0.01948	-0.2677	-0.0026	0.0098	3.91	4.049	63.23
21P	0.00161	0.1032	-0.01828	-0.2226	-0.0126	0.0061	4.472	4.573	54.98
23P	0.001981	0.07008	-0.01634	-0.1787	-0.0027	0.0026	5.122	5.19	45.48
25P	0.002401	0.03976	-0.01323	-0.1307	0.0003	-0.0022	5.812	5.85	34.49
27P	0.0009707	0.01687	-0.009237	-0.0797	0.0040	-0.0085	6.731	6.747	21.99
29P	0.0004472	0.002362	-0.00374	-0.0301	0.0033	-0.0180	7.69	7.692	7.996
30P	0	0	0	0.0000	0.0000	0.0000	8.23	8.23	0
39P	-0.0009828	0.001801	-0.0001593	-0.0244	-0.0002	0.0047	7.689	0.001801	8
40P	-0.0001431	0.01539	0.0008966	-0.0273	0.0009	0.0025	-0.0001431	7.705	8.001
41P	-0.005178	0.9298	-0.2067	-0.9204	0.0019	0.0302	-0.005178	13.43	139.8
42P	-0.004216	0.681	-0.1536	-0.8868	0.0018	0.0312	-0.004216	10.68	123.8
43P	-0.00504	0.4984	-0.1574	-0.7353	0.0010	0.0278	-0.00504	13	109.8
44P	-0.003534	0.352	-0.0996	-0.5833	0.0005	0.0245	-0.003534	10.35	95.9
1X	0.00233	0.9313	0.01873	-0.9020	0.0020	0.0304	0.00233	-0.7387	140
2X	0.002163	0.866	0.01906	-0.9097	0.0045	0.0257	1.672	-0.804	135.8
2XY	0.002265	0.8642	0.01918	-0.9101	-0.0003	0.0344	-1.668	-0.8058	135.8
2Y	0.0003872	0.8638	-0.03298	-0.9106	0.0012	0.0344	-1.67	2.534	135.8
3X	0.001707	0.7995	0.01913	-0.9113	0.0178	0.0220	1.672	-0.8705	131.7
3XY	0.002468	0.7977	0.01925	-0.9119	-0.0130	0.0369	-1.668	-0.8723	131.7
3Y	-0.0001039	0.7973	-0.03193	-0.9088	0.0155	0.0368	-1.67	2.467	131.6
4X	0.0007476	0.7346	0.01853	-0.8670	-0.0116	0.0189	1.671	-0.9354	127.5
4XY	0.003189	0.7328	0.01864	-0.8660	0.0155	0.0388	-1.667	-0.9372	127.5
4Y	-0.0009077	0.7326	-0.03021	-0.8681	-0.0097	0.0398	-1.671	2.403	127.5
5X	0.001847	0.6832	0.01756	-0.8053	0.0075	0.0257	1.672	-0.9868	124
5XY	0.001916	0.6814	0.01766	-0.8055	-0.0030	0.0309	-1.668	-0.9886	124
5Y	0.0001181	0.6811	-0.02834	-0.8069	0.0079	0.0318	-1.67	2.351	124
6X	0.00128	0.6343	0.01725	-0.7866	0.0051	0.0237	1.671	-1.036	120.5
6XY	0.00227	0.6326	0.01735	-0.7858	-0.0004	0.0309	-1.668	-1.037	120.5
6Y	-0.0004014	0.6324	-0.02729	-0.7852	0.0041	0.0313	-1.67	2.302	120.5
7X	0.001226	0.5874	0.0167	-0.7533	0.0070	0.0217	1.671	-1.083	117
7XY	0.002116	0.5857	0.01679	-0.7522	-0.0027	0.0309	-1.668	-1.084	117

7Y	-0.0004299	0.5854	-0.02601	-0.7504	0.0059	0.0307	-1.67	2.255	117
8X	0.0007384	0.5424	0.01591	-0.7145	-0.0030	0.0198	1.671	-1.128	113.5
8XY	0.002413	0.5408	0.01599	-0.7136	0.0069	0.0308	-1.668	-1.129	113.5
8Y	-0.0008311	0.5408	-0.02453	-0.7145	-0.0040	0.0303	-1.671	2.211	113.5
9X	0.001337	0.5003	0.01492	-0.6619	0.0029	0.0189	1.671	-1.17	110
9XY	0.001639	0.4988	0.015	-0.6610	0.0008	0.0296	-1.668	-1.171	110
9Y	-0.0001973	0.4985	-0.02291	-0.6617	0.0024	0.0284	-1.67	2.168	110
10X	0.0009473	0.4604	0.01439	-0.6391	0.0053	0.0179	1.671	-1.21	106.5
10XY	0.001852	0.4589	0.01447	-0.6384	-0.0017	0.0292	-1.668	-1.211	106.5
10Y	-0.0005382	0.4588	-0.02186	-0.6375	0.0046	0.0276	-1.671	2.129	106.5
11X	0.0007649	0.4224	0.01369	-0.6064	0.0061	0.0168	1.671	-1.248	103
11XY	0.001861	0.4209	0.01376	-0.6056	-0.0026	0.0288	-1.668	-1.249	103
11Y	-0.0006736	0.4208	-0.02067	-0.6046	0.0052	0.0267	-1.671	2.091	103
12X	0.0004775	0.3864	0.01279	-0.5678	-0.0053	0.0159	1.67	-1.284	99.51
12XY	0.001977	0.385	0.01286	-0.5669	0.0086	0.0283	-1.668	-1.285	99.51
12Y	-0.0008859	0.385	-0.01933	-0.5678	-0.0065	0.0260	-1.671	2.055	99.48
13X	0.001087	0.3532	0.01178	-0.5159	0.0017	0.0151	1.671	-1.317	96.01
13XY	0.001197	0.3519	0.01185	-0.5157	0.0019	0.0276	-1.669	-1.318	96.01
13Y	-0.0001962	0.3517	-0.01792	-0.5170	0.0006	0.0248	-1.67	2.022	95.98
14X	0.0005415	0.3252	0.01272	-0.4753	0.0112	0.0147	1.891	-1.565	92.76
14XY	0.001714	0.3237	0.01281	-0.4753	-0.0074	0.0265	-1.888	-1.566	92.76
14Y	-0.0008346	0.3236	-0.01854	-0.4737	0.0095	0.0233	-1.891	2.214	92.73
15X	0.000512	0.2952	0.01368	-0.4413	0.0007	0.0150	2.151	-1.855	89.01
15XY	0.001709	0.2936	0.01378	-0.4407	0.0032	0.0244	-2.148	-1.856	89.01
15Y	-0.0009254	0.2935	-0.01916	-0.4413	-0.0016	0.0215	-2.151	2.443	88.98
16X	0.0004942	0.2673	0.01439	-0.4102	0.0052	0.0140	2.4	-2.133	85.26
16XY	0.001657	0.2655	0.01449	-0.4093	-0.0013	0.0236	-2.398	-2.134	85.26
16Y	-0.0009645	0.2654	-0.01954	-0.4093	0.0031	0.0207	-2.401	2.665	85.23
17X	0.0001968	0.2332	0.01519	-0.3722	0.0043	0.0128	2.75	-2.517	80.27
17XY	0.001882	0.2313	0.01529	-0.3705	-0.0007	0.0224	-2.748	-2.519	80.27
17Y	-0.001326	0.2313	-0.01993	-0.3704	0.0023	0.0195	-2.751	2.981	80.23
18X	0.0001658	0.2021	0.01566	-0.3388	0.0044	0.0113	3.09	-2.888	75.27
18XY	0.00185	0.2002	0.01576	-0.3367	-0.0013	0.0216	-3.088	-2.89	75.27
18Y	-0.001389	0.2002	-0.02002	-0.3365	0.0030	0.0188	-3.091	3.29	75.23
19X	-7.472e-005	0.1686	0.01591	-0.3014	-0.0006	0.0097	3.5	-3.331	69.27
19XY	0.002035	0.1667	0.016	-0.2987	0.0032	0.0204	-3.498	-3.333	69.27
19Y	-0.001725	0.1667	-0.01984	-0.2990	-0.0025	0.0177	-3.502	3.667	69.23
20X	0.0004535	0.1387	0.01588	-0.2679	0.0034	0.0071	3.91	-3.771	63.27
20XY	0.00144	0.1369	0.01597	-0.2656	0.0001	0.0201	-3.909	-3.773	63.27
20Y	-0.001116	0.1368	-0.01943	-0.2657	0.0011	0.0174	-3.911	4.047	63.23
21X	-0.001131	0.1032	0.0152	-0.2235	0.0119	0.0034	4.469	-4.367	55.02
21XY	0.002675	0.1013	0.01532	-0.2224	-0.0075	0.0201	-4.467	-4.369	55.02
21Y	-0.002675	0.1014	-0.01825	-0.2213	0.0098	0.0174	-4.473	4.571	54.98
23X	-0.001608	0.06968	0.01385	-0.1801	0.0031	-0.0002	5.118	-5.05	45.51
23XY	0.002797	0.06786	0.01396	-0.1779	0.0002	0.0194	-5.117	-5.052	45.51
23Y	-0.002896	0.06805	-0.01633	-0.1779	0.0007	0.0167	-5.123	5.188	45.48
25X	-0.002043	0.03948	0.01137	-0.1294	-0.0003	-0.0048	5.808	-5.771	34.51
25XY	0.002891	0.03781	0.01145	-0.1272	0.0028	0.0191	-5.807	-5.772	34.51
25Y	-0.003149	0.03797	-0.01321	-0.1275	-0.0021	0.0165	-5.813	5.848	34.49
27X	-0.0008401	0.01671	0.008042	-0.0796	-0.0033	-0.0111	6.729	-6.713	22.01
27XY	0.001425	0.01547	0.008075	-0.0766	0.0046	0.0199	-6.729	-6.715	22.01
27Y	-0.001564	0.01558	-0.009204	-0.0770	-0.0049	0.0174	-6.732	6.746	21.99
29X	-0.0004466	0.002262	0.003278	-0.0293	-0.0036	-0.0207	7.69	-7.688	8.003
29XY	0.0007732	0.001769	0.003277	-0.0247	0.0064	0.0235	-7.689	-7.688	8.003
29Y	-0.0008173	0.001791	-0.003715	-0.0249	-0.0063	0.0208	-7.691	7.692	7.996
30X	0	0	0	0.0000	0.0000	0.0000	8.23	-8.23	0
30XY	0	0	0	0.0000	0.0000	0.0000	-8.23	-8.23	0
30Y	0	0	0	0.0000	0.0000	0.0000	-8.23	8.23	0
39Y	0.0009557	0.001391	-0.0001574	-0.0267	0.0000	-0.0022	-7.689	0.001391	8
40X	0.0001255	0.01919	-0.001377	-0.0272	-0.0007	0.0021	0.0001255	-7.671	7.999

41X	0.008069	0.9327	0.1902	-0.9097	0.0020	0.0303	0.008069	-11.57	140.2
42X	0.006265	0.6835	0.1382	-0.8409	0.0020	0.0310	0.006265	-9.317	124.1
43X	0.006533	0.5007	0.1421	-0.6785	0.0014	0.0279	0.006533	-12	110.1
44X	0.004526	0.3532	0.08916	-0.5400	0.0015	0.0242	0.004526	-9.647	96.09

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
30P	-12.82	0.0	-17.60	0.0	0.0	-190.91	0.0	0.0	192.15	0.0	0.93	0.0	-0.2	0.0	0.0	0.48	0.0	0.0
30X	10.90	0.0	-15.71	0.0	0.0	167.05	0.0	0.0	168.14	0.0	0.86	0.0	0.2	0.0	0.0	0.55	0.0	0.0
30XY	-11.48	0.0	-14.60	0.0	0.0	166.05	0.0	0.0	167.09	0.0	0.44	0.0	-0.5	0.0	0.0	-0.59	0.0	0.0
30Y	13.40	0.0	-16.43	0.0	0.0	-188.78	0.0	0.0	189.97	0.0	0.43	0.0	0.5	0.0	0.0	-0.52	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.5076	-0.2774	-0.0000	-0.5076	0.2774	0.0006	0.9309	-0.0337
2P	0.0000	2.2741	-0.1604	0.0000	-2.2741	0.1604	0.0005	0.8656	-0.0331
3P	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0008	0.7991	-0.0320
4P	0.0000	0.8086	-0.3754	0.0000	-0.8086	0.3754	0.0015	0.7345	-0.0303
5P	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0003	0.6828	-0.0284
6P	0.0000	-0.8319	-0.7394	0.0000	0.8319	0.7394	0.0007	0.6341	-0.0274
7P	0.0000	0.7506	-0.3574	-0.0000	-0.7506	0.3574	0.0006	0.5872	-0.0261
8P	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0009	0.5424	-0.0246
9P	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0002	0.5000	-0.0230
10P	0.0000	0.7506	-0.3574	-0.0000	-0.7506	0.3574	0.0004	0.4603	-0.0219
11P	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0005	0.4222	-0.0207
12P	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0007	0.3864	-0.0194
13P	0.0000	1.1447	-0.7952	-0.0000	-1.1447	0.7952	-0.0001	0.3531	-0.0180
14P	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0004	0.3251	-0.0186
15P	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0004	0.2952	-0.0192
16P	0.0000	0.9791	-0.6298	0.0000	-0.9791	0.6298	0.0003	0.2673	-0.0196
17P	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0005	0.2332	-0.0200
18P	0.0000	1.0151	-0.6418	0.0000	-1.0151	0.6418	0.0005	0.2022	-0.0201
19P	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0006	0.1686	-0.0199
20P	0.0000	1.1011	-0.6698	0.0000	-1.1011	0.6698	-0.0001	0.1388	-0.0195
21P	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0016	0.1032	-0.0183
23P	0.0000	1.0511	-0.6538	0.0000	-1.0511	0.6538	0.0020	0.0701	-0.0163
25P	0.0000	1.0151	-0.6418	0.0000	-1.0151	0.6418	0.0024	0.0398	-0.0132
27P	0.0000	1.1011	-0.6698	0.0000	-1.1011	0.6698	0.0010	0.0169	-0.0092
29P	0.0000	1.1941	-0.6998	-0.0000	-1.1941	0.6998	0.0004	0.0024	-0.0037
30P	0.0000	0.3861	-0.4358	12.8226	17.2168	-190.4781	0.0000	0.0000	0.0000
39P	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0010	0.0018	-0.0002
40P	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0001	0.0154	0.0009
41P	0.0000	1.7796	-0.4684	-0.0000	-1.7796	0.4684	-0.0052	0.9298	-0.2067
42P	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	-0.0042	0.6810	-0.1536
43P	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	-0.0050	0.4984	-0.1574
44P	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	-0.0035	0.3520	-0.0996
1X	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0023	0.9313	0.0187
2X	0.0000	2.2741	-0.1604	0.0000	-2.2741	0.1604	0.0022	0.8660	0.0191
2XY	0.0000	2.2741	-0.1604	-0.0000	-2.2741	0.1604	0.0023	0.8642	0.0192
2Y	0.0000	2.2741	-0.1604	-0.0000	-2.2741	0.1604	0.0004	0.8638	-0.0330

3X	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0017	0.7995	0.0191
3XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0025	0.7977	0.0193
3Y	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	-0.0001	0.7973	-0.0319
4X	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0007	0.7346	0.0185
4XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0032	0.7328	0.0186
4Y	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	-0.0009	0.7326	-0.0302
5X	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0018	0.6832	0.0176
5XY	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0019	0.6814	0.0177
5Y	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0001	0.6811	-0.0283
6X	0.0000	-0.8319	-0.7394	-0.0000	0.8319	0.7394	0.0013	0.6343	0.0172
6XY	0.0000	-0.8319	-0.7394	0.0000	0.8319	0.7394	0.0023	0.6326	0.0173
6Y	0.0000	-0.8319	-0.7394	-0.0000	0.8319	0.7394	-0.0004	0.6324	-0.0273
7X	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0012	0.5874	0.0167
7XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0021	0.5857	0.0168
7Y	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	-0.0004	0.5854	-0.0260
8X	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0007	0.5424	0.0159
8XY	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0024	0.5408	0.0160
8Y	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	-0.0008	0.5408	-0.0245
9X	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0013	0.5003	0.0149
9XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0016	0.4988	0.0150
9Y	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	-0.0002	0.4985	-0.0229
10X	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0009	0.4604	0.0144
10XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0019	0.4589	0.0145
10Y	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	-0.0005	0.4588	-0.0219
11X	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0008	0.4224	0.0137
11XY	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0019	0.4209	0.0138
11Y	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	-0.0007	0.4208	-0.0207
12X	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	0.0005	0.3864	0.0128
12XY	0.0000	0.1506	-0.1604	0.0000	-0.1506	0.1604	0.0020	0.3850	0.0129
12Y	0.0000	0.1506	-0.1604	-0.0000	-0.1506	0.1604	-0.0009	0.3850	-0.0193
13X	0.0000	0.5367	-0.5962	-0.0000	-0.5367	0.5962	0.0011	0.3532	0.0118
13XY	0.0000	0.5367	-0.5962	0.0000	-0.5367	0.5962	0.0012	0.3519	0.0118
13Y	0.0000	0.5367	-0.5962	0.0000	-0.5367	0.5962	-0.0002	0.3517	-0.0179
14X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0005	0.3252	0.0127
14XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0017	0.3237	0.0128
14Y	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0008	0.3236	-0.0185
15X	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0005	0.2952	0.0137
15XY	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0017	0.2936	0.0138
15Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0009	0.2935	-0.0192
16X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0005	0.2673	0.0144
16XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0017	0.2655	0.0145
16Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0010	0.2654	-0.0195
17X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0002	0.2332	0.0152
17XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0019	0.2313	0.0153
17Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0013	0.2313	-0.0199
18X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0002	0.2021	0.0157
18XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0019	0.2002	0.0158
18Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0014	0.2002	-0.0200
19X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0001	0.1686	0.0159
19XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0020	0.1667	0.0160
19Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0017	0.1667	-0.0198
20X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0005	0.1387	0.0159
20XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0014	0.1369	0.0160
20Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0011	0.1368	-0.0194
21X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0011	0.1032	0.0152
21XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0027	0.1013	0.0153
21Y	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0027	0.1014	-0.0182
23X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0016	0.0697	0.0139
23XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0028	0.0679	0.0140
23Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0029	0.0681	-0.0163

25X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0020	0.0395	0.0114
25XY	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0029	0.0378	0.0114
25Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0031	0.0380	-0.0132
27X	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0008	0.0167	0.0080
27XY	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0014	0.0155	0.0081
27Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0016	0.0156	-0.0092
29X	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	-0.0004	0.0023	0.0033
29XY	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	0.0008	0.0018	0.0033
29Y	0.0000	0.3861	-0.4358	0.0000	-0.3861	0.4358	-0.0008	0.0018	-0.0037
30X	0.0000	0.3861	-0.4358	-10.9031	15.3201	167.4841	0.0000	0.0000	0.0000
30XY	0.0000	0.3861	-0.4358	11.4844	14.2152	166.4864	0.0000	0.0000	0.0000
30Y	0.0000	0.3861	-0.4358	-13.4039	16.0410	-188.3437	0.0000	0.0000	0.0000
39Y	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0010	0.0014	-0.0002
40X	0.0000	0.3861	-0.4358	-0.0000	-0.3861	0.4358	0.0001	0.0192	-0.0014
41X	0.0000	1.7796	-0.4684	0.0000	-1.7796	0.4684	0.0081	0.9327	0.1902
42X	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	0.0063	0.6835	0.1382
43X	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	0.0065	0.5007	0.1421
44X	0.0000	2.9906	-1.1154	0.0000	-2.9906	1.1154	0.0045	0.3532	0.0892

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g4P	g4Y	Short only	-0.23	-0.27	18.91	0.750	0.500	0.500	81.24	90.93	2	15.50	1.000	103.76	111.88	3
g4Y	g4P	Short only	-0.27	-0.23	18.91	0.750	0.500	0.500	81.24	90.93	2	15.50	1.000	103.76	111.88	3
g6X	g6XY	Short only	-0.54	-0.50	18.90	0.750	0.500	0.500	81.36	91.02	2	15.49	1.000	103.91	111.95	3
g6XY	g6X	Short only	-0.50	-0.54	18.90	0.750	0.500	0.500	81.36	91.02	2	15.49	1.000	103.91	111.95	3
g8P	g8Y	Short only	-0.96	-0.94	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g8Y	g8P	Short only	-0.94	-0.96	19.72	0.750	0.500	0.500	73.67	85.26	2	16.35	1.000	94.09	107.05	3
g10P	g10Y	Short only	-0.71	-1.01	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g10Y	g10P	Short only	-1.01	-0.71	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g12X	g12XY	Short only	-0.32	-0.00	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g12XY	g12X	Short only	-0.00	-0.32	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g14X	g14XY	Short only	-1.04	-0.72	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g14XY	g14X	Short only	-0.72	-1.04	44.57	0.750	0.500	0.500	49.03	66.77	2	38.28	1.000	62.42	91.21	3
g16P	g16Y	Long only	-2.34	-2.64	48.53	0.500	0.750	0.500	47.64	65.73	2	41.29	1.000	63.52	91.76	3
g16Y	g16P	Long only	-2.64	-2.34	48.53	0.500	0.750	0.500	47.64	65.73	2	41.29	1.000	63.52	91.76	3
g18P	g18Y	Long only	-1.69	-2.22	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g18Y	g18P	Long only	-2.22	-1.69	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g20X	g20XY	Long only	-0.69	-0.14	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g20XY	g20X	Long only	-0.14	-0.69	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g22X	g22XY	Long only	-2.04	-1.50	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g22XY	g22X	Long only	-1.50	-2.04	80.89	0.500	0.750	0.500	42.27	61.70	2	69.47	1.000	56.36	88.18	3
g24P	g24Y	Long only	-5.64	-6.20	96.52	0.500	0.750	0.500	42.69	62.02	2	82.78	1.000	56.92	88.46	3
g24Y	g24P	Long only	-6.20	-5.64	96.52	0.500	0.750	0.500	42.69	62.02	2	82.78	1.000	56.92	88.46	3
g26P	g26Y	Long only	-3.46	-4.43	80.49	0.555	0.778	0.555	43.74	62.80	2	69.50	1.000	56.22	88.11	3
g26Y	g26P	Long only	-4.43	-3.46	80.49	0.555	0.778	0.555	43.74	62.80	2	69.50	1.000	56.22	88.11	3
g28X	g28XY	Long only	-0.75	0.11	78.88	0.539	0.770	0.539	49.50	67.13	2	67.41	1.000	64.29	92.15	3
g30X	g30XY	Short only	-1.19	-0.51	46.17	0.768	0.537	0.537	60.27	75.20	2	41.25	1.000	63.80	91.90	3
g30XY	g30X	Short only	-0.51	-1.19	46.17	0.768	0.537	0.537	60.27	75.20	2	41.25	1.000	63.80	91.90	3
g32P	g32Y	Short only	-0.84	-1.58	43.26	0.771	0.541	0.541	73.94	85.45	2	38.91	1.000	77.69	98.85	3
g32Y	g32P	Short only	-1.58	-0.84	43.26	0.771	0.541	0.541	73.94	85.45	2	38.91	1.000	77.69	98.85	3
g34X	g34XY	Short only	-1.08	-0.52	38.01	0.766	0.531	0.531	82.83	92.12	2	32.24	1.000	99.30	109.65	3
g34XY	g34X	Short only	-0.52	-1.08	38.01	0.766	0.531	0.531	82.83	92.12	2	32.24	1.000	99.30	109.65	3
g36Y	g36P	Short only	-0.50	0.07	34.74	0.767	0.534	0.534	96.57	102.43	2	29.31	1.000	115.12	117.56	3

g38P	g38Y	Short only	-0.45	-0.97	27.08	0.765	0.531	0.531	115.17	116.38	2	25.55	1.000	121.19	120.73	6
g38Y	g38P	Short only	-0.97	-0.45	27.08	0.765	0.531	0.531	115.17	116.38	2	25.55	1.000	121.19	120.73	6
g40P	g40Y	Short only	-1.47	-2.62	26.01	0.768	0.535	0.535	127.67	125.89	5	21.14	1.000	151.91	139.62	6
g40Y	g40P	Short only	-2.62	-1.47	26.01	0.768	0.535	0.535	127.67	125.89	5	21.14	1.000	151.91	139.62	6
g42X	g42XY	Short only	-1.51	-0.55	25.03	0.768	0.536	0.536	137.76	133.57	5	24.12	1.000	146.10	136.05	6
g42XY	g42X	Short only	-0.55	-1.51	25.03	0.768	0.536	0.536	137.76	133.57	5	24.12	1.000	146.10	136.05	6
g44X	g44XY	Short only	-0.90	-0.05	25.24	0.768	0.537	0.537	144.13	138.43	5	21.13	1.000	170.89	151.30	6
g44XY	g44X	Short only	-0.05	-0.90	25.24	0.768	0.537	0.537	144.13	138.43	5	21.13	1.000	170.89	151.30	6
g46P	g46Y	Short only	-2.68	-3.51	20.38	0.766	0.537	0.537	164.63	154.05	5	17.50	1.000	195.19	166.24	6
g46Y	g46P	Short only	-3.51	-2.68	20.38	0.766	0.537	0.537	164.63	154.05	5	17.50	1.000	195.19	166.24	6
g48P	g48Y	Short only	-7.79	-8.54	19.69	0.767	0.533	0.533	175.33	162.20	5	19.47	1.000	190.12	163.12	6
g48Y	g48P	Short only	-8.54	-7.79	19.69	0.767	0.533	0.533	175.33	162.20	5	19.47	1.000	190.12	163.12	6
g102P	g102X	Long only	-0.11	-0.05	19.28	0.500	0.750	0.500	98.41	103.80	2	13.47	1.000	131.21	131.21	4
g102X	g102P	Long only	-0.05	-0.11	19.28	0.500	0.750	0.500	98.41	103.80	2	13.47	1.000	131.21	131.21	4

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	1.840	50.00	50.00	3.68
C2	1.840	50.00	50.00	3.68
C3	3.192	50.00	50.00	6.38
C4	3.192	50.00	50.00	6.38
C5	3.192	50.00	50.00	6.38
C6	3.192	50.00	50.00	6.38
C7	3.192	50.00	50.00	6.38
C8	3.192	50.00	50.00	6.38
C9	2.280	50.00	50.00	4.56
C10	2.280	50.00	50.00	4.56
C11	2.280	50.00	50.00	4.56
C12	2.280	50.00	50.00	4.56
C13	1.113	50.00	50.00	2.23
C14	1.113	50.00	50.00	2.23
C15	1.113	50.00	50.00	2.23
C16	1.113	50.00	50.00	2.23
C17	0.578	50.00	50.00	1.16
C18	0.891	50.00	50.00	1.78
C19	0.831	50.00	50.00	1.66
C20	0.831	50.00	50.00	1.66
C21	1.394	50.00	50.00	2.79
C22	1.164	50.00	50.00	2.33
C23	1.201	50.00	50.00	2.40
C24	1.289	50.00	50.00	2.58
C25	1.238	50.00	50.00	2.48
C26	1.201	50.00	50.00	2.40
C27	1.289	50.00	50.00	2.58
C28	1.384	50.00	50.00	2.77

*** 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 (ft)	Curve No.	Comp. No. Of Member	Bolts Comp.
Diag1	Diagonal 1	SAU	2X1.5X0.1875	36.0	17.15	Comp	17.15	g1P	-2.212	NESC Hea	12.897	27.200	24.469	0.500	0.750	0.500	114.50	115.87	5.598	2	2
Diag2	Diagonal 2	SAE	2X2X0.1875	36.0	42.16	Tens	28.88	g5XY	-5.459	NESC Ext	18.901	27.200	24.469	0.750	0.500	0.500	81.36	91.02	5.343	2	2
Diag3	Diagonal 3	SAU	3X2.5X0.25	36.0	12.35	Comp	12.35	g37X	-3.345	NESC Ext	27.075	40.800	48.937	0.765	0.531	0.531	115.17	116.38	9.543	2	3
Diag4	Diagonal 4	SAE	3X3X0.25	36.0	24.11	Tens	17.90	g9X	-7.979	NESC Ext	44.572	54.400	65.250	0.750	0.500	0.500	49.03	66.77	4.838	2	4
Diag5	Diagonal 5	SAU	3.5X3X0.25	36.0	20.00	Tens	15.15	g41X	-3.790	NESC Ext	25.026	27.200	32.625	0.768	0.536	0.536	137.76	133.57	13.514	5	2
Diag6	Diagonal 6	SAE	3.5X3.5X0.25	36.0	20.75	Tens	20.59	g43X	-5.197	NESC Ext	25.243	27.200	32.625	0.768	0.537	0.537	144.13	138.43	15.522	5	2
Diag7	Diagonal 7	SAU	4X3.5X0.25	36.0	43.87	Cross	43.87	g48Y	-8.541	NESC Ext	19.469	27.200	32.625	1.000	0.533	0.533	190.12	163.12	20.121	6	2
Diag8	Diagonal 8	SAE	4X4X0.25	36.0	30.87	Comp	30.87	g49X	-6.633	NESC Ext	21.486	27.200	32.625	1.000	1.000	1.000	173.44	160.76	11.490	5	2
Diag9	Diagonal 9	SAU	5X3X0.3125	36.0	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
Diag10	Diagonal 10	SAU	5X3.5X0.3125	36.0	16.75	Tens	12.76	g21X	-10.324	NESC Ext	80.889	81.600	122.344	0.500	0.750	0.500	42.27	61.70	4.838	2	6
Diag11	Diagonal 11	SAU	5X3.5X0.375	36.0	13.09	Tens	12.61	g23X	-10.288	NESC Ext	96.521	81.600	146.812	0.500	0.750	0.500	42.69	62.02	4.838	2	6
Horz1	Horizontal 1	SAU	2X1.5X0.1875	36.0	34.20	Tens	0.00	g57Y	0.000		11.446	13.600	12.234	1.000	1.000	1.000	124.47	124.47	3.340	4	1
Horz2	Horizontal 2	SAE	2X2X0.1875	36.0	47.45	Comp	47.45	g60X	-2.597	NESC Ext	5.474	27.200	24.469	1.000	1.000	1.000	238.17	192.68	7.820	6	2
Horz3	Horizontal 3	SAU	2.5X2X0.1875	36.0	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
Horz4	Horizontal 4	SAE	2.5X2.5X0.1875	36.0	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
Horz5	Horizontal 5	SAU	3X2X0.25	36.0	7.15	Tens	4.58	g51Y	-1.245	NESC Hea	27.684	27.200	32.625	1.000	1.000	1.000	92.14	106.07	3.340	3	2
Horz6	Horizontal 6	SAU	3X2.5X0.25	36.0	15.54	Tens	12.60	g56X	-3.429	NESC Ext	32.931	27.200	32.625	1.000	1.000	1.000	75.91	97.95	3.340	3	2
Horz7	Horizontal 7	SAU	3.5X3X0.25	36.0	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
Horz8	Horizontal 8	SAE	3.5X3.5X0.25	36.0	61.12	Comp	61.12	g62X	-8.248	NESC Ext	13.494	27.200	32.625	1.000	1.000	1.000	232.74				

189.33 13.460 6 2
Horz9 Horizontal 9 SAE 3X3X0.1875 36.0 0.00 0.00 0.000 0.000 0.000 0.000 0.000 0.000 0.00
0.00 0.000 0 0
Horz 10 Horizontal 10 SAU 4X3.5X0.3125 36.0 21.45 Tens 19.54 g64XY -5.316NESC Ext 41.251 27.200 40.781 1.000 1.000 1.000 126.41
124.93 7.690 5 2
Leg 1 Leg 1 SAE 4X4X0.25 50.0 40.98 Tens 32.15 g68X -24.231NESC Ext 75.378 81.600 109.687 1.000 1.000 1.000 52.83
52.83 3.500 1 6
Leg 2 Leg 2 SAE 6X6X0.5 50.0 34.40 Comp 34.40 g72X -65.489NESC Ext 271.593 190.400 511.874 1.000 1.000 1.000 35.59
35.59 3.500 1 14
Leg 3 Leg 3 SAE 8X8X0.75 50.0 55.14 Comp 55.14 g76X -119.987NESC Ext 554.347 217.600 877.499 1.000 1.000 1.000 26.58
26.58 3.500 1 16
Leg 4 Leg 4 SAE 8X8X0.875 50.0 68.66 Comp 68.66 g89X -186.747NESC Ext 552.500 272.000 1279.686 1.000 1.000 1.000 61.42
61.42 8.036 1 20
Horz 11 Horizontal 11 SAU 5X3X0.25 36.0 5.06 Comp 5.06 g92Y -2.277NESC Hea 44.997 54.400 65.250 1.000 1.000 1.000 60.45
90.23 3.340 3 4
Horz 12 Horizontal 12 SAU 5X3X0.3125 36.0 4.09 Comp 4.09 g98Y -2.616NESC Hea 64.028 68.000 101.953 1.000 1.000 1.000 60.91
90.46 3.340 3 5
Horz 13 Horizontal 13 SAU 5X3.5X0.375 36.0 9.34 Comp 9.34 g94P -4.787NESC Hea 51.221 54.400 97.875 1.000 1.000 1.000 133.79
130.55 8.496 5 4
Arm Arm SAE 2X2X0.1875 36.0 18.57 Tens 0.00 g96Y 0.000 3.474 27.200 24.469 1.000 1.000 1.000 279.85
241.85 9.188 5 2
top top DAL 4X3.5X0.375 36.0 21.50 Tens 2.33 g100P -0.634NESC Ext 116.434 27.200 97.875 1.000 1.000 1.000 103.97
111.98 10.830 3 2
Arm2 Arm2 SAE 2.5X2.5X0.1875 36.0 20.59 Tens 0.00 g99Y 0.000 4.441 27.200 24.469 1.000 1.000 1.000 278.87
241.10 11.503 5 2
Inner1 Inner 1 SAU 2X1.5X0.25 36.0 2.10 Cross 2.10 g102P -0.283NESC Hea 13.467 13.600 16.312 0.500 1.000 0.500 131.21
131.21 4.723 4 1
Inner2 Inner 2 SAU 2X1.5X0.1875 36.0 7.52 Comp 7.52 g106P -0.261NESC Ext 3.468 13.600 12.234 0.500 0.750 0.500 226.21
226.21 11.059 4 1
Inner3 Inner 3 SAE 2X2X0.1875 36.0 1.13 Cross 1.13 g105P -0.187NESC Hea 16.541 27.200 24.469 1.000 0.500 0.500 91.87
105.93 4.723 3 2
Inner4 Inner 4 SAE 3X3X0.1875 36.0 1.45 Tens 1.24 g107P -0.101NESC Ext 8.167 27.200 24.469 0.750 0.500 0.500 218.97
195.45 21.751 5 2
Diag12 Diagonal 5 SAU 3.5X3X0.25 36.0 5.43 Comp 5.43 g90P -1.813NESC Hea 33.365 40.800 48.937 0.500 0.500 0.500 111.49
113.61 11.725 2 3

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts	No. Of Holes	Hole Diameter (in)
Diag1	Diagonal 1	SAU	2X1.5X0.1875	36.0	17.15	Comp	16.03	g1X	2.043NESC Hea		14.772	27.200	24.469	12.741	5.598	2	1.000	0.875
Diag2	Diagonal 2	SAE	2X2X0.1875	36.0	42.16	Tens	42.16	g5Y	5.715NESC Ext		17.688	27.200	24.469	13.556	5.343	2	1.000	0.875
Diag3	Diagonal 3	SAU	3X2.5X0.25	36.0	12.35	Comp	10.29	g37P	3.222NESC Ext		31.306	40.800	48.937	34.228	9.543	3	1.000	0.875
Diag4	Diagonal 4	SAE	3X3X0.25	36.0	24.11	Tens	24.11	g13P	7.832NESC Ext		32.481	54.400	65.250	49.755	4.838	4	2.000	0.875
Diag5	Diagonal 5	SAU	3.5X3X0.25	36.0	20.00	Tens	20.00	g15P	7.273NESC Ext		36.369	54.400	65.250	55.885	4.838	4	2.000	0.875

Diag6	Diagonal 6	SAE	3.5X3.5X0.25	36.0	20.75	Tens	20.75	g43P	5.645	NESC Ext	47.668	27.200	32.625	27.943	15.522	2	1.000	0.875
Diag7	Diagonal 7	SAU	4X3.5X0.25	36.0	43.87	Cross	27.60	g48XY	7.508	NESC Ext	47.506	27.200	32.625	27.943	20.121	2	1.000	0.875
Diag8	Diagonal 8	SAE	4X4X0.25	36.0	30.87	Comp	22.07	g49P	6.000	NESC Ext	55.768	27.200	32.625	27.187	11.490	2	1.000	0.875
Diag9	Diagonal 9	SAU	5X3X0.3125	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Diag10	Diagonal 10	SAU	5X3.5X0.3125	36.0	16.75	Tens	16.75	g21P	10.925	NESC Ext	65.225	81.600	122.344	101.953	4.838	6	2.000	0.875
Diag11	Diagonal 11	SAU	5X3.5X0.375	36.0	13.09	Tens	13.09	g23P	10.149	NESC Ext	77.557	81.600	146.812	125.742	4.838	6	2.000	0.875
Horz1	Horizontal 1	SAU	2X1.5X0.1875	36.0	34.20	Tens	34.20	g53P	2.544	NESC Hea	14.772	13.600	12.234	7.439	3.340	1	1.000	0.875
Horz2	Horizontal 2	SAE	2X2X0.1875	36.0	47.45	Comp	15.30	g60P	2.706	NESC Ext	17.688	27.200	24.469	18.658	7.820	2	1.000	0.875
Horz3	Horizontal 3	SAU	2.5X2X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz4	Horizontal 4	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz5	Horizontal 5	SAU	3X2X0.25	36.0	7.15	Tens	7.15	g52P	1.945	NESC Hea	31.468	27.200	32.625	27.187	3.340	2	1.000	0.875
Horz6	Horizontal 6	SAU	3X2.5X0.25	36.0	15.54	Tens	15.54	g56P	4.225	NESC Ext	35.356	27.200	32.625	27.187	3.340	2	1.000	0.875
Horz7	Horizontal 7	SAU	3.5X3X0.25	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz8	Horizontal 8	SAE	3.5X3.5X0.25	36.0	61.12	Comp	33.95	g62P	9.229	NESC Ext	47.668	27.200	32.625	27.187	13.460	2	1.000	0.875
Horz9	Horizontal 9	SAE	3X3X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz 10	Horizontal 10	SAU	4X3.5X0.3125	36.0	21.45	Tens	21.45	g64Y	5.834	NESC Ext	58.978	27.200	40.781	33.984	7.690	2	1.000	0.875
Leg 1	Leg 1	SAE	4X4X0.25	50.0	40.98	Tens	40.98	g68Y	21.824	NESC Ext	53.250	81.600	109.687	95.588	3.500	6	4.000	0.875
Leg 2	Leg 2	SAE	6X6X0.5	50.0	34.40	Comp	31.12	g72Y	59.247	NESC Ext	200.000	190.400	511.874	473.958	3.500	14	4.000	0.875
Leg 3	Leg 3	SAE	8X8X0.75	50.0	55.14	Comp	51.14	g76P	111.281	NESC Ext	375.124	217.600	877.499	812.499	3.500	16	6.000	0.875
Leg 4	Leg 4	SAE	8X8X0.875	50.0	68.66	Comp	60.48	g89P	164.499	NESC Ext	508.374	272.000	1279.686	1184.894	8.036	20	4.000	0.875
Horz 11	Horizontal 11	SAU	5X3X0.25	36.0	5.06	Comp	0.00	g95Y	0.000		41.593	54.400	65.250	71.078	3.340	4	3.000	0.875
Horz 12	Horizontal 12	SAU	5X3X0.3125	36.0	4.09	Comp	0.00	g98Y	0.000		51.182	68.000	101.953	111.060	3.340	5	3.000	0.875
Horz 13	Horizontal 13	SAU	5X3.5X0.375	36.0	9.34	Comp	0.84	g91X	0.457	NESC Ext	77.557	54.400	97.875	95.156	8.496	4	2.000	0.875
Arm	Arm	SAE	2X2X0.1875	36.0	18.57	Tens	18.57	g96P	3.123	NESC Hea	17.688	27.200	24.469	16.819	9.188	2	1.000	0.875
top	top	DAL	4X3.5X0.375	36.0	21.50	Tens	21.50	g100X	5.849	NESC Hea	139.603	27.200	97.875	90.625	10.830	2	2.000	0.875
Arm2	Arm2	SAE	2.5X2.5X0.1875	36.0	20.59	Tens	20.59	g99P	3.985	NESC Hea	23.909	27.200	24.469	19.350	11.503	2	1.000	0.875
Inner1	Inner 1	SAU	2X1.5X0.25	36.0	2.10	Cross	0.00	g102X	0.000		19.156	13.600	16.312	9.919	4.723	1	1.000	0.875
Inner2	Inner 2	SAU	2X1.5X0.1875	36.0	7.52	Comp	6.33	g106X	0.471	NESC Ext	14.772	13.600	12.234	7.439	11.059	1	1.000	0.875
Inner3	Inner 3	SAE	2X2X0.1875	36.0	1.13	Cross	0.34	g105X	0.060	NESC Ext	17.688	27.200	24.469	18.658	4.723	2	1.000	0.875
Inner4	Inner 4	SAE	3X3X0.1875	36.0	1.45	Tens	1.45	g107X	0.276	NESC Ext	30.000	27.200	24.469	18.998	21.751	2	1.000	0.875

Diag12	Diagonal 5	SAU	3.5X3X0.25	36.0	5.43	Comp	0.00	g90Y	0.000		39.406	40.800	48.937	31.639	11.725	3	1.000	0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	52.90	g89X	Angle
NESC Extreme	68.66	g89X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	5.70	NESC Heavy	0.0
C2	Clamp	5.70	NESC Heavy	0.0
C3	Clamp	8.85	NESC Heavy	0.0
C4	Clamp	8.85	NESC Heavy	0.0
C5	Clamp	8.92	NESC Heavy	0.0
C6	Clamp	8.92	NESC Heavy	0.0
C7	Clamp	8.85	NESC Heavy	0.0
C8	Clamp	8.85	NESC Heavy	0.0
C9	Clamp	4.56	NESC Extreme	0.0
C10	Clamp	4.56	NESC Extreme	0.0
C11	Clamp	4.56	NESC Extreme	0.0
C12	Clamp	4.56	NESC Extreme	0.0
C13	Clamp	2.77	NESC Heavy	0.0
C14	Clamp	2.77	NESC Heavy	0.0
C15	Clamp	2.77	NESC Heavy	0.0
C16	Clamp	2.77	NESC Heavy	0.0
C17	Clamp	1.42	NESC Heavy	0.0
C18	Clamp	1.85	NESC Heavy	0.0
C19	Clamp	1.87	NESC Heavy	0.0
C20	Clamp	2.19	NESC Heavy	0.0
C21	Clamp	2.79	NESC Extreme	0.0
C22	Clamp	2.33	NESC Extreme	0.0
C23	Clamp	2.61	NESC Heavy	0.0
C24	Clamp	3.22	NESC Heavy	0.0
C25	Clamp	3.64	NESC Heavy	0.0
C26	Clamp	3.86	NESC Heavy	0.0
C27	Clamp	4.65	NESC Heavy	0.0
C28	Clamp	4.30	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

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

NESC Heavy	C1	Clamp	41X	0.000	2.527	1.317	2.850
NESC Heavy	C2	Clamp	41P	0.000	2.527	1.317	2.850
NESC Heavy	C3	Clamp	42X	0.000	3.705	2.418	4.425
NESC Heavy	C4	Clamp	42P	0.000	3.705	2.418	4.425
NESC Heavy	C5	Clamp	43X	0.000	3.707	2.479	4.460
NESC Heavy	C6	Clamp	43P	0.000	3.707	2.479	4.460
NESC Heavy	C7	Clamp	44X	0.000	3.705	2.418	4.425
NESC Heavy	C8	Clamp	44P	0.000	3.705	2.418	4.425
NESC Heavy	C9	Clamp	2P	0.000	0.558	0.157	0.580
NESC Heavy	C10	Clamp	2X	0.000	0.558	0.157	0.580
NESC Heavy	C11	Clamp	2XY	0.000	0.558	0.157	0.580
NESC Heavy	C12	Clamp	2Y	0.000	0.558	0.157	0.580
NESC Heavy	C13	Clamp	6P	0.000	-0.194	1.372	1.386
NESC Heavy	C14	Clamp	6X	0.000	-0.194	1.372	1.386
NESC Heavy	C15	Clamp	6XY	0.000	-0.194	1.372	1.386
NESC Heavy	C16	Clamp	6Y	0.000	-0.194	1.372	1.386
NESC Heavy	C17	Clamp	1P	0.000	0.129	0.699	0.711
NESC Heavy	C18	Clamp	4P	0.000	0.228	0.895	0.924
NESC Heavy	C19	Clamp	7P	0.000	0.218	0.907	0.933
NESC Heavy	C20	Clamp	10P	0.000	0.238	1.071	1.097
NESC Heavy	C21	Clamp	13P	0.000	0.249	1.208	1.233
NESC Heavy	C22	Clamp	16P	0.000	0.239	1.139	1.164
NESC Heavy	C23	Clamp	18P	0.000	0.260	1.279	1.305
NESC Heavy	C24	Clamp	20P	0.000	0.320	1.576	1.609
NESC Heavy	C25	Clamp	23P	0.000	0.341	1.788	1.820
NESC Heavy	C26	Clamp	25P	0.000	0.350	1.899	1.931
NESC Heavy	C27	Clamp	27P	0.000	0.424	2.287	2.326
NESC Heavy	C28	Clamp	29P	0.000	0.405	2.111	2.149
NESC Extreme	C1	Clamp	41X	0.000	1.780	0.468	1.840
NESC Extreme	C2	Clamp	41P	0.000	1.780	0.468	1.840
NESC Extreme	C3	Clamp	42X	0.000	2.991	1.115	3.192
NESC Extreme	C4	Clamp	42P	0.000	2.991	1.115	3.192
NESC Extreme	C5	Clamp	43X	0.000	2.991	1.115	3.192
NESC Extreme	C6	Clamp	43P	0.000	2.991	1.115	3.192
NESC Extreme	C7	Clamp	44X	0.000	2.991	1.115	3.192
NESC Extreme	C8	Clamp	44P	0.000	2.991	1.115	3.192
NESC Extreme	C9	Clamp	2P	0.000	2.274	0.160	2.280
NESC Extreme	C10	Clamp	2X	0.000	2.274	0.160	2.280
NESC Extreme	C11	Clamp	2XY	0.000	2.274	0.160	2.280
NESC Extreme	C12	Clamp	2Y	0.000	2.274	0.160	2.280
NESC Extreme	C13	Clamp	6P	0.000	-0.832	0.739	1.113
NESC Extreme	C14	Clamp	6X	0.000	-0.832	0.739	1.113
NESC Extreme	C15	Clamp	6XY	0.000	-0.832	0.739	1.113
NESC Extreme	C16	Clamp	6Y	0.000	-0.832	0.739	1.113
NESC Extreme	C17	Clamp	1P	0.000	0.508	0.277	0.578
NESC Extreme	C18	Clamp	4P	0.000	0.809	0.375	0.891
NESC Extreme	C19	Clamp	7P	0.000	0.751	0.357	0.831
NESC Extreme	C20	Clamp	10P	0.000	0.751	0.357	0.831
NESC Extreme	C21	Clamp	13P	0.000	1.145	0.795	1.394
NESC Extreme	C22	Clamp	16P	0.000	0.979	0.630	1.164
NESC Extreme	C23	Clamp	18P	0.000	1.015	0.642	1.201
NESC Extreme	C24	Clamp	20P	0.000	1.101	0.670	1.289
NESC Extreme	C25	Clamp	23P	0.000	1.051	0.654	1.238
NESC Extreme	C26	Clamp	25P	0.000	1.015	0.642	1.201
NESC Extreme	C27	Clamp	27P	0.000	1.101	0.670	1.289
NESC Extreme	C28	Clamp	29P	0.000	1.194	0.700	1.384

Overturning Moments For User Input Concentrated Loads:

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

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	30.598	0.000	29.485	3508.183	34.208	8.524
NESC Extreme	32.439	0.000	11.143	3563.779	9.284	28.365

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 35451.7
Total: 35451.7

*** End of Report

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

Subject:	Anchor Bolt Analysis for CL&P Tower # 1280
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $Uplift := 167.05 \cdot kips$ (User Input)

Shear = $Shear := 21.78 \cdot kips$ (User Input)

Compression = $Compression := 190.91 \cdot kips$ (User Input)

Anchor Bolt Data:

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

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

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

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

Diameter of Bolts = $D := 2.5in$ (User Input)

Threads per Inch = $n := 4$ (User Input)

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

Anchor Bolt Area:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 4.909 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 3.999 \cdot in^2$ (AISC 13th Ed. pg. 7-83)

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Check Tensile Force:

Maximum Tensile Force (Gross Area) = $F_{gross.area} := 1.0 \cdot (0.33 \cdot A_g \cdot F_u) = 94 \cdot kips$

Maximum Tensile Force (Net Area) = $F_{net.area} := 1.0 \cdot (0.60 \cdot A_n \cdot F_y) = 86.4 \cdot kips$

Allowable Tension = $AllowableTension := \begin{cases} F_{gross.area} & \text{if } F_{gross.area} < F_{net.area} \\ F_{net.area} & \text{if } F_{net.area} < F_{gross.area} \end{cases}$

$AllowableTension = 86.4 \cdot kips$

Applied Tension = $MaxTension := \frac{Uplift}{N} = 41.76 \cdot kips$

$\frac{MaxTension}{F_{net.area}} = 48.4 \cdot \%$

$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, "OK", "Overstressed"\right)$

$Condition1 = "OK"$

Check Anchor Bolt Area:

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

Required Area = $A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 5.9 \cdot in^2$

$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y}\right] = -2.109 \cdot in^2$

Provided Area = $A_{sprovided} := A_n \cdot N = 16 \cdot in^2$

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

$Condition2 = "OK"$

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

$Condition3 = "OK"$

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Subject:	FOUNDATION ANALYSIS
Location:	Greenwich, CT
Rev. 1: 12/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.03

Foundation:

Input Data:

Tower Data

Shear (Compression Leg) =	$Shear_{comp} := 21.78 \cdot 1.1 \cdot kips = 24 \cdot kips$	(User Input from PLS Tower)	
Shear (Uplift Leg) =	$Shear_{up} := 19.12 \cdot 1.1 \cdot kips = 21 \cdot kips$	(User Input from PLS Tower)	
Compression =	$Comp := 190.91 \cdot 1.1 \cdot kips = 210 \cdot kips$	(User Input from PLS Tower)	
Uplift =	$Uplift := 167.05 \cdot 1.1 \cdot kips = 183.8 \cdot kips$	(User Input from PLS Tower)	
Tower Height =	$H_t := 140 \cdot ft$	(User Input)	

Footing Data:

Depth to Bottom of Footing =	$D_f := 12 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 12.5 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)	
Width of Pier =	$W_p := 5 \cdot ft$	(User Input)	
Depth of Soil =	$D_{soil} := 12 \cdot ft$	(User Input)	
Depth of Rock =	$D_{rock} := 13 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 3500 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Anchor Bolt Yield Strength =	$f_{ya} := 75000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 4000 \cdot psf$	(User Input)	
Allowable Rock Bearing Capacity =	$q_{rock} := 50000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Unit Weight of Rock =	$\gamma_{rock} := 160 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 1.0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Rock Anchor Properties:

ASTM A615 Grade 60

Bolt Ultimate Strength =	$F_u := 90 \cdot ksi$	(User Input)	
Bolt Yield Strength =	$F_y := 60 \cdot ksi$	(User Input)	
Anchor Diameter =	$d_{ra1} := 1.00 \cdot in$	(User Input)	(1 # 8 and 2 # 11 per Rock Group)
Anchor Diameter =	$d_{ra2} := 1.41 \cdot in$	(User Input)	
Hole Diameter =	$d_{Hole} := 4 \cdot in$	(User Input)	
Grout Strength =	$\tau := 120 \cdot psi$	(User Input)	
Distance to Rock Anchor Group 1 =	$D_{a1} := 24 \cdot in$	(User Input)	
Number of Rock Anchors in Group 1 =	$N_{a1} := 6$	(User Input)	
Total Number of Rock Bolts =	$N_{atot} := 8$	(User Input)	

Check Uplift:

Adjusted Concrete Unit Weight = $\gamma_c := if(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

Weight of Concrete = $WT_c := \left(W_p^2 \cdot L_p\right) \cdot \gamma_c = 46.875 \cdot kip$

Base Area 1 of Resisting Pyramid = $B_1 := \left(D_{a1} \cdot 2\right)^2 = 16 ft^2$

Base Area 2 of Resisting Pyramid = $B_2 := \left[\tan\left(\Phi_s\right) \cdot \left(D_{rock} \cdot 0.5\right) \cdot 2 + D_{a1} \cdot 2\right]^2 = 132.4 ft^2$

Base Area 3 of Resisting Pyramid = $B_3 := \left[\tan\left(\Phi_s\right) \cdot \left(D_{rock} \cdot 0.5 + D_{soil}\right) \cdot 2 + D_{a1} \cdot 2\right]^2 = 643.2 ft^2$

Weight of Soil = $WT_{soil} := \left[\frac{D_{soil}}{3} \cdot \left(B_2 + B_3 + \sqrt{B_2 \cdot B_3}\right) - W_p^2 \cdot L_p\right] \cdot \gamma_s = 395.714 \cdot kip$

Weight of Rock = $WT_{rock} := \left[\frac{D_{rock} \cdot 0.5}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] \cdot \gamma_{rock} = 67.392 \cdot kip$

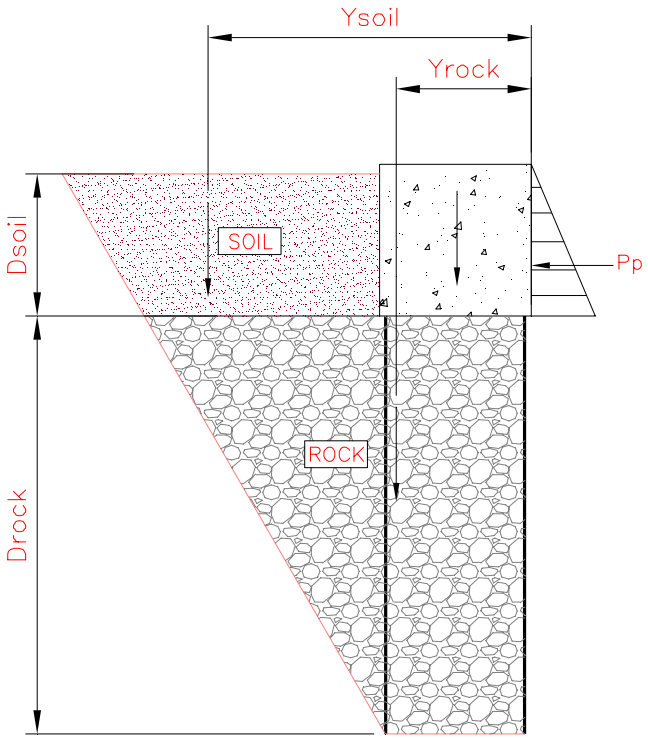
Total Resistance = $WT_{tot} := WT_c + WT_{rock} + WT_{soil} = 510 \cdot kips$

Factor of Safety Actual = $FS := \frac{WT_{tot}}{Uplift} = 2.78$

Factor of Safety Required = $FS_{req} := 1.0$

$Uplift\_Check := if\left(FS \geq FS_{req}, "Okay", "No Good"\right)$

Uplift_Check = "Okay"



Area 1 = $A1 := \frac{1}{2}\cdot\tan(\Phi_s)\cdot D_{soil}^{2} = 41.569\,ft^{2}$ sf

Area 2 = $A2 := \tan(\Phi_s)\cdot D_{rock}\cdot D_{soil} = 90.067\,ft^{2}$ sf

Distance to Centroid 1 = $Y1 := \tan(\Phi_s)\cdot D_{rock} + \frac{1}{3}\cdot\tan(\Phi_s)\cdot D_{soil} = 9.815\,ft$ ft

Distance to Centroid 2 = $Y2 := \frac{1}{2}\cdot\tan(\Phi_s)\cdot D_{rock} = 3.753\,ft$ ft

Distance from Toe to Centroid of Soil = $Y_{soil} := \frac{(A1\cdot Y1 + A2\cdot Y2)}{(A1 + A2)} + W_p = 10.67\,ft$ ft

Area 3 = $A3 := \frac{1}{2}\cdot\tan(\Phi_s)\cdot D_{rock}^{2} = 48.786\,ft^{2}$ sf

Area 4 = $A4 := W_p\cdot D_{rock} = 65\,ft^{2}$ sf

Distance to Centroid 3 = $Y3 := W_p + \frac{1}{3}\cdot\tan(\Phi_s)\cdot D_{rock} = 7.502\,ft$ ft

Distance to Centroid 4 = $Y4 := \frac{W_p}{2} = 2.5\,ft$ ft

Distance from Toe to Centroid of Rock = $Y_{rock} := \frac{(A3\cdot Y3 + A4\cdot Y4)}{(A3 + A4)} = 4.64\,ft$ ft

Check Oveturning:

Coefficient of Lateral Soil Pressure =

$$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$$

Passive Pressure =

$$P_{top} := 0 = 0 \cdot ksf$$

$$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 3.6 \cdot ksf$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.8 \cdot ksf$$

$$A_p := W_p \cdot (L_p - L_{pag}) = 60 ft^2$$

Ultimate Shear =

$$S_u := P_{ave} \cdot A_p = 108 \cdot kip$$

Weight of Concrete Pad =

$$WT_c := \left(W_p^2 \cdot L_p\right) \cdot \gamma_c = 46.875 \cdot kip$$

Weight of Soil Wedge at Back Face Corners =

$$WT_{s2} := 2 \cdot \left[(D_{soil})^3 \cdot \frac{\tan(\Phi_s)}{3} \right] \cdot \gamma_s = 66.511 \cdot kips$$

Total Weight of Soil =

$$WT_{Stot} := (A1 + A2) \cdot W_p \cdot \gamma_s + WT_{s2} = 132.3 \cdot kips$$

Total Weight of Rock =

$$WT_{Rtot} := (A3 + A4) \cdot W_p \cdot \gamma_{rock} = 91 \cdot kips$$

Resisting Moment =

$$M_r := (WT_c) \cdot \frac{W_p}{2} + S_u \cdot \frac{L_p}{3} + WT_{Stot} \cdot Y_{soil} + WT_{Rtot} \cdot Y_{rock} = 2402 \cdot kip \cdot ft$$

Overturning Moment =

$$M_{ot} := Uplift \cdot \frac{W_p}{2} + Shear_{up} \cdot L_p = 722 \cdot kip \cdot ft$$

Factor of Safety Actual =

$$FS := \frac{M_r}{M_{ot}} = 3.32$$

Factor of Safety Required =

$$FS_{req} := 1.0$$

$$OverTurning\_Moment\_Check := if(FS \geq FS_{req}, "Okay", "No Good")$$

OverTurning_Moment_Check = "Okay"

Check Bearing Pressure:

Area of the Pier = $A_{mat} := W_p^2 = 25\,ft^2$

Section Modulus of Pier = $S := \frac{W_p^3}{6} = 20.83\cdot ft^3$

Maximum Bearing Pressure = $P_{max} := \frac{WT_c + Comp}{A_{mat}} + \frac{Shear_{comp}\cdot L_p}{S} = 24.65\cdot ksf$

$Max\_Pressure\_Check := if(P_{max} < q_{rock}, "Okay", "No Good")$

Max_Pressure_Check = "Okay"

Check Rock Anchors:

Rock Anchor Check:

Polar Moment of Inertia = $I_p := \left(D_{a1}^2 \cdot N_{a1}\right) = 3456\cdot in^2$

Maximum Tension Force = $T_{Max} := \frac{Uplift}{N_{atot}} + \frac{Shear_{up}\cdot L_p \cdot D_{a1}}{I_p} - \frac{WT_c}{N_{atot}} = 39\cdot kips$

Gross Area of Bolt Group = $A_g := \frac{\pi}{4}\cdot\left(d_{ra1}^2 + 2\cdot d_{ra2}^2\right) = 3.908\cdot in^2$

Allowable Tension = $T_{all} := A_g \cdot F_y = 234.5\cdot kips$

$\frac{T_{Max}}{T_{all}} = 16.6\cdot\%$

$Condition1 := if(T_{Max} < T_{all}, "OK", "NG")$

Condition1 = "OK"

Check Bond Strength:

Bond Strength = $Bond\_Strength := d_{Hole}\cdot\pi\cdot\left(D_{rock}\cdot 0.5\right)\cdot\tau = 118\cdot kips$

$\frac{T_{Max}}{Bond\_Strength} = 33.2\cdot\%$

$Condition2 := if(T_{Max} < Bond\_Strength, "OK", "NG")$

Condition2 = "OK"

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Section 1 - Site Information

Site ID: CT11241A
Status: Draft
Version: 1.2
Project Type: L700
Approved: Not Approved
Approved By: Not Approved
Last Modified: 12/13/2016 8:07:43 AM
Last Modified By: GSM1900\AMurill9

Site Name: GREENWICH/COS COB/I-95
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Solution Type:
Plan Year:
Market: CONNECTICUT
Vendor: Ericsson
Landlord: CL&P

Latitude: 41.02998600
Longitude: -73.59748400
Address: Station drive - Line # 1750 - Pole# 1280
City, State: Greenwich, CT
Region: NORTHEAST

RAN Template: 704Bu Outdoor			AL Template: 1HP_704Bu	
Sector Count: 3	Antenna Count: 6	Coax Line Count: 18	TMA Count: 6	RRU Count: 0

Section 2 - Existing Template Images

— This section is intentionally blank. —

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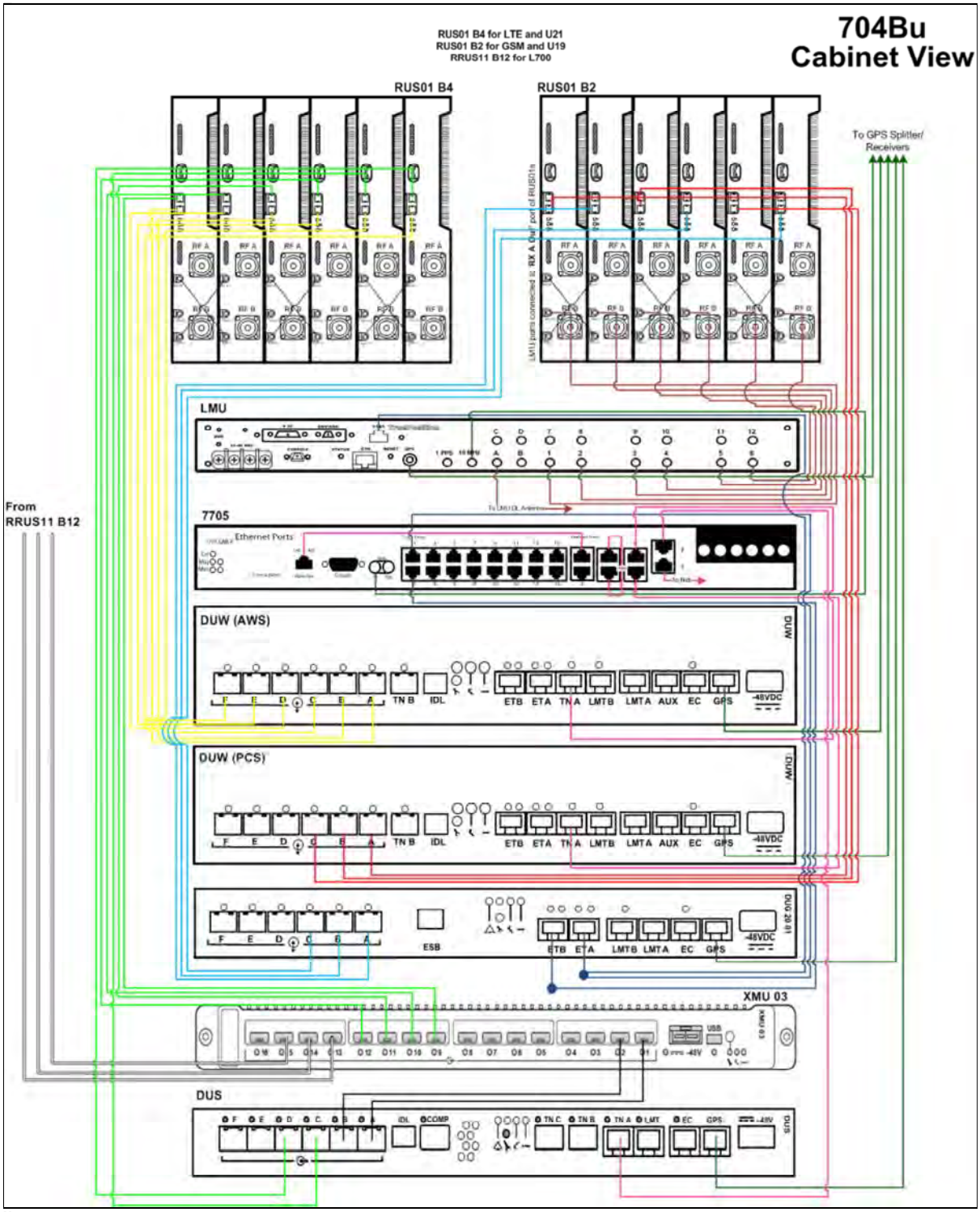
Section 3 - Proposed Template Images

704Bu.png



Notes:

Section 4 - Siteplan Images

— This section is intentionally blank. —

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RAN Template:	A&L Template:
704Bu Outdoor	1HP_704Bu

CT11241A_1.2_L700

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 4B

Enclosure	1	2
Enclosure Type	RBS 3106	RBS 6102
Baseband		DUW30 (x2) DUG20 DUL20
Radio		RUS01 B4 (x6) RUS01 B2 (x6)

Proposed RAN Equipment

Template: 704Bu Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	Ground Mount
Baseband	DUG20 G1900 DUW30 U1900 DUW30 U2100 DUS41 L2100 L700	
Multiplexer	XMU L2100 L700	
Radio	RUS01 B2 (x3) G1900 RUS01 B2 (x3) U1900 RUS01 B4 (x6) U2100 L2100	RRUS11 B12 (x3) L700

RAN Scope of Work:

DRAFT

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Section 6 - A&L Equipment

Existing Template: 4B
Proposed Template: 1HP_704Bu

Sector 1 (Existing) view from behind				
Coverage Type	A - Outdoor Macro			
Antenna	1		2	
Antenna Model	ADFD1820-9090B-XDM (Quad)		TMZXX-6516-A2M (Quad)	
Azimuth	20		30	
M. Tilt	0		0	
Height	161		152	
Ports	P1	P2	P3	P4
Active Tech.	U1900 G1900		U2100 L2100	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	3		6	
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.		1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	
TMAs				
Diplexers / Combiners				
Radio				
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Sector 1 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		2
Antenna Model	TMBXX-6516-R2M (Quad)		LNX-6512DS-A1M (Dual)
Azimuth	20		20
M. Tilt	0		0
Height	153		161
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Sector 2 (Existing) view from behind				
Coverage Type	A - Outdoor Macro			
Antenna	1		2	
Antenna Model	ADFD1820-9090B-XDM (Quad)		TMZXX-6516-A2M (Quad)	
Azimuth	140		150	
M. Tilt	0		0	
Height	161		152	
Ports	P1	P2	P3	P4
Active Tech.	U1900 G1900		U2100 L2100	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	6		6	
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.		1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	
TMAs				
Diplexers / Combiners				
Radio				
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Sector 2 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		2
Antenna Model	TMBXX-6516-R2M (Quad)		LNX-6512DS-A1M (Dual)
Azimuth	140		140
M. Tilt	0		0
Height	153		161
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Sector 3 (Existing) view from behind				
Coverage Type	A - Outdoor Macro			
Antenna	1		2	
Antenna Model	ADFD1820-9090B-XDM (Quad)		TMZXX-6516-A2M (Quad)	
Azimuth	240		270	
M. Tilt	0		0	
Height	161		152	
Ports	P1	P2	P3	P4
Active Tech.	U1900 G1900		U1900 L2100	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	6		6	
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.		1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	
TMAs				
Diplexers / Combiners				
Radio				
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: 1HP_704Bu

CT11241A_1.2_L700

Sector 3 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		2
Antenna Model	TMBXX-6516-R2M (Quad)		LNX-6512DS-A1M (Dual)
Azimuth	240		240
M. Tilt	0		0
Height	153		161
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.	1-5/8" Coax - 170 ft. 1-5/8" Coax - 170 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

Product Specifications

LNX-6512DS-T4M

DualPol® Antenna, 698–896 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Continuous wideband operation
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Patented DualPol® technology
- Ideal choice for site collocations and tough zoning restrictions

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	12.4	13.3
Gain, dBi	14.5	15.4
Beamwidth, Vertical, degrees	18.7	16.2
Beam Tilt, degrees	4	4
Upper Sidelobe Suppression (USLS), typical, dB	20	20
Front-to-Back Ratio at 180°, dB	30	32
Isolation, dB	30	30
VSWR | Return Loss, db	1.35:1 | 16.5	1.35:1 | 16.5
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

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See www.commscope.com/andrew for the most current information.

Product Specifications

LNX-6512DS-T4M

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	379.8 N @ 150 km/h 85.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1232.0 mm | 48.5 in
Width	301.0 mm | 11.9 in
Net Weight	12.8 kg | 28.2 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2002/95/EC	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

MTG-L-STD
Downtilt Mounting Kit for panel Antennas

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TMBXX-6516-R2M

±45° Dual Band Quad Antenna

Decibel®
Base Station Antennas

- Patented cross dipole and feed system
- Rugged, reliable design with excellent PIM suppression
- Includes factory installed AISG RET actuator
- Fully compatible with Andrew Teletilt® remote control antenna system

ELECTRICAL

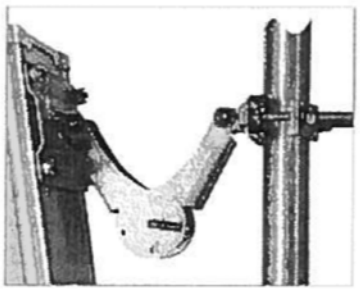
Frequency Range (MHz):	1710–2155				
Characteristic Impedance (Ohms):	50				
Azimuth BW (Deg):	64.5 ± 8				
Elevation BW (Deg):	7.2 ± 1.2				
Gain (dBi) :	17.5 ± 8				
Polarization:	±45°				
Front-to-Back Ratio (dB)	**2°**	**4°**	**6°**	**8°**	**10°**
Copol, 180° ± 30°:	>24	>24	>24	>24	>24
Total Power, 180° ± 30°:	>24	>23	>22	>23	>23
Upper Sidelobe (dB)	**2°**	**4°**	**6°**	**8°**	**10°**
Main Beam to +20°:	>18	>17	>15	>14	>11
VSWR / Return Loss (dB):	1.35:1 / 16.5				
Port-to-Port Isolation (dB):	>30				
Electrical Tilt Range (Deg):	2–10				
Electrical Downtilt Accuracy (Deg):	± 0.9				
Cross-pol (dBc)	**2°**	**4°**	**6°**	**8°**	**10°**
3 dB Beamwidth:	>13	>13	>12	>12	>12
Intermodulation Products (dBc)					
3rd Order, 2 x 20 Watts:	155				
Max. Input Power (Watts):	250				
Lightning Protection:	DC Ground				

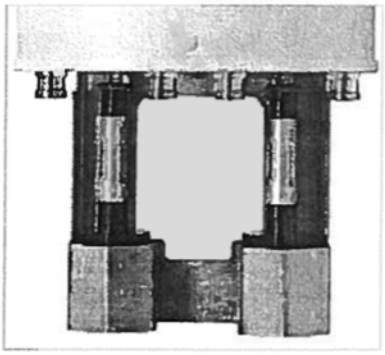
PERFORMANCE TRACKING

Gain Variation (dB) (between UL and DL frequency pair):	1.3
Electrical Tilt Accuracy (Deg) (between UL and DL frequncy pair within 0.5°):	<0.55
Azimuth HPBW (Deg) (between UL and DL frequncy pair):	11.5

MECHANICAL

Net Weight (kg / lbs):	15.7 / 34.6
Dimensions–LxWxD: (with actuator)	1499 x 302 x 160 mm 59 x 11.9 x 6.3 inch
Max. Wind Area (m² / ft²):	0.27 / 2.9
Max. Wind Load (N / lbf):	729.4 / 164
Max. Wind Speed (km/h / mph):	241 / 150
Hardware Material:	Hot Dip Galvanized
Connector Type:	7-16 DIN, Female (4)
Color:	Off White
Standard Mounting Hardware:	TM600899A-2





Andrew Corporation
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Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

Fax: 214.688.0089
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

11/27/2006

dbtech@andrew.com

Information correct at date of issue but may be subject to change without notice.

Product Specifications

ATSBT-TOP-FM-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 (BTS)
- 7-16 DIN male connector (ANT)

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 Male
BTS Interface	7-16 DIN Female
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

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Product Specifications

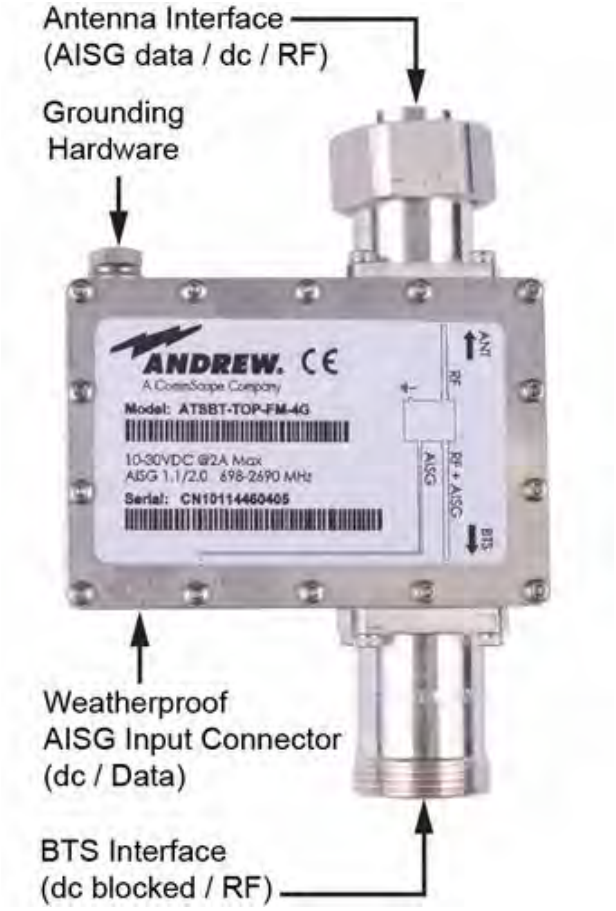
ATSBT-TOP-FM-4G

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



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

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Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11241A

Greenwich/Cos Cob/I-95
Station drive - Line # 1750 -
Greenwich, CT 06807

January 11, 2017

EBI Project Number: 6217000099

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	1.27 %

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

EBI Consulting
environmental | engineering | due diligence

January 11, 2017

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

Emissions Analysis for Site: **CT11241A – Greenwich/Cos Cob/I-95**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **Station drive - Line # 1750 -, Greenwich, 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 1900 MHz (PCS) and 2100 MHz (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 **Station drive - Line # 1750 -, Greenwich, 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 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 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.

4) 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

5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

6) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 0.95 dB of additional cable loss for all ground mounted 700 MHz Channels, 1.75 dB of additional cable loss for all ground mounted 1900 MHz channels and 1.80 dB of additional cable loss for all ground mounted 2100 MHz channels. This is based on manufacturers Specifications for 170 feet of 1-5/8" coax cable on each path.

7) 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.

8) For the following calculations the sample point was the top of a 6-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.

9) The antennas used in this modeling are the **Andrew TMBXX-6516-R2M** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6512DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Andrew TMBXX-6516-R2M** has a maximum gain of **15.35 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6512DS-VTM** has a maximum gain of **12 dBd** at its main lobe at 700 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.

10) The antenna mounting height centerline of the proposed antennas are **161 & 153 feet** above ground level (AGL).

11) 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.

12) 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:	Andrew TMBXX-6516-R2M	Make / Model:	Andrew TMBXX-6516-R2M	Make / Model:	Andrew TMBXX-6516-R2M
Gain:	15.35 dBd	Gain:	15.35 dBd	Gain:	15.35 dBd
Height (AGL):	153	Height (AGL):	153	Height (AGL):	153
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	300	Total TX Power(W):	300	Total TX Power(W):	300
ERP (W):	6,825.40	ERP (W):	6,825.40	ERP (W):	6,825.40
Antenna A1 MPE%	1.14	Antenna B1 MPE%	1.14	Antenna C1 MPE%	1.14
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6512DS-VTM	Make / Model:	Commscope LNX-6512DS-VTM	Make / Model:	Commscope LNX-6512DS-VTM
Gain:	12 dBd	Gain:	12 dBd	Gain:	12 dBd
Height (AGL):	153	Height (AGL):	153	Height (AGL):	153
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	382.05	ERP (W):	382.05	ERP (W):	382.05
Antenna A2 MPE%	0.14	Antenna B2 MPE%	0.14	Antenna C2 MPE%	0.14

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.27 %**
Site Total MPE %:	**1.27 %**

T-Mobile Sector A Total:	1.27 %
T-Mobile Sector B Total:	1.27 %
T-Mobile Sector C Total:	1.27 %
Site Total:	1.27 %

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 PCS - 1950 MHz UMTS	2	687.26	153	2.29	PCS - 1950 MHz	1000	0.23%
T-Mobile PCS - 1900 MHz GSM	2	687.26	153	2.29	PCS - 1900 MHz	1000	0.23%
T-Mobile AWS - 2100 MHz UMTS	2	679.39	153	2.26	AWS - 2100 MHz	1000	0.23%
T-Mobile AWS - 2100 MHz LTE	2	1,358.79	153	4.52	AWS - 2100 MHz	1000	0.45%
T-Mobile 700 MHz LTE	1	382.05	153	0.64	700 MHz	467	0.14%
						Total:	**1.27%**

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 A:	1.27 %
Sector B:	1.27 %
Sector C:	1.27 %
T-Mobile Per Sector Maximum:	1.27 %
Site Total:	1.27 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **1.27%** 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.

Exhibit F

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

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

Dec 23, 2016

Mr. Mark Richard
T-Mobile
35 Griffin Rd.
Bloomfield, CT 06002

RE: T-Mobile Antenna Site, CT1241A, Station Dr., Greenwich CT, structure 1280.

Dear Mr. Richard:

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

Since there are no outstanding structural or site related issues to resolve at this time, please contact Hank O'Brien (860-665-6987) to complete the lease amendment issues

Sincerely,

Robert Gray
Transmission Line Engineering

Ref: CT11241A-L700-CD 10-25-16.pdf
16162.03 - CT1111241A Structural Analysis Rev1 16.12.15.pdf