November 30, 2016

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas, Addition of (6) TMAs and addition of associated lines
Property Address:	226 Ferry Road, Old Saybrook, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T" Site: CT2042)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 190 foot utility tower ("tower") at the above-referenced address, latitude 43.31966667, longitude -72.3516111. AT&T's facility consists of three (9) wireless telecommunications antennas at 195 feet. The tower is controlled and owned by Eversource Energy. Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas, adding (6) TMAs, and adding associated lines. The centerline height of said antennas is and will remain at 195 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman of the Town of Old Saybrook, the Building Inspector of the Town of Old Saybrook, and the Zoning Enforcement Officer of the Town of Old Saybrook. A copy of this letter is also being sent to Eversource Energy, the owner of the structure that AT&T is located.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and associated lines will be installed at 195 foot level of the 190 foot utility tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Centek Engineering Dated November 17, 2016).

For the foregoing reasons AT&T respectfully requests that the proposed swap of 3 antennas, the addition of (6) TMAs, and addition of associated lines be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Carl P. Fortuna, Jr., First Selectman, Town of Old Saybrook
Don Lucas, Building Inspector, Town of Old Saybrook
Christina M. Costa, Zoning Enforcement Officer
Eversource Energy, c/o Robert Gray

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

Town of Old Saybrook, CT

August 23, 2016

Property Information

Property ID	059/105-0000
Location	226 FERRY RD
Owner	CONN LIGHT & POWER CO

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Old Saybrook, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

226 FERRY RD

Location	226 FERRY RD	**MBLU**	059/ 105/ / /
Acct#	00631700	**Owner**	CONN LIGHT & POWER CO
Assessment	$504,200	**Appraisal**	$720,300
PID	2407	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$180,000	$540,300	$720,300
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$126,000	$378,200	$504,200

Owner of Record

Owner	CONN LIGHT & POWER CO	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	P O BOX 270 HARTFORD, CT 06141-0270	**Book & Page**	0023/0053
		Sale Date	12/29/1922

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CONN LIGHT & POWER CO	$0		0023/0053	12/29/1922

Building Information

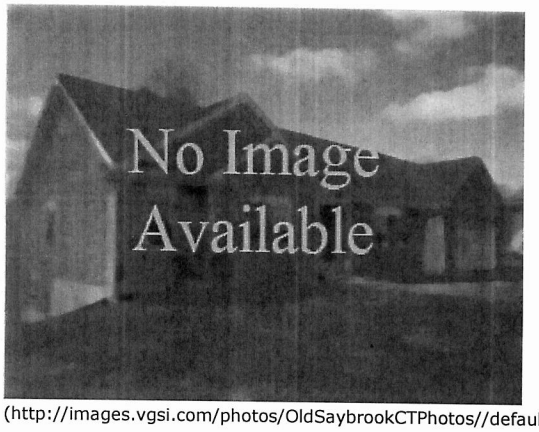
Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	

Building Photo

Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	



(http://images.vgsi.com/photos/OldSaybrookCTPhotos//default.jp

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 4230
Description ELEC ROW
Zone MC

Land Line Valuation

Size (Acres) 0.55
Depth 0
Assessed Value $378,200
Appraised Value $540,300

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
UTIL	UTILITY BLDG			200 UNITS	$180,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$180,000	$540,300	$720,300
2013	$180,000	$540,300	$720,300
2012	$180,000	$540,300	$720,300

Assessment

Valuation Year	Improvements	Land	Total
2014	$126,000	$378,200	$504,200
2013	$126,000	$378,200	$504,200
2012	$126,000	$378,200	$504,200

WIRELESS COMMUNICATIONS FACILITY
CT2042 - LTE 2C
EVERSOURCE STRUCT.: DISTRIBUTION WEST RIVER X-ING
OLD SAYBROOK
226 FERRY ROAD
OLD SAYBROOK, CT 06475

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

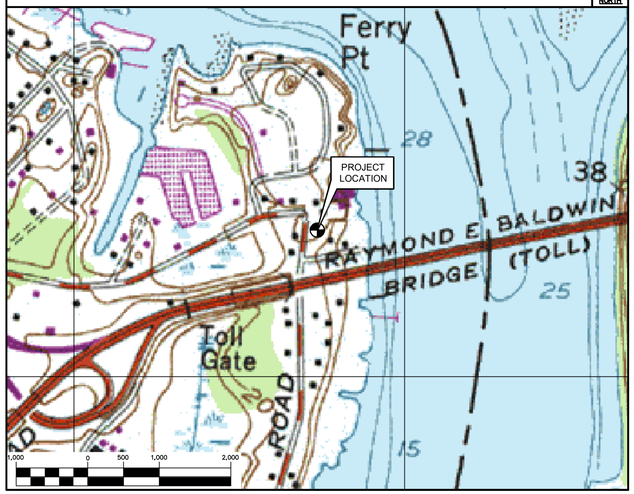
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 226 FERRY ROAD, OLD SAYBROOK, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5.	MERGE ONTO CT-9 S via EXIT 22S ON THE LEFT TOWARD MIDDLETOWN/OLD SAY BROOK	28.00 MI
6.	TAKE THE CT-154/MIDDLESEX TPKE EXIT, EXIT 2, TOWARD OLD SAYBROOK	0.32 MI
7.	TURN LEFT ONTO CT-154/MIDDLESEX TPKE	0.11 MI
8.	TAKE THE 1ST RIGHT ONTO OLD SPRING BROOK RD.	0.15 MI
9.	TURN SLIGHT RIGHT ONTO ESSEX RD.	1.30 MI
10.	TURN RIGHT ONTO FERRY RD	0.10 MI

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING LTE ANTENNA, POSITION 3, FOR PROPOSED LTE HEXPORT ANTENNA, (1) PER SECTOR, AND RELOCATE TO POSITION 2
   B. INSTALL (3) NEW RRUS-12+A2'S WITHIN EXISTING EQUIPMENT SHELTER
   C. INSTALL (6) NEW TMA'S BEHIND POS. 2 ANTENNA

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2042
AT&T SITE NAME:	OLD SAYBROOK
SITE ADDRESS:	EVERSOURCE STRUCT.: DISTRIBUTION WEST RIVER X-ING 226 FERRY ROAD OLD SAYBROOK, CT 06475
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-19'-10.77" N LONGITUDE: 72°-21'-5.80" W GROUND ELEVATION: ±29' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES, SPECIFICATIONS AND DETAILS	0
C-1	PLANS AND ELEVATIONS	0
C-2	LTE 2C EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	08/22/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

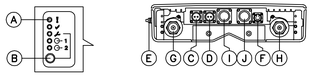
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
OLD SAYBROOK
CT2042 - LTE 2C
226 FERRY ROAD
OLD SAYBROOK, CT 06475

DATE: 08/16/16
SCALE: AS NOTED
JOB NO. 16071.16

TITLE SHEET

T-1

Sheet No. 1 of 7



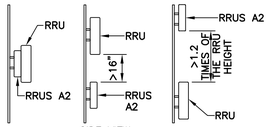
SIDE PANEL

BOTTOM VIEW

CONNECTION INTERFACE

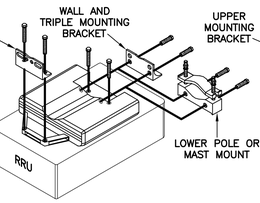
POSITION (ID)	DESCRIPTION	MARKING
A	OPTICAL INDICATORS	⏽, ⏽, ⏽, O-1,O-2
B	MAINTENANCE	🔧
C	−48V DC POWER SUPPLY	POW IN
D	−48V DC POWER SUPPLY TO RRU	POW OUT
E	GROUNDING	⏚
F	RET	RET
G	ANTENNA B	𝕏 - B
H	ANTENNA A	𝕏 - A
I	OPTICAL CABLE 1	O-1
J	OPTICAL CABLE 2	O-2

NOTES:
1. STACKING OF RRU's IS NOT PERMITTED.
2. NO PAINTING OF RRU OR THE SOLAR SHIELD IS ALLOWED.
3. A SINGLE RRUS A2 CAN BE INSTALLED AS A STAND ALONE UNIT OR MOUNTED TO THE BACK OF ITS ASSOCIATED RRU.

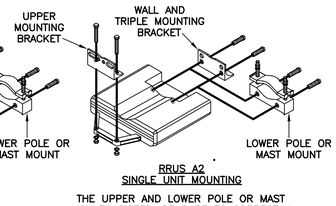


SIDE VIEW

RRUS A2 MANUFACTURER INSTALLATION REQUIREMENTS



RRUS A2 W/ASSOCIATED RRU MOUNTING

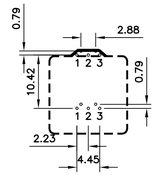


RRUS A2 SINGLE UNIT MOUNTING

THE UPPER AND LOWER POLE OR MAST MOUNTS DIFFER, BE SURE TO CORRECTLY POSITION THE MOUNTS BEFORE INSTALLUATION.

1 N−1 ERICSSON RRU A2 DETAILS

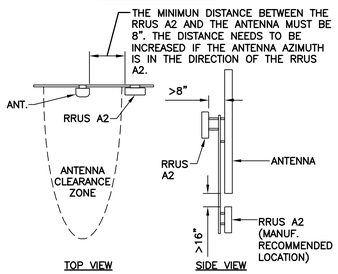
NOT TO SCALE



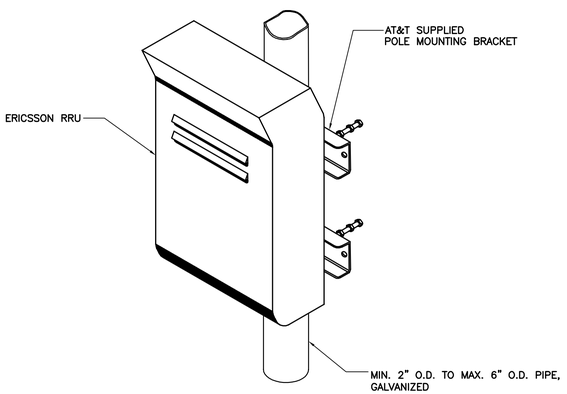
THE NUMBER OF BOLT HOLES DEPENDS ON THE WALL MATERIAL, AS SPECIFIED BY THE SITE ENGINEER. A MINIMUM OF TWO BOLT HOLES ARE RECOMMENDED FOR EACH BRACKET.

ONE OF THE FOLLOWING SOLUTIONS FOR HOLE POSITIONS MUST BE USED:
- 1, 3
- 1, 2, 3

WALL MOUNTING BRACKET INSTALLATION



TOP VIEW SIDE VIEW



ISOMETRIC VIEW

NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE−MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE−MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

2 N−1 TYPICAL RRUS MOUNTING DETAILS

SCALE: NTS

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   ANTENNA MAST
   - WIND LOAD: PER EIA/TIA 222 F−96 (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST).

   TRANSMISSION TOWER
   - WIND LOAD: PER NESC C2−2012 SECTION 25 RULE 250C (TOWER & FOUNDATION) 110 MPH (3 SECOND GUST)
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7−02 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF−SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

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

   A. STRUCTURAL STEEL (W SHAPES)−−−ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)−−−ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)−−−ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)−−−ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE−−−ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS−−−ASTM A325−N
   G. U−BOLTS−−−ASTM A36
   H. ANCHOR RODS−−−ASTM F 1554
   I. WELDING ELECTRODE−−−ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON−GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT−DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE−B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2−5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5−5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI−SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH−PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON−PETROLEUM−BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

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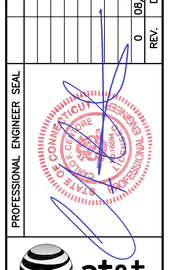

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NOTES, SPECIFICATIONS & DETAILS

N−1

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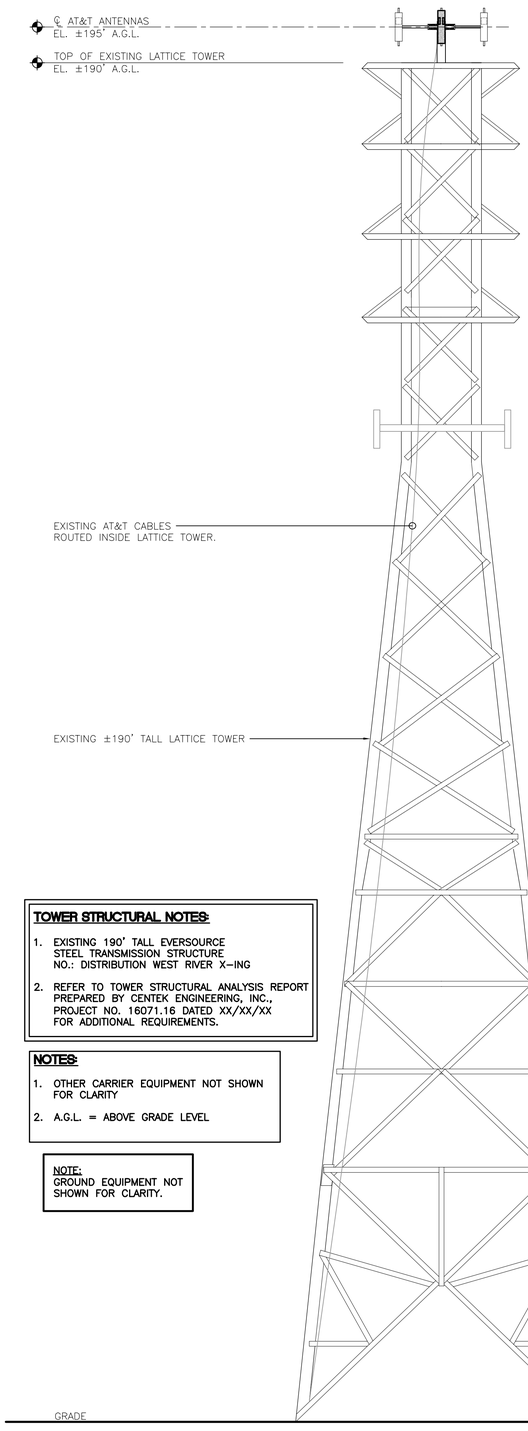


TOWER STRUCTURAL NOTES:

1. EXISTING 190' TALL EVERSOURCE STEEL TRANSMISSION STRUCTURE NO.: DISTRIBUTION WEST RIVER X-ING
2. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJECT NO. 16071.16 DATED XX/XX/XX FOR ADDITIONAL REQUIREMENTS.

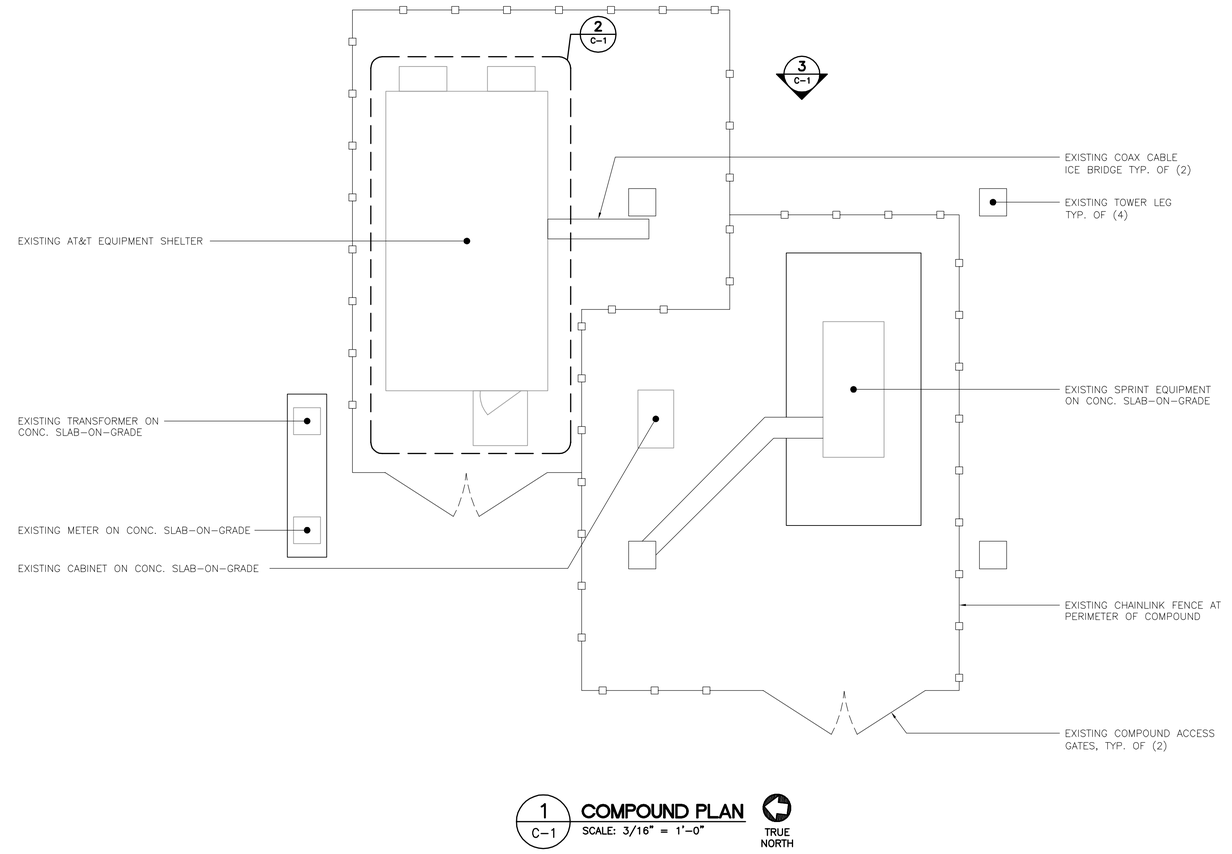
NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

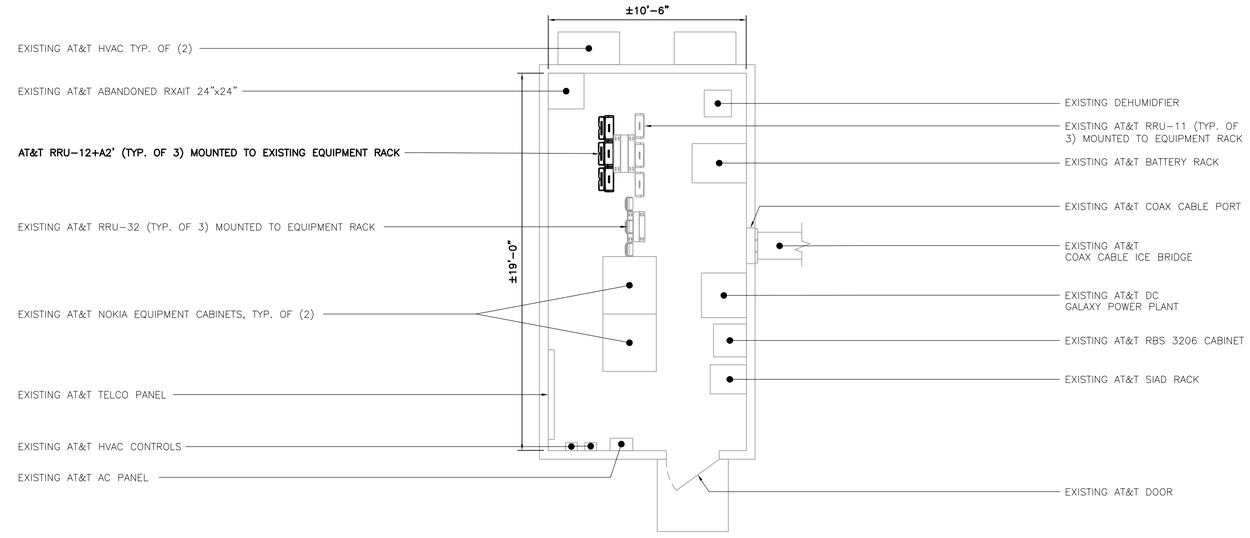
NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

3 / C-1 **WEST TOWER ELEVATION**
SCALE: 1" = 10'-0"

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



1 / C-1 **COMPOUND PLAN**
SCALE: 3/16" = 1'-0"
TRUE NORTH



2 / C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'-0"
TRUE NORTH

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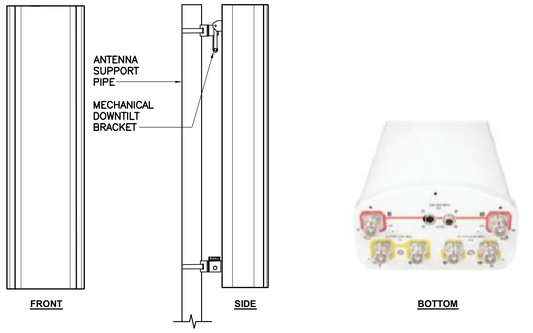
PLANS & ELEVATIONS

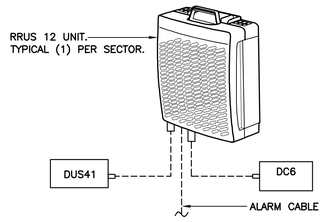
C-1

Sheet No. 3 of 7



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ANDREW MODEL: SBNHH-1D65A	55"L x 11.9"W x 7.1"D	33.5 LBS.

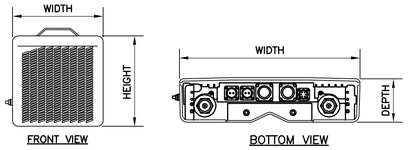
5 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

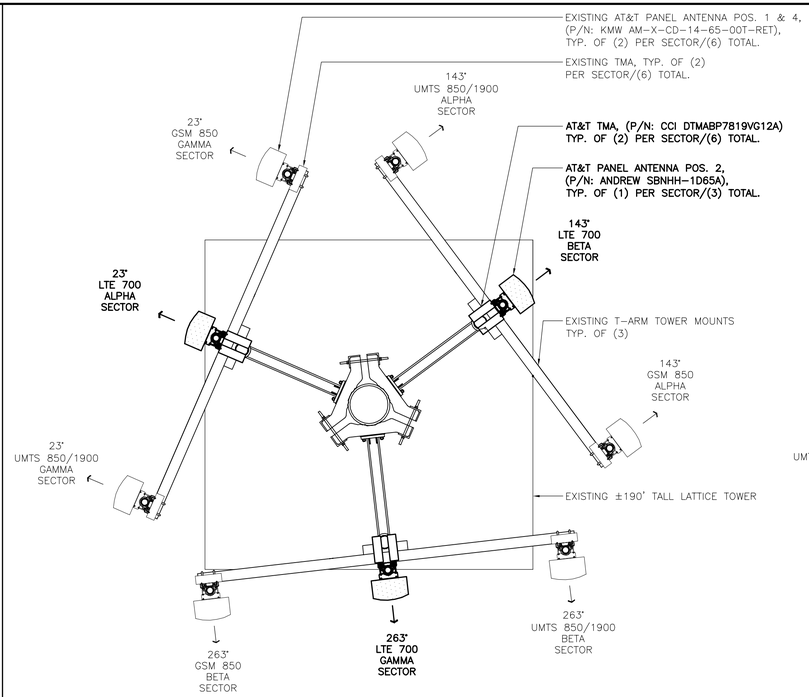
6 C-2 ERICSSON RRUS 12 DETAIL
SCALE: 1" = 1'-0"



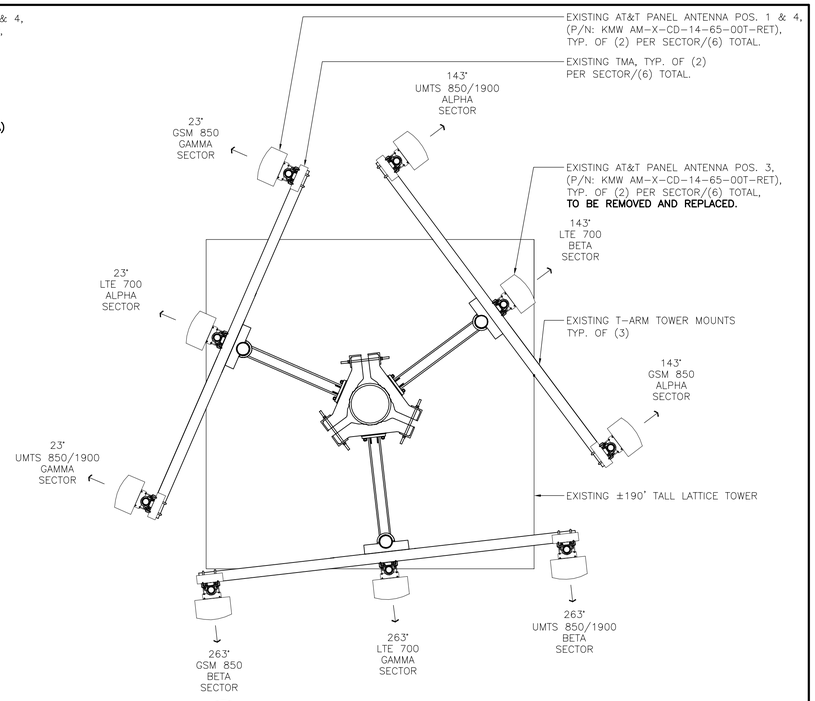
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS A2	16.42"L x 15.19"W x 3.35"D	22.05 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

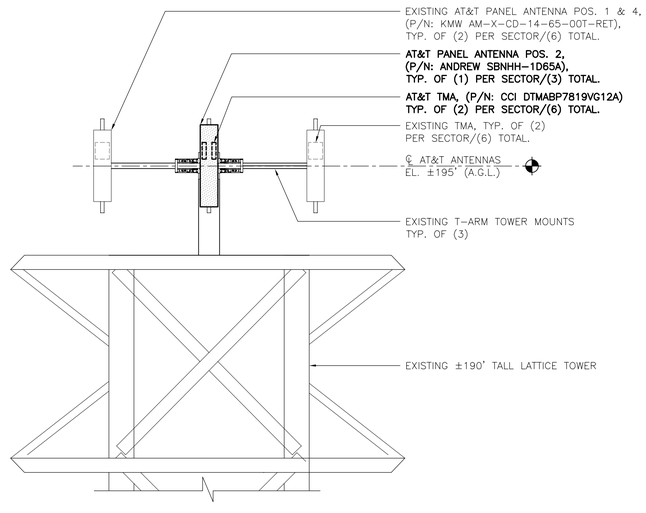
7 C-2 ERICSSON RRUS A2 DETAIL
SCALE: 1" = 1'-0"



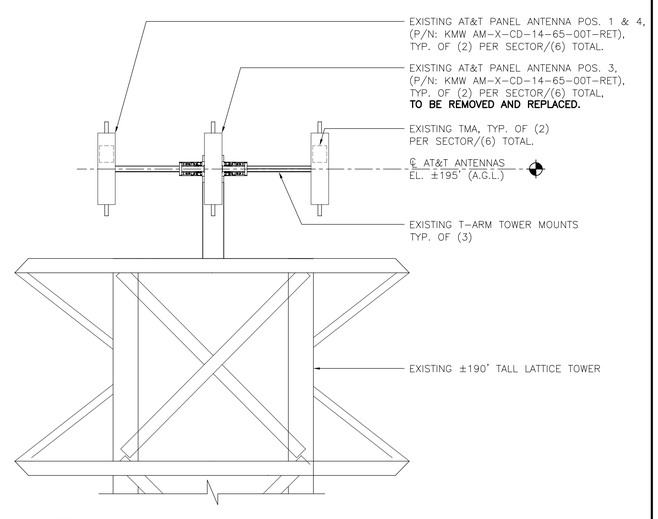
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



1 C-2 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



4 C-2 PROPOSED ANTENNA ELEVATION
SCALE: 1/4" = 1'-0"



3 C-2 EXISTING ANTENNA ELEVATION
SCALE: 1/4" = 1'-0"

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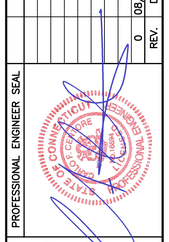

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LTE 2C EQUIPMENT DETAILS

C-2

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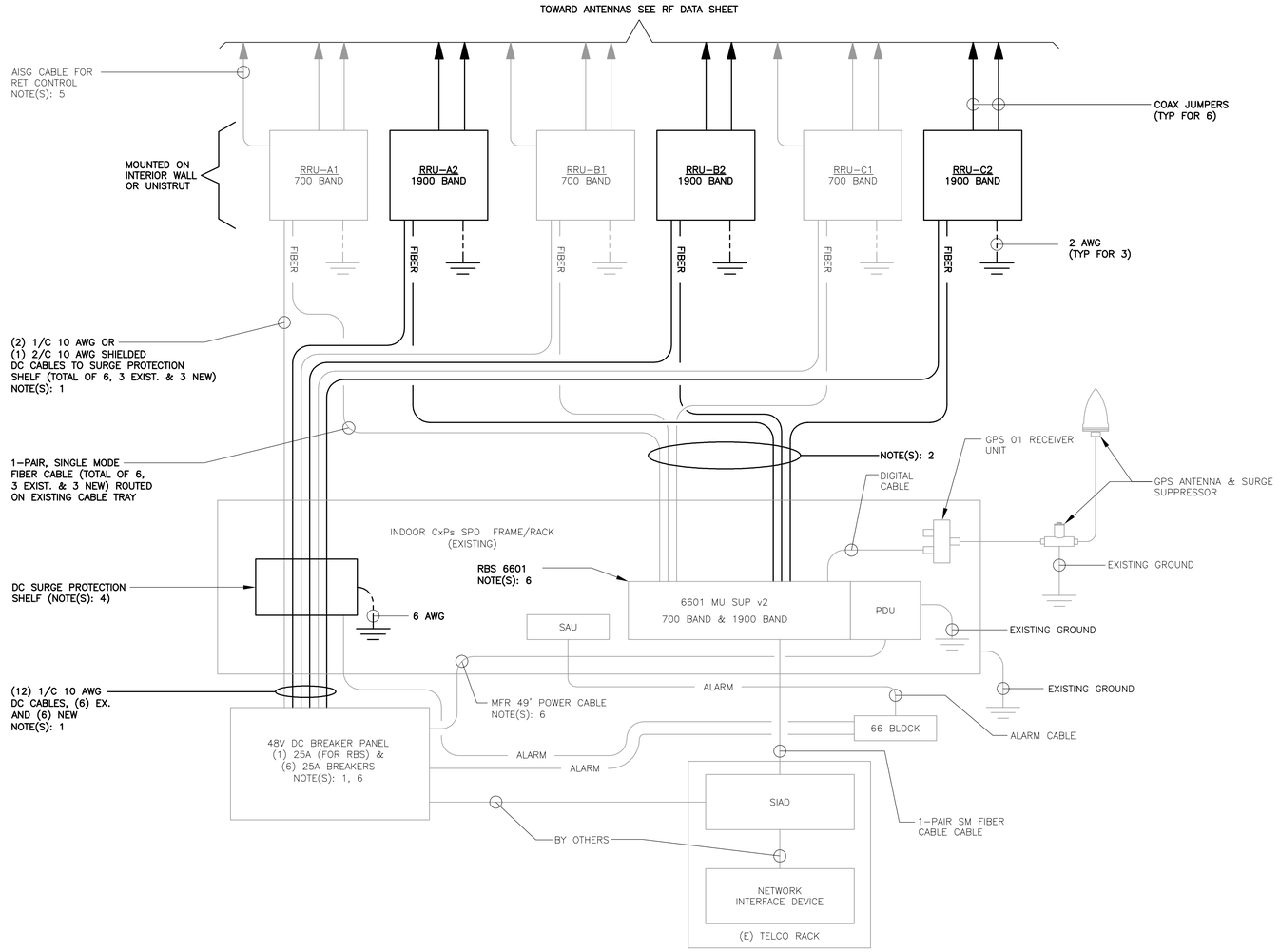


1 E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	08/22/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — CRAIG A. GAUDET — LICENSED PROFESSIONAL ENGINEER

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

OLD SAYBROOK

CT2042 - LTE 2C

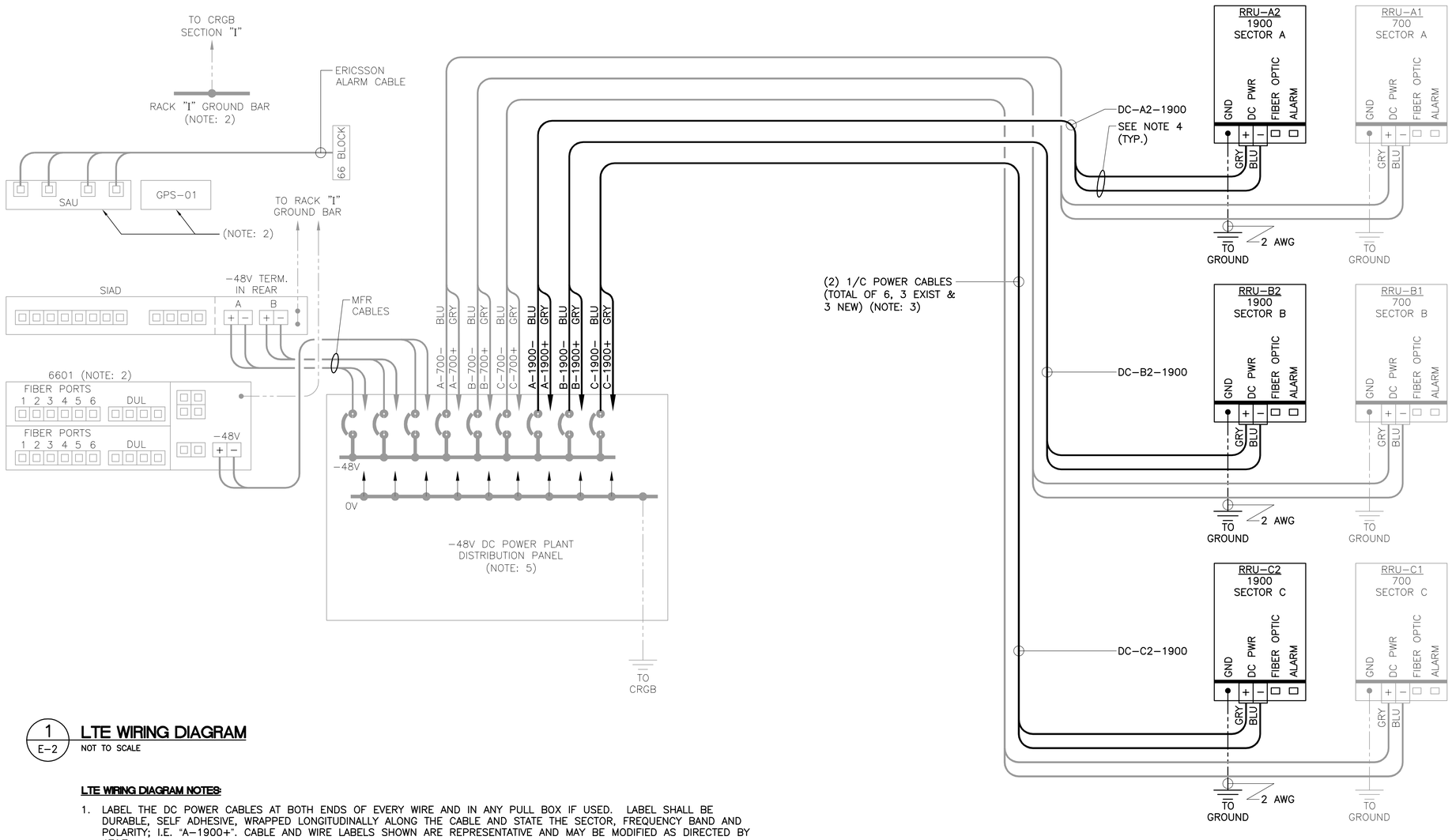
226 FERRY ROAD
OLD SAYBROOK, CT 06475

DATE:	08/16/16
SCALE:	AS NOTED
JOB NO.	16071.16

LTE SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 5 of 7



1/E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

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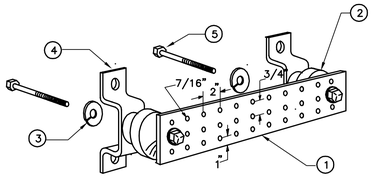
OLD SAYBROOK, CT 06475

DATE: 08/16/16
SCALE: AS NOTED
JOB NO. 16071.16

LTE WIRING DIAGRAM

E-2

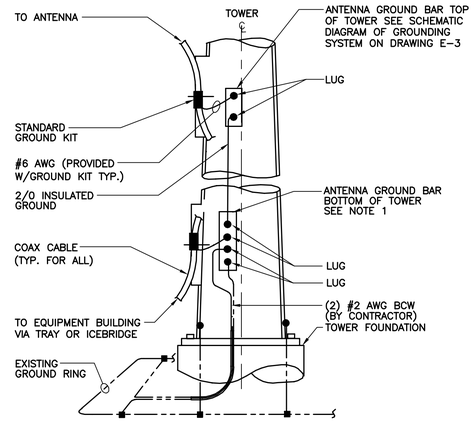
Sheet No. 6 of 7



LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

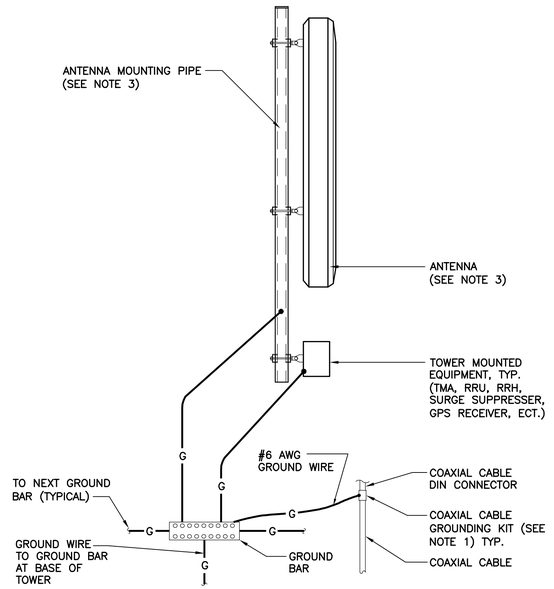
3 / E-3 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

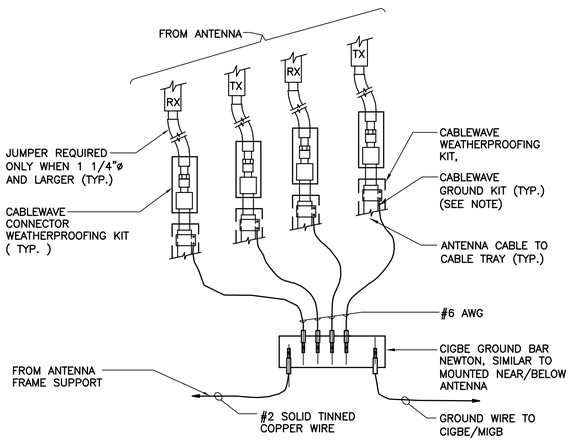
2 / E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

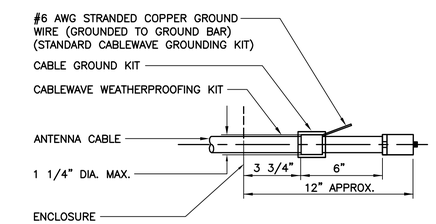
1 / E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

5 / E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

4 / E-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

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SCALE: AS NOTED
JOB NO. 16071.16

TYPICAL ELECTRICAL DETAILS

E-3
Sheet No. 7 of 7

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

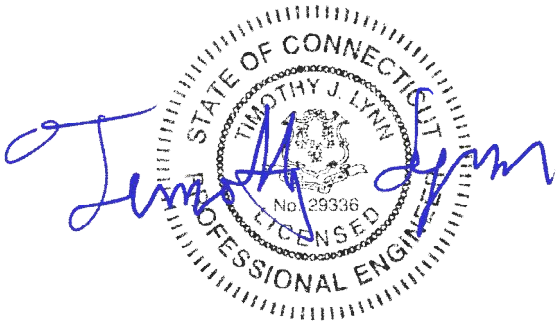
AT&T Site Ref: CT2042

Eversource Structure Dist West River x-ing
190' Electric Transmission Lattice Tower

226 Ferry Road
Old Saybrook, CT

CENTEK Project No. 16071.16

~~Date: September 7, 2016~~
~~Rev 1: October 24, 2016~~
Rev 2: November 17, 2016



Prepared for:
AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to analyze the existing antenna mast and 190' utility tower located at 226 Ferry Road in Old Saybrook, CT for the proposed antenna and equipment upgrade by AT&T.

The existing and proposed loads consist of the following:

- SPRINT (Existing to remain):
  Antennas: Six (6) Decibel DB950G40E-M panel antennas mounted on three (3) Valmont wireless frames to three (3) separate legs of the tower with a RAD center elevation of 136.5-ft above tower base plate.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the outside of the tower as indicated in section 4 of this report.
- AT&T (Existing to Remain):
  Antennas: Six (6) KMW AM-X-CD-14-65-00T panel antennas and six (6) Powerwave TT19-08DB111-01 TMAs mounted on three (3) 10'-6" T-Arms with a RAD center elevation of 195-ft above tower base.
  Coax Cables: Eighteen (18) 1-5/8" ∅ coax cables running on a leg of the existing tower.
- AT&T (Existing to Remove):
  Antennas: Three (3) KMW AM-X-CD-14-65-00T panel antennas and three (3) Powerwave TTAW-07BP111-001 TMA's mounted on three (3) 10'-6" T-Arms with a RAD center elevation of 195-ft above tower base.
- **AT&T (Proposed):**
  Antennas: Three (3) Andrew SBNHH-1D65A panel antennas and six (6) CCI DTMABP7819VG12A TMAs mounted on three (3) 10'-6" T-Arms with a RAD center elevation of 195-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 12" std. 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 190-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..... 120 mph (1)
  Radial Ice Thickness..... 0"

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

- MAST ASSEMBLY ANALYSIS

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

  Load cases considered:

  Load Case 1:
  Wind Speed……... 105 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
12” Std. Pipe	Bending	35.0%	**PASS**
HSS6x6x1/4 Brace	Bending	50.4%	**PASS**
Connection	Shear	26.3%	**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 **98.31%** occurs in the utility tower under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

- FOUNDATION AND ANCHORS

Tower Member	Stress Ratio (% of capacity)	Result
Angle 84Y	98.31%	**PASS**

The existing foundation consists of two (2) 3.5-ft square tapering to 6-ft square x 12.5-ft long reinforced concrete piers with two (2) 10-ft square x 2-ft thick reinforced concrete pads (uplift piers) and two (2) 10-ft x 25-ft x 7.5-ft thick reinforced concrete mats (compression piers) . The base of the tower is connected to the foundation by five (5) 2-1/4” ∅ anchor bolts per leg. Foundation information was obtained from NUSCO drawings # 01503-60002 and 01503-42001.

BASE REACTIONS:

From PLS-Tower analysis of utility tower based on NESC/NU prescribed loads.

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	17.9 kips	37.4 kips	118.3 kips
NESC Extreme Wind	39.1 kips	274.1 kips	298.5 kips

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

ANCHOR BOLTS:

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

Design Limit	Original Design (1)	Proposed Loading	Result
Uplift	325 kips	301.4 kips	**PASS**
Compression	370 kips	328.4 kips	**PASS**

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

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Required FS (1)	Proposed Loading FS (2)	Result
Reinf. Conc. Pad & Pier	Uplift	1.0	1.52	**PASS**
	Bearing Pressure	5 ksf	4.6 ksf	**PASS**

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

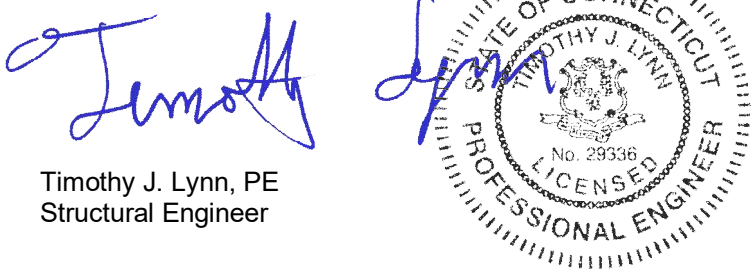
Conclusion

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

The analysis is based, in part on the information provided to this office by Eversource and AT&T. 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.

Northeast Utilities System

Job :
Description:

Spec. Number
Computed by
Checked by

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Date 3/1/11
Date

INPUT DATA

TOWER ID: dist west river crossing

Structure Height (ft) : 190

Wind Zone : SE Coastal CT (red)

Wind Speed : 120 mph

Tower Type : ○ Suspension ◉ Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

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

Conductor Properties:

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

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	8,000	12,000	8,000	12,000
EXTREME WIND =	8,214	12,156	10,953	16,512
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	7,187	10,859	7,647	15,088

Line Geometry:

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

Northeast Utilities System

Job :
Description:

Spec. Number
Computed by
Checked by

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Date 3/1/11
Date

WIRE LOADING AT ATTACHMENTS

TOWER ID: dist west river crossing

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

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

1. NESC RULE 250B Heavy Loading:

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

2. NESC RULE 250C Transverse Extreme Wind Loading:

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

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

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

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

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

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

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

6. 60 Deg. F, No Wind

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

7. Construction

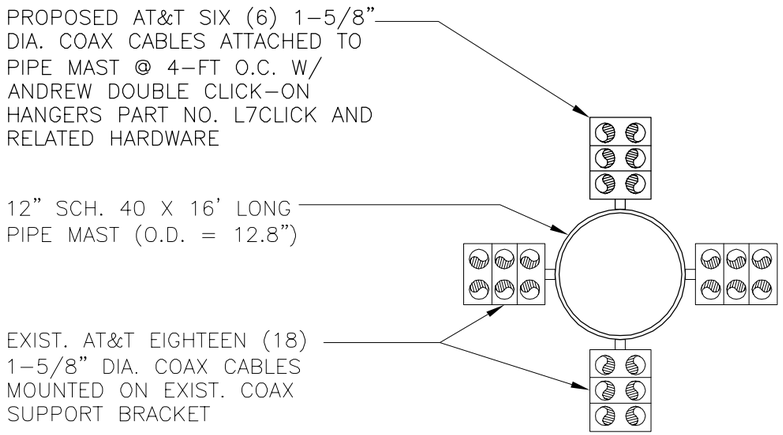
	Horizontal	Longitudinal	Vertical
Shield Wire =	0 lb	460 lb	333 lb
Conductor =	0 lb	4,229 lb	949 lb

Northeast
Utilities System

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

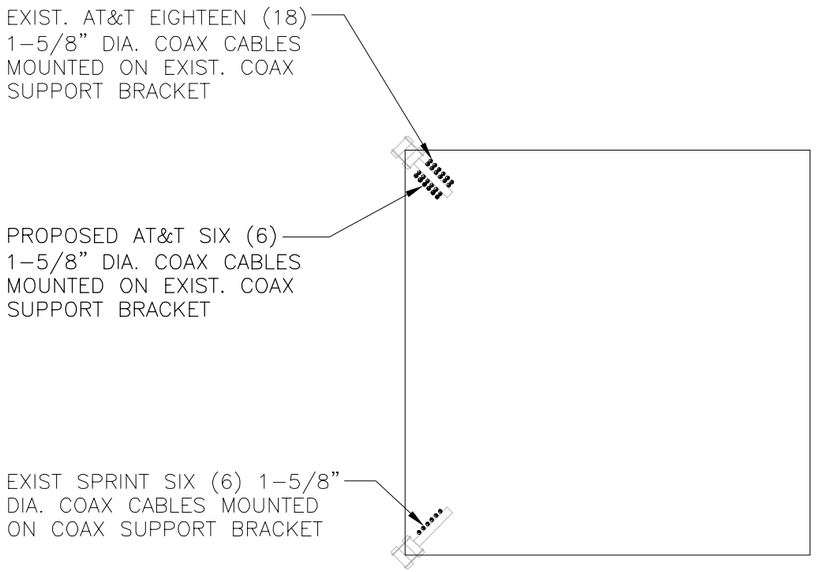
NOTE: All loads include required overload factors (OLF's).

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



2 / EL-1 **COAX CABLE PLAN**

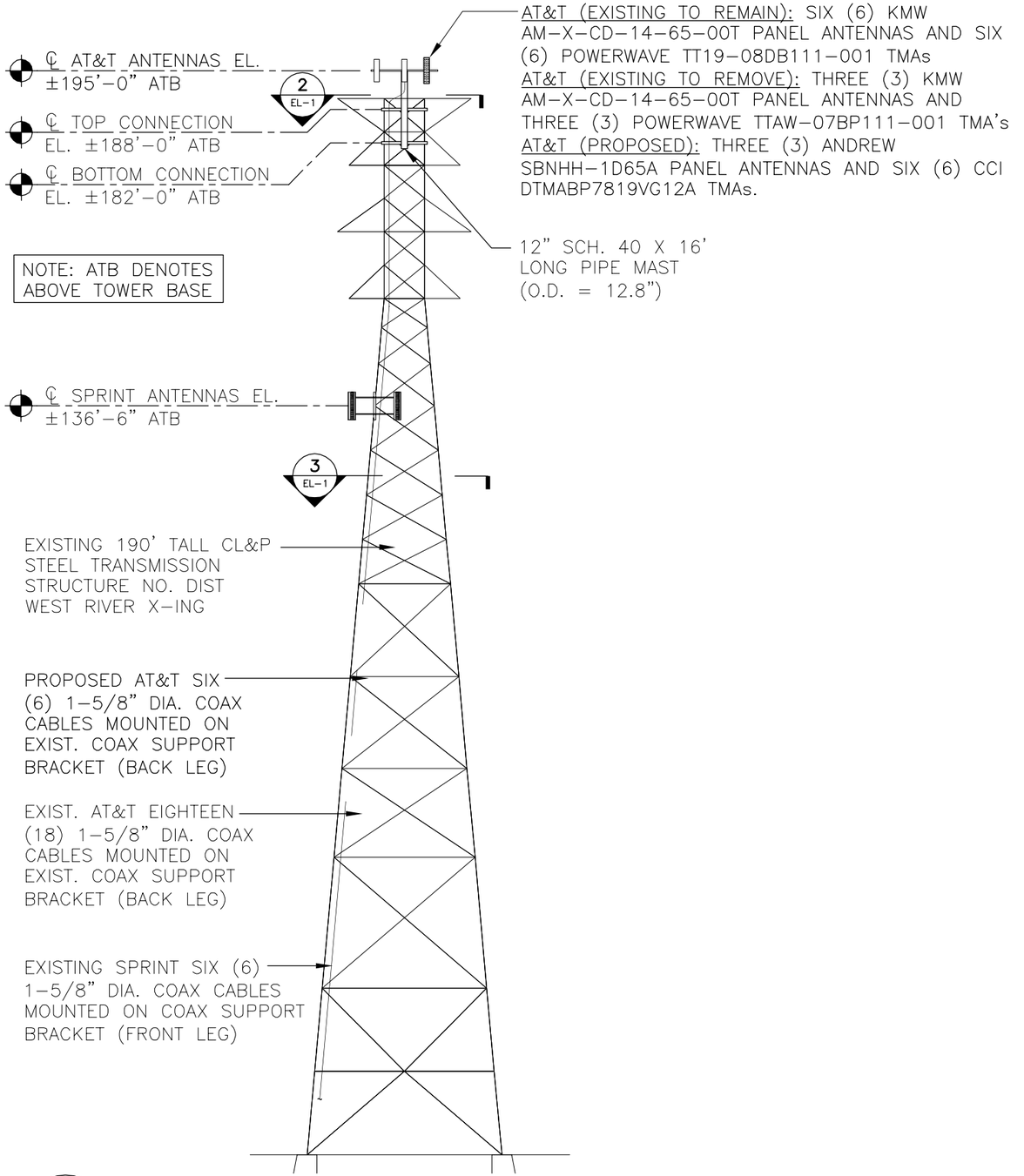
SCALE: NOT TO SCALE



3 / EL-1 **COAX CABLE PLAN**

SCALE: NOT TO SCALE

APPROX. NORTH



1 / EL-1 **TOWER & MAST ELEVATION**

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	10/24/16	TJL	CFC	ISSUED FOR CONSTRUCTION
0	9/7/16	TJL	CFC	ISSUED FOR REVIEW

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AT&T MOBILITY

CT2042
STRUCTURE
DIST WEST RIVER X-ING

228 FERRY ROAD
OLD SAYBROOK CT, 06475

DATE:	09/7/16
SCALE:	AS SHOWN
JOB NO.	16071.16

TOWER / MAST ELEVATION AND FEEDLINE PLANS

SHEET NO.
EL-1
Sheet No. 1 of 1

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Branford, CT 06405 F: (203) 488-8587

Subject:	Loads on AT&T Equipmnet Structure Dist. West River X-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

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

Wind Speeds

Basic Wind Speed: $V := 105$ 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 = $h := 190$ ft (User Input)

Height to Center of Antennas = $z_{AT\&T} := 195$ 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)

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

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

$$K_{iz} := \left(\frac{z_{AT\&T}}{33}\right)^{0.1} = 1.194$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.24$$

Velocity Pressure Coefficient =

$$Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.457$$

Velocity Pressure w/o Ice =

$$qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot K_{zt} \cdot V^2 \cdot I_{Wind} = 40.188$$

Velocity Pressure with Ice =

$$qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot K_{zt} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.924$$

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Subject:	Loads on AT&T Equipmnet Structure Dist. West River X-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Mast

Mast Data: (Pipe 12" SCH. 40) (User Input)

Mast Shape = Round (User Input)

Mast Diameter = $D_{mast} := 12.8$ in (User Input)

Mast Length = $L_{mast} := 16$ ft (User Input)

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

Mast Aspect Ratio = $Ar_{mast} := \frac{12 L_{mast}}{D_{mast}} = 15.0$

Mast Force Coefficient = $Ca_{mast} = 0.98$

Wind Load (without ice)

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

Total Mast Wind Force = $qz_{AT\&T} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 57$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{iz})}{12} = 1.44$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 15$ 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 = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + t_{iz} \cdot 2)^2 - D_{mast}^2\right] = 105.8$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 41$ plf **BLC 3**

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Location:	Old Saybrook, CT
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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew SBNHH-1D65A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.5$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 34$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.7$		
Antenna Force Coefficient =	$Ca_{ant} = 1.3$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.8$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 968$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.8$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 20.5$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 284$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 102$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4689$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 6686$		cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 217$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 650$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	KMW AM-X-CD-14-65-00T		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 48$	in	(User Input)
Antenna Width =	$W_{ant} := 11.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 36.4$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 23.6$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1626$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 5.9$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 35.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 483$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 218$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3342$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5525$		cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 179$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1074$	lbs	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure Dist. West River X-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	Powerwave TT19-08DB111-01			
TMA Shape =	Flat		(User Input)	
TMA Height =	$L_{TMA} := 14.2$	in	(User Input)	
TMA Width =	$W_{TMA} := 6.7$	in	(User Input)	
TMA Thickness =	$T_{TMA} := 5.4$	in	(User Input)	
TMA Weight =	$WT_{TMA} := 22$	lbs	(User Input)	
Number of TMA's =	$N_{TMA} := 6$		(User Input)	
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{T_{TMA}} = 2.6$			
TMA Force Coefficient =	$Ca_{TMA} = 1.21$			

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.5$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 3.2$	sf	
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 209$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz})}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 7.7$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 99$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 132$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 514$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz})(T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 2 \times 10^3$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 50$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 301$	lbs	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure Dist. West River X-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on TMA's

Proposed TMA Data:

TMA Model =	CCI DTMABP7819VG12A		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 10.63$	in	(User Input)
TMA Width =	$W_{TMA} := 11.02$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.78$	in	(User Input)
TMA Weight =	$WT_{TMA} := 20$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{T_{TMA}} = 2.8$		
TMA Force Coefficient =	$Ca_{TMA} = 1.21$		

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.3$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 1.7$	sf	
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 110$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz})}{144} = 0.9$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5.2$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 68$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 120$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 443$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz})(T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 1 \times 10^3$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 48$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 290$	lbs	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure Dist. West River X-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type:	Valmont 10-6" T-Arm Co-Location Kit		
Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CaAa := 15.5$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CaAa_{ice} := 17.8$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 910$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1500$	lbs	

Wind Load (without ice)

Total Mount Wind Force =	$F_{mnt} := qz_{AT\&T} \cdot G_H \cdot CaAa = 841$	lbs	**BLC 5,7**

Wind Load (with ice)

Total Mount Wind Force =	$Fi_{mnt} := qz_{ice.AT\&T} \cdot G_H \cdot CaAa_{ice} = 190$	lbs	**BLC 4,6**

Gravity Loads (without ice)

Weight of All Mounts =	$WT_{mnt} = 910$	lbs	**BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts =	$WT_{mnt.ice} - WT_{mnt} = 590$	lbs	**BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 5$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 24$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 6$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 30.3$

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

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 1$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{AT\&T} \cdot G_H \cdot A_{coax} = 64$ plf **BLC 5**

Wind Load (with ice)

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

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.AT\&T} \cdot G_H \cdot AICE_{coax} = 18$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} := Wt_{coax} \cdot N_{coax} = 25$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2\right] = 29.7$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 277$ plf **BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data: HSS 6x6x1/4

Antenna Shape = Flat (User Input)

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

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

Length = $L_{mem} := 60$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 10.0$

Member Force Coefficient = $Ca_{mem} = 1.5$

Wind Load (without ice)

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

Total Member Wind Force = $F_{mem} := qz_{AT\&T} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 41$ lbs **BLC 5, 7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot t_{iz})}{12} = 0.9$ plf

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 14$ lbs **BLC 4, 6**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot = $Ai_{mem} := (W_{mem} + 2 \cdot t_{iz}) \cdot (H_{mem} + 2 \cdot t_{iz}) - W_{mem} \cdot H_{mem} = 74$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 29$ lbs **BLC 3**

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Mast Only**
Tabulated Load Cases
Location: **Old Saybrook, CT**
Date: 10/17/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	TIA Wind with Ice X-direction
5	TIA Wind X-direction
6	TIA Wind with Ice Z-direction
7	TIA Wind Z-direction

Footnotes:

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Ph. 203-488-0580 / Fax. 203-488-8587

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

Location: **Old Saybrook, CT**

Date: 10/17/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D + 1.6W (X-direction)		1		1	1.2	2	1.2	5	1.6				
2	0.9D + 1.6W (X-direction)		1		1	0.9	2	0.9	5	1.6				
3	1.2D + 1.0Di + 1.0Wi (X-direction)		1		1	1.2	2	1.2	3	1.0	4	1.0		
4	1.2D + 1.6W (Z-direction)		1		1	1.2	2	1.2	7	1.6				
5	0.9D + 1.6W (Z-direction)		1		1	0.9	2	0.9	7	1.6				
6	1.2D + 1.0Di + 1.0Wi (Z-direction)		1		1	1.2	2	1.2	3	1.0	6	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	Mast	16									Lateral
2	M2	Brace	1									Lateral
3	M3	Brace	7.25									Lateral
4	M4	Brace	1									Lateral
5	M5	Brace	1									Lateral
6	M6	Brace	7.25									Lateral
7	M7	Brace	1									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE 12.0	Beam	Pipe	A53 Gr. B	Typical	13.7	262	262	523
2	Brace	HSS6x6x4	Beam	Tube	A500 Gr.46	Typical	5.24	28.6	28.6	45.6

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N4			Mast	Beam	Pipe	A53 Gr. B	Typical
2	M2	N8	N12			Brace	Beam	Tube	A500 Gr.46	Typical
3	M3	N12	N11			Brace	Beam	Tube	A500 Gr.46	Typical
4	M4	N11	N7			Brace	Beam	Tube	A500 Gr.46	Typical
5	M5	N6	N10			Brace	Beam	Tube	A500 Gr.46	Typical
6	M6	N10	N9			Brace	Beam	Tube	A500 Gr.46	Typical
7	M7	N9	N5			Brace	Beam	Tube	A500 Gr.46	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
1	N1	0	0	0	0	
2	N2	0	1	0	0	
3	N3	0	7	0	0	
4	N4	0	16	0	0	
5	N5	3.625	1	-1	0	
6	N6	-3.625	1	-1	0	
7	N7	3.625	7	-1	0	
8	N8	-3.625	7	-1	0	
9	N9	3.625	1	0	0	
10	N10	-3.625	1	0	0	
11	N11	3.625	7	0	0	
12	N12	-3.625	7	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N8	Reaction	Reaction	Reaction				
2	N7	Reaction	Reaction	Reaction				
3	N5	Reaction	Reaction	Reaction				
4	N6	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.102	14
2	M1	Y	-.218	14
3	M1	Y	-.132	14
4	M1	Y	-.12	14
5	M1	Y	-.91	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.65	14
2	M1	Y	-1.074	14
3	M1	Y	-.301	14
4	M1	Y	-.29	14
5	M1	Y	-.59	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.284	14
2	M1	X	.483	14
3	M1	X	.099	14
4	M1	X	.068	14
5	M1	X	.19	14

Member Point Loads (BLC 5 : x-dir TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.968	14
2	M1	X	1.626	14
3	M1	X	.209	14
4	M1	X	.11	14
5	M1	X	.841	14

Member Point Loads (BLC 6 : z-dir TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.284	14
2	M1	Z	.483	14
3	M1	Z	.099	14
4	M1	Z	.068	14
5	M1	Z	.19	14

Member Point Loads (BLC 7 : z-dir TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.968	14
2	M1	Z	1.626	14
3	M1	Z	.209	14
4	M1	Z	.11	14
5	M1	Z	.841	14

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	-.025	-.025	9	14

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	-.041	-.041	0	0
2	M1	Y	-.277	-.277	9	14
3	M2	Y	-.029	-.029	0	0
4	M3	Y	-.029	-.029	0	0
5	M4	Y	-.029	-.029	0	0
6	M5	Y	-.029	-.029	0	0
7	M6	Y	-.029	-.029	0	0
8	M7	Y	-.029	-.029	0	0

Member Distributed Loads (BLC 4 : x-dir 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	.015	.015	0	0
2	M1	X	.018	.018	9	14
3	M2	X	.014	.014	0	0
4	M5	X	.014	.014	0	0

Member Distributed Loads (BLC 5 : x-dir TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.057	.057	0	0
2	M1	X	.064	.064	9	14
3	M2	X	.041	.041	0	0
4	M5	X	.041	.041	0	0

Member Distributed Loads (BLC 6 : z-dir 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	Z	.015	.015	0	0
2	M1	Z	.018	.018	9	14
3	M3	Z	.014	.014	0	0
4	M6	Z	.014	.014	0	0

Member Distributed Loads (BLC 7 : z-dir TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.057	.057	0	0
2	M1	Z	.064	.064	9	14
3	M3	Z	.041	.041	0	0
4	M6	Z	.041	.041	0	0

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					5	1		
3	Weight of Ice Only	None					5	8		
4	x-dir TIA Wind with Ice	None					5	4		
5	x-dir TIA Wind	None					5	4		
6	z-dir TIA Wind with Ice	None					5	4		
7	z-dir TIA Wind	None					5	4		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	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										
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6												
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6												
6	1.2D + 1.0Di + 1.0Wi (Z-dir...	Yes	Y		1	1.2	2	1.2	3	1	6	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	0	1	0	1	0	4	0	1	0	1	0	1
2			min	0	1	0	4	0	2	0	1	0	1	0	1
3		2	max	3.604	6	0	4	8.532	4	2.744	1	22.952	4	16.909	1
4			min	.886	2	-5.977	1	.399	2	0	4	.009	2	0	4
5		3	max	6.994	3	7.254	1	0	2	0	1	40.828	4	40.8	1
6			min	1.782	5	0	4	-7.258	4	0	1	0	2	0	4
7		4	max	5.685	3	6.582	1	0	2	0	1	12.987	4	12.973	1
8			min	1.547	5	0	4	-6.586	4	0	1	0	2	0	4
9		5	max	0	1	.006	1	0	2	0	1	0	1	0	1
10			min	0	1	0	4	-.01	4	0	1	0	1	0	1
11	M2	1	max	-1.135	3	2.114	6	12.699	4	0	1	0	1	0	1
12			min	-8.313	4	-1.159	2	2.374	3	0	1	0	1	0	1
13		2	max	-1.135	3	2.101	6	12.699	4	0	1	3.175	4	.29	2
14			min	-8.313	4	-1.163	2	2.371	3	0	1	.593	3	-.527	6
15		3	max	-1.135	3	2.089	6	12.699	4	0	1	6.349	4	.581	2
16			min	-8.313	4	-1.167	2	2.367	3	0	1	1.185	3	-1.051	6
17		4	max	-1.135	3	2.076	6	12.699	4	0	1	9.524	4	.874	2
18			min	-8.313	4	-1.171	2	2.364	3	0	1	1.777	3	-1.571	6
19		5	max	-1.135	3	2.063	6	12.699	4	0	1	12.699	4	1.167	2
20			min	-8.313	4	-1.175	2	2.36	3	0	1	2.367	3	-2.089	6
21	M3	1	max	-2.361	3	2.065	6	-1.134	3	2.089	6	12.699	4	0	1
22			min	-12.696	4	-1.186	2	-8.274	4	-1.167	2	2.367	3	0	1
23		2	max	-2.361	3	1.974	6	-1.134	3	2.089	6	2.667	2	2.176	2
24			min	-12.696	4	-1.215	2	-8.155	4	-1.167	2	-2.19	4	-3.66	6
25		3	max	-2.361	3	1.882	6	7.968	5	2.089	6	-1.744	3	-.798	5
26			min	-12.696	4	-2.477	1	-8.036	4	-2.57	1	-16.862	4	-9.12	1
27		4	max	6.496	2	-.22	5	8.155	4	-.216	5	-.583	6	-.425	5
28			min	-12.696	4	-2.516	1	-2.058	2	-2.57	1	-2.789	1	-4.595	1
29		5	max	6.496	2	-.249	5	8.274	4	-.216	5	12.699	4	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
30			min	-12.696	4	-2.555	1	-2.058	2	-2.57	1	-6.501	2	0	1
31	M4	1	max	2.058	2	-.208	5	6.501	2	0	1	12.699	4	-.216	5
32			min	-8.313	4	-2.56	1	-12.699	4	0	1	-6.501	2	-2.57	1
33		2	max	2.058	2	-.212	5	6.501	2	0	1	9.524	4	-.164	5
34			min	-8.313	4	-2.565	1	-12.699	4	0	1	-4.876	2	-1.93	1
35		3	max	2.058	2	-.216	5	6.501	2	0	1	6.349	4	-.11	5
36			min	-8.313	4	-2.57	1	-12.699	4	0	1	-3.251	2	-1.288	1
37		4	max	2.058	2	-.22	5	6.501	2	0	1	3.175	4	-.056	5
38			min	-8.313	4	-2.576	1	-12.699	4	0	1	-1.625	2	-.645	1
39		5	max	2.058	2	-.224	5	6.501	2	0	1	0	1	0	1
40			min	-8.313	4	-2.581	1	-12.699	4	0	1	0	1	0	1
41	M5	1	max	3.848	4	2.233	6	-1.628	3	0	1	0	1	0	1
42			min	.932	3	.692	2	-6.101	4	0	1	0	1	0	1
43		2	max	3.848	4	2.221	6	-1.631	3	0	1	-.407	3	-.172	2
44			min	.932	3	.688	2	-6.101	4	0	1	-1.525	4	-.557	6
45		3	max	3.848	4	2.208	6	-1.635	3	0	1	-.816	3	-.344	2
46			min	.932	3	.683	2	-6.101	4	0	1	-3.05	4	-1.11	6
47		4	max	3.848	4	2.196	6	-1.638	3	0	1	-1.225	3	-.514	2
48			min	.932	3	.679	2	-6.101	4	0	1	-4.576	4	-1.661	6
49		5	max	3.848	4	2.183	6	-1.642	3	0	1	-1.635	3	-.683	2
50			min	.932	3	.675	2	-6.101	4	0	1	-6.101	4	-2.208	6
51	M6	1	max	6.101	4	2.183	6	3.858	4	2.208	6	-1.635	3	0	1
52			min	1.641	3	.676	2	.932	3	.683	2	-6.101	4	0	1
53		2	max	6.101	4	2.092	6	3.977	4	2.208	6	.999	4	-1.199	2
54			min	1.641	3	.647	2	.932	3	.683	2	-.656	2	-3.874	6
55		3	max	6.101	4	2	6	4.027	5	2.208	6	8.314	4	-2.345	2
56			min	1.641	3	-1.046	4	-4.095	4	-1.14	4	1.745	3	-7.582	6
57		4	max	6.101	4	-.466	2	.948	2	-.504	2	.999	4	-.87	2
58			min	-2.481	2	-2.092	6	-3.977	4	-2.208	6	.322	3	-3.874	6
59		5	max	6.101	4	-.495	2	.948	2	-.504	2	2.48	2	0	1
60			min	-2.481	2	-2.183	6	-3.858	4	-2.208	6	-6.101	4	0	1
61	M7	1	max	3.848	4	-.496	2	6.101	4	0	1	2.48	2	-.504	2
62			min	-.948	2	-2.183	6	-2.48	2	0	1	-6.101	4	-2.208	6
63		2	max	3.848	4	-.5	2	6.101	4	0	1	1.86	2	-.379	2
64			min	-.948	2	-2.196	6	-2.48	2	0	1	-4.576	4	-1.661	6
65		3	max	3.848	4	-.504	2	6.101	4	0	1	1.24	2	-.254	2
66			min	-.948	2	-2.208	6	-2.48	2	0	1	-3.05	4	-1.11	6
67		4	max	3.848	4	-.508	2	6.101	4	0	1	.62	2	-.127	2
68			min	-.948	2	-2.221	6	-2.48	2	0	1	-1.525	4	-.557	6
69		5	max	3.848	4	-.512	2	6.101	4	0	1	0	1	0	1
70			min	-.948	2	-2.233	6	-2.48	2	0	1	0	1	0	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	0	1	0	1	0	4	0	1	0	1	0	1	0	1
2			min	0	1	0	4	0	2	0	1	0	1	0	1	0	1
3		2	max	.263	6	0	4	1.246	4	0	4	4.956	1	6.728	4	-.003	2
4			min	.065	2	-.873	1	.058	2	-4.956	1	0	4	.003	2	-6.728	4
5		3	max	.511	3	1.059	1	0	2	0	4	11.96	1	11.968	4	0	2
6			min	.13	5	0	4	-1.06	4	-11.96	1	0	4	0	2	-11.968	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
7		4	max	.415	3	.961	1	0	2	0	4	3.803	1	3.807	4	0	2
8			min	.113	5	0	4	-.961	4	-3.803	1	0	4	0	2	-3.807	4
9		5	max	0	1	0	1	0	2	0	1	0	1	0	1	0	1
10			min	0	1	0	4	-.001	4	0	1	0	1	0	1	0	1
11	M2	1	max	-.217	3	.856	6	5.141	4	0	1	0	1	0	1	0	1
12			min	-1.586	4	-.469	2	.961	3	0	1	0	1	0	1	0	1
13		2	max	-.217	3	.851	6	5.141	4	.663	6	.365	2	3.996	4	-.747	3
14			min	-1.586	4	-.471	2	.96	3	-.365	2	-.663	6	.747	3	-3.996	4
15		3	max	-.217	3	.845	6	5.141	4	1.322	6	.732	2	7.992	4	-1.492	3
16			min	-1.586	4	-.472	2	.958	3	-.732	2	-1.322	6	1.492	3	-7.992	4
17		4	max	-.217	3	.84	6	5.141	4	1.978	6	1.1	2	11.988	4	-2.237	3
18			min	-1.586	4	-.474	2	.957	3	-1.1	2	-1.978	6	2.237	3	-11.988	4
19		5	max	-.217	3	.835	6	5.141	4	2.629	6	1.469	2	15.984	4	-2.98	3
20			min	-1.586	4	-.476	2	.955	3	-1.469	2	-2.629	6	2.98	3	-15.984	4
21	M3	1	max	-.451	3	.836	6	-.459	3	0	1	0	1	15.984	4	-2.98	3
22			min	-2.423	4	-.48	2	-3.349	4	0	1	0	1	2.98	3	-15.984	4
23		2	max	-.451	3	.799	6	-.459	3	4.607	6	2.739	2	3.357	2	2.756	4
24			min	-2.423	4	-.492	2	-3.301	4	-2.739	2	-4.607	6	-2.756	4	-3.357	2
25		3	max	-.451	3	.762	6	3.226	5	11.48	1	-1.005	5	-2.195	3	21.225	4
26			min	-2.423	4	-1.003	1	-3.253	4	1.005	5	-11.48	1	-21.225	4	2.195	3
27		4	max	1.24	2	-.089	5	3.301	4	5.784	1	-.535	5	-.734	6	3.511	1
28			min	-2.423	4	-1.018	1	-.833	2	.535	5	-5.784	1	-3.511	1	.734	6
29		5	max	1.24	2	-.101	5	3.349	4	0	1	0	1	15.984	4	8.183	2
30			min	-2.423	4	-1.034	1	-.833	2	0	1	0	1	-8.183	2	-15.984	4
31	M4	1	max	.393	2	-.084	5	2.632	2	3.235	1	-.272	5	15.984	4	8.183	2
32			min	-1.586	4	-1.036	1	-5.141	4	.272	5	-3.235	1	-8.183	2	-15.984	4
33		2	max	.393	2	-.086	5	2.632	2	2.429	1	-.206	5	11.988	4	6.137	2
34			min	-1.586	4	-1.038	1	-5.141	4	.206	5	-2.429	1	-6.137	2	-11.988	4
35		3	max	.393	2	-.087	5	2.632	2	1.621	1	-.139	5	7.992	4	4.092	2
36			min	-1.586	4	-1.041	1	-5.141	4	.139	5	-1.621	1	-4.092	2	-7.992	4
37		4	max	.393	2	-.089	5	2.632	2	.811	1	-.07	5	3.996	4	2.046	2
38			min	-1.586	4	-1.043	1	-5.141	4	.07	5	-.811	1	-2.046	2	-3.996	4
39		5	max	.393	2	-.091	5	2.632	2	0	1	0	1	0	1	0	1
40			min	-1.586	4	-1.045	1	-5.141	4	0	1	0	1	0	1	0	1
41	M5	1	max	.734	4	.904	6	-.659	3	0	1	0	1	0	1	0	1
42			min	.178	3	.28	2	-2.47	4	0	1	0	1	0	1	0	1
43		2	max	.734	4	.899	6	-.66	3	.701	6	-.217	2	-.513	3	1.92	4
44			min	.178	3	.278	2	-2.47	4	.217	2	-.701	6	-1.92	4	.513	3
45		3	max	.734	4	.894	6	-.662	3	1.398	6	-.433	2	-1.027	3	3.84	4
46			min	.178	3	.277	2	-2.47	4	.433	2	-1.398	6	-3.84	4	1.027	3
47		4	max	.734	4	.889	6	-.663	3	2.091	6	-.647	2	-1.542	3	5.76	4
48			min	.178	3	.275	2	-2.47	4	.647	2	-2.091	6	-5.76	4	1.542	3
49		5	max	.734	4	.884	6	-.665	3	2.779	6	-.86	2	-2.058	3	7.679	4
50			min	.178	3	.273	2	-2.47	4	.86	2	-2.779	6	-7.679	4	2.058	3
51	M6	1	max	1.164	4	.884	6	1.562	4	0	1	0	1	-2.058	3	7.679	4
52			min	.313	3	.274	2	.377	3	0	1	0	1	-7.679	4	2.058	3
53		2	max	1.164	4	.847	6	1.61	4	4.876	6	-1.509	2	1.257	4	.826	2
54			min	.313	3	.262	2	.377	3	1.509	2	-4.876	6	-.826	2	-1.257	4
55		3	max	1.164	4	.81	6	1.63	5	9.544	6	-2.951	2	10.465	4	-2.197	3
56			min	.313	3	-.423	4	-1.658	4	2.951	2	-9.544	6	2.197	3	-10.465	4
57		4	max	1.164	4	-.189	2	.384	2	4.876	6	-1.096	2	1.257	4	-.406	3
58			min	-.473	2	-.847	6	-1.61	4	1.096	2	-4.876	6	.406	3	-1.257	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
59		5	max	1.164	4	-.2	2	.384	2	0	1	0	1	3.122	2	7.679	4
60			min	-.473	2	-.884	6	-1.562	4	0	1	0	1	-7.679	4	-3.122	2
61	M7	1	max	.734	4	-.201	2	2.47	4	2.779	6	-.634	2	3.122	2	7.679	4
62			min	-.181	2	-.884	6	-1.004	2	.634	2	-2.779	6	-7.679	4	-3.122	2
63		2	max	.734	4	-.202	2	2.47	4	2.091	6	-.477	2	2.341	2	5.76	4
64			min	-.181	2	-.889	6	-1.004	2	.477	2	-2.091	6	-5.76	4	-2.341	2
65		3	max	.734	4	-.204	2	2.47	4	1.398	6	-.319	2	1.561	2	3.84	4
66			min	-.181	2	-.894	6	-1.004	2	.319	2	-1.398	6	-3.84	4	-1.561	2
67		4	max	.734	4	-.205	2	2.47	4	.701	6	-.16	2	.78	2	1.92	4
68			min	-.181	2	-.899	6	-1.004	2	.16	2	-.701	6	-1.92	4	-.78	2
69		5	max	.734	4	-.207	2	2.47	4	0	1	0	1	0	1	0	1
70			min	-.181	2	-.904	6	-1.004	2	0	1	0	1	0	1	0	1

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N8	max	-2.375	3	2.122	6	-1.135	3	0	1	0	1	0	1
2		min	-12.696	4	-1.162	2	-8.313	4	0	1	0	1	0	1
3	N7	max	12.696	4	2.575	1	2.058	2	0	1	0	1	0	1
4		min	-6.496	2	.268	5	-8.313	4	0	1	0	1	0	1
5	N5	max	2.481	2	2.229	6	3.848	4	0	1	0	1	0	1
6		min	-6.101	4	.512	2	-.948	2	0	1	0	1	0	1
7	N6	max	6.101	4	2.229	6	3.848	4	0	1	0	1	0	1
8		min	1.627	3	.69	2	.932	3	0	1	0	1	0	1
9	Totals:	max	0	4	8.702	6	0	2						
10		min	-8.109	1	2.414	2	-8.929	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotatio...	LC	Z Rotation...	LC
1	N1	max	0	6	-.034	2	-.005	2	1.856e-3	4	0	6	1.181e-4	1
2		min	-.01	1	-.13	6	-.088	4	1.242e-4	2	-3.88e-5	2	0	5
3	N2	max	0	4	-.034	2	-.003	2	1.856e-3	4	0	6	1.177e-4	1
4		min	-.012	1	-.13	6	-.066	4	1.242e-4	2	-3.88e-5	2	0	5
5	N3	max	.031	1	-.034	2	.135	4	5.138e-3	4	0	4	0	4
6		min	0	4	-.131	6	.003	2	1.255e-4	2	-4.451e-4	1	-2.305e-3	1
7	N4	max	.6	1	-.034	2	1.01	4	9.032e-3	4	0	4	0	4
8		min	0	4	-.132	6	.017	2	1.256e-4	2	-4.451e-4	1	-6.196e-3	1
9	N5	max	0	4	0	2	0	2	3.268e-3	6	-5.404e-5	6	3.026e-3	6
10		min	0	2	0	6	0	4	6.96e-4	2	-9.098e-4	1	7.955e-4	2
11	N6	max	0	3	0	2	0	3	3.268e-3	6	1.52e-4	4	-8.185e-4	2
12		min	0	4	0	6	0	4	9.001e-4	2	-8.901e-4	2	-3.026e-3	6
13	N7	max	0	2	0	5	0	4	5.609e-3	4	2.444e-3	1	2.992e-3	3
14		min	0	4	0	1	0	2	2.817e-3	2	8.456e-5	6	3.278e-4	5
15	N8	max	0	4	0	2	0	4	5.609e-3	4	2.427e-3	2	-3.278e-4	5
16		min	0	3	0	6	0	3	-1.198e-3	2	-3.163e-4	4	-2.909e-3	3
17	N9	max	0	6	-.008	2	0	2	3.028e-3	6	-2.603e-4	3	3.026e-3	6
18		min	-.011	1	-.039	6	0	4	6.411e-4	2	-8.14e-4	4	7.955e-4	2
19	N10	max	.002	4	-.011	2	0	3	3.028e-3	6	8.14e-4	4	-8.185e-4	2
20		min	-.011	2	-.039	6	0	4	8.257e-4	2	-5.551e-4	2	-3.026e-3	6
21	N11	max	.029	1	-.034	2	0	4	5.563e-3	4	1.749e-3	1	2.992e-3	3

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotatio...	LC	Z Rotation...	LC
22		min	0	6	-.067	4	0	2	2.559e-3	2	4.529e-4	6	3.278e-4	5
23	N12	max	.029	2	.014	2	0	4	5.563e-3	4	1.653e-3	2	-3.278e-4	5
24		min	-.004	4	-.067	4	0	3	-1.072e-3	2	-1.694e-3	4	-2.909e-3	3

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_12.0	.350	7	4	.078	7		1	391.006	431...	140...	140...	1	H1...
2	M2	HSS6x6x4	.359	1	4	.207	0	z	4	216.551	216...	38.64	38.64	...	H1...
3	M3	HSS6x6x4	.504	3.625	4	.148	0	z	4	197.614	216...	38.64	38.64	...	H1...
4	M4	HSS6x6x4	.359	0	4	.207	0	z	4	216.551	216...	38.64	38.64	...	H1...
5	M5	HSS6x6x4	.196	1	4	.099	0	z	4	216.551	216...	38.64	38.64	...	H1...
6	M6	HSS6x6x4	.332	3.625	4	.104	0	y	6	197.614	216...	38.64	38.64	...	H1...
7	M7	HSS6x6x4	.196	0	4	.099	0	z	4	216.551	216...	38.64	38.64	...	H1...

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N8	-7.262	-.959	-2.524	0	0	0
2	1	N7	-6.394	2.575	1.992	0	0	0
3	1	N5	2.379	.713	-.882	0	0	0
4	1	N6	3.168	.891	1.414	0	0	0
5	1	Totals:	-8.109	3.219	0			
6	1	COG (ft):	X: 0	Y: 10.986	Z: -.013			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N8	-7.158	-1.162	-2.457	0	0	0
2	2	N7	-6.496	2.374	2.058	0	0	0
3	2	N5	2.481	.512	-.948	0	0	0
4	2	N6	3.064	.69	1.347	0	0	0
5	2	Totals:	-8.109	2.414	0			
6	2	COG (ft):	X: 0	Y: 10.986	Z: -.013			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N8	-2.375	1.857	-1.135	0	0	0
2	3	N7	-.141	2.509	-.302	0	0	0
3	3	N5	-.593	2.152	.505	0	0	0
4	3	N6	1.627	2.184	.932	0	0	0
5	3	Totals:	-1.482	8.702	0			
6	3	COG (ft):	X: 0	Y: 11.418	Z: -.012			

Joint Reactions

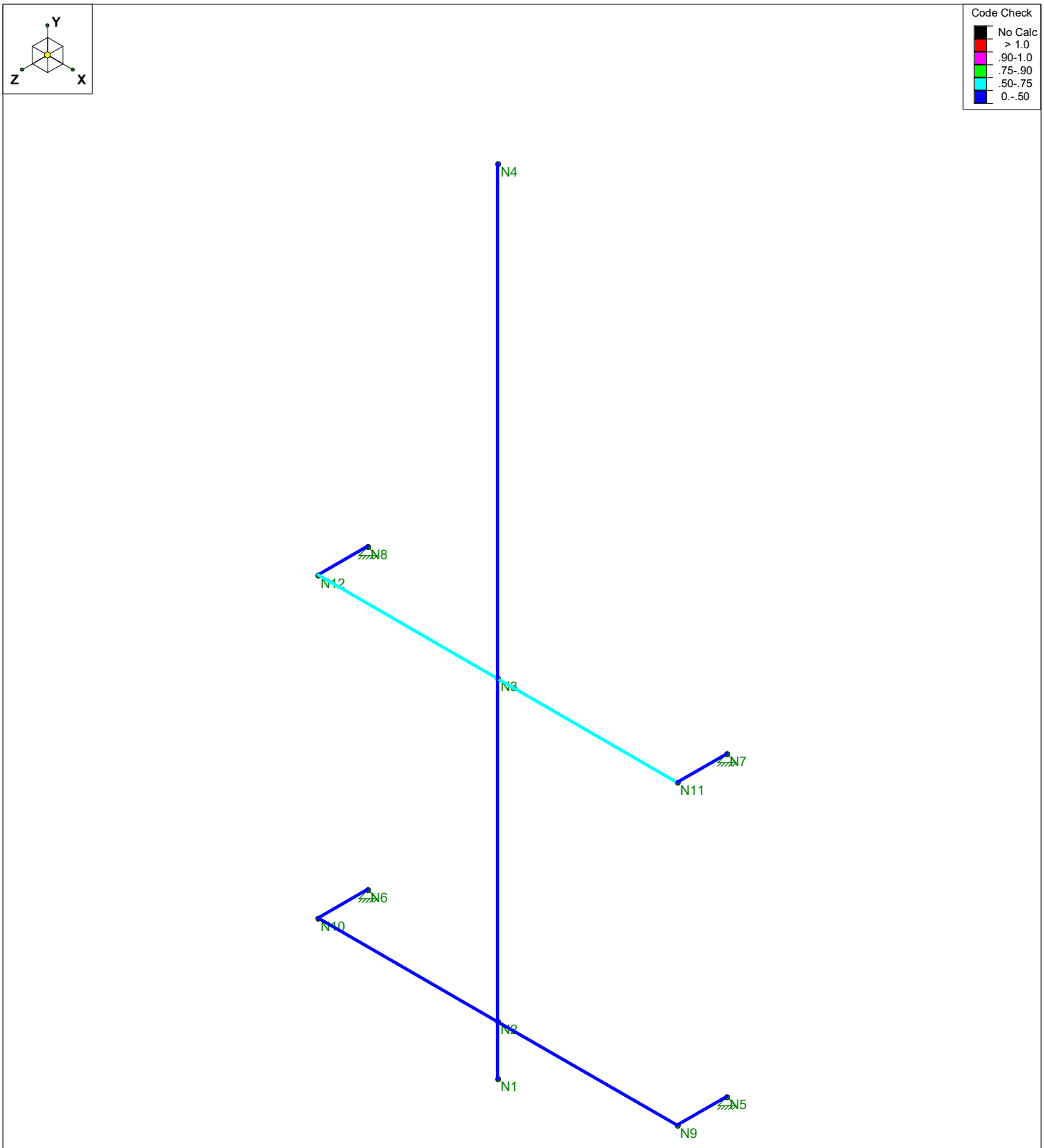
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N8	-12.696	.471	-8.313	0	0	0
2	4	N7	12.696	.471	-8.313	0	0	0
3	4	N5	-6.101	1.138	3.848	0	0	0
4	4	N6	6.101	1.138	3.848	0	0	0
5	4	Totals:	0	3.219	-8.929			
6	4	COG (ft):	X: 0	Y: 10.986	Z: -.013			

Joint Reactions

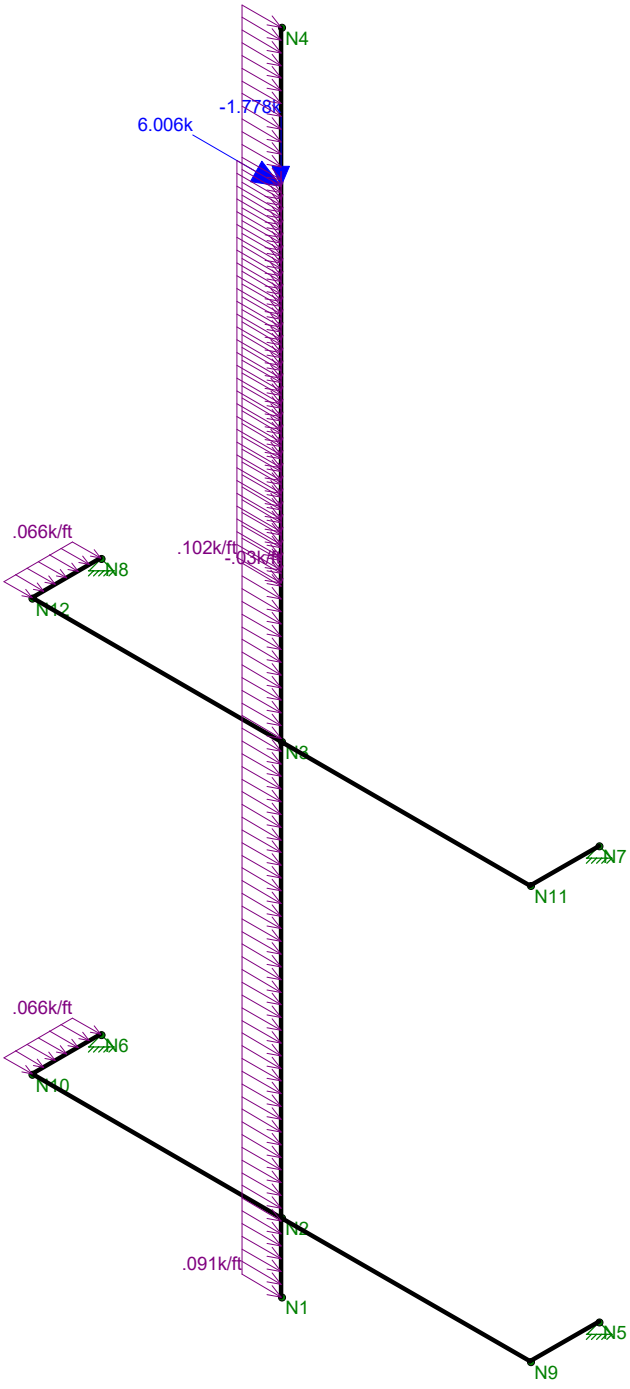
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N8	-12.591	.268	-8.245	0	0	0
2	5	N7	12.591	.268	-8.245	0	0	0
3	5	N5	-5.995	.939	3.78	0	0	0
4	5	N6	5.995	.939	3.78	0	0	0
5	5	Totals:	0	2.414	-8.929			
6	5	COG (ft):	X: 0	Y: 10.986	Z: -.013			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N8	-3.394	2.122	-2.21	0	0	0
2	6	N7	3.394	2.122	-2.21	0	0	0
3	6	N5	-2.169	2.229	1.381	0	0	0
4	6	N6	2.169	2.229	1.381	0	0	0
5	6	Totals:	0	8.702	-1.657			
6	6	COG (ft):	X: 0	Y: 11.418	Z: -.012			

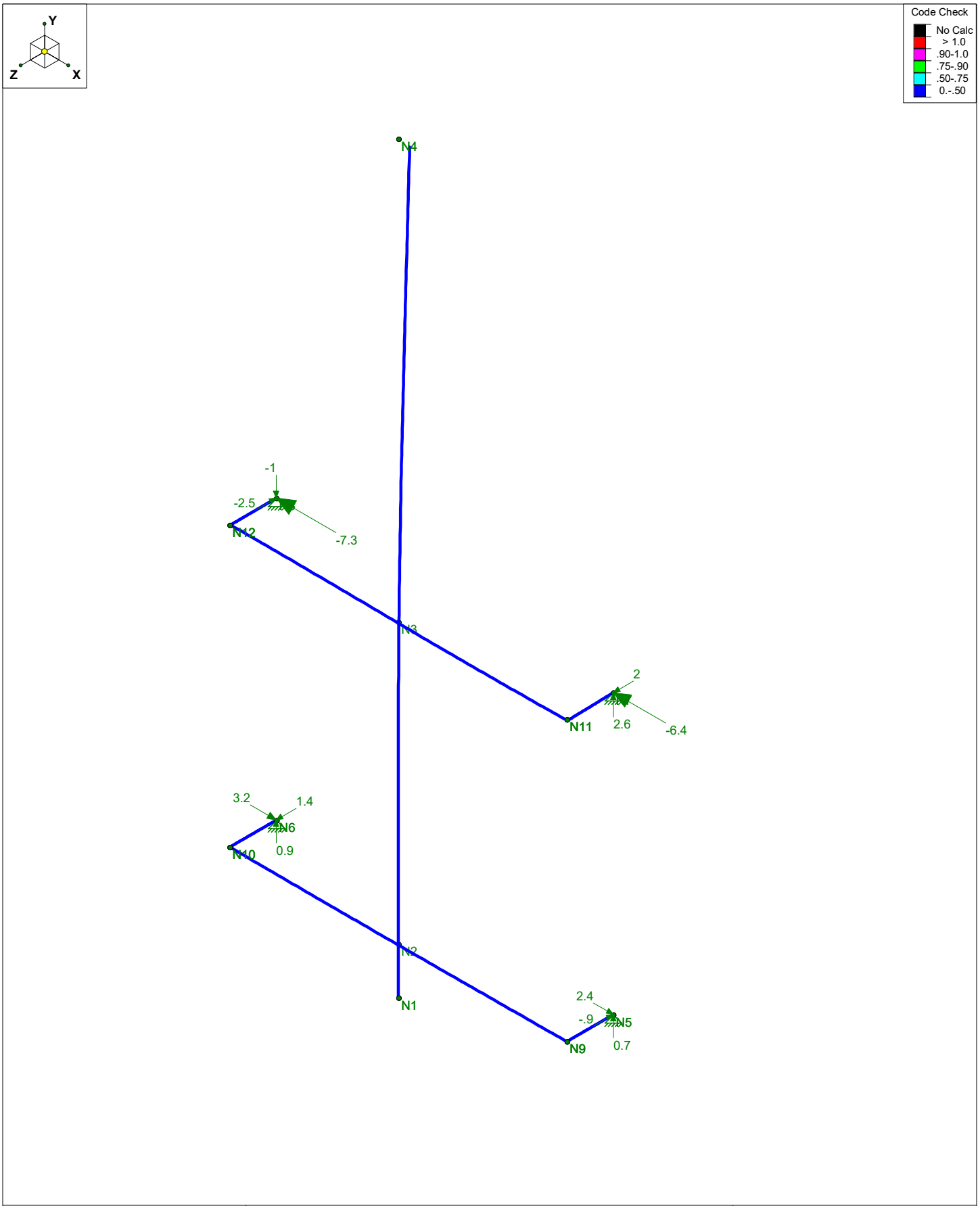


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:44 AM
16071.16	Unity Check	TIA.r3d

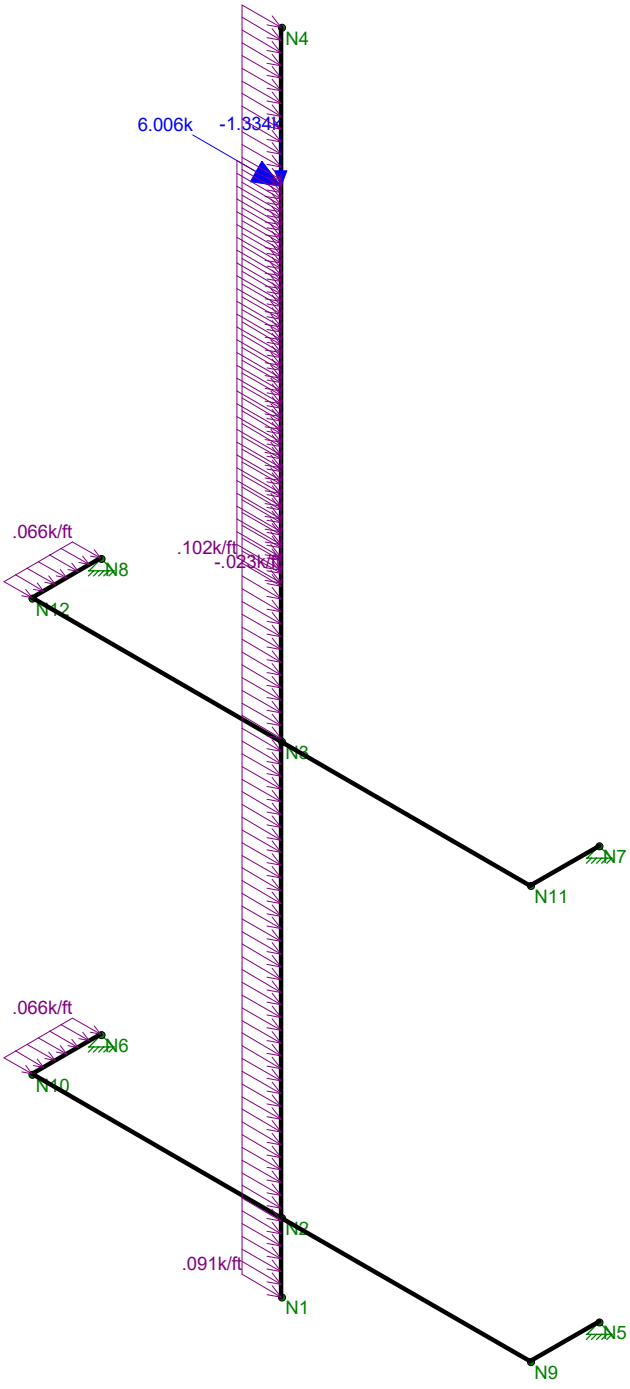


Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:44 AM
16071.16	LC #1 Loads	TIA.r3d

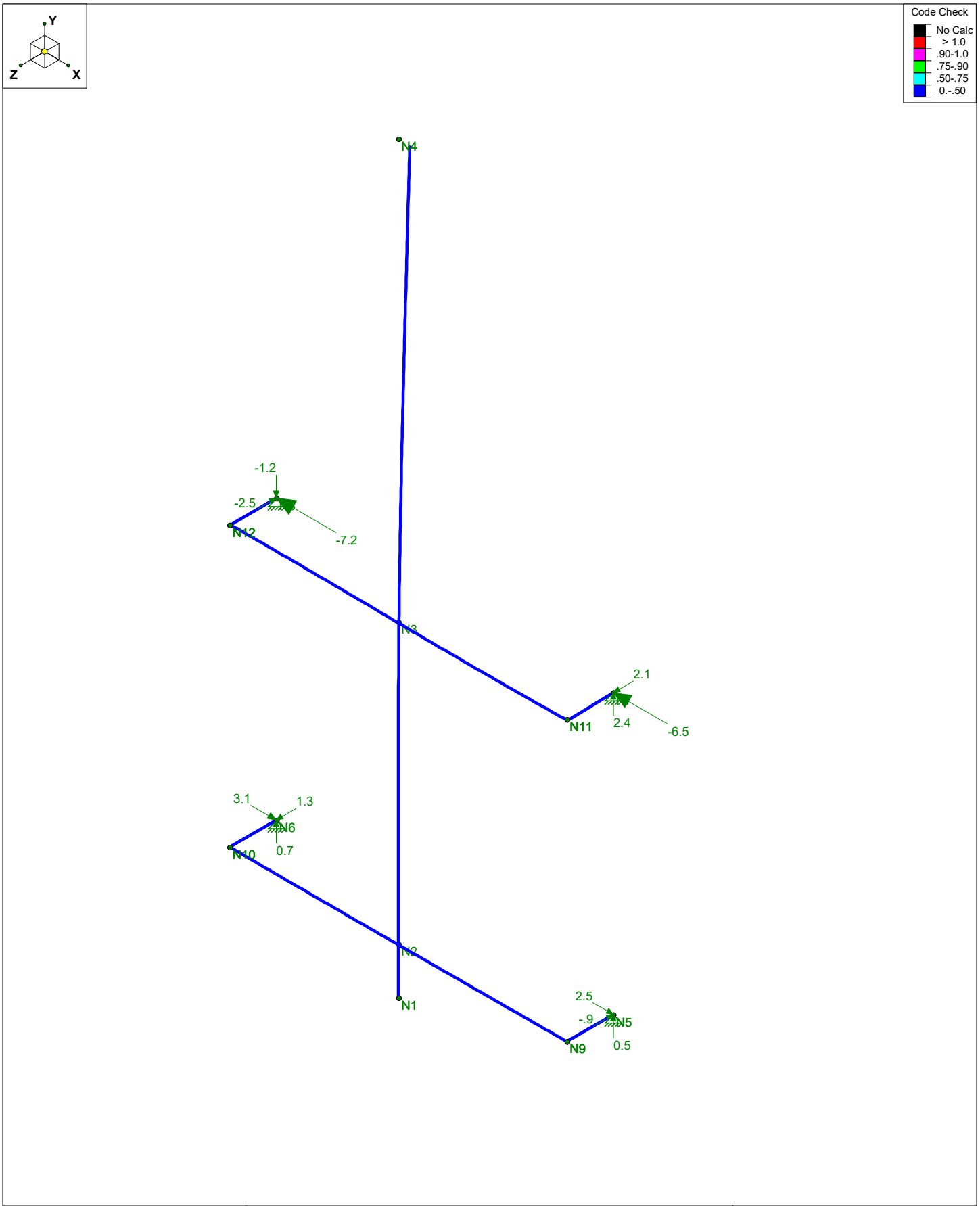


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:46 AM
16071.16	LC #1 Reactions and Deflected Shape	TIA.r3d

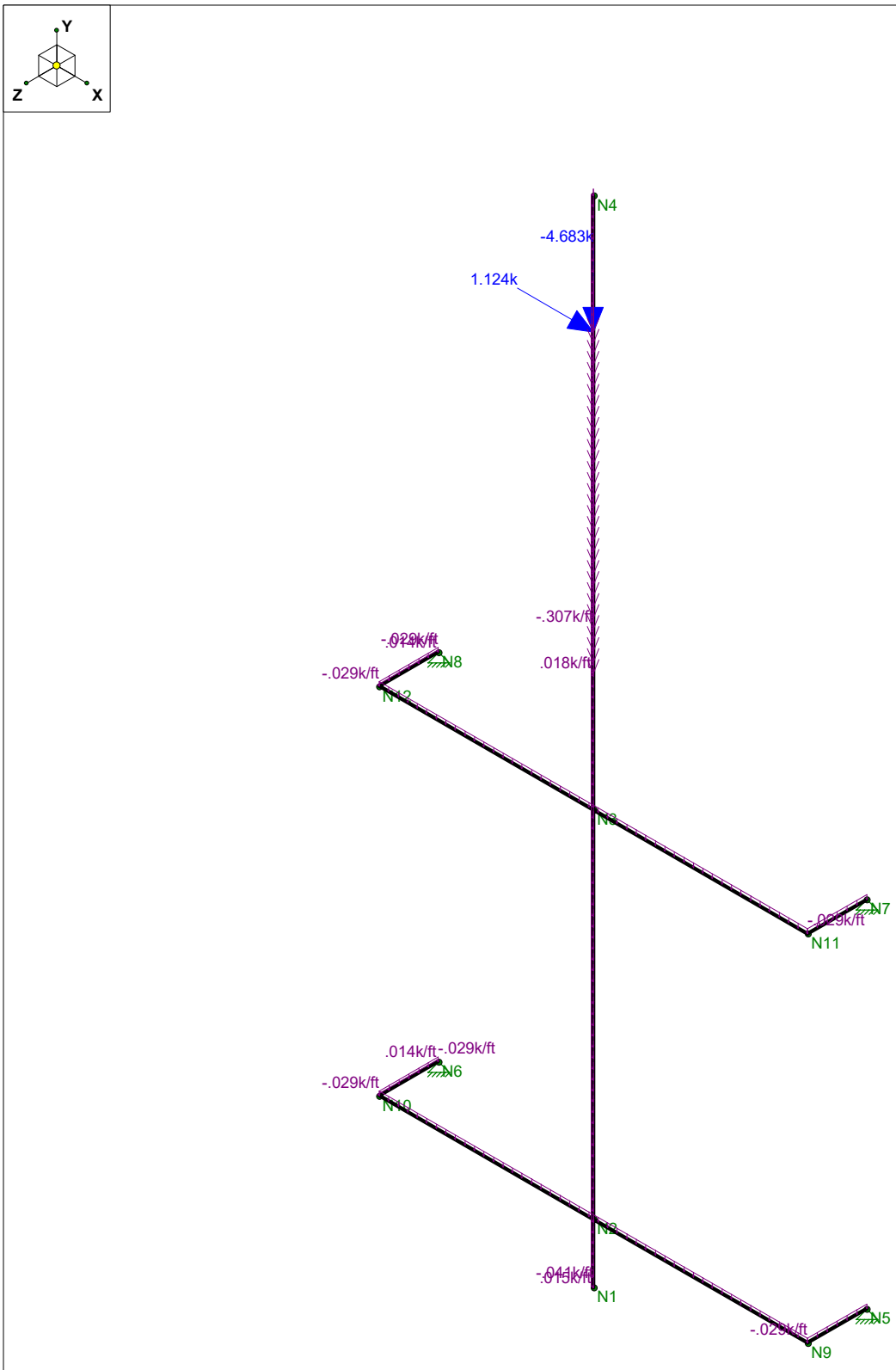


Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:45 AM
16071.16	LC #2 Loads	TIA.r3d

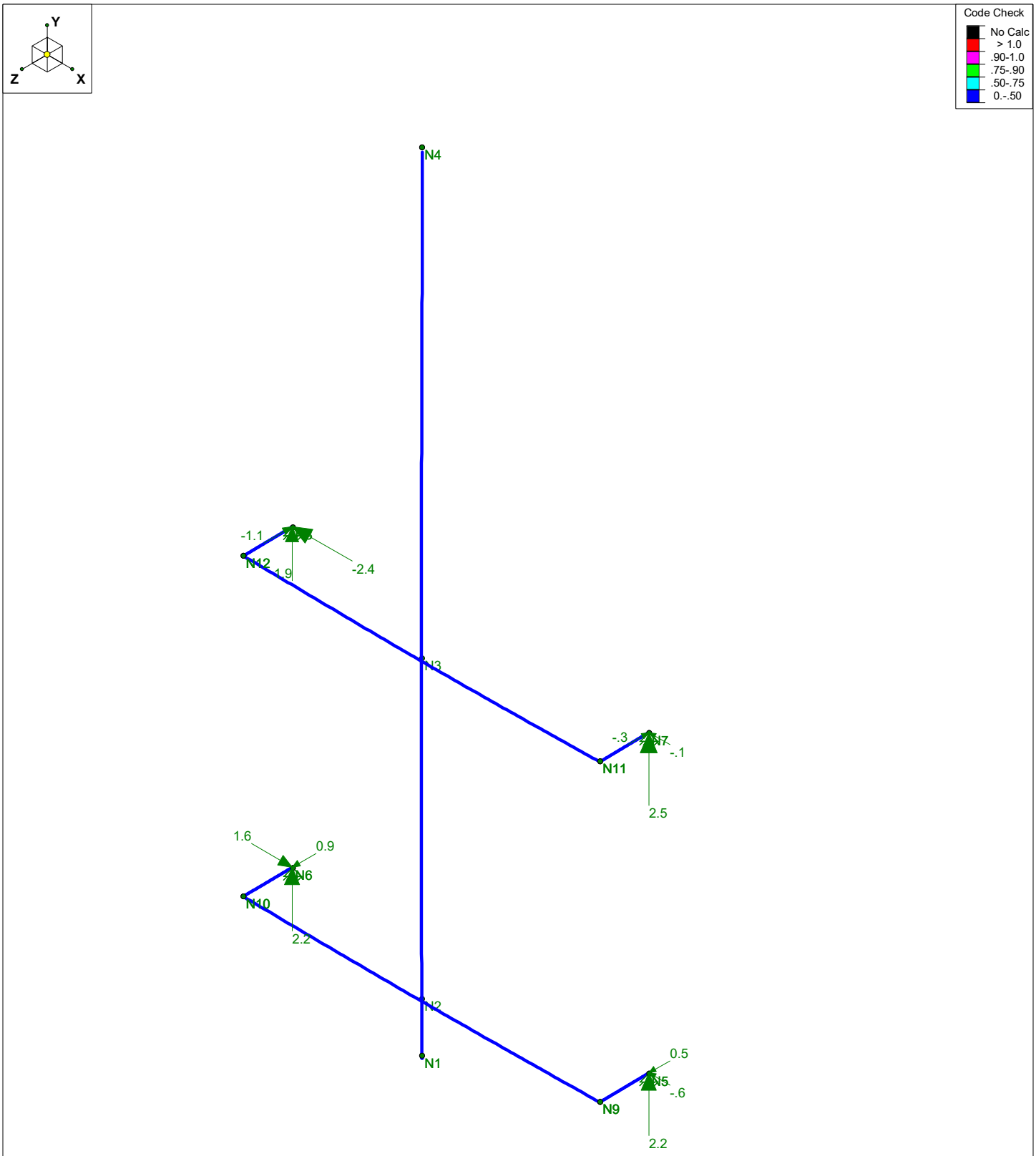


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:47 AM
16071.16	LC #2 Reactions and Deflected Shape	TIA.r3d

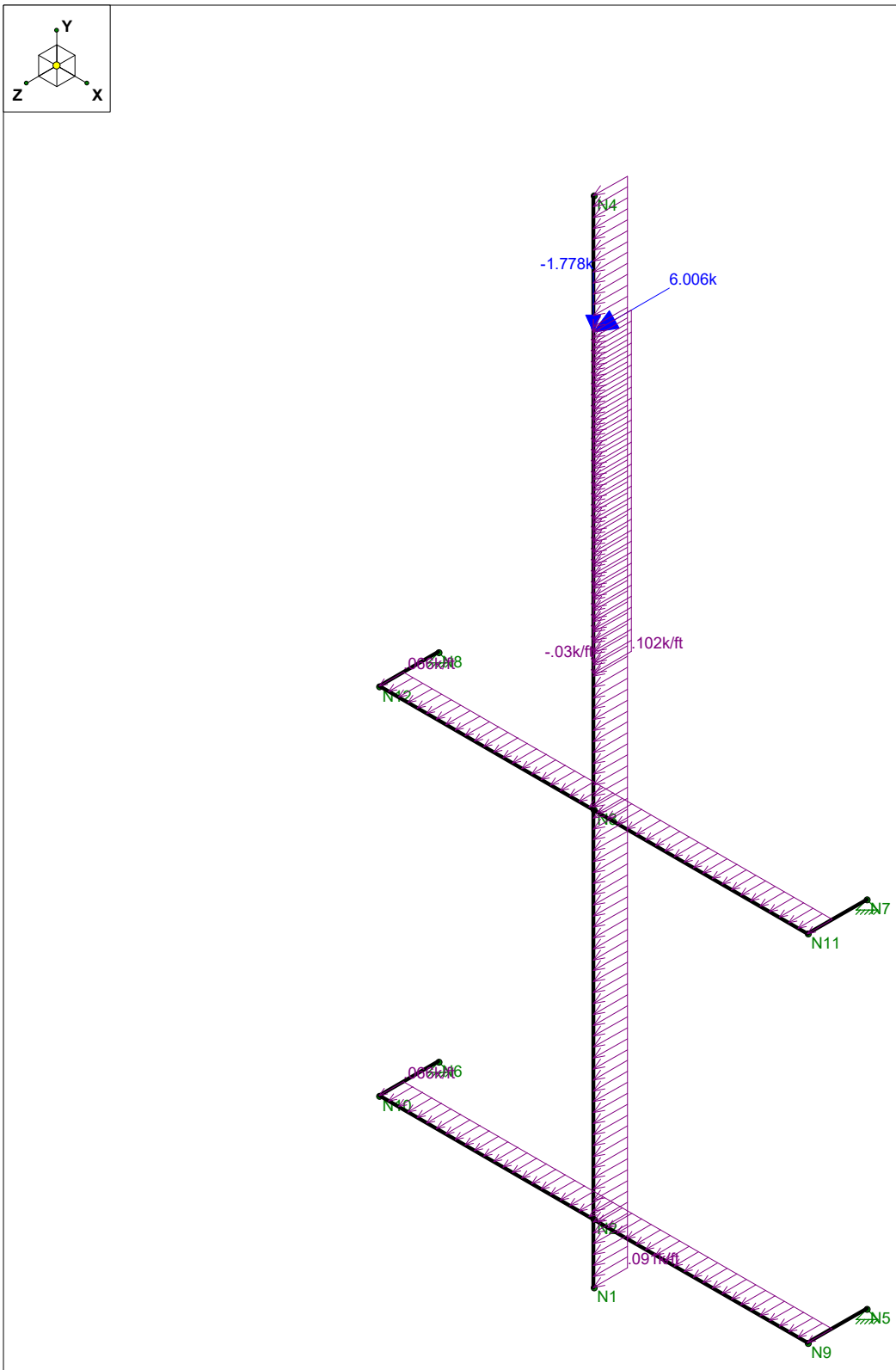


Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:45 AM
16071.16	LC #3 Loads	TIA.r3d

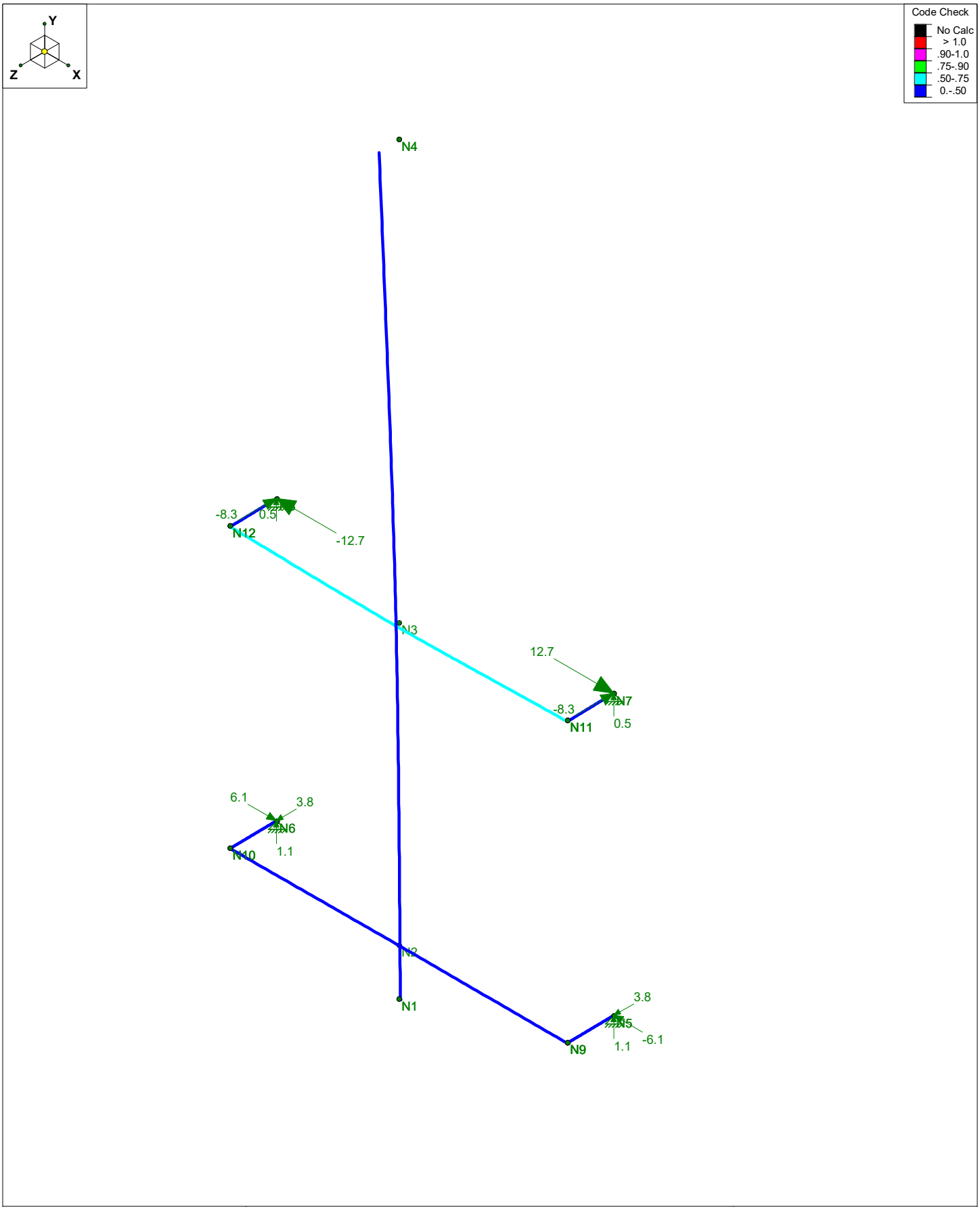


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:48 AM
16071.16	LC #3 Reactions and Deflected Shape	TIA.r3d

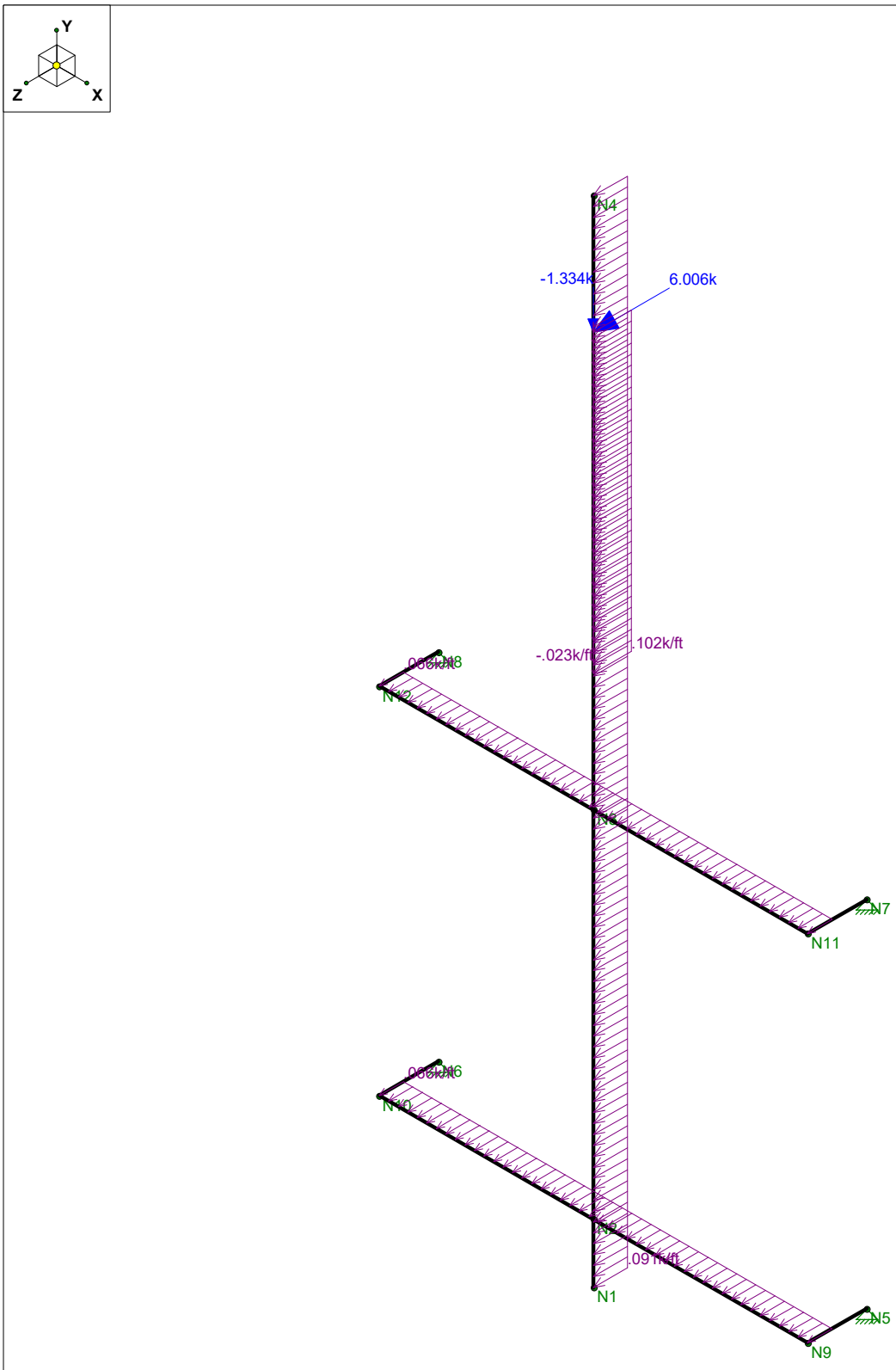


Loads: LC 4, 1.2D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:45 AM
16071.16	LC #4 Loads	TIA.r3d

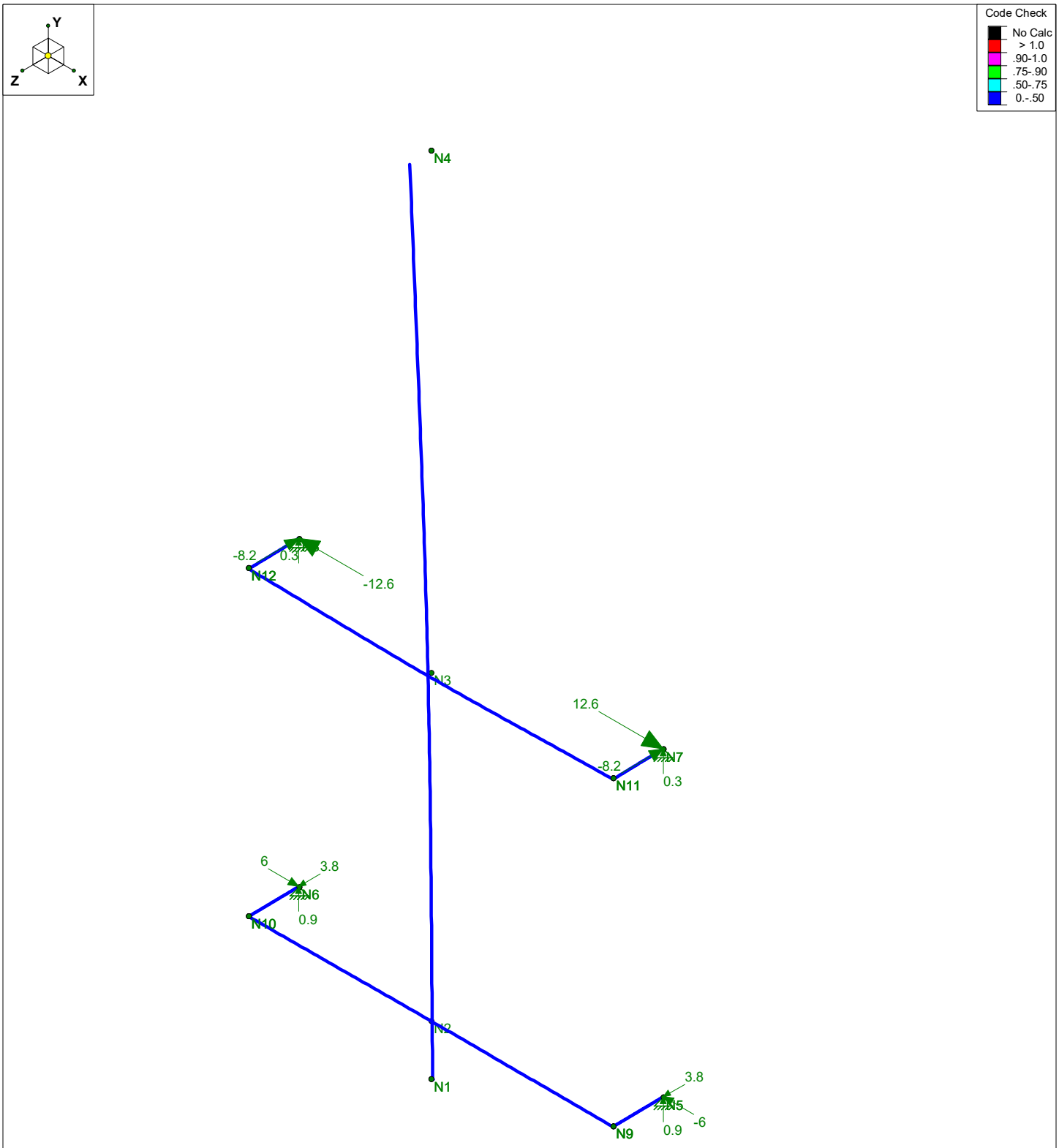


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:48 AM
16071.16	LC #4 Reactions and Deflected Shape	TIA.r3d

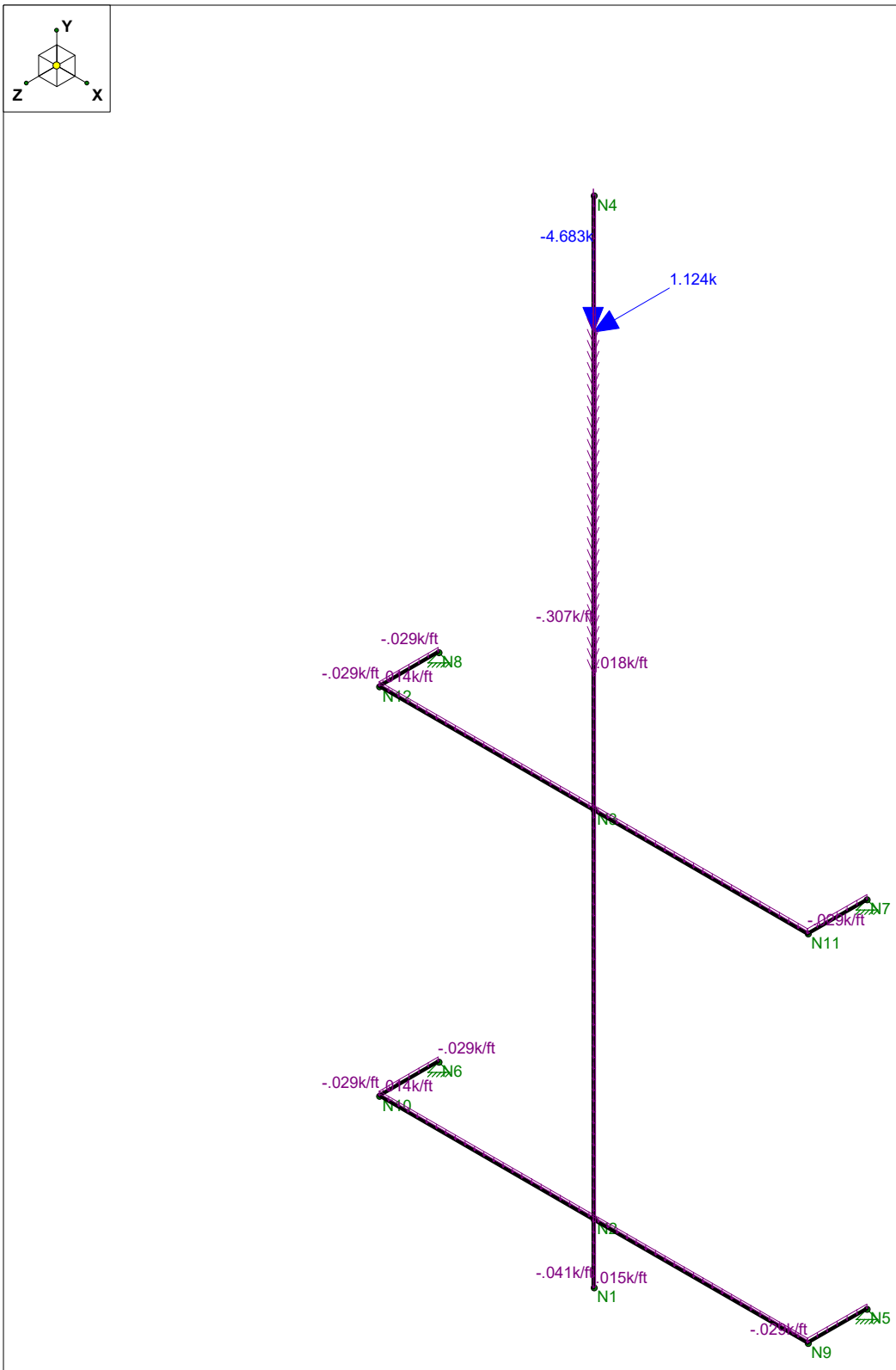


Loads: LC 5, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:45 AM
16071.16	LC #5 Loads	TIA.r3d

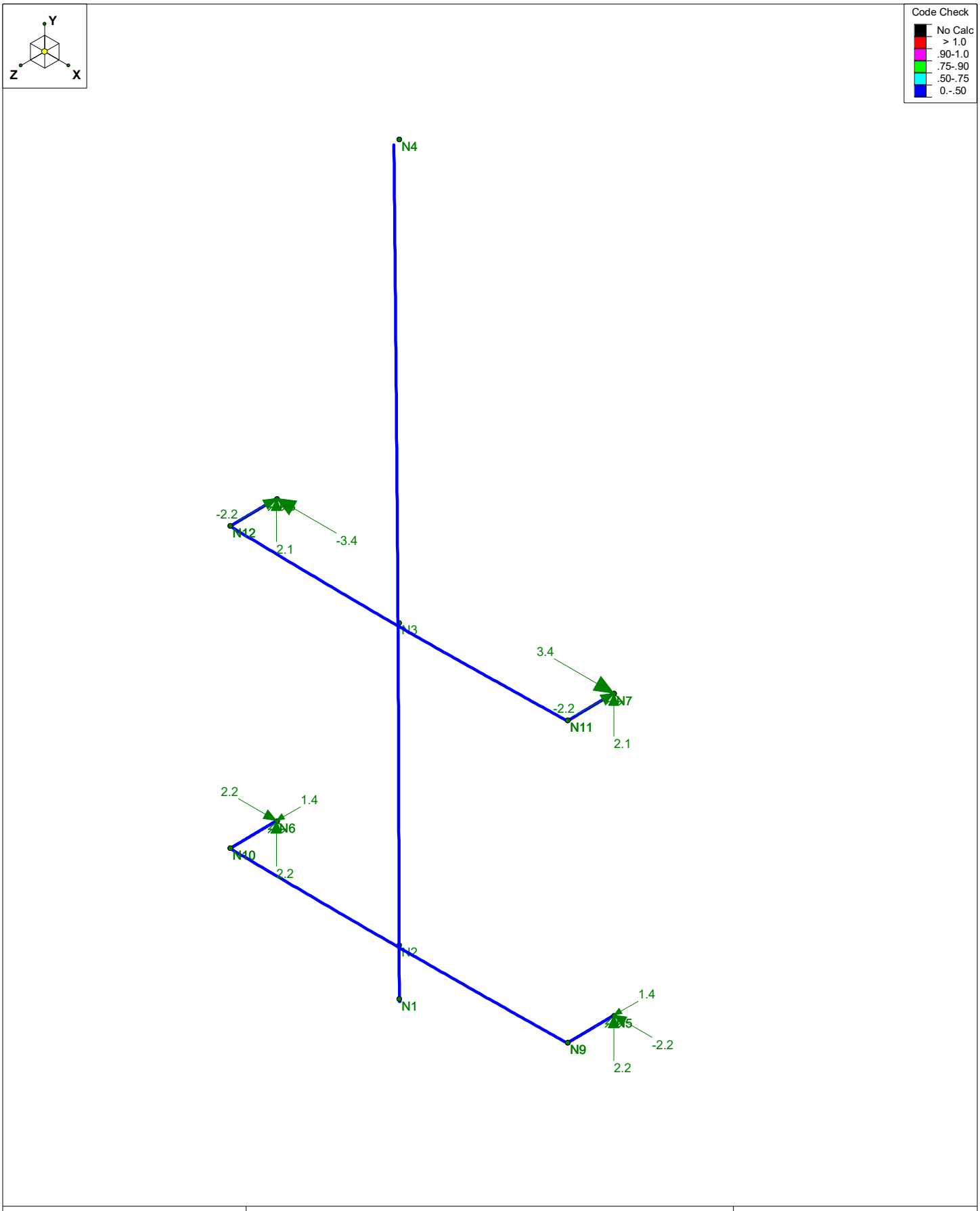


CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:49 AM
16071.16	LC #5 Reactions and Deflected Shape	TIA.r3d



Loads: LC 6, 1.2D + 1.0Di + 1.0Wi (Z-direction)

CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:46 AM
16071.16	LC #6 Loads	TIA.r3d



CENTEK Engineering, INC.		
tjl, cfc	AT&T Pipe Mast	Nov 17, 2016 at 8:49 AM
16071.16	LC #6 Reactions and Deflected Shape	TIA.r3d

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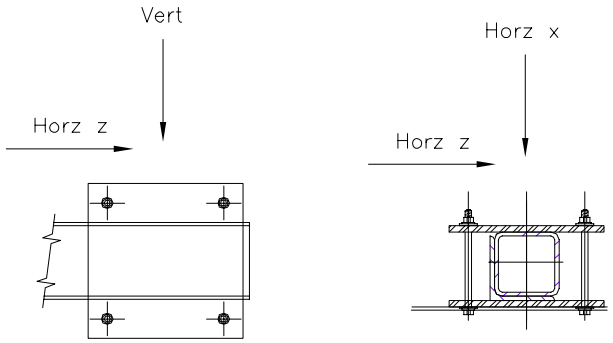
Subject:	Connection of Mast to Tower # Dist west river x-ing
Location:	Old Saybrook, CT
Rev. 2: 11/17/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Mast Connection to Tower:



Reactions:

Moment =	Moment := 0·kips	(Input From Risa-3D)
Vertical =	Vertical := 0.5·kips	(Input From Risa-3D)
Horizontal x-dir =	$Horizontal_x := 12.7 \cdot kips$	(Input From Risa-3D)
Horizontal z-dir =	$Horizontal_z := 8.3 \cdot kips$	(Input From Risa-3D)

Bolt Data:

Bolt Type =	ASTM A325	(User Input)
Bolt Diameter =	D := 0.5·in	(User Input)
Number of Bolts =	$N_b := 4$	(User Input)
Allowable Tensile Strength =	$F_t := 13.2 \cdot kips$	(User Input)
Allowable Shear Strength =	$F_v := 7.9 \cdot kips$	(User Input)

Shear Force = $f_v := \frac{\sqrt{Horizontal_z^2 + Vertical^2}}{N_b} = 2.1 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 26.31 \cdot \%$

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

Bolt_Shear = "OK"

Tension Force = $f_t := \frac{Horizontal_x}{N_b} = 3.2 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 24.05 \cdot \%$

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

Bolt_Tension = "OK"

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Branford, CT 06405 F: (203) 488-8587

Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 120	mph	(User Input NESC 2007 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 197	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 = $Kz := 2.01 \cdot \left(0.67 \cdot \frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.342$ (NESC 2007 Table 250-2)

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

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.749$ (NESC 2007 Table 250-3)

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

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 40.2$ 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 Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on PCS Mast

PCS Mast Data: (Pipe 12.0" SCH. 40)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 12.8$	in	(User Input)
Mast Length =	$L_{mast} := 16$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.375$	in	(User Input)

Wind Load (NESC Extreme)

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

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_R \cdot A_{mast} = 56$ plf **BLC 5,7**

Wind Load (NESE Heavy)

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

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

Gravity Loads (without ice)

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

Gravity Loads (ice only)

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

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

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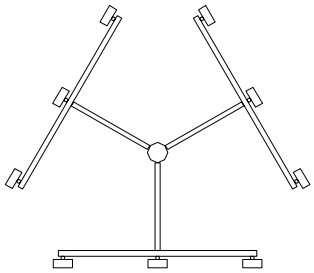
Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew SBNHH-1D65A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.5$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 34$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.8$	sf	
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1107$	lbs	**BLC 5,7**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.1$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.2$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 97$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 102$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4689$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1214$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 39$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 118$	lbs	**BLC 3**

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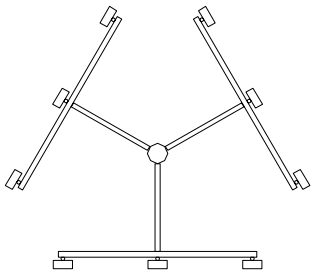
Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	KMW AM-X-CD-14-65-00T		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 48$	in	(User Input)
Antenna Width =	$W_{ant} := 11.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 36.4$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 23.6$	sf	
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1899$	lbs	**BLC 5,7**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.4$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 26.1$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 167$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 218$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3342$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 986$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 32$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 192$	lbs	**BLC 3**

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Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model = Powerwave TT19-08DB111-01

TMA Shape = Flat (User Input)

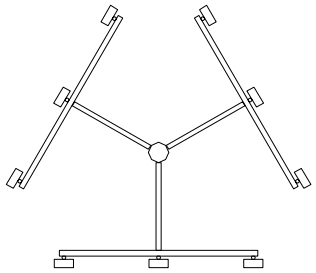
TMA Height = $L_{TMA} := 14.2$ in (User Input)

TMA Width = $W_{TMA} := 6.7$ in (User Input)

TMA Thickness = $T_{TMA} := 5.4$ in (User Input)

TMA Weight = $WT_{TMA} := 22$ lbs (User Input)

Number of TMA's = $N_{TMA} := 6$ (User Input)



Wind Load (NESC Extreme)

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

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.7$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4$ sf

Total TMA Wind Force = $F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 319$ lbs **BLC 5,7**

Wind Load (NESC Heavy)

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

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 0.8$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 4.9$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 31$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All TMA's = $WT_{TMA} \cdot N_{TMA} = 132$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 514$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 235$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 8$ lbs

Weight of Ice on All TMA's = $W_{ICETMA} \cdot N_{TMA} = 46$ lbs **BLC 3**

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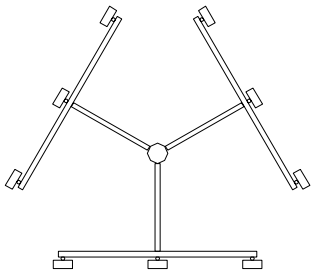
Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	CCI DTMABP7819VG12A		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 14.25$	in	(User Input)
TMA Width =	$W_{TMA} := 11.46$	in	(User Input)
TMA Thickness =	$T_{TMA} := 4.17$	in	(User Input)
TMA Weight =	$WT_{TMA} := 20$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)



Wind Load (NESC Extreme)

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

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 1.1$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 6.8$	sf	
Total TMA Wind Force =	$F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 547$	lbs	**BLC 5,7**

Wind Load (NESC Heavy)

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

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 7.9$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 51$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 120$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 681$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 301$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 59$	lbs	**BLC 3**

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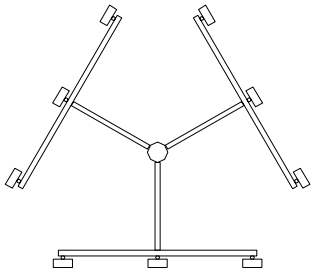
Subject:	Load Analysis of Pipe Mast and AT&T Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type: Valmont 10'-6" T-Arm Co-Location Kit



Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CdAa := 15.5$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 17.8$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 910$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1048$	lbs	

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt} := qz \cdot CdAa \cdot m = 779$ lbs **BLC 5,7**

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt} := p \cdot CdAa_{ice} = 71$ lbs **BLC 4,6**

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

Weight of All Mounts = $WT_{mnt} = 910$ lbs **BLC 2**

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

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 138$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 5$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 24$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 6$		(User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 1$ ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 72$ plf **BLC 5,7**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot Ir)}{12} = 1.1$ ft

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

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 25$ 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 = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 36$ plf **BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data: HSS6x6x1/4

Shape =	Flat		(User Input)
Width =	$W_{mem} := 6$	in	(User Input)
Length =	$L_{mem} := 5$	ft	(User Input)
Height =	$H_{mem} := 6$	in	(User Input)

Wind Load (NESC Extreme)

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

Total Member Wind Force = $qz \cdot Cd_F \cdot A_{mem} = 32$ plf **BLC 5,7**

Wind Load (NESE Heavy)

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

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

Gravity Loads (without ice)

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

Gravity Loads (ice only)

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

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

CENTEK engineering, INC.
Consulting Engineers
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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: **Old Saybrook, CT**
Date: 9/7/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

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:

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

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

Location: **Old Saybrook, CT**

Date: 9/7/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

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	Mast	16												Lateral
2	M2	Brace	1												Lateral
3	M3	Brace	7.25												Lateral
4	M4	Brace	1												Lateral
5	M5	Brace	1												Lateral
6	M6	Brace	7.25												Lateral
7	M7	Brace	1												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE 12.0	Beam	Pipe	A53 Gr. B	Typical	13.7	262	262	523
2	Brace	HSS6x6x4	Beam	Tube	A500 Gr.46	Typical	5.24	28.6	28.6	45.6

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N4			Mast	Beam	Pipe	A53 Gr. B	Typical
2	M2	N8	N12			Brace	Beam	Tube	A500 Gr.46	Typical
3	M3	N12	N11			Brace	Beam	Tube	A500 Gr.46	Typical
4	M4	N11	N7			Brace	Beam	Tube	A500 Gr.46	Typical
5	M5	N6	N10			Brace	Beam	Tube	A500 Gr.46	Typical
6	M6	N10	N9			Brace	Beam	Tube	A500 Gr.46	Typical
7	M7	N9	N5			Brace	Beam	Tube	A500 Gr.46	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From D...
1	N1	0	0	0	0	
2	N2	0	1	0	0	
3	N3	0	7	0	0	
4	N4	0	16	0	0	
5	N5	3.625	1	-1	0	
6	N6	-3.625	1	-1	0	
7	N7	3.625	7	-1	0	
8	N8	-3.625	7	-1	0	
9	N9	3.625	1	0	0	
10	N10	-3.625	1	0	0	
11	N11	3.625	7	0	0	
12	N12	-3.625	7	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N8	Reaction	Reaction	Reaction				
2	N7	Reaction	Reaction	Reaction				
3	N5	Reaction	Reaction	Reaction				
4	N6	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.102	14
2	M1	Y	-.218	14
3	M1	Y	-.132	14
4	M1	Y	-.12	14
5	M1	Y	-.91	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.118	14
2	M1	Y	-.192	14
3	M1	Y	-.046	14
4	M1	Y	-.059	14
5	M1	Y	-.138	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.097	14
2	M1	X	.167	14
3	M1	X	.031	14
4	M1	X	.051	14
5	M1	X	.071	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.107	14
2	M1	X	1.899	14
3	M1	X	.319	14
4	M1	X	.547	14
5	M1	X	.779	14

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	-.025	-.025	9	14

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	-.008	-.008	0	0
2	M1	Y	-.036	-.036	9	14
3	M2	Y	-.005	-.005	0	0
4	M3	Y	-.005	-.005	0	0
5	M4	Y	-.005	-.005	0	0
6	M6	Y	-.005	-.005	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
7	M5	Y	-.005	-.005	0	0
8	M7	Y	-.005	-.005	0	0

Member Distributed Loads (BLC 4 : x-dir 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	.006	.006	0	0
2	M1	X	.006	.006	9	14
3	M2	X	.004	.004	0	0
4	M5	X	.004	.004	0	0

Member Distributed Loads (BLC 5 : x-dir 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	.056	.056	0	0
2	M1	X	.072	.072	9	14
3	M2	X	.032	.032	0	0
4	M5	X	.032	.032	0	0

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					5	1		
3	Weight of Ice Only	None					5	8		
4	x-dir NESC Heavy Wind	None					5	4		
5	x-dir NESC Extreme Wind	None					5	4		

Load Combinations

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

Envelope Joint Reactions

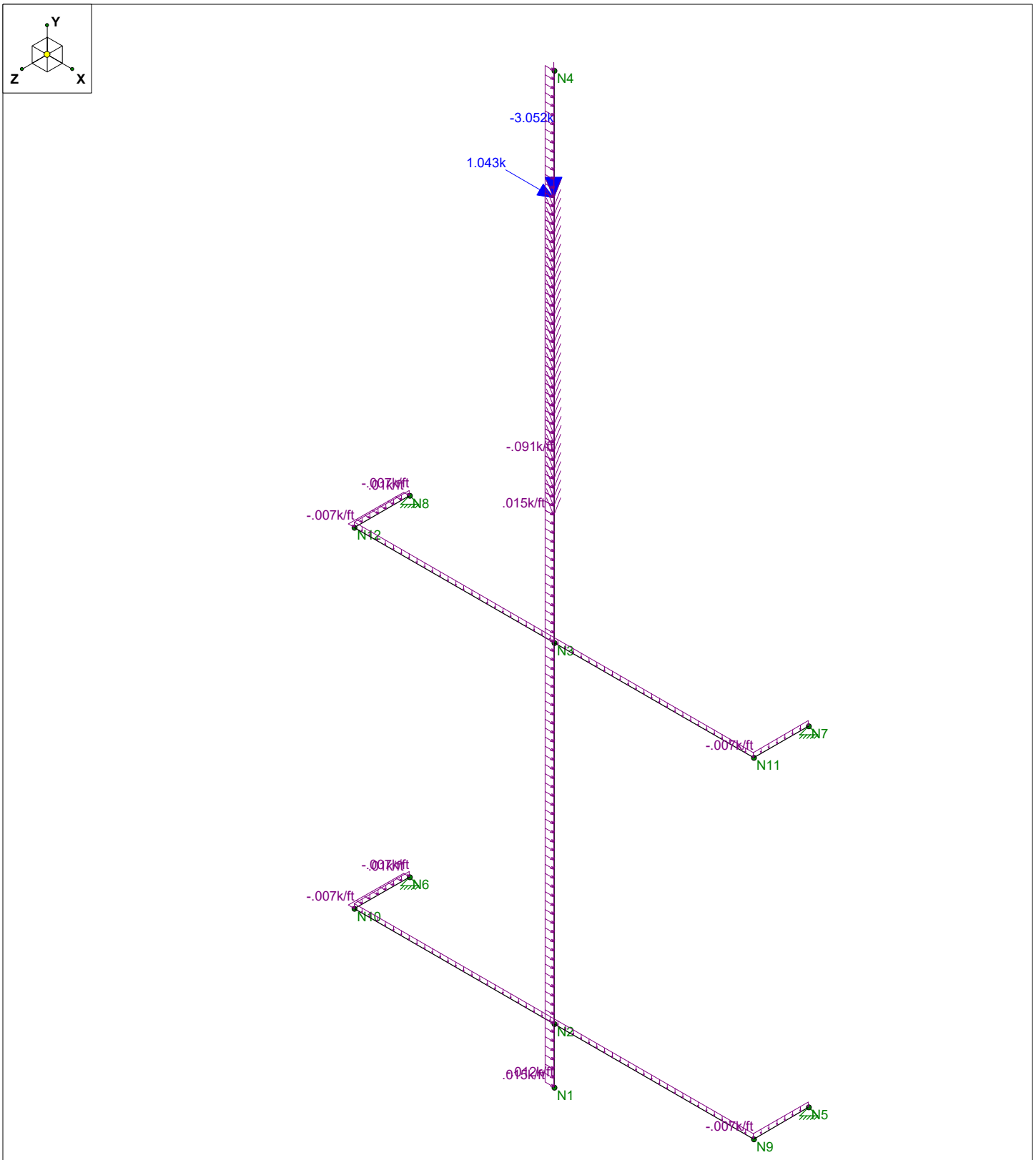
Joint	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
No Data to Print ...												

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N8	-1.855	1.072	-.828	0	0	0
2	1	N7	-.481	1.663	-.069	0	0	0
3	1	N5	-.203	1.35	.258	0	0	0
4	1	N6	1.161	1.37	.64	0	0	0
5	1	Totals:	-1.378	5.454	0			
6	1	COG (ft):	X: 0	Y: 11.187	Z: -.013			

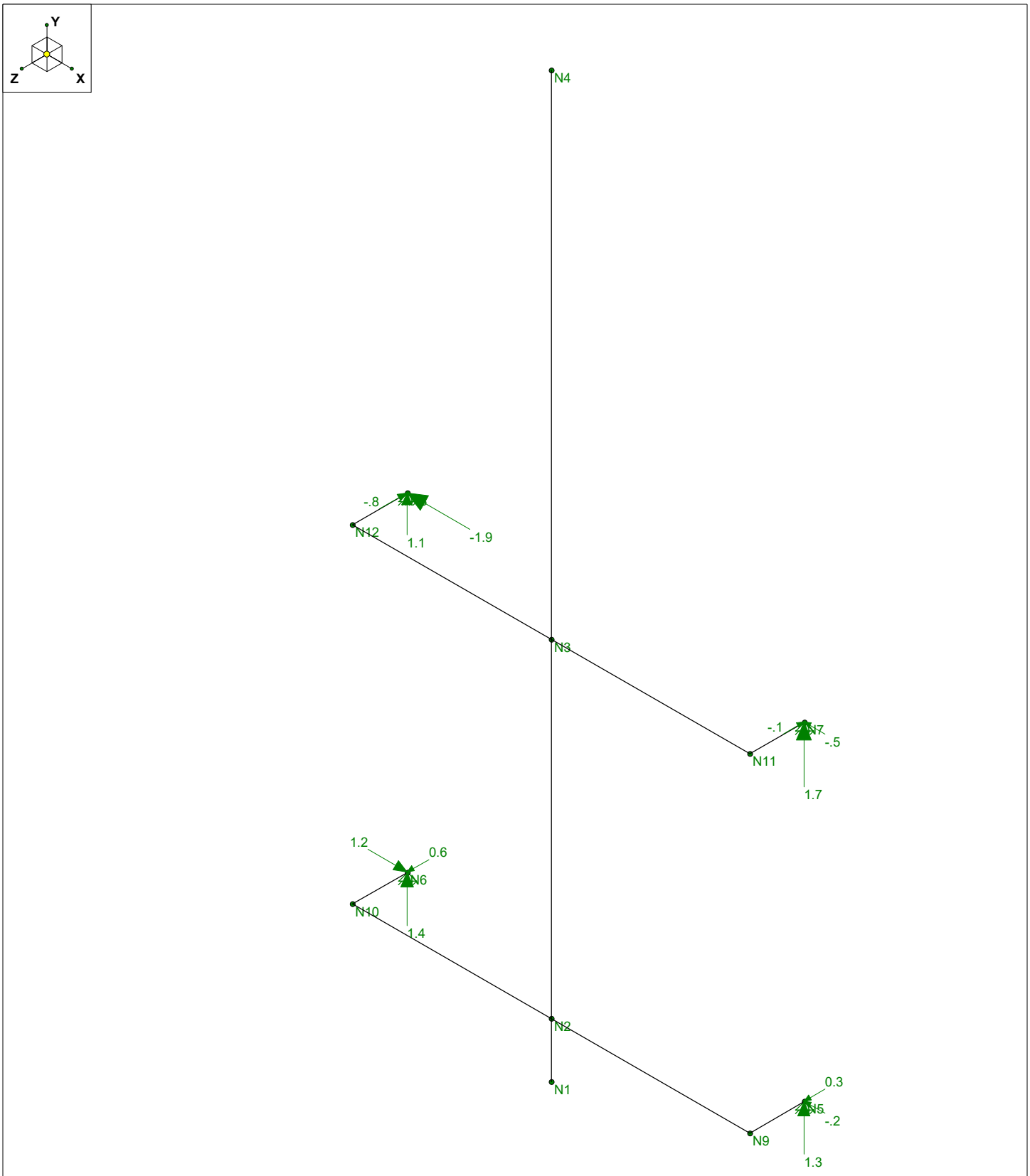
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N8	-5.476	-.633	-1.89	0	0	0
2	2	N7	-4.787	1.978	1.449	0	0	0
3	2	N5	1.818	.622	-.63	0	0	0
4	2	N6	2.474	.715	1.071	0	0	0
5	2	Totals:	-5.971	2.683	0			
6	2	COG (ft):	X: 0	Y: 10.986	Z: -.013			



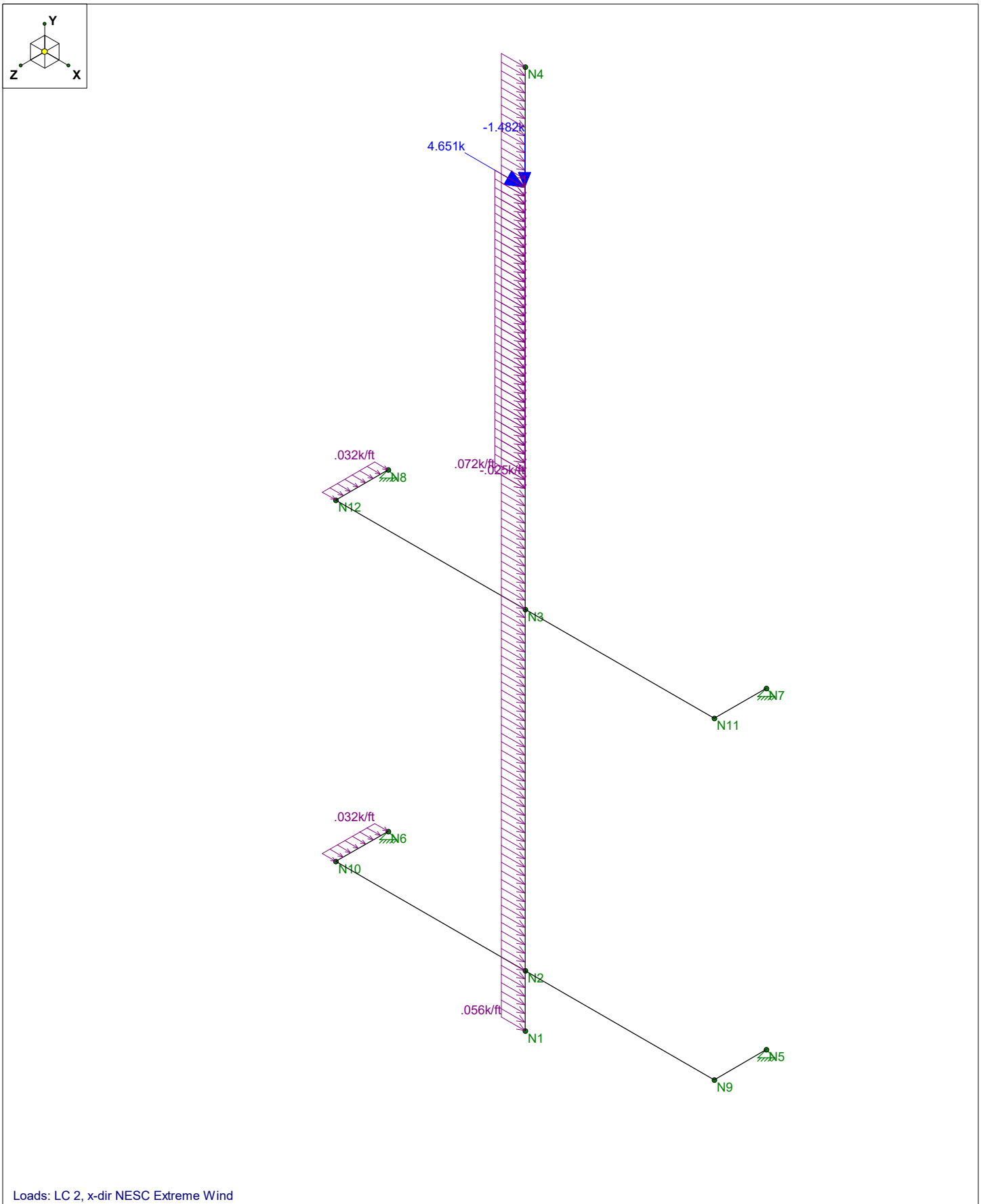
Loads: LC 1, x-dir NESC Heavy Wind

CENTEK Engineering, Inc.		
tjl, cfc	AT&T Pipe Mast	Sept 7, 2016 at 2:11 PM
16071.16	LC #1 Loads	NESC.r3d



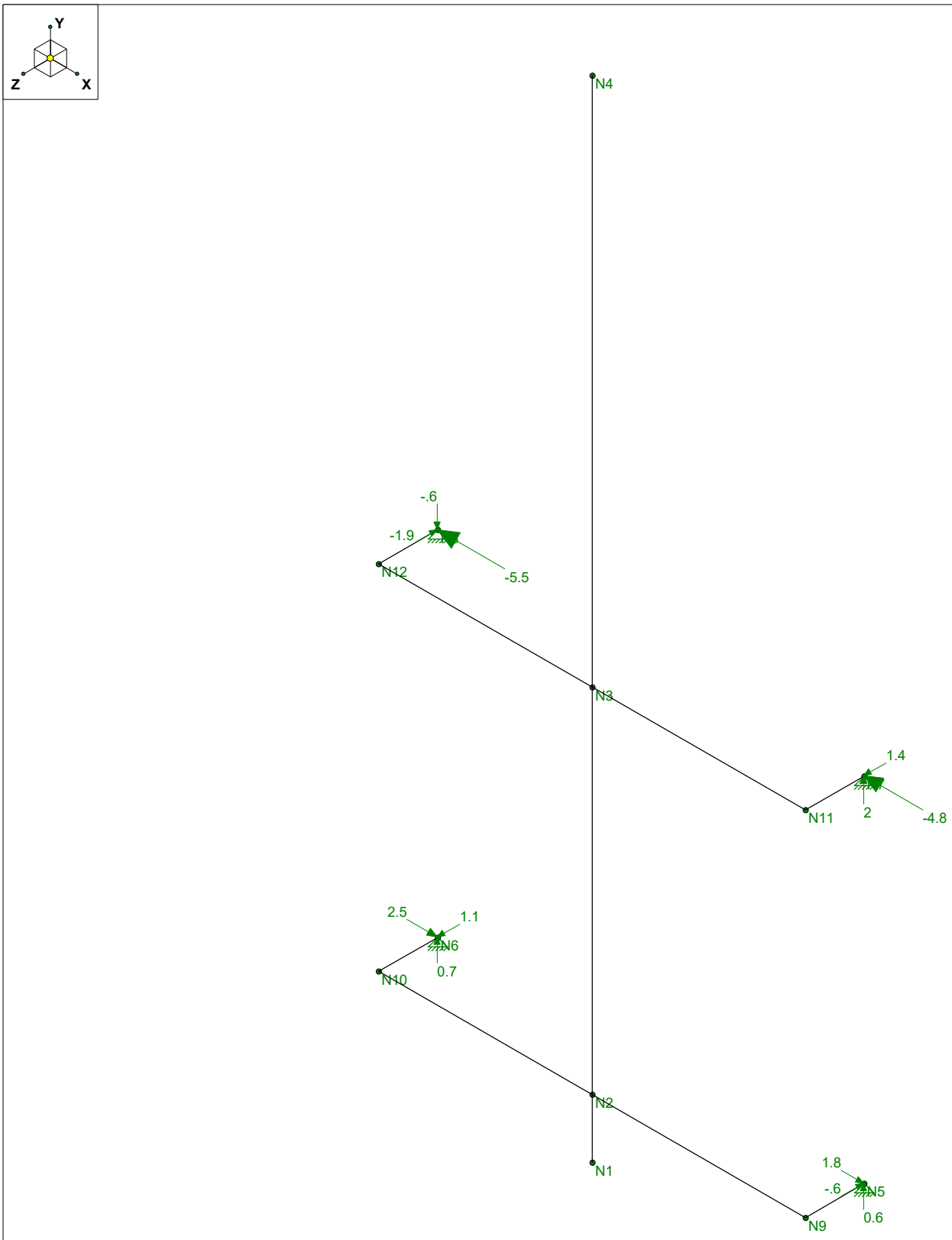
Results for LC 1, x-dir NESC Heavy Wind
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	AT&T Pipe Mast	Sept 7, 2016 at 2:12 PM
16071.16	LC #1 Reactions	NESC.r3d



Loads: LC 2, x-dir NESC Extreme Wind

CENTEK Engineering, Inc.		
tjl, cfc	AT&T Pipe Mast	Sept 7, 2016 at 2:11 PM
16071.16	LC #2 Loads	NESC.r3d



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

CENTEK Engineering, Inc.		
tjl, cfc	AT&T Pipe Mast	Sept 7, 2016 at 2:12 PM
16071.16	LC #2 Reactions	NESC.r3d

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Subject:	AT&T Coax Cable on CL&P Tower # Dist west river x-ing
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 6 \\ 15 \\ 14.6 \\ 12.6 \\ 15 \\ 16 \\ 16.35 \\ 16.6 \\ 16.25 \\ 19.75 \\ 19.25 \\ 22.5 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

Number of Coax Cables = $N_{coax} := 24$ *(User Input)*

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

Extreme Wind Pressure = $qz := 40 \cdot psf$ *(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 = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 36.359 \cdot plf$

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	552
1	1380
2	1343
3	1159
4	1380
5	1472
6	1504
7	1527
8	1495
9	1817
10	1771
11	2070

lb

$Heavy_{Trans}$ =

	0
0	103
1	258
2	251
3	216
4	258
5	275
6	281
7	285
8	279
9	339
10	331
11	386

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	150
1	374
2	364
3	314
4	374
5	399
6	408
7	414
8	406
9	493
10	480
11	562

lb

$Extreme_{Trans}$ =

	0
0	380
1	950
2	925
3	798
4	950
5	1014
6	1036
7	1052
8	1030
9	1251
10	1220
11	1426

lb

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Subject:	Sprint Coax Cable on CL&P Tower # Dist west river x-ing
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

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

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

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

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

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

Extreme Wind Pressure = $qz := 38.7 \cdot psf$ *(User Input)*

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

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

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

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

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

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

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

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

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

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 9.09 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 345 \\ 368 \\ 376 \\ 382 \\ 374 \\ 454 \\ 443 \\ 517 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 258 \\ 275 \\ 281 \\ 285 \\ 279 \\ 339 \\ 331 \\ 386 \end{pmatrix} lb$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 94 \\ 100 \\ 102 \\ 104 \\ 101 \\ 123 \\ 120 \\ 140 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 920 \\ 981 \\ 1002 \\ 1018 \\ 996 \\ 1211 \\ 1180 \\ 1379 \end{pmatrix} lb$$

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Subject: Load Analysis of Sprint Equipment

Location: Old Saybrook, CT

Rev. 0: 9/7/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16071.16

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 120	mph	(User Input NESC 2007 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 136.5	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.0		(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 = $Kz := 2.01 \cdot \left(0.67 \cdot \frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.242$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.299$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.811$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.845$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 38.7$ 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**
NESC Extreme Loading =	**1.0**

Overload Factors for Vertical Loads:

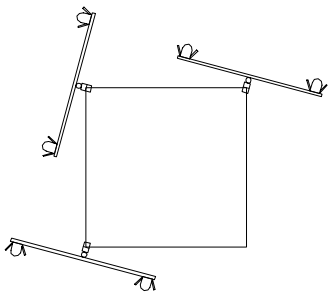
NESC Heavy Loading =	**1.5**
NESC Extreme Loading =	**1.0**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Decibel DB950G40E-M		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 60$	in	(User Input)
Antenna Width =	$W_{ant} := 11$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 19$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 2$		(User Input)

(Note Typ. of 3 Locations)



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.6$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.2$	sf
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 567$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.1$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 10.2$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 65$	lbs

Weight Load (NESC Extreme)

Weight of All Antennas =	$Wght_{ant} := (WT_{ant} \cdot N_{ant}) = 38$	lbs

Weight Load (NESC Heavy)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5280$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1308$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 42$	lbs
Weight of Ice on All Antennas =	$Wght_{ICE.ant} := (WT_{ant} \cdot N_{ant}) + W_{ICEant} \cdot N_{ant} = 123$	lbs

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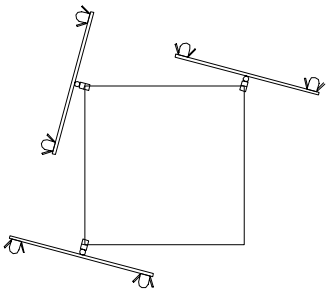
Subject:	Load Analysis of Sprint Equipment
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type: Valmont Wireless Frame

(Note Typ. of 3 Locations)



Mount Shape =	Round		(User Input)
Mount Projected Surface Area =	$CdAa := 7.6$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 10.4$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 250$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 300$	lbs	(User Input)

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt} := qz \cdot CdAa \cdot m = 294$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt} := p \cdot CdAa_{ice} = 42$ lbs

Weight Load (NESC Extreme)

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

Weight of All Mounts = $Wght_{mnt} := WT_{mnt} = 250$ lbs

Weight Load (NESC Heavy)

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

Weight of Ice on All Mounts = $Wght_{ICE.mnt} := WT_{mnt.ice} = 300$ lbs

Load Summation

NESC Heavy Wind = $\left(Fi_{ant} + Fi_{mnt}\right)2.5 = 267$

NESC Heavy Weight = $\left(Wght_{ICE.ant} + Wght_{ICE.mnt}\right)\cdot 1.5 = 634$

NESC Extreme Wind = $F_{ant} + F_{mnt} = 861$

NESC Extreme Weight = $Wght_{ant} + Wght_{mnt} = 288$

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	GPS Located @ 50' AGL		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 6$	in	(User Input)
Antenna Width =	$W_{ant} := 3$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 5$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(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 =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 8$	lbs

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 =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.2$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} \cdot 2.5 = 3$	lbs

Weight Load (NESC Extreme)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 5$	lbs

Weight Load (NESC Heavy)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 54$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 58$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$	lbs
Weight of Ice on All Antennas =	$\left[(WT_{ant} \cdot N_{ant}) + W_{ICEant} \cdot N_{ant}\right] \cdot 1.5 = 10$	lbs

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Subject: Load Analysis of Dish

Location: Old Saybrook, CT

Rev. 0: 9/7/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16071.16

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 120	mph	(User Input NESC 2007 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 110	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.0		(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 = $Kz := 2.01 \cdot \left(0.67 \cdot \frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.187$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.308$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.842$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.863$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 37.7$ 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**
NESC Extreme Loading =	**1.0**

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**
NESC Extreme Loading =	**1.0**

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Subject: Load Analysis of Dish

Location: Old Saybrook, CT

Rev. 0: 9/7/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16071.16

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Dish Located @ 110' AGL		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 12$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 15$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 121$ lbs

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 2.3$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} \cdot 2.5 = 36$ lbs

Weight Load (NESC Extreme)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 15$ lbs

Weight Load (NESC Heavy)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 864$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 436$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 14$ lbs

Weight of Ice on All Antennas = $[(WT_{ant} \cdot N_{ant}) + W_{ICEant} \cdot N_{ant}] \cdot 1.5 = 44$ lbs

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

Subject:	Climbing Ladder on CL&P Tower # Dist west river x-ing
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.16

Climbing Ladder on CL&P Tower

Climbing Ladder Span = (Between Attachment Points)

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

Extreme Wind Pressure = $qz := 38 \cdot psf$ *(User Input)*

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

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

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

Steel Density = $D_s := 490 \cdot pcf$ *(User Input)*

Shape Factor = $Cd := 1.6$ *(User Input)*

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

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

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

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

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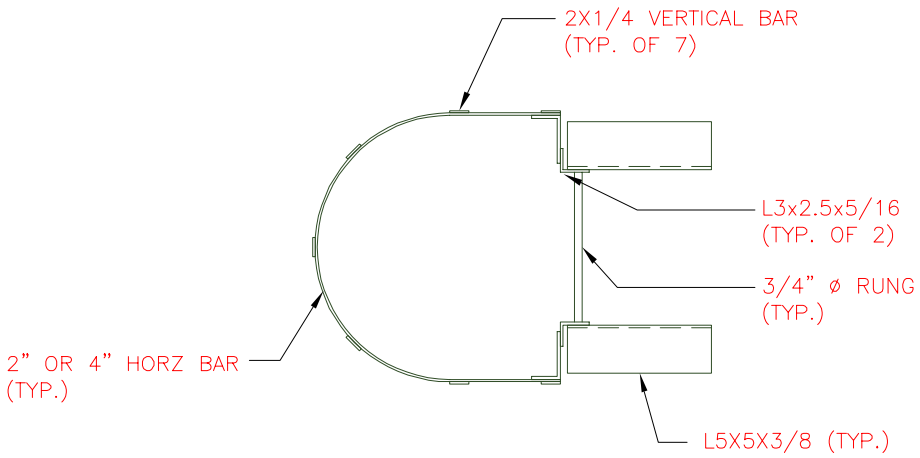
Climbing Ladder Components:

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



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

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

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

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

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

Number of 2" Horz Bars per Span = $N_{2HB} :=$ (1, 1, 1, 3, 3, 2, 3, 3, 3, 5, 3)

(User Input)

Number of 4" Horz Bars per Span = $N_{4HB} :=$ (2, 2, 2, 2, 1, 1, 2, 1, 1, 1, 0)

(User Input)

Number of Clip Angles per Span = $N_{CA} :=$ (2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2)

(User Input)

Number of Rungs per Span = $N_{Rung} :=$ (11, 12, 13, 15, 16, 19, 16, 16, 16, 23, 16)

(User Input)

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

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

lb

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

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

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

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

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

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

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

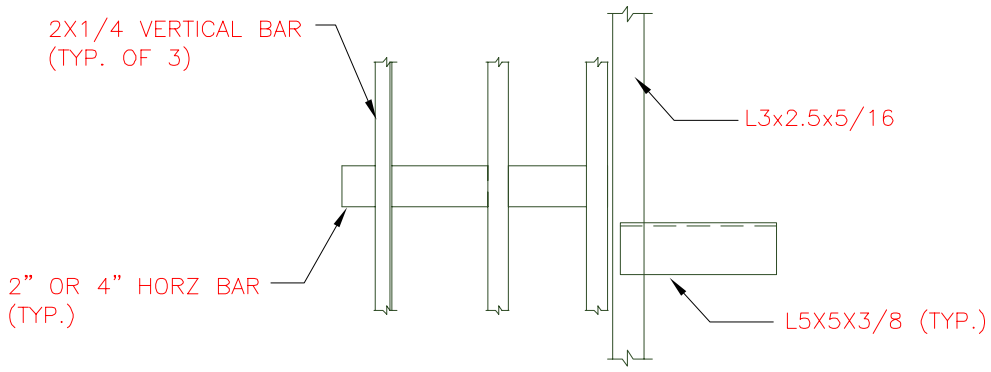
Weight of Climbing Ladder with Ice = $W_{ice} := \left(Aice_V \cdot CL_{Span} + Vice_{Rung} \cdot N_{Rung} + Vice_{2HB} \cdot N_{2HB} + Vice_{4HB} \cdot N_{4HB} + Vice_{CA} \cdot N_{CA}\right) \cdot Id + W =$

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

lb

Climbing Ladder Components Exposed to Wind:

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



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

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

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

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

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

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

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

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

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

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

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

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

ft^2

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

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

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

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

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

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

ft^2

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$Heavy_{Vert} =$

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

lb

$Heavy_{Trans} =$

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

lb

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$Extreme_{Vert} =$

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

lb

$Extreme_{Trans} =$

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

lb

Heavy Transverse Loads (Apply @ Indicated Points)

$$1px := \frac{\left(HeavyTrans_0\right)}{4} = 67lb$$

$$4px := \frac{\left(HeavyTrans_0 + HeavyTrans_1\right)}{4} = 134lb$$

$$7px := \frac{\left(HeavyTrans_1 + HeavyTrans_2\right)}{4} = 134lb$$

$$10px := \frac{\left(HeavyTrans_2 + HeavyTrans_3\right)}{4} = 151lb$$

$$13px := \frac{\left(HeavyTrans_3 + HeavyTrans_4\right)}{4} = 169lb$$

$$15px := \frac{\left(HeavyTrans_4 + HeavyTrans_5\right)}{4} = 181lb$$

$$18px := \frac{\left(HeavyTrans_5 + HeavyTrans_6\right)}{4} = 188lb$$

$$19px := \frac{\left(HeavyTrans_6 + HeavyTrans_7\right)}{4} = 180lb$$

$$20px := \frac{\left(HeavyTrans_7 + HeavyTrans_8\right)}{4} = 173lb$$

$$21px := \frac{\left(HeavyTrans_8 + HeavyTrans_9\right)}{4} = 207lb$$

$$22px := \frac{\left(HeavyTrans_9 + HeavyTrans_{10}\right)}{4} = 203lb$$

$$25px := \frac{\left(HeavyTrans_{10}\right)}{4} = 81lb$$

Heavy Vertical Loads (Apply @ Indicated Points)

$$1px := \frac{\left(HeavyVert_0\right)}{4} = 226lb$$

$$4px := \frac{\left(HeavyVert_0 + HeavyVert_1\right)}{4} = 453lb$$

$$7px := \frac{\left(HeavyVert_1 + HeavyVert_2\right)}{4} = 456lb$$

$$10px := \frac{\left(HeavyVert_2 + HeavyVert_3\right)}{4} = 514lb$$

$$13px := \frac{\left(HeavyVert_3 + HeavyVert_4\right)}{4} = 574lb$$

$$15px := \frac{\left(HeavyVert_4 + HeavyVert_5\right)}{4} = 617lb$$

$$18px := \frac{\left(HeavyVert_5 + HeavyVert_6\right)}{4} = 639lb$$

$$19px := \frac{\left(HeavyVert_6 + HeavyVert_7\right)}{4} = 610lb$$

$$20px := \frac{\left(HeavyVert_7 + HeavyVert_8\right)}{4} = 588lb$$

$$21px := \frac{\left(HeavyVert_8 + HeavyVert_9\right)}{4} = 704lb$$

$$22px := \frac{\left(HeavyVert_9 + HeavyVert_{10}\right)}{4} = 692lb$$

$$25px := \frac{\left(HeavyVert_{10}\right)}{4} = 278lb$$

Extreme Transverse Loads (Apply @ Indicated Points)

$$1px := \frac{\left(Extreme_{Trans_0}\right)}{4} = 180lb$$

$$4px := \frac{\left(Extreme_{Trans_0} + Extreme_{Trans_1}\right)}{4} = 359lb$$

$$7px := \frac{\left(Extreme_{Trans_1} + Extreme_{Trans_2}\right)}{4} = 359lb$$

$$10px := \frac{\left(Extreme_{Trans_2} + Extreme_{Trans_3}\right)}{4} = 404lb$$

$$13px := \frac{\left(Extreme_{Trans_3} + Extreme_{Trans_4}\right)}{4} = 450lb$$

$$15px := \frac{\left(Extreme_{Trans_4} + Extreme_{Trans_5}\right)}{4} = 479lb$$

$$18px := \frac{\left(Extreme_{Trans_5} + Extreme_{Trans_6}\right)}{4} = 498lb$$

$$19px := \frac{\left(Extreme_{Trans_6} + Extreme_{Trans_7}\right)}{4} = 478lb$$

$$20px := \frac{\left(Extreme_{Trans_7} + Extreme_{Trans_8}\right)}{4} = 459lb$$

$$21px := \frac{\left(Extreme_{Trans_8} + Extreme_{Trans_9}\right)}{4} = 547lb$$

$$22px := \frac{\left(Extreme_{Trans_9} + Extreme_{Trans_{10}}\right)}{4} = 536lb$$

$$25px := \frac{\left(Extreme_{Trans_{10}}\right)}{4} = 214lb$$

Extreme Vertical Loads (Apply @ Indicated Points)

$$1px := \frac{\left(Extreme_{Vert_0}\right)}{4} = 96lb$$

$$4px := \frac{\left(Extreme_{Vert_0} + Extreme_{Vert_1}\right)}{4} = 192lb$$

$$7px := \frac{\left(Extreme_{Vert_1} + Extreme_{Vert_2}\right)}{4} = 193lb$$

$$10px := \frac{\left(Extreme_{Vert_2} + Extreme_{Vert_3}\right)}{4} = 217lb$$

$$13px := \frac{\left(Extreme_{Vert_3} + Extreme_{Vert_4}\right)}{4} = 242lb$$

$$15px := \frac{\left(Extreme_{Vert_4} + Extreme_{Vert_5}\right)}{4} = 260lb$$

$$18px := \frac{\left(Extreme_{Vert_5} + Extreme_{Vert_6}\right)}{4} = 269lb$$

$$19px := \frac{\left(Extreme_{Vert_6} + Extreme_{Vert_7}\right)}{4} = 257lb$$

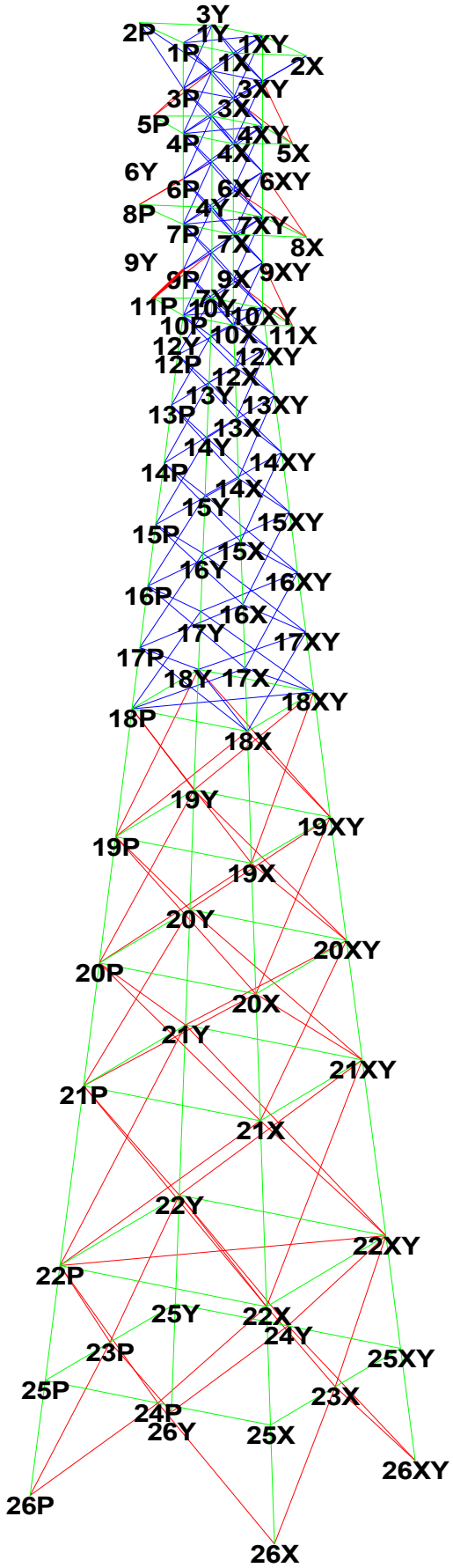
$$20px := \frac{\left(Extreme_{Vert_7} + Extreme_{Vert_8}\right)}{4} = 248lb$$

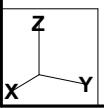
$$21px := \frac{\left(Extreme_{Vert_8} + Extreme_{Vert_9}\right)}{4} = 296lb$$

$$22px := \frac{\left(Extreme_{Vert_9} + Extreme_{Vert_{10}}\right)}{4} = 291lb$$

$$25px := \frac{\left(Extreme_{Vert_{10}}\right)}{4} = 117lb$$

Centek Engineering Inc, Project: "cl&p # dist west river x-ing "
Tower Version 12.50, 2:46:50 PM Wednesday, September 07, 2016
Undeformed geometry displayed





Project Name : 16071.16 - Old Saybrook
Project Notes: CT2042 - Structure - dist west river x-ing
Project File : J:\Jobs\1607100.WI\16_Old Saybrook CT2042\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p # dist west river x-ing .tow
Date run : 2:56:49 PM Monday, October 17, 2016
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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and spacing distances will be checked. ??
Member "20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64P" ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78X" ??
The model has 70 warnings. ??

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

Loads from file: j:\jobs\1607100.wi\16_old saybrook ct2042\04_structural\backup documentation\calcs\rev (1)\pls tower\cl&p # dist west river x-ing.lca

*** Analysis Results:

Maximum element usage is 98.31% for Angle "84Y" in load case "NESC Extreme"
Maximum insulator usage is 39.64% for Clamp "3" in load case "NESX Heavy Broken Wire"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	26P	4.15	-11.94	37.39	12.64	4.42	0.16	4.42	1.67	0.00
NESC Heavy	26X	-14.10	-10.93	-118.28	17.84	4.65	0.22	4.66	0.26	0.00
NESC Heavy	26XY	14.30	-10.80	-117.04	17.92	4.47	-0.04	4.47	-0.26	0.00
NESC Heavy	26Y	-4.35	-11.26	34.16	12.07	4.25	-0.33	4.26	-1.67	0.00
NESC Extreme	26P	12.69	-33.76	105.74	36.07	12.24	0.08	12.24	2.87	0.00
NESC Extreme	26X	-26.91	-28.36	-298.49	39.10	12.63	-3.75	13.18	2.89	0.00
NESC Extreme	26XY	14.70	-15.99	-159.30	21.72	10.40	-3.88	11.10	-3.33	0.00
NESC Extreme	26Y	-32.10	-51.16	274.13	60.40	9.86	-0.44	9.87	-2.63	0.00
NESX Heavy Broken Wire	26P	-8.20	-7.94	-56.93	11.41	2.51	-0.49	2.56	1.09	0.00
NESX Heavy Broken Wire	26X	-12.30	-17.43	-195.08	21.33	2.60	1.38	2.95	-0.24	0.00
NESX Heavy Broken Wire	26XY	2.25	-2.94	-25.14	3.70	0.25	1.26	1.28	-0.21	0.00
NESX Heavy Broken Wire	26Y	-14.75	-13.81	117.10	20.20	0.01	-0.88	0.88	-1.76	0.00

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

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	26P	25P	21P	-38.524	8.566	8.606	-0.784	8.570	4.15	-11.94	37.39
NESC Heavy	26X	25X	21X	119.573	3.450	3.466	3.454	0.281	-14.10	-10.93	-118.28
NESC Heavy	26XY	25XY	21XY	118.347	3.758	3.775	-3.765	0.268	14.30	-10.80	-117.04
NESC Heavy	26Y	25Y	21Y	-35.283	8.238	8.281	1.273	8.182	-4.35	-11.26	34.16
NESC Extreme	26P	25P	21P	-109.038	24.332	24.454	-3.174	24.248	12.69	-33.76	105.74
NESC Extreme	26X	25X	21X	301.034	1.495	1.501	0.046	1.500	-26.91	-28.36	-298.49
NESC Extreme	26XY	25XY	21XY	160.769	1.686	1.695	-0.365	1.656	14.70	-15.99	-159.30
NESC Extreme	26Y	25Y	21Y	-279.374	27.345	27.512	7.424	26.492	-32.10	-51.16	274.13
NESX Heavy Broken Wire	26P	25P	21P	56.497	13.391	13.421	3.077	13.063	-8.20	-7.94	-56.93
NESX Heavy Broken Wire	26X	25X	21X	196.172	5.237	5.259	-5.257	-0.128	-12.30	-17.43	-195.08
NESX Heavy Broken Wire	26XY	25XY	21XY	25.398	0.673	0.676	0.012	0.675	2.25	-2.94	-25.14
NESX Heavy Broken Wire	26Y	25Y	21Y	-118.715	5.289	5.331	4.210	3.270	-14.75	-13.81	117.10

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC Heavy	5370.362	-34.688	5370.474
NESC Extreme	14659.093	5382.685	15616.091
NESX Heavy Broken Wire	4906.785	6019.548	7766.047

Sections Information:

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

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage Cont-rol %	Max Comp. 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 Comp.	Length (ft)	Curve No.	No. Of Bolts

Leg1	6x6x3/8	SAE	6X6X0.375	33.0	22.24	Comp	22.24	5X	-28.622	NESX	Hea	128.698	163.200	303.750	1.000	1.000	1.000	60.50	60.50	6.000	1	12
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	39.68	Tens	36.01	8X	-86.664	NESC	Ext	240.633	301.600	629.999	1.000	1.000	1.000	45.28	45.28	6.000	1	16
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	48.64	Tens	47.03	11X	-147.070	NESC	Ext	312.686	414.700	1191.092	1.000	1.000	1.000	58.19	58.19	7.661	1	22
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	53.84	Tens	53.27	13X	-179.346	NESC	Ext	336.697	490.100	1535.623	1.000	1.000	1.000	61.25	61.25	8.065	1	26
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	56.92	Tens	56.53	15X	-204.325	NESC	Ext	361.445	527.800	1791.560	1.000	1.000	1.000	61.64	61.64	8.065	1	28
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	58.94	Comp	58.94	16X	-226.613	NESC	Ext	384.502	565.500	2067.184	0.500	0.500	0.500	64.34	64.34	16.835	1	30
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	61.87	Comp	61.87	18X	-256.240	NESC	Ext	414.146	603.200	2362.496	0.500	0.500	0.500	61.76	61.76	16.129	1	32
Leg8	8x8x1	SAE	8X8X1	33.0	67.12	Comp	67.12	21X	-299.854	NESC	Ext	446.741	640.900	2677.496	0.500	0.500	0.500	58.16	58.16	15.121	1	34
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	62.75	Comp	62.75	24P	-10.052	NESX	Hea	16.019	27.200	33.750	0.500	0.750	0.500	143.07	137.62	9.411	5	2
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.54	Comp	92.54	27XY	-24.924	NESX	Hea	26.934	40.800	50.625	0.500	0.750	0.500	112.48	114.36	9.411	2	3
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	61.12	Comp	61.12	31XY	-25.158	NESX	Hea	41.160	54.400	84.375	0.750	0.500	0.500	95.87	101.90	9.411	2	4
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	55.77	Comp	55.77	34P	-18.352	NESX	Hea	32.903	54.400	84.375	0.767	0.535	0.535	114.00	115.50	9.322	2	4
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	66.71	Comp	66.71	46P	-11.098	NESX	Hea	16.638	40.800	50.625	0.763	0.527	0.527	177.45	163.82	17.706	5	3
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	72.78	Tens	49.45	49Y	-2.794	NESC	Hea	5.650	54.400	84.375	0.764	0.529	0.529	319.36	271.95	24.601	5	4
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	89.30	Tens	82.54	55Y	-1.440	NESC	Ext	1.745	54.400	84.375	0.466	0.767	0.466	570.84	463.58	36.220	5	4
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.72	Comp	47.72	82Y	-8.275	NESC	Ext	17.340	40.800	50.625	0.500	1.000	0.500	181.65	167.02	16.500	5	3
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	98.31	Comp	98.31	84Y	-19.071	NESC	Ext	18.928	40.800	50.625	0.500	1.000	0.500	187.24	171.28	19.504	5	3
HBR3 LL	3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	68.26	Comp	68.26	88Y	-21.701	NESC	Ext	31.791	81.600	101.250	0.500	1.000	0.500	191.40	174.44	25.360	5	3
HBR4 LL	4x4x1/4	DAE	4X4X0.25	33.0	37.73	Comp	37.73	90Y	-23.484	NESC	Ext	62.237	81.600	101.250	0.500	0.500	0.500	142.08	133.58	29.600	6	3
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.76	Comp	54.76	73P	-22.340	NESX	Hea	65.312	40.800	63.281	1.000	0.500	0.500	57.44	88.72	7.334	3	3
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.75	Comp	88.75	94Y	-9.397	NESX	Hea	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	92.25	Comp	92.25	97X	-5.158	NESX	Hea	5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	5.47	Comp	5.47	79X	-2.302	NESC	Ext	42.081	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.67	Comp	21.67	61X	-3.027	NESX	Hea	13.968	27.200	33.750	0.500	0.750	0.500	155.87	147.38	10.253	5	2
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.55	Comp	55.55	78P	-3.102	NESC	Ext	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.68	Comp	91.68	64P	-3.971	NESC	Ext	4.332	27.200	25.312	0.500	0.750	0.500	282.84	244.13	23.335	5	2
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	61.78	Comp	61.78	65P	-1.202	NESC	Hea	1.946	27.200	33.750	0.500	0.750	0.500	511.54	418.39	41.861	5	2
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	96.27	Tens	78.79	59Y	-5.509	NESC	Hea	6.992	54.400	84.375	0.500	0.500	0.500	283.29	244.47	23.088	5	4
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.00				

0.00 0.000 0 0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Member Tens. (ft)	No. Of Bolts	No. Of Holes	Hole Diameter (in)
Leg1	6x6x3/8	SAE	6X6X0.375	33.0	22.24	Comp	18.05	5Y	19.890	NESC Ext	110.204	163.200	303.750	281.250	6.000	12	3.110	0.875
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	39.68	Tens	39.68	8Y	77.379	NESC Ext	195.030	301.600	629.999	699.999	6.000	16	3.680	1
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	48.64	Tens	48.64	11Y	128.689	NESC Ext	264.598	414.700	1191.092	1134.373	7.661	22	3.610	1
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	53.84	Tens	53.84	13Y	155.162	NESC Ext	288.172	490.100	1535.623	1462.498	8.065	26	3.610	1
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	56.92	Tens	56.92	15Y	176.246	NESC Ext	309.643	527.800	1791.560	1706.247	8.065	28	3.590	1
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	58.94	Comp	54.00	16Y	179.787	NESC Ext	332.928	565.500	2067.184	1968.747	16.835	30	3.590	1
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	61.87	Comp	61.60	18Y	218.223	NESC Ext	354.234	603.200	2362.496	2249.997	16.129	32	3.590	1
Leg8	8x8x1	SAE	8X8X1	33.0	67.12	Comp	66.32	20Y	250.164	NESC Ext	377.189	640.900	2677.496	2549.996	15.121	34	3.570	1
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	62.75	Comp	34.38	25X	8.590	NESX Hea	24.985	27.200	33.750	29.297	9.411	2	1.000	0.875
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.54	Comp	75.89	27X	24.597	NESX Hea	32.410	40.800	50.625	45.328	9.411	3	1.000	0.875
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	61.12	Comp	56.68	31X	25.362	NESX Hea	44.745	54.400	84.375	66.504	9.411	4	1.000	0.875
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	55.77	Comp	46.93	35X	16.592	NESX Hea	35.352	54.400	84.375	62.637	9.322	4	1.000	0.875
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	66.71	Comp	37.13	38X	13.411	NESX Hea	36.123	54.400	67.500	53.203	12.619	4	1.000	0.875
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	72.78	Tens	72.78	48XY	25.647	NESC Ext	35.241	54.400	84.375	62.637	24.601	4	1.000	0.875
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	89.30	Tens	89.30	54XY	27.493	NESC Ext	30.786	54.400	84.375	62.637	36.220	4	1.000	0.875
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.72	Comp	5.94	83P	2.425	NESC Hea	43.696	40.800	50.625	46.875	16.500	3	1.000	0.875
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	98.31	Comp	8.06	85P	3.290	NESC Hea	51.121	40.800	50.625	46.875	19.504	3	1.000	0.875
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	68.26	Comp	3.77	87P	3.079	NESC Hea	87.392	81.600	101.250	93.750	22.480	3	2.000	0.875
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	37.73	Comp	4.44	91P	3.621	NESC Hea	102.242	81.600	101.250	93.750	29.600	3	2.000	0.875
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.76	Comp	52.18	73Y	21.291	NESX Hea	67.911	40.800	63.281	44.613	7.334	3	1.000	0.875
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.75	Comp	31.27	94P	8.507	NESX Hea	36.271	27.200	33.750	31.250	10.922	2	1.000	0.875
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	92.25	Comp	40.76	97XY	10.184	NESX Hea	24.985	27.200	33.750	28.641	9.475	2	1.000	0.875

Br1	5x3x5/16	SAU	5X3X0.3125	33.0	5.47	Comp	5.14	79P	2.696	NESC Ext	63.159	54.400	84.375	52.441	7.250	4	1.000	0.875
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.67	Comp	11.81	61P	2.950	NESX Hea	24.985	27.200	33.750	31.250	10.253	2	1.000	0.875
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.55	Comp	33.29	78X	3.209	NESC Ext	19.184	13.600	12.656	9.640	7.250	1	1.000	0.875
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.68	Comp	0.00	64X	0.000		21.917	27.200	25.312	20.707	23.335	2	1.000	0.875
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	61.78	Comp	6.11	65X	1.662	NESC Ext	28.846	27.200	33.750	27.609	41.861	2	1.000	0.875
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	96.27	Tens	96.27	58Y	33.926	NESC Ext	35.241	54.400	84.375	62.637	23.088	4	1.000	0.875
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.17	53P	Angle
NESC Extreme	98.31	84Y	Angle
NESX Heavy Broken Wire	92.54	27XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	26.44	NESX Heavy Broken Wire	0.0
2	Clamp	6.85	NESC Extreme	0.0
3	Clamp	39.64	NESX Heavy Broken Wire	0.0
4	Clamp	12.17	NESC Extreme	0.0
5	Clamp	12.17	NESC Extreme	0.0
6	Clamp	12.17	NESC Extreme	0.0
7	Clamp	12.17	NESC Extreme	0.0
8	Clamp	12.17	NESC Extreme	0.0
9	Clamp	12.34	NESC Extreme	0.0
10	Clamp	3.96	NESC Heavy	0.0
11	Clamp	3.96	NESC Heavy	0.0
12	Clamp	3.59	NESC Heavy	0.0
13	Clamp	5.86	NESC Heavy	0.0
14	Clamp	4.90	NESC Heavy	0.0
15	Clamp	6.48	NESC Heavy	0.0
16	Clamp	7.38	NESC Heavy	0.0
17	Clamp	8.07	NESC Heavy	0.0
18	Clamp	10.26	NESC Heavy	0.0
19	Clamp	10.84	NESC Heavy	0.0
20	Clamp	8.02	NESC Heavy	0.0
21	Clamp	5.24	NESC Extreme	0.0
22	Clamp	3.54	NESC Extreme	0.0
23	Clamp	5.68	NESC Heavy	0.0

24	Clamp	6.49	NESC Heavy	0.0
25	Clamp	7.50	NESC Extreme	0.0
26	Clamp	9.14	NESC Heavy	0.0
27	Clamp	9.72	NESC Heavy	0.0
28	Clamp	5.95	NESC Extreme	0.0
29	Clamp	3.49	NESC Extreme	0.0
30	Clamp	1.28	NESC Heavy	0.0
31	Clamp	1.07	NESC Heavy	0.0
32	Clamp	3.76	NESC Heavy	0.0
33	Clamp	2.14	NESC Heavy	0.0
34	Clamp	12.27	NESC Extreme	0.0
35	Clamp	5.13	NESC Extreme	0.0
37	Clamp	1.24	NESC Extreme	0.0
38	Clamp	2.11	NESC Heavy	0.0
39	Clamp	2.00	NESC Heavy	0.0
40	Clamp	2.46	NESC Heavy	0.0
41	Clamp	2.34	NESC Heavy	0.0
42	Clamp	3.47	NESC Extreme	0.0
43	Clamp	3.47	NESC Extreme	0.0
44	Clamp	2.74	NESC Extreme	0.0
45	Clamp	2.74	NESC Extreme	0.0
46	Clamp	3.12	NESC Heavy	0.0
47	Clamp	2.94	NESC Heavy	0.0
49	Clamp	4.51	NESC Heavy	0.0
51	Clamp	5.25	NESC Heavy	0.0
53	Clamp	5.98	NESC Heavy	0.0
55	Clamp	7.73	NESC Heavy	0.0
57	Clamp	8.40	NESC Heavy	0.0
59	Clamp	4.26	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	57016.4
Total:	57016.4

*** End of Report

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

Project Name : 16071.16 - Old Saybrook
Project Notes: CT2042 - Structure - dist west river x-ing
Project File : J:\Jobs\1607100.WI\16_Old Saybrook CT2042\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Tower\cl&p # dist west river x-ing .tow
Date run     : 2:56:49 PM Monday, October 17, 2016
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

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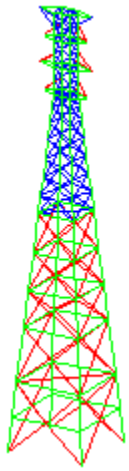
Member "15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "15X" will not be checked for block shear since more than one gage line exists (long edge distance (g)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

and spacing distances will be checked. ??
Member "19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64P" ??
KL/R value of 244.13 exceeds maximum of 200.00 for member "64X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78P" ??
KL/R value of 203.75 exceeds maximum of 200.00 for member "78X" ??
The model has 70 warnings. ??



Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 100%
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]

Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	3.625	-3.625	190	Free	Free	Free	Free	Free	Free
2P	X-Symmetry	0	-12	190	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3.625	-3.625	184	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3.625	-3.625	178	Free	Free	Free	Free	Free	Free
5P	X-Symmetry	0	-10	178	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3.625	-3.625	172	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3.625	-3.625	166	Free	Free	Free	Free	Free	Free
8P	X-Symmetry	0	-12	166	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3.625	-3.625	160	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	3.625	-3.625	154	Free	Free	Free	Free	Free	Free
11P	X-Symmetry	0	-10	154	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	4.098	-4.098	148.8	Free	Free	Free	Free	Free	Free
13P	XY-Symmetry	4.684	-4.684	142.3	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	5.367	-5.367	134.7	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	6.088	-6.088	126.7	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	6.808	-6.808	118.7	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	7.529	-7.529	110.7	Free	Free	Free	Free	Free	Free
18P	XY-Symmetry	8.25	-8.25	102.7	Free	Free	Free	Free	Free	Free
19P	XY-Symmetry	9.752	-9.752	86	Free	Free	Free	Free	Free	Free
20P	XY-Symmetry	11.24	-11.24	69.5	Free	Free	Free	Free	Free	Free
21P	XY-Symmetry	12.68	-12.68	53.5	Free	Free	Free	Free	Free	Free
22P	XY-Symmetry	14.8	-14.8	30	Free	Free	Free	Free	Free	Free
23P	X-Symmetry	0	-16.15	15	Free	Free	Free	Free	Free	Free
24P	Y-Symmetry	16.15	0	15	Free	Free	Free	Free	Free	Free
25P	XY-Symmetry	16.15	-16.15	15	Free	Free	Free	Free	Free	Free
26P	XY-Symmetry	17.5	-17.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
1X	X-GenXY	3.625	3.625	190	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-3.625	3.625	190	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-3.625	-3.625	190	Free	Free	Free	Free	Free	Free
2X	X-Gen	0	12	190	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3.625	3.625	184	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3.625	3.625	184	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3.625	-3.625	184	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3.625	3.625	178	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3.625	3.625	178	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3.625	-3.625	178	Free	Free	Free	Free	Free	Free
5X	X-Gen	0	10	178	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3.625	3.625	172	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3.625	3.625	172	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3.625	-3.625	172	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3.625	3.625	166	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3.625	3.625	166	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3.625	-3.625	166	Free	Free	Free	Free	Free	Free
8X	X-Gen	0	12	166	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3.625	3.625	160	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3.625	3.625	160	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3.625	-3.625	160	Free	Free	Free	Free	Free	Free
10X	X-GenXY	3.625	3.625	154	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-3.625	3.625	154	Free	Free	Free	Free	Free	Free

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

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

Steel Material Properties:

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

Bolt Properties:

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

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

Number Bolts Used By Type:

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

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	8X8X1	8	8	1	51	15	6.38	2.44	2.44	1.56	1	8	4	0	1.0000	0
SAE	8X8X0.875	8	8	0.875	45	13.23	7.43	2.45	2.45	1.57	1	8	4	0	1.0000	0
SAE	8X8X0.75	8	8	0.75	38.9	11.44	8.83	2.47	2.47	1.58	1	8	4	0	1.0000	0
SAE	8X8X0.5	8	8	0.5	26.4	7.75	13.75	2.5	2.5	1.59	1	8	4	0	1.0000	0
SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.3125	3	3	0.3125	6.1	1.78	7.6	0.922	0.922	0.589	1	3	1.5	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.3125	2.5	2.5	0.3125	5	1.46	6	0.761	0.761	0.489	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAU	5X3.5X0.3125	5	3.5	0.3125	8.7	2.56	13.4	1.61	1.03	0.766	1	5	1.75	0	1.0000	0
SAU	5X3X0.3125	5	3	0.3125	8.2	2.4	13.4	1.61	0.853	0.658	1	5	1.5	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3X2.5X0.3125	3	2.5	0.3125	5.6	1.62	7.4	0.937	0.744	0.525	1	3	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	2.5X2X0.3125	2.5	2	0.3125	4.5	1.31	6	0.776	0.584	0.422	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
DAE	4X4X0.25	4	4	0.25	13.2	3.88	13.5	1.25	1.79	1.25	2	4	2	0	1.0000	0
DAE	3.5X3.5X0.25	3.5	3.5	0.25	11.6	3.38	11.5	1.09	1.59	1.09	2	3.5	1.75	0	1.0000	0
SAE	8X8X0.6875	8	8	0.6875	36	10.5	12	2.48	2.48	1.58	1	8	0	0	1.0000	0
SAE	8X8X0.8125	8	8	0.8125	42	12.3	8.1	2.46	2.46	1.57	1	8	0	0	1.0000	0
SAE	8X8X0.9375	8	8	0.9375	48	14.1	6.9	2.44	2.44	1.567	1	8	0	0	1.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Add. Angle Width For Optimize (in)
Leg1	6x6x3/8	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
Leg2	8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None	0.000
Leg3	8x8x11/16	SAE	8X8X0.6875	A7	Beam	Leg	None	0.000
Leg4	8x8x3/4	SAE	8X8X0.75	A7	Beam	Leg	None	0.000
Leg5	8x8x13/16	SAE	8X8X0.8125	A7	Beam	Leg	None	0.000

Leg6	8x8x7/8	SAE	8X8X0.875	A7	Beam	Leg	None	0.000
Leg7	8x8x/15/16	SAE	8X8X0.9375	A7	Beam	Leg	None	0.000
Leg8	8x8x1	SAE	8X8X1	A7	Beam	Leg	None	0.000
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR3	3x3x5/16	SAE	3X3X0.3125	A7	Truss	Crossing Diagonal	None	0.000
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	A7	Truss	Crossing Diagonal	None	0.000
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	A7	Truss	Crossing Diagonal	None	0.000
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	A7	T-Only	Other	None	0.000
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
HBR2	4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None	0.000
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
HBR4	LL4x4x1/4	DAE	4X4X0.25	A7	Beam	Other	None	0.000
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
ArmBR1	3x3x1/4	SAE	3X3X0.25	A7	Truss	Other	None	0.000
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
Br1	5x3x5/16	SAU	5X3X0.3125	A7	Truss	Other	None	0.000
Br2	2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Other	None	0.000
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	T-Only	Other	None	0.000
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	T-Only	Other	None	0.000
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	A7	Truss	Crossing Diagonal	None	0.000

Aggregate Angle Information:

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

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	6X6X0.375	A7	72.00	144.00	1072.80
SAE	8X8X0.5	A7	72.00	192.00	1900.80
SAE	8X8X0.6875	A7	77.83	207.54	2801.75
SAE	8X8X0.75	A7	64.52	172.05	2509.71
SAE	8X8X0.8125	A7	64.52	172.05	2709.75
SAE	8X8X0.875	A7	67.34	179.57	3030.22
SAE	8X8X0.9375	A7	131.05	349.47	6290.44
SAE	8X8X1	A7	215.73	575.28	11002.23
SAU	2.5X2X0.25	A7	352.09	264.06	1274.55
SAU	3X2.5X0.25	A7	150.57	138.02	677.58
SAE	3X3X0.3125	A7	150.57	150.57	918.49
SAU	3X2.5X0.3125	A7	162.11	148.60	907.83
SAU	3.5X3X0.25	A7	607.54	658.17	3280.72
SAE	2.5X2.5X0.3125	A7	550.44	458.70	2752.20
SAU	2.5X2X0.3125	A7	734.21	550.66	3303.93
SAE	2.5X2.5X0.1875	A7	46.67	38.89	143.27
SAE	2.5X2.5X0.25	A7	83.72	69.77	343.26
SAU	5X3.5X0.3125	A7	189.68	268.71	1650.18
SAU	5X3X0.3125	A7	58.00	77.33	475.60
SAU	2.5X2X0.1875	A7	58.00	43.50	159.50
SAE	3.5X3.5X0.25	A7	66.00	77.00	382.80
SAE	4X4X0.25	A7	78.02	104.02	514.91
DAE	3.5X3.5X0.25	A7	320.56	373.99	3718.50
DAE	4X4X0.25	A7	118.40	157.87	1562.88
SAE	3X3X0.25	A7	43.69	43.69	214.06

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

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	10P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	20P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
3	26P	1.150	3.200	3.200	1.200	1.200	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
3P	Leg1		XY-Symmetry	1P	3P	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
3X	Leg1		X-GenXY	1X	3X	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
3XY	Leg1		XY-GenXY	1XY	3XY	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
3Y	Leg1		Y-GenXY	1Y	3Y	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
4P	Leg1		XY-Symmetry	3P	4P	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
4X	Leg1		X-GenXY	3X	4X	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
4XY	Leg1		XY-GenXY	3XY	4XY	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
4Y	Leg1		Y-GenXY	3Y	4Y	1	4	1	1	1 3/4	A394	0	3.62	1		0	0	0	0	0	0	0
5P	Leg1		XY-Symmetry	4P	6P	1	4	1	1	1 3/4	A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5X	Leg1		X-GenXY	4X	6X	1	4	1	1	1 3/4	A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5XY	Leg1		XY-GenXY	4XY	6XY	1	4	1	1	1 3/4	A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
5Y	Leg1		Y-GenXY	4Y	6Y	1	4	1	1	1 3/4	A394	12	3.11	1	Both	1.25	3.875	1.25	3	0	0	0
6P	Leg2		XY-Symmetry	6P	7P	1	4	1	1	1 3/4	A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6X	Leg2		X-GenXY	6X	7X	1	4	1	1	1 3/4	A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6XY	Leg2		XY-GenXY	6XY	7XY	1	4	1	1	1 3/4	A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
6Y	Leg2		Y-GenXY	6Y	7Y	1	4	1	1	1 3/4	A394	12	3.63	1	Both	2.375	5.875	1.25	3	0	0	0
7P	Leg2		XY-Symmetry	7P	9P	1	4	1	1	1 3/4	A394	0	3.6	1		0	0	0	0	0	0	0

0	0	0																			
	7X	Leg2	X-GenXY	7X	9X	1	4	1	1	1	3/4	A394	0	3.6	1		0	0	0	0	
0	0	0																			
	7XY	Leg2	XY-GenXY	7XY	9XY	1	4	1	1	1	3/4	A394	0	3.6	1		0	0	0	0	
0	0	0																			
	7Y	Leg2	Y-GenXY	7Y	9Y	1	4	1	1	1	3/4	A394	0	3.6	1		0	0	0	0	
0	0	0																			
	8P	Leg2	XY-Symmetry	9P	10P	1	4	1	1	1	7/8	A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																			
	8X	Leg2	X-GenXY	9X	10X	1	4	1	1	1	7/8	A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																			
	8XY	Leg2	XY-GenXY	9XY	10XY	1	4	1	1	1	7/8	A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																			
	8Y	Leg2	Y-GenXY	9Y	10Y	1	4	1	1	1	7/8	A394	16	3.68	1	Both	2.375	5.875	1.75	3	
0	0	0																			
	9P	Leg3	XY-Symmetry	10P	12P	1	4	1	1	1	7/8	A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																			
	9X	Leg3	X-GenXY	10X	12X	1	4	1	1	1	7/8	A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																			
	9XY	Leg3	XY-GenXY	10XY	12XY	1	4	1	1	1	7/8	A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																			
	9Y	Leg3	Y-GenXY	10Y	12Y	1	4	1	1	1	7/8	A394	16	3.61	1	Both	2.25	5.125	1.75	3	
0	0	0																			
	10P	Leg3	XY-Symmetry	12P	13P	1	4	1	1	1	7/8	A394	0	3.61	1		0	0	0	0	
0	0	0																			
	10X	Leg3	X-GenXY	12X	13X	1	4	1	1	1	7/8	A394	0	3.61	1		0	0	0	0	
0	0	0																			
	10XY	Leg3	XY-GenXY	12XY	13XY	1	4	1	1	1	7/8	A394	0	3.61	1		0	0	0	0	
0	0	0																			
	10Y	Leg3	Y-GenXY	12Y	13Y	1	4	1	1	1	7/8	A394	0	3.61	1		0	0	0	0	
0	0	0																			
	11P	Leg3	XY-Symmetry	13P	14P	1	4	1	1	1	7/8	A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			
	11X	Leg3	X-GenXY	13X	14X	1	4	1	1	1	7/8	A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			
	11XY	Leg3	XY-GenXY	13XY	14XY	1	4	1	1	1	7/8	A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			
	11Y	Leg3	Y-GenXY	13Y	14Y	1	4	1	1	1	7/8	A394	22	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			
	12P	Leg4	XY-Symmetry	15P	14P	1	4	1	1	1	7/8	A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	12X	Leg4	X-GenXY	15X	14X	1	4	1	1	1	7/8	A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	12XY	Leg4	XY-GenXY	15XY	14XY	1	4	1	1	1	7/8	A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	12Y	Leg4	Y-GenXY	15Y	14Y	1	4	1	1	1	7/8	A394	22	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	13P	Leg4	XY-Symmetry	16P	15P	1	4	1	1	1	7/8	A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	13X	Leg4	X-GenXY	16X	15X	1	4	1	1	1	7/8	A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	13XY	Leg4	XY-GenXY	16XY	15XY	1	4	1	1	1	7/8	A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	13Y	Leg4	Y-GenXY	16Y	15Y	1	4	1	1	1	7/8	A394	26	3.61	1	Both	1.5	4.375	1.5	3	
0	0	0																			
	14P	Leg5	XY-Symmetry	17P	16P	1	4	1	1	1	7/8	A394	26	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			
	14X	Leg5	X-GenXY	17X	16X	1	4	1	1	1	7/8	A394	26	3.61	1	Both	2.25	5.125	1.5	3	
0	0	0																			

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

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

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

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

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

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

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

0	0	0																			
	71X	Br1	X-Gen	4X	4XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	
0	0	0																			
	72P	Arm	Y-Symmetry	4P	4X	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0	
0	0	0																			
	72Y	Arm	Y-Gen	4Y	4XY	3	6	1	1	1	3/4	A394	0	0	1		0	0	0	0	
0	0	0																			
	73P	Arm	XY-Symmetry	4P	5P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	73X	Arm	X-GenXY	4X	5X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	73XY	Arm	XY-GenXY	4XY	5X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	73Y	Arm	Y-GenXY	4Y	5P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	74P	Br3	X-Symmetry	6Y	6P	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	74X	Br3	X-Gen	6XY	6X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	75P	Br1	X-Symmetry	7P	7Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	
0	0	0																			
	75X	Br1	X-Gen	7X	7XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	
0	0	0																			
	76P	Arm	XY-Symmetry	7P	8P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	76X	Arm	X-GenXY	7X	8X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	76XY	Arm	XY-GenXY	7XY	8X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	76Y	Arm	Y-GenXY	7Y	8P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	77P	Arm	Y-Symmetry	7Y	7XY	3	6	1	1	1			0	0	1		0	0	0	0	
0	0	0																			
	77Y	Arm	Y-Gen	7P	7X	3	6	1	1	1			0	0	1		0	0	0	0	
0	0	0																			
	78P	Br3	X-Symmetry	9Y	9P	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	78X	Br3	X-Gen	9XY	9X	3	4	1	1	1	3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	79P	Br1	X-Symmetry	10P	10Y	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	
0	0	0																			
	79X	Br1	X-Gen	10X	10XY	3	6	1	1	1	3/4	A394	4	1	1	Long only	0	0	0	0	
0	0	0																			
	80P	Arm	XY-Symmetry	10P	11P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	80X	Arm	X-GenXY	10X	11X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	80XY	Arm	XY-GenXY	10XY	11X	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	80Y	Arm	Y-GenXY	10Y	11P	3	6	1	0.5	0.5	3/4	A394	3	1	1	Long only	0	0	0	0	
0	0	0																			
	81P	Arm	Y-Symmetry	10X	10P	3	6	1	1	1			0	0	1		0	0	0	0	
0	0	0																			
	81Y	Arm	Y-Gen	10XY	10Y	3	6	1	1	1			0	0	1		0	0	0	0	
0	0	0																			
	82P	HBR1	Y-Symmetry	18P	18X	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	
0	0	0																			
	82Y	HBR1	Y-Gen	18Y	18XY	3	5	0.5	1	0.5	3/4	A394	3	1	1	Long only	2	0	1.25	7	
0	0	0																			

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

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

Member Capacities and Overrides:

Member Label	Group Label	Design Comp. Control	Design Tension Criterion	Tension Capacity (kips)	Control Criterion	Comp. Capacity (kips)	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. Capacity (kips)	RTE Edge Dist. Capacity (kips)	Override Comp. Capacity (kips)	Override Tension Capacity (kips)	Override Warnings or Errors
3P	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
3X	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
3XY	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
3Y	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
4P	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
4X	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
4XY	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic
4Y	Leg1	128.698	L/r	104.682	Net Sect	61	6.00	128.698	0.000	0.000	104.682	0.000	0.000	0.000	0.000	0.000	Automatic

5P	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
5X	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
5XY	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
5Y	Leg1	128.698	L/r	110.204	Net Sect	61	6.00	128.698	163.200	303.750	110.204	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
6P	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
6X	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
6XY	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
6Y	Leg2	163.200	Shear	163.200	Shear	45	6.00	240.633	163.200	404.999	203.342	374.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
7P	Leg2	240.633	L/r	203.775	Net Sect	45	6.00	240.633	0.000	0.000	203.775	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
7X	Leg2	240.633	L/r	203.775	Net Sect	45	6.00	240.633	0.000	0.000	203.775	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
7XY	Leg2	240.633	L/r	203.775	Net Sect	45	6.00	240.633	0.000	0.000	203.775	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
7Y	Leg2	240.633	L/r	203.775	Net Sect	45	6.00	240.633	0.000	0.000	203.775	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
8P	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
8X	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
8XY	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
8Y	Leg2	240.633	L/r	195.030	Net Sect	45	6.00	240.633	301.600	629.999	195.030	699.999	0.000	0.000	0.000	0.000	0.000
Automatic	Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
9P	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000	0.000
Automatic	Member "9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
9X	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000	0.000
Automatic	Member "9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
9XY	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000	0.000
Automatic	Member "9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
9Y	Leg3	301.600	Shear	264.598	Net Sect	40	5.24	330.664	301.600	866.249	264.598	962.499	0.000	0.000	0.000	0.000	0.000
Automatic	Member "9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
10P	Leg3	321.763	L/r	264.598	Net Sect	50	6.55	321.763	0.000	0.000	264.598	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	

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

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

zero); however, end, edge and spacing distances will be checked. ??

20X	Leg8	446.741	L/r	377.189	Net Sect	58	15.12	446.741	640.900	2677.496	377.189	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

20XY	Leg8	446.741	L/r	377.189	Net Sect	58	15.12	446.741	640.900	2677.496	377.189	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

20Y	Leg8	446.741	L/r	377.189	Net Sect	58	15.12	446.741	640.900	2677.496	377.189	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

21P	Leg8	446.741	L/r	375.209	Net Sect	58	15.12	446.741	640.900	2677.496	375.209	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

21X	Leg8	446.741	L/r	375.209	Net Sect	58	15.12	446.741	640.900	2677.496	375.209	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

21XY	Leg8	446.741	L/r	375.209	Net Sect	58	15.12	446.741	640.900	2677.496	375.209	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

21Y	Leg8	446.741	L/r	375.209	Net Sect	58	15.12	446.741	640.900	2677.496	375.209	2549.996	0.000	0.000	0.000	0.000

0.000 Automatic Member "21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

22P	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

22X	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

22XY	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

22Y	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

23P	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

23X	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

23XY	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

23Y	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

24P	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

24X	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

24XY	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

24Y	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

25P	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

25X	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

25XY	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

25Y	XBR1	16.019	L/r	24.985	Net Sect	143	9.41	16.019	27.200	33.750	24.985	29.297	0.000	0.000	0.000	0.000

0.000 Automatic

26P	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000

0.000 Automatic

26X	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000

0.000 Automatic

26XY	XBR2	26.934	L/r	32.410	Net Sect	112	9.41	26.934	40.800	50.625	32.410	45.328	0.000	0.000	0.000	0.000

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

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

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

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

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

66Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
67P	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
67X	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
68P	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68X	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68XY	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
68Y	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
69P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "69P" ??																
69Y	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "69Y" ??																
70P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "70P" ??																
70X	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "70X" ??																
71P	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
71X	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
72P	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
72Y	Arm	51.267	L/r	84.480	Net Sect	114	7.25	51.267	0.000	0.000	84.480	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
73P	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73X	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73XY	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
73Y	Arm	40.800	Shear	40.800	Shear	57	7.33	65.312	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
74P	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "74P" ??																
74X	**Br3**	**5.585**	**L/r**	**9.640**	**Rupture**	**204**	**7.25**	**5.585**	**13.600**	**12.656**	**19.184**	**9.640**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 203.75 exceeds maximum of 200.00 for member "74X" ??																
75P	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
75X	Br1	42.081	L/r	52.441	Rupture	132	7.25	42.081	54.400	84.375	63.159	52.441	0.000	0.000	0.000	0.000
0.000		Automatic														
76P	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76X	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76XY	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000
0.000		Automatic														
76Y	Arm	40.800	Shear	40.800	Shear	71	9.13	62.159	40.800	63.281	67.911	44.613	0.000	0.000	0.000	0.000

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

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

The model contains 324 angle members.

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

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

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

Unadjusted Dead Load and Drag Areas by Section:

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

Angle Member Weights and Surface Areas by Section:

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

2	22.464	22.464	2364.673	2364.673
3	22.790	26.208	1928.934	2218.274
Total	53.598	57.016	5615.495	5904.835

Section Joint Information:

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

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

Sections Information:

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

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

*** Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

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

41	7X	C-EX1	No Limit
42	10P	C-EX1	No Limit
43	10X	C-EX1	No Limit
44	13P	C-EX1	No Limit
45	13X	C-EX1	No Limit
46	15P	C-EX1	No Limit
47	15X	C-EX1	No Limit
49	18X	C-EX1	No Limit
51	19X	C-EX1	No Limit
53	20X	C-EX1	No Limit
55	21X	C-EX1	No Limit
57	22X	C-EX1	No Limit
59	25X	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1607100.wi\16_old saybrook ct2042\04_structural\backup documentation\calcs\rev (1)\pls tower\cl&p # dist west river x-ing.lca

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

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):

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

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	61 loads	Wind on Face	4	0	0.500	56.000	0.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	61 loads	NESC 2007	36.8	0	0.000	0.000	0.0	
NESX Heavy Broken Wire	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	61 loads	Wind on Face	4	0	0.500	56.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	1548	1466	0	Shield Wire
2X	1548	1466	0	Shield Wire
5P	3064	1993	0	Conductor
5X	3064	1993	0	Conductor
8P	3064	1993	0	Conductor
8X	3064	1993	0	Conductor
11P	3064	1993	0	Conductor
11X	3064	1993	0	Conductor
1Y	1663	481	69	AT&T Top Connection
1XY	1072	1855	828	AT&T Top Connection
3Y	1350	203	-258	AT&T Bottom Connection
3XY	1370	-1161	-640	AT&T Bottom Connection
14P	634	267	0	Sprint Antennas & Mount
14Y	634	267	0	Sprint Antennas & Mount
14XY	634	267	0	Sprint Antennas & Mount
1Y	552	103	0	AT&T Coax Cables
4Y	1380	258	0	AT&T Coax Cables
9Y	1343	251	0	AT&T Coax Cables
12Y	1159	216	0	AT&T Coax Cables

14Y	1380	258	0	AT&T Coax Cables
16Y	1472	275	0	AT&T Coax Cables
18Y	1504	281	0	AT&T Coax Cables
19Y	1527	285	0	AT&T Coax Cables
20Y	1495	279	0	AT&T Coax Cables
21Y	1817	339	0	AT&T Coax Cables
22Y	1771	331	0	AT&T Coax Cables
25Y	2070	386	0	AT&T Coax Cables
14P	345	258	0	Sprint Coax Cables
16P	368	275	0	Sprint Coax Cables
18P	376	281	0	Sprint Coax Cables
19P	382	285	0	Sprint Coax Cables
20P	374	279	0	Sprint Coax Cables
21P	454	339	0	Sprint Coax Cables
22P	443	331	0	Sprint Coax Cables
25P	517	386	0	Sprint Coax Cables
21P	10	3	0	Sprint GSP
17P	44	36	0	Dish
1P	226	67	0	Climbing Ladder
1X	226	67	0	Climbing Ladder
4P	453	134	0	Climbing Ladder
4X	453	134	0	Climbing Ladder
7P	456	134	0	Climbing Ladder
7X	456	134	0	Climbing Ladder
10P	514	151	0	Climbing Ladder
10X	514	151	0	Climbing Ladder
13P	574	169	0	Climbing Ladder
13X	574	169	0	Climbing Ladder
15P	617	181	0	Climbing Ladder
15X	617	181	0	Climbing Ladder
18P	639	188	0	Climbing Ladder
18X	639	188	0	Climbing Ladder
19P	610	180	0	Climbing Ladder
19X	610	180	0	Climbing Ladder
20P	588	173	0	Climbing Ladder
20X	588	173	0	Climbing Ladder
21P	704	207	0	Climbing Ladder
21X	704	207	0	Climbing Ladder
22P	692	203	0	Climbing Ladder
22X	692	203	0	Climbing Ladder
25P	278	81	0	Climbing Ladder
25X	278	81	0	Climbing Ladder

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	10.00	10.00	3.200	3899.5	0.00	3.200	0.0	3435	15950
2	154.00	69.50	111.75	10.00	10.00	3.200	8009.3	0.00	3.200	0.0	6190	39887
3	69.50	0.00	34.75	10.00	10.00	3.200	6471.8	0.00	3.200	0.0	6306	45619

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load	Transverse Load	Longitudinal Load	Load Comment

	(lbs)	(lbs)	(lbs)	
2P	333	1630	2739	Shield Wire
2X	333	1630	2739	Shield Wire
5P	949	3738	4356	Conductor
5X	949	3738	4356	Conductor
8P	949	3738	4356	Conductor
8X	949	3738	4356	Conductor
11P	949	3738	4356	Conductor
11X	949	3738	4356	Conductor
1Y	1978	4787	-1449	AT&T Top Connection
1XY	-633	5476	1890	AT&T Top Connection
3Y	622	-1818	630	AT&T Bottom Connection
3XY	715	-2474	-1071	AT&T Bottom Connection
14P	288	861	0	Sprint Antennas & Mount
14Y	288	861	0	Sprint Antennas & Mount
14XY	288	861	0	Sprint Antennas & Mount
1Y	150	380	0	AT&T Coax Cables
4Y	374	950	0	AT&T Coax Cables
9Y	364	925	0	AT&T Coax Cables
12Y	314	798	0	AT&T Coax Cables
14Y	374	950	0	AT&T Coax Cables
16Y	399	1014	0	AT&T Coax Cables
18Y	408	1036	0	AT&T Coax Cables
19Y	414	1052	0	AT&T Coax Cables
20Y	406	1030	0	AT&T Coax Cables
21Y	493	1251	0	AT&T Coax Cables
22Y	480	1220	0	AT&T Coax Cables
25Y	562	1426	0	AT&T Coax Cables
14P	94	920	0	Sprint Coax Cables
16P	100	981	0	Sprint Coax Cables
18P	102	1002	0	Sprint Coax Cables
19P	104	1018	0	Sprint Coax Cables
20P	101	996	0	Sprint Coax Cables
21P	123	1211	0	Sprint Coax Cables
22P	120	1180	0	Sprint Coax Cables
25P	140	1379	0	Sprint Coax Cables
21P	5	8	0	Sprint GSP
17P	15	121	0	Dish
1P	96	180	0	Climbing Ladder
1X	96	180	0	Climbing Ladder
4P	192	359	0	Climbing Ladder
4X	192	359	0	Climbing Ladder
7P	193	359	0	Climbing Ladder
7X	193	359	0	Climbing Ladder
10P	217	404	0	Climbing Ladder
10X	217	404	0	Climbing Ladder
13P	242	450	0	Climbing Ladder
13X	242	450	0	Climbing Ladder
15P	260	479	0	Climbing Ladder
15X	260	479	0	Climbing Ladder
18P	269	498	0	Climbing Ladder
18X	269	498	0	Climbing Ladder
19P	257	478	0	Climbing Ladder
19X	257	478	0	Climbing Ladder
20P	248	459	0	Climbing Ladder
20X	248	459	0	Climbing Ladder
21P	296	547	0	Climbing Ladder
21X	296	547	0	Climbing Ladder

22P	291	536	0	Climbing Ladder
22X	291	536	0	Climbing Ladder
25P	117	214	0	Climbing Ladder
25X	117	214	0	Climbing Ladder

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	39.97	39.97	97.55	261.00	0.374	3.200	12476.9	0.00	123.58	438.00	0.282	3.200	0.0	0	8344
2	154.00	69.50	111.75	39.97	39.97	206.72	1256.37	0.165	3.200	26441.0	0.00	206.72	1256.37	0.165	3.200	0.0	0	22464
3	69.50	0.00	34.75	39.97	39.97	198.20	1997.50	0.099	3.200	25351.3	0.00	198.20	1997.50	0.099	3.200	0.0	0	26208

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

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	294	277	13200	Broken Shield Wire
2X	1548	1466	0	Shield Wire
5P	581	377	19800	Broken Conductor
5X	3064	1993	0	Conductor
8P	3064	1993	0	Conductor
8X	3064	1993	0	Conductor
11P	3064	1993	0	Conductor
11X	3064	1993	0	Conductor
1Y	1663	481	69	AT&T Top Connection
1XY	1072	1855	828	AT&T Top Connection
3Y	1350	203	-258	AT&T Bottom Connection
3XY	1370	-1161	-640	AT&T Bottom Connection
14P	634	267	0	Sprint Antennas & Mount
14Y	634	267	0	Sprint Antennas & Mount
14XY	634	267	0	Sprint Antennas & Mount
1Y	552	103	0	AT&T Coax Cables
4Y	1380	258	0	AT&T Coax Cables
9Y	1343	251	0	AT&T Coax Cables
12Y	1159	216	0	AT&T Coax Cables
14Y	1380	258	0	AT&T Coax Cables
16Y	1472	275	0	AT&T Coax Cables
18Y	1504	281	0	AT&T Coax Cables
19Y	1527	285	0	AT&T Coax Cables
20Y	1495	279	0	AT&T Coax Cables
21Y	1817	339	0	AT&T Coax Cables
22Y	1771	331	0	AT&T Coax Cables
25Y	2070	386	0	AT&T Coax Cables
14P	345	258	0	Sprint Coax Cables
16P	368	275	0	Sprint Coax Cables
18P	376	281	0	Sprint Coax Cables
19P	382	285	0	Sprint Coax Cables
20P	374	279	0	Sprint Coax Cables
21P	454	339	0	Sprint Coax Cables
22P	443	331	0	Sprint Coax Cables
25P	517	386	0	Sprint Coax Cables
21P	10	3	0	Sprint GSP

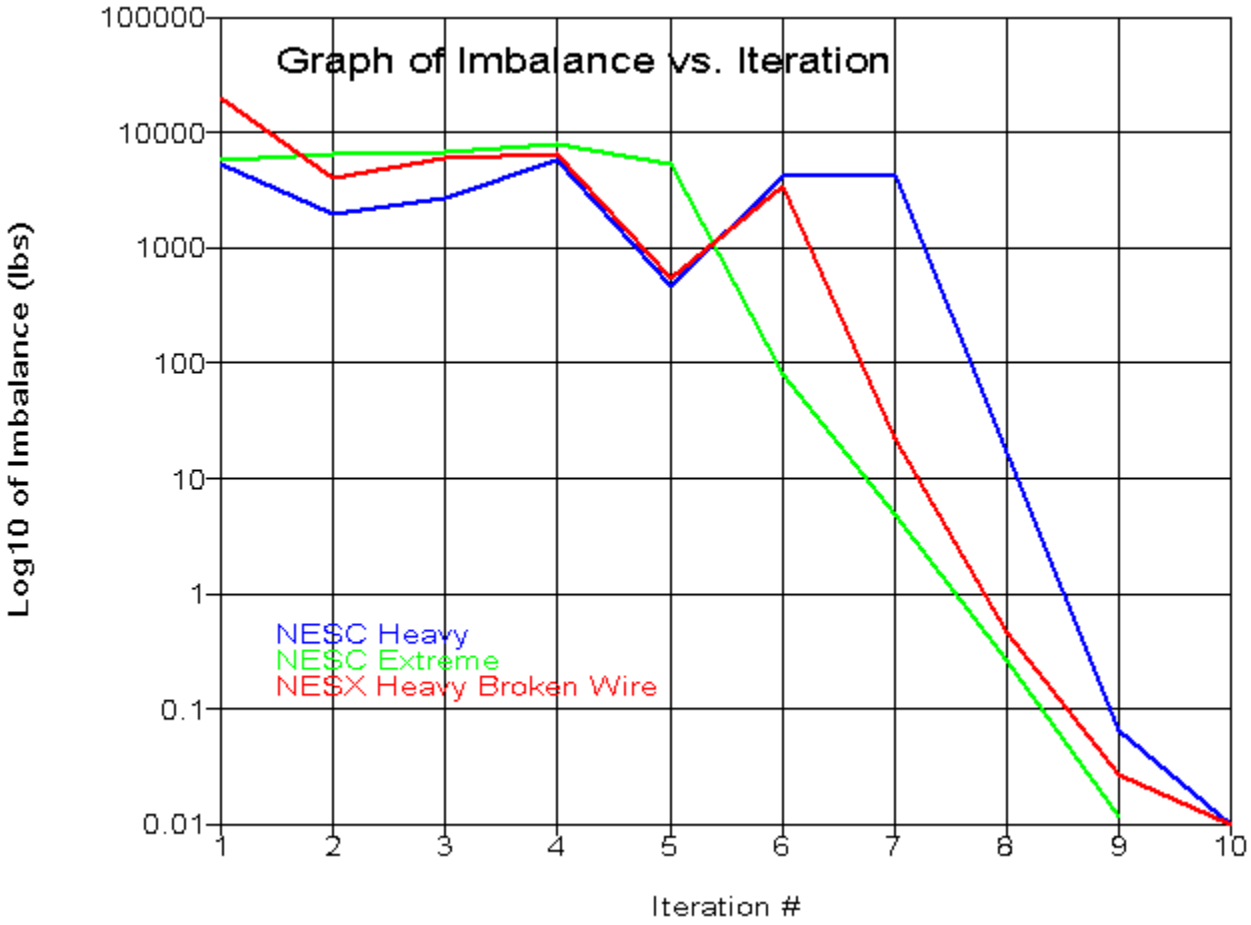
17P	44	36	0	Dish
1P	226	67	0	Climbing Ladder
1X	226	67	0	Climbing Ladder
4P	453	134	0	Climbing Ladder
4X	453	134	0	Climbing Ladder
7P	456	134	0	Climbing Ladder
7X	456	134	0	Climbing Ladder
10P	514	151	0	Climbing Ladder
10X	514	151	0	Climbing Ladder
13P	574	169	0	Climbing Ladder
13X	574	169	0	Climbing Ladder
15P	617	181	0	Climbing Ladder
15X	617	181	0	Climbing Ladder
18P	639	188	0	Climbing Ladder
18X	639	188	0	Climbing Ladder
19P	610	180	0	Climbing Ladder
19X	610	180	0	Climbing Ladder
20P	588	173	0	Climbing Ladder
20X	588	173	0	Climbing Ladder
21P	704	207	0	Climbing Ladder
21X	704	207	0	Climbing Ladder
22P	692	203	0	Climbing Ladder
22X	692	203	0	Climbing Ladder
25P	278	81	0	Climbing Ladder
25X	278	81	0	Climbing Ladder

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	190.00	154.00	172.00	10.00	10.00	3.200	3899.5	0.00	3.200	0.0	3435	15950
2	154.00	69.50	111.75	10.00	10.00	3.200	8009.3	0.00	3.200	0.0	6190	39887
3	69.50	0.00	34.75	10.00	10.00	3.200	6471.8	0.00	3.200	0.0	6306	45619

*** Analysis Results:

Maximum element usage is 98.31% for Angle "84Y" in load case "NESC Extreme"
Maximum insulator usage is 39.64% for Clamp "3" in load case "NESX Heavy Broken Wire"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)	LC 3 (kips)
Leg1	3P	1.91	2.003	-0.573	0.271	2.003	-0.573
Leg1	3X	2.89	0.000	-3.724	-1.809	-3.724	-3.130
Leg1	3XY	2.20	0.000	-2.836	-2.609	-2.836	-1.354
Leg1	3Y	1.97	2.066	-1.013	-1.013	2.066	0.014

Leg1	4P	6.45	4.960	-8.304	-0.224	4.960	-8.304
Leg1	4X	10.45	0.000	-13.453	-6.780	-13.453	-10.742
Leg1	4XY	6.57	0.000	-8.453	-8.453	-7.320	-5.458
Leg1	4Y	9.78	10.243	-2.302	-2.302	8.438	10.243
Leg1	5P	11.56	6.848	-14.884	0.960	6.848	-14.884
Leg1	5X	22.24	0.000	-28.622	-11.550	-25.334	-28.622
Leg1	5XY	10.37	3.516	-13.341	-13.341	-11.680	3.516
Leg1	5Y	18.05	19.890	-1.647	-1.647	19.890	18.103
Leg2	6P	16.92	10.964	-27.622	3.180	10.964	-27.622
Leg2	6X	29.77	0.000	-48.588	-18.207	-42.222	-48.588
Leg2	6XY	12.43	12.513	-20.280	-20.280	-17.706	12.513
Leg2	6Y	21.55	35.162	0.000	0.764	35.162	33.023
Leg2	7P	14.95	15.123	-35.972	7.800	15.123	-35.972
Leg2	7X	28.76	0.000	-69.213	-24.469	-63.192	-69.213
Leg2	7XY	11.46	23.359	-26.378	-26.378	-22.394	23.359
Leg2	7Y	27.57	56.171	0.000	6.185	56.171	48.746
Leg2	8P	20.25	20.187	-48.717	12.023	20.187	-48.717
Leg2	8X	36.01	0.000	-86.664	-32.506	-86.664	-85.010
Leg2	8XY	14.37	25.203	-34.580	-34.580	-28.311	25.203
Leg2	8Y	39.68	77.379	0.000	9.368	77.379	66.518
Leg3	9P	17.90	25.843	-53.998	17.061	25.843	-53.998
Leg3	9X	36.91	0.000	-111.315	-39.814	-111.315	-100.759
Leg3	9XY	13.85	28.643	-41.762	-41.762	-34.646	28.643
Leg3	9Y	37.56	99.389	0.000	15.409	99.389	80.882
Leg3	10P	17.14	29.766	-55.163	20.134	29.766	-55.163
Leg3	10X	40.67	0.000	-130.845	-45.208	-130.845	-110.291
Leg3	10XY	14.76	28.279	-47.508	-47.508	-38.427	28.279
Leg3	10Y	43.43	114.911	0.000	18.100	114.911	86.659
Leg3	11P	17.54	34.889	-54.845	22.698	34.889	-54.845
Leg3	11X	47.03	0.000	-147.070	-49.899	-147.070	-117.433
Leg3	11XY	16.63	27.210	-52.006	-52.006	-42.379	27.210
Leg3	11Y	48.64	128.689	0.000	21.966	128.689	91.837
Leg4	12P	16.53	40.323	-55.657	24.598	40.323	-55.657
Leg4	12X	48.80	0.000	-164.305	-54.791	-164.305	-125.074
Leg4	12XY	17.16	24.899	-57.768	-57.768	-48.547	24.899
Leg4	12Y	49.39	142.329	0.000	23.544	142.329	95.097
Leg4	13P	16.40	46.258	-55.210	26.552	46.258	-55.210
Leg4	13X	53.27	0.000	-179.346	-59.849	-179.346	-131.631
Leg4	13XY	18.53	22.825	-62.375	-62.375	-54.571	22.825
Leg4	13Y	53.84	155.162	0.000	26.707	155.162	99.442
Leg5	14P	16.84	52.040	-55.779	28.294	52.040	-55.779
Leg5	14X	53.51	0.000	-193.404	-64.256	-193.404	-138.325
Leg5	14XY	18.50	20.379	-66.869	-66.869	-61.477	20.379
Leg5	14Y	53.65	165.829	0.000	27.756	165.829	101.547
Leg5	15P	18.85	58.355	-53.773	30.393	58.355	-53.773
Leg5	15X	56.53	0.000	-204.325	-67.904	-204.325	-141.961
Leg5	15XY	19.54	18.208	-70.639	-70.639	-66.780	18.208
Leg5	15Y	56.92	176.246	0.000	30.265	176.246	104.870
Leg6	16P	17.65	54.698	-67.848	28.160	54.698	-67.848
Leg6	16X	58.94	0.000	-226.613	-75.607	-226.613	-161.411
Leg6	16XY	22.99	8.342	-88.408	-77.754	-88.408	8.342
Leg6	16Y	54.00	179.787	0.000	27.858	179.787	100.388
Leg7	17P	17.92	63.474	-65.103	30.783	63.474	-65.103
Leg7	17X	58.64	0.000	-240.963	-84.036	-240.963	-168.046
Leg7	17XY	24.73	3.876	-101.608	-85.365	-101.608	3.876
Leg7	17Y	57.02	201.967	0.000	30.300	201.967	106.185
Leg7	18P	19.88	70.431	-63.247	32.452	70.431	-63.247
Leg7	18X	61.87	0.000	-256.240	-91.866	-256.240	-174.790
Leg7	18XY	27.92	0.000	-115.634	-92.387	-115.634	-1.632

Leg7	18Y	61.60	218.223	0.000	31.572	218.223	109.664
Leg8	19P	20.42	77.038	-65.177	32.476	77.038	-65.177
Leg8	19X	62.08	0.000	-274.662	-103.460	-274.662	-186.373
Leg8	19XY	30.04	0.000	-132.909	-102.883	-132.909	-10.213
Leg8	19Y	61.62	232.415	0.000	31.003	232.415	110.723
Leg8	20P	22.81	86.030	-62.619	33.487	86.030	-62.619
Leg8	20X	66.80	0.000	-298.415	-112.721	-298.415	-198.352
Leg8	20XY	35.28	0.000	-157.620	-111.477	-157.620	-21.770
Leg8	20Y	66.32	250.164	0.000	31.427	250.164	116.512
Leg8	21P	22.61	84.816	-65.282	30.862	84.816	-65.282
Leg8	21X	67.12	0.000	-299.854	-114.942	-299.854	-200.494
Leg8	21XY	35.56	0.000	-158.842	-113.422	-158.842	-23.637
Leg8	21Y	66.25	248.593	0.000	27.517	248.593	112.539
XBR1	22P	36.21	0.000	-5.801	-1.303	-4.025	-5.801
XBR1	22X	15.78	3.944	0.000	1.682	3.328	3.944
XBR1	22XY	28.91	7.223	0.000	2.364	7.223	0.260
XBR1	22Y	39.48	1.764	-6.324	-2.220	-6.324	1.764
XBR1	23P	7.60	1.899	-0.049	0.151	1.899	-0.049
XBR1	23X	23.05	5.759	-0.051	-0.051	0.463	5.759
XBR1	23XY	36.55	0.000	-5.855	-0.221	-0.424	-5.855
XBR1	23Y	13.90	0.000	-2.227	-0.607	-2.227	-0.394
XBR1	24P	62.75	0.000	-10.052	-2.012	-4.333	-10.052
XBR1	24X	22.59	5.645	0.000	1.069	2.507	5.645
XBR1	24XY	23.26	5.811	-2.195	1.364	5.811	-2.195
XBR1	24Y	30.47	4.667	-4.881	-2.797	-4.881	4.667
XBR1	25P	7.54	1.883	-0.318	-0.318	1.883	0.451
XBR1	25X	34.38	8.590	-0.061	-0.061	1.825	8.590
XBR1	25XY	51.98	0.101	-8.327	0.101	-1.007	-8.327
XBR1	25Y	18.93	0.000	-3.033	-0.486	-3.033	-1.330
XBR2	26P	68.54	0.000	-18.461	-1.912	-6.583	-18.461
XBR2	26X	60.02	19.452	0.000	4.223	6.307	19.452
XBR2	26XY	44.62	10.338	-12.019	4.849	10.338	-12.019
XBR2	26Y	49.17	15.936	-8.501	-2.757	-8.501	15.936
XBR2	27P	16.91	4.148	-4.555	-0.884	4.148	-4.555
XBR2	27X	75.89	24.597	-0.316	-0.316	4.547	24.597
XBR2	27XY	92.54	0.045	-24.924	0.045	-2.606	-24.924
XBR2	27Y	26.02	2.356	-7.008	-1.241	-7.008	2.356
XBR2	28P	56.06	0.000	-15.098	-2.255	-7.694	-15.098
XBR2	28X	54.28	17.591	0.000	4.529	7.242	17.591
XBR2	28XY	38.09	10.419	-10.259	5.015	10.419	-10.259
XBR2	28Y	37.23	12.068	-8.183	-2.732	-8.183	12.068
XBR2	29P	14.40	4.666	-3.092	-0.662	4.666	-3.092
XBR2	29X	72.96	23.645	-0.156	-0.156	4.984	23.645
XBR2	29XY	87.68	0.135	-23.616	0.135	-3.450	-23.616
XBR2	29Y	25.27	1.633	-6.806	-0.879	-6.806	1.633
XBR3	30P	48.45	0.000	-19.941	-4.308	-10.739	-19.941
XBR3	30X	47.40	21.208	0.000	5.585	10.484	21.208
XBR3	30XY	29.72	13.300	-11.416	6.100	13.300	-11.416
XBR3	30Y	30.47	12.654	-12.543	-4.984	-12.543	12.654
XBR3	31P	15.70	7.026	-4.373	-0.833	7.026	-4.373
XBR3	31X	56.68	25.362	-0.043	-0.043	7.496	25.362
XBR3	31XY	61.12	0.293	-25.158	0.293	-5.138	-25.158
XBR3	31Y	24.40	2.503	-10.045	-1.159	-10.045	2.503
XBR3	32P	39.39	0.000	-16.213	-4.544	-12.451	-16.213
XBR3	32X	31.49	14.089	0.000	5.826	10.312	14.089
XBR3	32XY	32.68	14.623	-3.884	6.237	14.623	-3.884
XBR3	32Y	29.22	8.443	-12.027	-5.255	-12.027	8.443
XBR3	33P	11.05	4.946	-2.493	-2.211	4.946	-2.493
XBR3	33X	50.01	22.376	0.000	0.474	10.085	22.376

XBR3	33XY	52.16	0.720	-21.468	0.720	-3.837	-21.468
XBR3	33Y	30.39	0.000	-12.510	-2.411	-12.510	-1.713
XBR4	34P	55.77	0.000	-18.352	-3.887	-9.074	-18.352
XBR4	34X	41.25	14.584	0.000	2.636	6.377	14.584
XBR4	34XY	29.77	9.280	-9.795	3.105	9.280	-9.795
XBR4	34Y	30.77	10.877	-8.247	-4.593	-8.247	10.877
XBR4	35P	32.33	5.686	-10.638	-0.375	5.686	-10.638
XBR4	35X	46.93	16.592	0.000	0.433	5.110	16.592
XBR4	35XY	48.16	0.435	-15.845	0.435	-2.787	-15.845
XBR4	35Y	27.15	9.599	-8.191	-0.769	-8.191	9.599
XBR4	36P	55.28	0.000	-14.992	-3.021	-7.106	-14.992
XBR4	36X	45.67	16.147	0.000	3.189	8.452	16.147
XBR4	36XY	36.89	8.758	-10.004	3.855	8.758	-10.004
XBR4	36Y	35.23	9.060	-9.555	-3.779	-9.555	9.060
XBR4	37P	35.29	6.878	-9.571	0.409	6.878	-9.571
XBR4	37X	41.36	14.623	-0.198	-0.198	2.982	14.623
XBR4	37XY	55.74	0.000	-15.115	-0.310	-4.152	-15.115
XBR4	37Y	28.03	9.910	-5.803	0.039	-5.803	9.910
XBR5	38P	53.52	0.000	-14.598	-3.502	-8.924	-14.598
XBR5	38X	37.13	13.411	0.000	2.750	7.437	13.411
XBR5	38XY	29.97	8.787	-8.174	3.270	8.787	-8.174
XBR5	38Y	33.55	7.962	-9.150	-3.884	-9.150	7.962
XBR5	39P	31.92	5.248	-8.706	-0.039	5.248	-8.706
XBR5	39X	35.99	13.000	0.000	0.009	3.352	13.000
XBR5	39XY	48.24	0.000	-13.157	-0.042	-3.006	-13.157
XBR5	39Y	22.91	8.277	-5.871	-0.308	-5.871	8.277
XBR5	40P	52.43	0.000	-12.534	-3.420	-8.895	-12.534
XBR5	40X	34.50	12.461	0.000	2.978	8.502	12.461
XBR5	40XY	27.44	9.722	-6.560	3.551	9.722	-6.560
XBR5	40Y	41.88	5.863	-10.012	-3.922	-10.012	5.863
XBR5	41P	30.23	4.849	-7.228	0.127	4.849	-7.228
XBR5	41X	30.82	11.134	-0.083	-0.083	2.549	11.134
XBR5	41XY	47.23	0.000	-11.292	-0.222	-2.920	-11.292
XBR5	41Y	20.30	7.335	-4.587	-0.163	-4.587	7.335
XBR5	42P	55.07	0.000	-11.791	-3.507	-9.211	-11.791
XBR5	42X	28.98	10.467	0.000	2.824	8.315	10.467
XBR5	42XY	24.62	8.895	-5.150	3.103	8.895	-5.150
XBR5	42Y	45.46	4.978	-9.735	-3.781	-9.735	4.978
XBR5	43P	30.83	3.736	-6.602	0.022	3.736	-6.602
XBR5	43X	25.89	9.353	0.000	0.013	2.445	9.353
XBR5	43XY	46.04	0.000	-9.857	-0.056	-2.281	-9.857
XBR5	43Y	20.07	5.953	-4.297	-0.169	-4.297	5.953
XBR5	44P	49.21	0.000	-9.309	-3.020	-8.354	-9.309
XBR5	44X	29.52	10.664	0.000	3.170	9.176	10.664
XBR5	44XY	26.56	9.593	-4.448	3.428	9.593	-4.448
XBR5	44Y	47.65	3.576	-9.014	-3.331	-9.014	3.576
XBR5	45P	26.64	3.801	-5.041	0.038	3.801	-5.041
XBR5	45X	24.03	8.682	-0.066	-0.066	1.857	8.682
XBR5	45XY	42.88	0.000	-8.113	-0.226	-2.321	-8.113
XBR5	45Y	16.32	5.895	-3.058	-0.129	-3.058	5.895
XBR5	46P	66.71	0.000	-11.098	-3.792	-10.097	-11.098
XBR5	46X	22.17	8.008	0.000	2.499	7.797	8.008
XBR5	46XY	23.57	8.514	-3.197	2.756	8.514	-3.197
XBR5	46Y	61.96	3.450	-10.309	-4.009	-10.309	3.450
XBR5	47P	35.50	2.573	-5.906	0.035	2.573	-5.906
XBR5	47X	19.55	7.063	0.000	0.119	2.174	7.063
XBR5	47XY	50.17	0.000	-8.348	-0.024	-1.641	-8.348
XBR5	47Y	23.10	4.324	-3.843	-0.116	-3.843	4.324
XBR6	48P	0.00	0.000	0.000	0.000	0.000	0.000

XBR6	48X	58.57	20.641	0.000	8.033	19.095	20.641
XBR6	48XY	72.78	25.647	-0.667	8.167	25.647	-0.667
XBR6	48Y	13.00	4.583	0.000	0.000	0.000	4.583
XBR6	49P	47.78	2.958	-2.700	-2.700	2.958	0.000
XBR6	49X	46.99	16.559	0.000	1.084	8.159	16.559
XBR6	49XY	2.52	0.887	0.000	0.887	0.612	0.000
XBR6	49Y	49.45	11.050	-2.794	-2.794	0.000	11.050
XBR7	50P	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	50X	62.58	19.265	0.000	8.193	19.265	18.546
XBR7	50XY	76.46	23.539	-0.309	8.000	23.539	-0.309
XBR7	50Y	7.93	2.442	0.000	0.000	0.000	2.442
XBR7	51P	63.70	2.421	-1.981	-1.981	2.421	0.000
XBR7	51X	43.56	13.411	0.000	0.745	6.101	13.411
XBR7	51XY	1.73	0.532	-0.016	0.532	-0.016	0.000
XBR7	51Y	64.76	9.273	-2.014	-2.014	0.000	9.273
XBR7	52P	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	52X	72.03	22.176	0.000	8.510	22.176	16.954
XBR7	52XY	80.47	24.772	0.000	8.063	24.772	0.447
XBR7	52Y	4.31	1.328	0.000	0.000	0.000	1.328
XBR7	53P	79.17	1.625	-2.156	-2.156	1.625	0.000
XBR7	53X	36.53	11.245	0.000	0.668	5.370	11.245
XBR7	53XY	1.43	0.441	0.000	0.441	0.188	0.000
XBR7	53Y	75.11	7.762	-2.046	-2.046	0.000	7.762
XBR7	54P	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	54X	84.25	25.937	0.000	10.009	25.937	18.385
XBR7	54XY	89.30	27.493	0.000	9.229	27.493	1.678
XBR7	54Y	2.39	0.736	0.000	0.000	0.000	0.736
XBR7	55P	0.00	0.000	0.000	0.000	0.000	0.000
XBR7	55X	35.06	10.793	0.000	0.992	6.765	10.793
XBR7	55XY	5.49	1.692	0.000	0.709	1.692	0.000
XBR7	55Y	82.54	7.713	-1.440	0.076	-1.440	7.713
XBR8	56P	3.71	0.000	-0.304	-0.304	-0.121	0.000
XBR8	56X	84.31	29.711	0.000	11.607	29.711	17.868
XBR8	56XY	92.71	32.671	0.000	11.057	32.671	3.817
XBR8	56Y	2.89	0.206	-0.236	-0.236	-0.224	0.206
XBR8	57P	54.83	0.264	-4.485	-4.485	0.264	0.000
XBR8	57X	29.92	10.546	0.000	2.115	10.546	6.724
XBR8	57XY	52.83	4.414	-4.321	1.520	4.414	-4.321
XBR8	57Y	48.35	8.043	-3.955	-3.955	0.331	8.043
XBR8	58P	87.53	30.845	0.000	11.027	30.845	18.104
XBR8	58X	0.00	0.000	0.000	0.000	0.000	0.000
XBR8	58XY	15.71	0.000	-1.098	0.000	0.000	-1.098
XBR8	58Y	96.27	33.926	0.000	10.497	33.926	4.116
XBR8	59P	72.93	7.382	-5.099	-5.099	0.000	7.382
XBR8	59X	64.78	4.357	-4.529	0.982	4.357	-4.529
XBR8	59XY	29.53	10.408	0.000	1.655	10.408	5.814
XBR8	59Y	78.79	0.000	-5.509	-5.509	-1.043	0.000
Br2	60P	5.26	1.315	-0.359	0.076	-0.359	1.315
Br2	60X	7.86	0.419	-1.099	0.158	0.419	-1.099
Br2	61P	11.81	2.950	-0.201	-0.098	-0.201	2.950
Br2	61X	21.67	0.112	-3.027	-0.042	0.112	-3.027
Br2	62P	1.63	0.000	-0.228	-0.228	-0.208	-0.043
Br2	62X	3.50	0.066	-0.489	-0.260	0.066	-0.489
Br2	63P	6.07	0.822	-0.847	-0.232	-0.847	0.822
Br2	63X	9.95	0.648	-1.390	-0.338	0.648	-1.390
Br4	64P	91.68	0.000	-3.971	-0.523	-3.971	-2.213
Br4	64X	36.47	0.000	-1.580	-0.535	-0.096	-1.580
Br5	65P	61.78	0.000	-1.202	-1.202	0.000	0.000
Br5	65X	47.51	1.662	-0.924	-0.924	1.662	1.033

Arm	66P	6.60	5.572	0.000	1.567	2.132	5.572
Arm	66Y	5.94	1.048	-3.047	1.048	-1.335	-3.047
Br1	67P	1.78	0.935	-0.217	-0.217	0.935	-0.194
Br1	67X	3.35	0.000	-1.411	-1.176	-1.411	-1.191
Arm	68P	21.71	0.348	-8.857	0.348	-3.991	-8.857
Arm	68X	6.20	2.528	0.000	2.528	0.509	0.886
Arm	68XY	8.41	3.430	0.000	1.796	2.458	3.430
Arm	68Y	22.99	9.378	0.000	0.642	2.669	9.378
Br3	69P	17.06	0.351	-0.953	0.351	-0.255	-0.953
Br3	69Y	10.53	1.015	0.000	0.151	0.583	1.015
Br3	70P	14.00	0.016	-0.782	-0.183	-0.782	0.016
Br3	70X	9.22	0.889	0.000	0.372	0.889	0.403
Br1	71P	3.14	1.646	0.000	1.646	0.388	0.243
Br1	71X	3.00	1.574	0.000	1.574	0.812	1.574
Arm	72P	14.13	0.000	-7.246	-2.130	-3.208	-7.246
Arm	72Y	5.84	4.938	-1.982	-1.982	1.498	4.938
Arm	73P	54.76	0.000	-22.340	-3.061	-6.650	-22.340
Arm	73X	7.49	1.985	-3.054	-0.926	-3.054	1.985
Arm	73XY	15.70	6.405	-3.573	-0.680	6.405	-3.573
Arm	73Y	52.18	21.291	-3.295	-3.295	0.556	21.291
Br3	74P	27.05	0.000	-1.511	-0.750	-1.511	-0.781
Br3	74X	15.11	1.456	0.000	0.422	1.456	0.389
Br1	75P	2.56	1.341	-0.570	1.324	-0.570	1.341
Br1	75X	4.12	2.159	0.000	2.159	1.792	2.063
Arm	76P	17.93	0.000	-7.314	-3.560	-7.314	-6.262
Arm	76X	9.44	1.016	-3.850	-1.529	-3.850	1.016
Arm	76XY	16.22	6.617	-3.864	-1.227	6.617	-3.864
Arm	76Y	9.09	1.114	-3.708	-3.708	1.114	-1.121
Arm	77P	7.07	2.160	-3.624	-2.966	2.160	-3.624
Arm	77Y	8.09	0.000	-4.147	-3.109	-4.147	-2.576
Br3	78P	55.55	0.000	-3.102	-1.256	-3.102	-1.181
Br3	78X	33.29	3.209	0.000	1.383	3.209	1.160
Br1	79P	5.14	2.696	0.000	1.899	2.696	1.817
Br1	79X	5.47	0.000	-2.302	-0.370	-2.302	-0.273
Arm	80P	20.17	0.000	-8.229	-3.131	-6.285	-8.229
Arm	80X	12.46	5.085	-2.363	-0.916	-2.363	5.085
Arm	80XY	16.38	5.753	-6.684	-0.681	5.753	-6.684
Arm	80Y	8.00	1.832	-3.264	-3.264	0.123	1.832
Arm	81P	8.86	0.000	-4.544	-2.230	-4.544	-4.367
Arm	81Y	4.20	3.160	-2.155	-2.155	3.160	-0.025
HBR1	82P	33.78	0.000	-5.858	-2.806	-5.385	-5.858
HBR1	82Y	47.72	0.000	-8.275	-2.858	-8.275	-1.060
HBR1	83P	14.33	2.425	-2.485	2.425	0.895	-2.485
HBR1	83X	27.74	0.000	-4.810	-0.726	-2.474	-4.810
HBR2	84P	80.16	0.000	-15.551	-6.927	-15.155	-15.551
HBR2	84Y	98.31	0.000	-19.071	-6.892	-19.071	-2.967
HBR2	85P	40.65	3.290	-7.886	3.290	-2.150	-7.886
HBR2	85X	59.21	0.000	-11.486	-1.475	-5.524	-11.486
HBR3	86P	45.01	0.000	-17.470	-7.562	-17.470	-15.044
HBR3	86Y	52.15	0.000	-20.239	-7.294	-20.239	-2.417
HBR3	87P	18.20	3.079	-7.065	3.079	-1.741	-7.065
HBR3	87X	26.38	0.000	-10.239	-1.296	-4.926	-10.239
HBR3	88P	63.08	0.000	-20.053	-8.424	-20.053	-15.159
HBR3	88Y	68.26	0.000	-21.701	-7.930	-21.701	-2.685
HBR3	89P	20.61	1.284	-6.553	1.284	-0.251	-6.553
HBR3	89X	29.05	0.000	-9.234	-1.539	-5.766	-9.234
HBR4	90P	35.19	0.000	-21.900	-8.123	-21.900	-14.610
HBR4	90Y	37.73	0.000	-23.484	-7.661	-23.484	-3.785
HBR4	91P	10.42	3.621	-6.486	3.621	-0.373	-6.486

HBR4	91X	15.20	0.000	-9.460	-1.704	-9.460	-5.570
HBR3	92P	3.77	0.000	-1.509	-0.821	-1.340	-1.509
HBR3	92X	2.02	0.102	-0.809	-0.809	0.102	-0.322
HBR3	92XY	2.09	0.029	-0.838	-0.838	0.029	-0.190
HBR3	92Y	4.03	0.000	-1.610	-0.882	-1.593	-1.610
HBR3	93P	0.98	0.000	-0.393	-0.150	-0.393	-0.186
HBR3	93X	0.82	0.000	-0.329	-0.278	-0.099	-0.329
HBR3	93XY	1.07	0.000	-0.427	-0.372	-0.384	-0.427
HBR3	93Y	0.65	0.351	-0.229	-0.210	0.351	-0.229
ArmBR1	94P	31.27	8.507	-1.814	-1.814	-0.360	8.507
ArmBR1	94X	29.08	2.472	-3.079	-1.192	2.472	-3.079
ArmBR1	94XY	32.47	0.000	-3.438	-2.067	-3.438	-0.172
ArmBR1	94Y	88.75	0.000	-9.397	-1.462	-0.642	-9.397
ArmBR2	95P	33.16	2.680	-1.854	2.680	1.931	-1.854
ArmBR2	95X	24.90	6.221	0.000	2.365	0.452	6.221
ArmBR2	95XY	21.39	2.684	-1.196	2.684	1.305	-1.196
ArmBR2	95Y	11.65	2.910	-0.141	2.377	-0.141	2.910
ArmBR2	96P	12.22	3.053	0.000	3.053	2.556	0.000
ArmBR2	96X	24.07	6.013	0.000	2.773	1.302	6.013
ArmBR2	96XY	12.55	3.136	0.000	3.136	0.728	0.000
ArmBR2	96Y	24.28	6.066	-0.474	2.876	-0.474	6.066
ArmBR2	97P	36.15	9.033	-0.608	2.465	-0.608	9.033
ArmBR2	97X	92.25	2.666	-5.158	2.666	0.415	-5.158
ArmBR2	97XY	40.76	10.184	0.000	2.363	1.287	10.184
ArmBR2	97Y	70.17	2.636	-3.923	2.636	2.486	-3.923

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 10

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.003437	0.2578	-0.003759	-0.1348	-0.0042	-0.0014	3.622	-3.367	190
2P	-0.003648	0.2579	0.01514	-0.1298	-0.0048	-0.0018	-0.003648	-11.74	190
3P	-0.002974	0.2435	-0.003755	-0.1345	-0.0055	-0.0013	3.622	-3.381	184
4P	-0.002381	0.2295	-0.003728	-0.1375	-0.0040	-0.0013	3.623	-3.395	178
5P	-0.002393	0.2299	0.009231	-0.1098	-0.0033	0.0005	-0.002393	-9.77	178
6P	-0.002169	0.2146	-0.003755	-0.1273	-0.0050	-0.0014	3.623	-3.41	172
7P	-0.00166	0.2017	-0.003826	-0.1274	-0.0020	-0.0015	3.623	-3.423	166
8P	-0.001273	0.202	0.01147	-0.0951	-0.0022	0.0031	-0.001273	-11.8	166
9P	-0.001651	0.1878	-0.004018	-0.1254	-0.0028	-0.0025	3.623	-3.437	160
10P	-0.001143	0.1759	-0.004327	-0.1085	-0.0014	-0.0036	3.624	-3.449	154
11P	-0.0007082	0.176	0.006712	-0.0960	-0.0012	0.0050	-0.0007082	-9.824	154
12P	-0.001279	0.166	-0.003721	-0.1058	0.0009	-0.0038	4.097	-3.932	148.8
13P	-0.001092	0.1547	-0.003114	-0.0931	-0.0017	-0.0027	4.683	-4.529	142.3
14P	-0.001011	0.1428	-0.002602	-0.0867	-0.0006	-0.0026	5.366	-5.224	134.7
15P	-0.0008047	0.1311	-0.002127	-0.0763	-0.0012	-0.0019	6.087	-5.957	126.7
16P	-0.000671	0.1211	-0.001855	-0.0713	-0.0005	-0.0018	6.807	-6.687	118.7
17P	-0.0005408	0.1113	-0.001607	-0.0599	-0.0010	-0.0011	7.528	-7.418	110.7
18P	-0.0003438	0.1039	-0.001605	-0.0553	-0.0007	-0.0010	8.25	-8.146	102.7
19P	-0.0002667	0.08366	-0.001014	-0.0726	-0.0005	-0.0044	9.752	-9.668	86
20P	2.962e-006	0.06367	-0.0004373	-0.0623	-0.0009	-0.0069	11.24	-11.18	69.5
21P	6.639e-005	0.04641	-0.0001591	-0.0614	-0.0013	-0.0169	12.68	-12.63	53.5
22P	0.0001062	0.02324	0.000163	-0.0267	-0.0035	-0.0427	14.8	-14.78	30
23P	0.0002424	0.09453	-0.007701	-0.0500	-0.0008	0.0009	0.0002424	-16.06	14.99
24P	-0.001479	0.01477	-0.008119	0.0191	-0.0035	0.0199	16.15	0.01477	14.99
25P	-1.455e-006	0.01491	-0.0002678	-0.0517	-0.0065	-0.0845	16.15	-16.14	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	-0.003249	0.2579	-0.02036	-0.1354	-0.0046	-0.0010	3.622	3.883	190
1XY	-0.003126	0.2582	-0.02089	-0.1366	-0.0008	-0.0012	-3.628	3.883	190
1Y	-0.003414	0.258	-0.00441	-0.1353	-0.0049	-0.0008	-3.628	-3.367	190
2X	-0.002974	0.2583	-0.04191	-0.1494	-0.0045	-0.0018	-0.002974	12.26	190
3X	-0.002862	0.2436	-0.02026	-0.1384	-0.0033	0.0009	3.622	3.869	184
3XY	-0.002977	0.2436	-0.02074	-0.1407	-0.0026	-0.0008	-3.628	3.869	184
3Y	-0.002918	0.2436	-0.004345	-0.1364	-0.0039	0.0014	-3.628	-3.381	184
4X	-0.002501	0.2293	-0.01992	-0.1298	-0.0040	0.0027	3.622	3.854	178
4XY	-0.002665	0.2292	-0.02033	-0.1301	-0.0020	-0.0004	-3.628	3.854	178
4Y	-0.002552	0.2294	-0.004219	-0.1389	-0.0047	0.0036	-3.628	-3.396	178
5X	-0.002642	0.2291	-0.03707	-0.1612	-0.0034	0.0003	-0.002642	10.23	178
6X	-0.002273	0.2159	-0.01936	-0.1400	-0.0017	0.0055	3.623	3.841	172
6XY	-0.002403	0.2157	-0.01968	-0.1418	-0.0025	0.0002	-3.627	3.841	172
6Y	-0.001937	0.2143	-0.004121	-0.1285	-0.0018	0.0069	-3.627	-3.411	172
7X	-0.002017	0.2013	-0.01885	-0.1292	-0.0037	0.0064	3.623	3.826	166
7XY	-0.002242	0.2009	-0.01912	-0.1303	0.0001	0.0003	-3.627	3.826	166
7Y	-0.001798	0.2012	-0.004128	-0.1281	-0.0037	0.0080	-3.627	-3.424	166
8X	-0.002545	0.2009	-0.04218	-0.1713	-0.0025	0.0027	-0.002545	12.2	166
9X	-0.001754	0.1887	-0.01818	-0.1228	0.0007	0.0080	3.623	3.814	160
9XY	-0.002181	0.1882	-0.0184	-0.1238	-0.0035	0.0001	-3.627	3.813	160
9Y	-0.001263	0.1872	-0.004276	-0.1265	-0.0020	0.0102	-3.626	-3.438	160
10X	-0.001855	0.1757	-0.0173	-0.1147	-0.0039	0.0096	3.623	3.801	154
10XY	-0.001816	0.1751	-0.01746	-0.1160	0.0021	-0.0001	-3.627	3.8	154
10Y	-0.001341	0.1753	-0.004515	-0.1093	-0.0019	0.0124	-3.626	-3.45	154

11X	-0.002353	0.1753	-0.03339	-0.1547	-0.0018	0.0047	-0.002353	10.18	154	
12X	-0.001439	0.1662	-0.01743	-0.1005	-0.0050	0.0104	4.097	4.264	148.8	
12XY	-0.002207	0.1653	-0.01758	-0.1020	0.0043	-0.0003	-4.1	4.263	148.8	
12Y	-0.000873	0.1651	-0.003892	-0.1078	-0.0032	0.0132	-4.099	-3.933	148.8	
13X	-0.001414	0.1549	-0.01745	-0.0970	-0.0011	0.0106	4.683	4.839	142.3	
13XY	-0.00227	0.1538	-0.01757	-0.0982	0.0007	0.0001	-4.686	4.838	142.3	
13Y	-0.0007405	0.1535	-0.003237	-0.0948	-0.0001	0.0128	-4.685	-4.53	142.3	
14X	-0.001406	0.1428	-0.01727	-0.0855	-0.0015	0.0111	5.366	5.51	134.7	
14XY	-0.00239	0.1413	-0.01735	-0.0867	0.0018	0.0005	-5.369	5.508	134.7	
14Y	-0.0004817	0.1413	-0.002714	-0.0880	-0.0007	0.0135	-5.367	-5.226	134.7	
15X	-0.001554	0.1315	-0.01695	-0.0791	-0.0006	0.0112	6.086	6.219	126.7	
15XY	-0.002478	0.1298	-0.01696	-0.0801	0.0015	0.0011	-6.09	6.218	126.7	
15Y	-0.0004024	0.1293	-0.002206	-0.0771	0.0002	0.0136	-6.088	-5.959	126.7	
16X	-0.001731	0.1209	-0.01645	-0.0690	-0.0004	0.0116	6.806	6.929	118.7	
16XY	-0.002603	0.1189	-0.01639	-0.0692	0.0017	0.0014	-6.811	6.927	118.7	
16Y	-0.0002449	0.1191	-0.001949	-0.0716	-0.0003	0.0144	-6.808	-6.689	118.7	
17X	-0.001979	0.1121	-0.01579	-0.0619	-0.0003	0.0117	7.527	7.641	110.7	
17XY	-0.00273	0.1099	-0.01566	-0.0619	0.0021	0.0019	-7.532	7.639	110.7	
17Y	-0.0001332	0.1091	-0.001687	-0.0602	0.0005	0.0144	-7.529	-7.42	110.7	
18X	-0.002168	0.1029	-0.01508	-0.0699	-0.0008	0.0105	8.248	8.353	102.7	
18XY	-0.002984	0.1006	-0.01487	-0.0701	0.0030	0.0039	-8.253	8.351	102.7	
18Y	-9.935e-005	0.1015	-0.00169	-0.0549	0.0003	0.0150	-8.25	-8.148	102.7	
19X	-0.002522	0.08126	-0.0137	-0.0718	-0.0004	0.0098	9.749	9.833	85.99	
19XY	-0.003663	0.07866	-0.01332	-0.0706	0.0021	0.0049	-9.756	9.831	85.99	
19Y	0.0002447	0.08105	-0.001099	-0.0717	0.0006	0.0191	-9.752	-9.671	86	
20X	-0.003295	0.06194	-0.01206	-0.0624	0.0025	0.0109	11.24	11.3	69.49	
20XY	-0.004001	0.05949	-0.01151	-0.0600	0.0031	0.0036	-11.24	11.3	69.49	
20Y	0.0003004	0.06117	-0.0005416	-0.0600	0.0013	0.0211	-11.24	-11.18	69.5	
21X	-0.003981	0.04423	-0.01005	-0.0655	-0.0066	0.0099	12.68	12.72	53.49	
21XY	-0.004313	0.0423	-0.009346	-0.0619	-0.0026	0.0010	-12.68	12.72	53.49	
21Y	0.0004646	0.04436	-0.0002902	-0.0579	0.0017	0.0287	-12.68	-12.64	53.5	
22X	0.0002131	0.0211	-0.006067	-0.0262	-0.0062	0.0111	14.8	14.82	29.99	
22XY	-0.0007393	0.02033	-0.005992	-0.0246	-0.0044	-0.0073	-14.8	14.82	29.99	
22Y	0.0005545	0.02235	-4.795e-006	-0.0246	0.0038	0.0474	-14.8	-14.78	30	
23X	-0.0001475	0.004896	-0.004013	-0.0501	-0.0001	0.0009	-0.0001475	16.15	15	
24Y	0.001583	0.01423	-0.00794	0.0185	0.0050	-0.0188	-16.15	0.01423	14.99	
25X	-0.0001752	0.01464	-0.002733	-0.0511	-0.0008	0.0066	16.15	16.16	15	
25XY	-0.0001102	0.01409	-0.002703	-0.0491	0.0016	-0.0045	-16.15	16.16	15	
25Y	0.0005042	0.01438	-0.0003818	-0.0495	0.0086	0.0864	-16.15	-16.14	15	
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0	
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0	
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0	

Joint Support Reactions for Load Case "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 %
26P	4.15	0.0	-11.94	0.0	0.0	37.39	0.0	0.0	39.46	0.0	4.42	0.0	0.2	0.0	0.0	1.67	0.0	0.0
26X	-14.10	0.0	-10.93	0.0	0.0	-118.28	0.0	0.0	119.62	0.0	4.65	0.0	0.2	0.0	0.0	0.26	0.0	0.0
26XY	14.30	0.0	-10.80	0.0	0.0	-117.04	0.0	0.0	118.41	0.0	4.47	0.0	-0.0	0.0	0.0	-0.26	0.0	0.0
26Y	-4.35	0.0	-11.26	0.0	0.0	34.16	0.0	0.0	36.23	0.0	4.25	0.0	-0.3	0.0	0.0	-1.67	0.0	0.0

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

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

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0000	0.1959	-0.6102	0.0000	-0.1959	0.6102	-0.0034	0.2578	-0.0038
2P	0.0000	1.5988	-1.8091	0.0000	-1.5988	1.8091	-0.0036	0.2579	0.0151
3P	0.0000	0.3038	-0.4396	-0.0000	-0.3038	0.4396	-0.0030	0.2435	-0.0038
4P	0.0000	0.3691	-0.9907	0.0000	-0.3691	0.9907	-0.0024	0.2295	-0.0037
5P	0.0000	2.1164	-3.2571	0.0000	-2.1164	3.2571	-0.0024	0.2299	0.0092
6P	0.0000	0.2949	-0.4567	-0.0000	-0.2949	0.4567	-0.0022	0.2146	-0.0038
7P	0.0000	0.4074	-1.1620	0.0000	-0.4074	1.1620	-0.0017	0.2017	-0.0038
8P	0.0000	2.1164	-3.2978	0.0000	-2.1164	3.2978	-0.0013	0.2020	0.0115
9P	0.0000	0.3109	-0.5565	-0.0000	-0.3109	0.5565	-0.0017	0.1878	-0.0040
10P	0.0000	0.4145	-1.2399	0.0000	-0.4145	1.2399	-0.0011	0.1759	-0.0043
11P	0.0000	2.1164	-3.2571	0.0000	-2.1164	3.2571	-0.0007	0.1760	0.0067
12P	0.0000	0.2489	-0.5767	-0.0000	-0.2489	0.5767	-0.0013	0.1660	-0.0037
13P	0.0000	0.4728	-1.2608	-0.0000	-0.4728	1.2608	-0.0011	0.1547	-0.0031
14P	0.0000	0.8724	-1.7634	-0.0000	-0.8724	1.7634	-0.0010	0.1428	-0.0026
15P	0.0000	0.5487	-1.4593	-0.0000	-0.5487	1.4593	-0.0008	0.1311	-0.0021
16P	0.0000	0.6573	-1.2557	-0.0000	-0.6573	1.2557	-0.0007	0.1211	-0.0019
17P	0.0000	0.4334	-0.9780	-0.0000	-0.4334	0.9780	-0.0005	0.1113	-0.0016
18P	0.0000	1.0863	-2.6254	0.0000	-1.0863	2.6254	-0.0003	0.1039	-0.0016
19P	0.0000	1.2342	-3.0033	0.0000	-1.2342	3.0033	-0.0003	0.0837	-0.0010
20P	0.0000	1.2374	-3.3604	0.0000	-1.2374	3.3604	0.0000	0.0637	-0.0004
21P	0.0000	1.4801	-4.3213	0.0000	-1.4801	4.3213	0.0001	0.0464	-0.0002
22P	0.0000	1.4623	-4.6368	0.0000	-1.4623	4.6368	0.0001	0.0232	0.0002
23P	0.0000	0.6056	-0.9003	0.0000	-0.6056	0.9003	0.0002	0.0945	-0.0077
24P	0.0000	0.0000	-0.9003	-0.0000	0.0000	0.9003	-0.0015	0.0148	-0.0081
25P	0.0000	0.9254	-2.6435	0.0000	-0.9254	2.6435	-0.0000	0.0149	-0.0003
26P	0.0000	0.2883	-0.9808	-4.1491	11.6470	38.3678	0.0000	0.0000	0.0000
1X	0.0000	0.0670	-0.6102	0.0000	-0.0670	0.6102	-0.0032	0.2579	-0.0204
1XY	0.8280	1.8550	-1.4562	-0.8280	-1.8550	1.4562	-0.0031	0.2582	-0.0209
1Y	0.0690	0.7129	-2.5992	-0.0690	-0.7129	2.5992	-0.0034	0.2580	-0.0044
2X	0.0000	1.4660	-1.8091	0.0000	-1.4660	1.8091	-0.0030	0.2583	-0.0419
3X	0.0000	0.0000	-0.4396	-0.0000	0.0000	0.4396	-0.0029	0.2436	-0.0203
3XY	-0.6400	-1.1610	-1.8096	0.6400	1.1610	1.8096	-0.0030	0.2436	-0.0207
3Y	-0.2580	0.5068	-1.7896	0.2580	-0.5068	1.7896	-0.0029	0.2436	-0.0043
4X	0.0000	0.1340	-0.9907	0.0000	-0.1340	0.9907	-0.0025	0.2293	-0.0199
4XY	0.0000	0.0000	-0.5377	0.0000	0.0000	0.5377	-0.0027	0.2292	-0.0203
4Y	0.0000	0.4931	-1.9177	0.0000	-0.4931	1.9177	-0.0026	0.2294	-0.0042
5X	0.0000	1.9930	-3.2571	0.0000	-1.9930	3.2571	-0.0026	0.2291	-0.0371
6X	0.0000	0.0000	-0.4567	-0.0000	0.0000	0.4567	-0.0023	0.2159	-0.0194
6XY	0.0000	0.0000	-0.4567	-0.0000	0.0000	0.4567	-0.0024	0.2157	-0.0197
6Y	0.0000	0.2949	-0.4567	-0.0000	-0.2949	0.4567	-0.0019	0.2143	-0.0041
7X	0.0000	0.1340	-1.1620	0.0000	-0.1340	1.1620	-0.0020	0.2013	-0.0189
7XY	0.0000	0.0000	-0.7060	0.0000	0.0000	0.7060	-0.0022	0.2009	-0.0191
7Y	0.0000	0.2734	-0.7060	0.0000	-0.2734	0.7060	-0.0018	0.2012	-0.0041
8X	0.0000	1.9930	-3.2978	0.0000	-1.9930	3.2978	-0.0025	0.2009	-0.0422
9X	0.0000	0.0000	-0.5565	-0.0000	0.0000	0.5565	-0.0018	0.1887	-0.0182
9XY	0.0000	0.0000	-0.5565	-0.0000	0.0000	0.5565	-0.0022	0.1882	-0.0184
9Y	0.0000	0.5619	-1.8995	-0.0000	-0.5619	1.8995	-0.0013	0.1872	-0.0043
10X	0.0000	0.1510	-1.2399	0.0000	-0.1510	1.2399	-0.0019	0.1757	-0.0173
10XY	0.0000	0.0000	-0.7259	0.0000	0.0000	0.7259	-0.0018	0.1751	-0.0175
10Y	0.0000	0.2635	-0.7259	0.0000	-0.2635	0.7259	-0.0013	0.1753	-0.0045
11X	0.0000	1.9930	-3.2571	0.0000	-1.9930	3.2571	-0.0024	0.1753	-0.0334
12X	0.0000	0.0000	-0.5767	-0.0000	0.0000	0.5767	-0.0014	0.1662	-0.0174
12XY	0.0000	0.0000	-0.5767	-0.0000	0.0000	0.5767	-0.0022	0.1653	-0.0176
12Y	0.0000	0.4649	-1.7357	-0.0000	-0.4649	1.7357	-0.0009	0.1651	-0.0039
13X	0.0000	0.1690	-1.2608	-0.0000	-0.1690	1.2608	-0.0014	0.1549	-0.0175
13XY	0.0000	0.0000	-0.6868	-0.0000	0.0000	0.6868	-0.0023	0.1538	-0.0176
13Y	0.0000	0.3038	-0.6868	-0.0000	-0.3038	0.6868	-0.0007	0.1535	-0.0032

14X	0.0000	0.0000	-0.7844	-0.0000	0.0000	0.7844	-0.0014	0.1428	-0.0173
14XY	0.0000	0.2670	-1.4184	-0.0000	-0.2670	1.4184	-0.0024	0.1413	-0.0174
14Y	0.0000	0.8724	-2.7984	-0.0000	-0.8724	2.7984	-0.0005	0.1413	-0.0027
15X	0.0000	0.1810	-1.4593	-0.0000	-0.1810	1.4593	-0.0016	0.1315	-0.0169
15XY	0.0000	0.0000	-0.8423	-0.0000	0.0000	0.8423	-0.0025	0.1298	-0.0170
15Y	0.0000	0.3677	-0.8423	-0.0000	-0.3677	0.8423	-0.0004	0.1293	-0.0022
16X	0.0000	0.0000	-0.8877	-0.0000	0.0000	0.8877	-0.0017	0.1209	-0.0164
16XY	0.0000	0.0000	-0.8877	-0.0000	0.0000	0.8877	-0.0026	0.1189	-0.0164
16Y	0.0000	0.6573	-2.3597	-0.0000	-0.6573	2.3597	-0.0002	0.1191	-0.0019
17X	0.0000	0.0000	-0.9340	-0.0000	0.0000	0.9340	-0.0020	0.1121	-0.0158
17XY	0.0000	0.0000	-0.9340	-0.0000	0.0000	0.9340	-0.0027	0.1099	-0.0157
17Y	0.0000	0.3974	-0.9340	-0.0000	-0.3974	0.9340	-0.0001	0.1091	-0.0017
18X	0.0000	0.1880	-2.2494	0.0000	-0.1880	2.2494	-0.0022	0.1029	-0.0151
18XY	0.0000	0.0000	-1.6104	0.0000	0.0000	1.6104	-0.0030	0.1006	-0.0149
18Y	0.0000	0.8983	-3.1144	0.0000	-0.8983	3.1144	-0.0001	0.1015	-0.0017
19X	0.0000	0.1800	-2.6213	0.0000	-0.1800	2.6213	-0.0025	0.0813	-0.0137
19XY	0.0000	0.0000	-2.0113	0.0000	0.0000	2.0113	-0.0037	0.0787	-0.0133
19Y	0.0000	1.0542	-3.5383	0.0000	-1.0542	3.5383	0.0002	0.0811	-0.0011
20X	0.0000	0.1730	-2.9864	0.0000	-0.1730	2.9864	-0.0033	0.0619	-0.0121
20XY	0.0000	0.0000	-2.3984	0.0000	0.0000	2.3984	-0.0040	0.0595	-0.0115
20Y	0.0000	1.0644	-3.8934	0.0000	-1.0644	3.8934	0.0003	0.0612	-0.0005
21X	0.0000	0.2070	-3.8573	0.0000	-0.2070	3.8573	-0.0040	0.0442	-0.0101
21XY	0.0000	0.0000	-3.1533	0.0000	0.0000	3.1533	-0.0043	0.0423	-0.0093
21Y	0.0000	1.2701	-4.9703	0.0000	-1.2701	4.9703	0.0005	0.0444	-0.0003
22X	0.0000	0.2030	-4.1938	0.0000	-0.2030	4.1938	0.0002	0.0211	-0.0061
22XY	0.0000	0.0000	-3.5018	0.0000	0.0000	3.5018	-0.0007	0.0203	-0.0060
22Y	0.0000	1.2593	-5.2728	0.0000	-1.2593	5.2728	0.0006	0.0223	-0.0000
23X	0.0000	0.0000	-0.9003	-0.0000	0.0000	0.9003	-0.0001	0.0049	-0.0040
24Y	0.0000	0.0000	-0.9003	0.0000	0.0000	0.9003	0.0016	0.0142	-0.0079
25X	0.0000	0.0810	-2.1265	0.0000	-0.0810	2.1265	-0.0002	0.0146	-0.0027
25XY	0.0000	0.0000	-1.8485	0.0000	0.0000	1.8485	-0.0001	0.0141	-0.0027
25Y	0.0000	0.8444	-3.9185	0.0000	-0.8444	3.9185	0.0005	0.0144	-0.0004
26X	0.0000	0.0000	-0.9808	14.1000	10.9268	-117.3040	0.0000	0.0000	0.0000
26XY	0.0000	0.0000	-0.9808	-14.2992	10.8015	-116.0622	0.0000	0.0000	0.0000
26Y	0.0000	0.2883	-0.9808	4.3473	10.9687	35.1438	0.0000	0.0000	0.0000

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported Cap. (kips)	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R	Alternate Unsupported RLOUT	Alternate Unsupported Cap. (kips)	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
23X	23XY	Long only	-0.05	-0.22	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23XY	23X	Long only	-0.22	-0.05	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
25P	25Y	Long only	-0.32	-0.49	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
25Y	25P	Long only	-0.49	-0.32	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
27P	27Y	Long only	-0.88	-1.24	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
27X	27XY	Long only	-0.32	0.04	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
27Y	27P	Long only	-1.24	-0.88	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
29P	29Y	Long only	-0.66	-0.88	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
29Y	29P	Long only	-0.88	-0.66	26.93	0.500	0.750	0.500	112.48	114.36	2	19.57	1.000	149.97	138.43	6
31P	31Y	Long only	-0.83	-1.16	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
31Y	31P	Long only	-1.16	-0.83	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33P	33Y	Long only	-2.21	-2.41	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33Y	33P	Long only	-2.41	-2.21	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
35P	35Y	Short only	-0.37	-0.77	32.90	0.767	0.535	0.535	114.00	115.50	2	31.38	1.000	119.39	119.70	3
35Y	35P	Short only	-0.77	-0.37	32.90	0.767	0.535	0.535	114.00	115.50	2	31.38	1.000	119.39	119.70	3

37X	37XY	Short only	-0.20	-0.31	27.12	0.768	0.536	0.536	134.05	130.75	5	26.46	1.000	140.13	132.38	6
37XY	37X	Short only	-0.31	-0.20	27.12	0.768	0.536	0.536	134.05	130.75	5	26.46	1.000	140.13	132.38	6
39P	39Y	Short only	-0.04	-0.31	27.28	0.771	0.542	0.542	130.07	127.72	5	26.36	1.000	136.43	130.10	6
39Y	39P	Short only	-0.31	-0.04	27.28	0.771	0.542	0.542	130.07	127.72	5	26.36	1.000	136.43	130.10	6
41X	41XY	Short only	-0.08	-0.22	23.91	0.766	0.533	0.533	141.81	136.66	5	23.04	1.000	151.25	139.22	6
41XY	41X	Short only	-0.22	-0.08	23.91	0.766	0.533	0.533	141.81	136.66	5	23.04	1.000	151.25	139.22	6
43Y	43P	Short only	-0.17	0.02	21.41	0.763	0.526	0.526	151.98	144.41	5	20.60	1.000	164.25	147.21	6
45X	45XY	Short only	-0.07	-0.23	18.92	0.763	0.525	0.525	164.08	153.63	5	18.47	1.000	177.66	155.46	6
45XY	45X	Short only	-0.23	-0.07	18.92	0.763	0.525	0.525	164.08	153.63	5	18.47	1.000	177.66	155.46	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.414	50.00	50.00	4.83
2	2.329	50.00	50.00	4.66
3	3.884	50.00	50.00	7.77
4	3.818	50.00	50.00	7.64
5	3.919	50.00	50.00	7.84
6	3.853	50.00	50.00	7.71
7	3.884	50.00	50.00	7.77
8	3.818	50.00	50.00	7.64
9	2.696	50.00	50.00	5.39
10	1.980	50.00	50.00	3.96
11	1.981	50.00	50.00	3.96
12	1.797	50.00	50.00	3.59
13	2.931	50.00	50.00	5.86
14	2.450	50.00	50.00	4.90
15	3.241	50.00	50.00	6.48
16	3.692	50.00	50.00	7.38
17	4.036	50.00	50.00	8.07
18	5.130	50.00	50.00	10.26
19	5.421	50.00	50.00	10.84
20	4.008	50.00	50.00	8.02
21	1.967	50.00	50.00	3.93
22	1.417	50.00	50.00	2.83
23	2.841	50.00	50.00	5.68
24	3.247	50.00	50.00	6.49
25	3.581	50.00	50.00	7.16
26	4.568	50.00	50.00	9.14
27	4.862	50.00	50.00	9.72
28	2.801	50.00	50.00	5.60
29	1.443	50.00	50.00	2.89
30	0.641	50.00	50.00	1.28
31	0.534	50.00	50.00	1.07
32	1.878	50.00	50.00	3.76
33	1.070	50.00	50.00	2.14
34	2.499	50.00	50.00	5.00
35	2.243	50.00	50.00	4.49
37	0.614	50.00	50.00	1.23
38	1.057	50.00	50.00	2.11
39	1.000	50.00	50.00	2.00
40	1.231	50.00	50.00	2.46
41	1.170	50.00	50.00	2.34

42	1.307	50.00	50.00	2.61
43	1.249	50.00	50.00	2.50
44	1.347	50.00	50.00	2.69
45	1.272	50.00	50.00	2.54
46	1.559	50.00	50.00	3.12
47	1.470	50.00	50.00	2.94
49	2.257	50.00	50.00	4.51
51	2.627	50.00	50.00	5.25
53	2.991	50.00	50.00	5.98
55	3.863	50.00	50.00	7.73
57	4.199	50.00	50.00	8.40
59	2.128	50.00	50.00	4.26

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.3026	0.6687	0.0002156	-0.3459	0.1855	-0.0520	3.928	-2.956	190
2P	0.2952	0.6727	0.06325	-0.3540	0.1835	-0.0526	0.2952	-11.33	190.1
3P	0.2832	0.6322	0.000263	-0.3462	0.1834	-0.0477	3.908	-2.993	184
4P	0.2637	0.5964	0.0001658	-0.3428	0.1891	-0.0434	3.889	-3.029	178
5P	0.2595	0.5998	0.04942	-0.3379	0.1809	-0.0395	0.2595	-9.4	178
6P	0.2437	0.5602	-1.597e-005	-0.3305	0.1850	-0.0377	3.869	-3.065	172
7P	0.2244	0.5261	-0.000181	-0.3269	0.1863	-0.0359	3.849	-3.099	166
8P	0.2208	0.5288	0.05825	-0.3250	0.1715	-0.0232	0.2208	-11.47	166.1
9P	0.205	0.4918	-0.0004553	-0.3123	0.1749	-0.0351	3.83	-3.133	160
10P	0.1876	0.4612	-0.000891	-0.2838	0.1651	-0.0343	3.813	-3.164	154
11P	0.1852	0.4634	0.0422	-0.3088	0.1499	-0.0189	0.1852	-9.537	154
12P	0.1725	0.4352	-0.0002716	-0.2744	0.1573	-0.0324	4.27	-3.663	148.8
13P	0.1557	0.4056	0.0003335	-0.2442	0.1388	-0.0276	4.84	-4.278	142.3
14P	0.1376	0.3741	0.000743	-0.2295	0.1278	-0.0248	5.505	-4.993	134.7
15P	0.1206	0.3429	0.001113	-0.2034	0.1134	-0.0207	6.209	-5.745	126.7
16P	0.1054	0.316	0.001089	-0.1902	0.1040	-0.0181	6.913	-6.492	118.7
17P	0.09141	0.2898	0.001061	-0.1631	0.0921	-0.0141	7.62	-7.239	110.7
18P	0.07932	0.2692	0.0005263	-0.1491	0.0844	-0.0117	8.329	-7.981	102.7
19P	0.05527	0.2169	0.0007531	-0.1831	0.0735	-0.0117	9.807	-9.535	86
20P	0.03697	0.1668	0.001102	-0.1595	0.0563	-0.0078	11.28	-11.07	69.5
21P	0.02274	0.1219	0.001129	-0.1630	0.0434	-0.0186	12.7	-12.56	53.5
22P	0.008106	0.06194	0.001071	-0.0729	0.0248	-0.0545	14.81	-14.74	30
23P	0.002177	0.1556	-0.008613	-0.1377	0.0068	0.0167	0.002177	-15.99	14.99
24P	-0.0007199	0.04016	-0.02109	0.0539	0.0291	0.0389	16.15	0.04016	14.98
25P	0.001748	0.04039	-0.0005604	-0.1463	0.0066	-0.1250	16.15	-16.11	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	0.3097	0.6685	-0.04226	-0.3452	0.1871	-0.0582	3.935	4.293	190
1XY	0.3099	0.6762	-0.01896	-0.3501	0.1935	-0.0577	-3.315	4.301	190
1Y	0.3025	0.6761	0.02321	-0.3498	0.1801	-0.0524	-3.322	-2.949	190
2X	0.3189	0.6724	-0.08273	-0.3594	0.1834	-0.0652	0.3189	12.67	189.9
3X	0.2898	0.632	-0.04194	-0.3495	0.1918	-0.0536	3.915	4.257	184
3XY	0.2896	0.6387	-0.01867	-0.3570	0.1911	-0.0526	-3.335	4.264	184
3Y	0.2834	0.6387	0.02326	-0.3570	0.1848	-0.0468	-3.342	-2.986	184
4X	0.2696	0.596	-0.04116	-0.3355	0.1912	-0.0489	3.895	4.221	178
4XY	0.2695	0.6022	-0.01818	-0.3441	0.1945	-0.0476	-3.355	4.227	178
4Y	0.2637	0.6022	0.02301	-0.3426	0.1862	-0.0412	-3.361	-3.023	178
5X	0.2758	0.5991	-0.06889	-0.3571	0.1777	-0.0588	0.2758	10.6	177.9
6X	0.2492	0.561	-0.03982	-0.3436	0.1958	-0.0400	3.874	4.186	172
6XY	0.2488	0.5657	-0.01748	-0.3416	0.1914	-0.0376	-3.376	4.191	172
6Y	0.2442	0.5657	0.02221	-0.3455	0.1901	-0.0334	-3.381	-3.059	172
7X	0.229	0.5256	-0.03856	-0.3217	0.1854	-0.0372	3.854	4.151	166
7XY	0.2288	0.5305	-0.01687	-0.3318	0.1920	-0.0345	-3.396	4.156	166
7Y	0.2245	0.5304	0.0214	-0.3238	0.1803	-0.0310	-3.401	-3.095	166
8X	0.2361	0.5281	-0.07813	-0.3523	0.1695	-0.0545	0.2361	12.53	165.9
9X	0.2098	0.4931	-0.03675	-0.3135	0.1856	-0.0326	3.835	4.118	160
9XY	0.2089	0.4962	-0.01614	-0.3157	0.1789	-0.0286	-3.416	4.121	160
9Y	0.206	0.4971	0.02002	-0.3192	0.1802	-0.0281	-3.419	-3.128	160
10X	0.1907	0.4607	-0.03432	-0.2861	0.1642	-0.0280	3.816	4.086	154
10XY	0.191	0.4648	-0.01527	-0.2893	0.1722	-0.0227	-3.434	4.09	154
10Y	0.1874	0.4646	0.01808	-0.2850	0.1585	-0.0252	-3.438	-3.16	154

11X	0.1952	0.4629	-0.06009	-0.3278	0.1486	-0.0447	0.1952	10.46	153.9
12X	0.1769	0.436	-0.03581	-0.2576	0.1495	-0.0254	4.275	4.534	148.8
12XY	0.1754	0.4392	-0.01551	-0.2739	0.1662	-0.0202	-3.923	4.537	148.8
12Y	0.1738	0.4401	0.01989	-0.2649	0.1419	-0.0226	-3.924	-3.658	148.8
13X	0.1599	0.4066	-0.03707	-0.2500	0.1448	-0.0235	4.844	5.091	142.3
13XY	0.1583	0.4099	-0.01568	-0.2514	0.1448	-0.0186	-4.526	5.094	142.3
13Y	0.1571	0.4105	0.02166	-0.2504	0.1386	-0.0201	-4.527	-4.274	142.3
14X	0.1419	0.3744	-0.03776	-0.2225	0.1268	-0.0207	5.509	5.741	134.7
14XY	0.14	0.3777	-0.01577	-0.2308	0.1325	-0.0150	-5.227	5.745	134.7
14Y	0.1393	0.379	0.02291	-0.2310	0.1232	-0.0162	-5.228	-4.988	134.7
15X	0.1249	0.3444	-0.0379	-0.2071	0.1156	-0.0184	6.213	6.432	126.7
15XY	0.123	0.3471	-0.01572	-0.2140	0.1143	-0.0118	-5.965	6.435	126.7
15Y	0.1222	0.3476	0.02387	-0.2091	0.1133	-0.0133	-5.966	-5.74	126.7
16X	0.1095	0.3159	-0.03739	-0.1822	0.0986	-0.0158	6.918	7.124	118.7
16XY	0.1081	0.3184	-0.01557	-0.1902	0.1050	-0.0085	-6.7	7.126	118.7
16Y	0.1068	0.32	0.02401	-0.1953	0.1003	-0.0093	-6.701	-6.488	118.7
17X	0.09661	0.292	-0.03625	-0.1636	0.0876	-0.0134	7.626	7.821	110.7
17XY	0.09444	0.2937	-0.0151	-0.1723	0.0873	-0.0057	-7.435	7.823	110.7
17Y	0.09304	0.2932	0.02394	-0.1701	0.0917	-0.0070	-7.436	-7.236	110.7
18X	0.08387	0.2674	-0.03491	-0.1814	0.0921	-0.0128	8.334	8.517	102.7
18XY	0.08358	0.2685	-0.01483	-0.1906	0.0805	0.0013	-8.166	8.518	102.7
18Y	0.08016	0.2713	0.02309	-0.1591	0.0848	-0.0036	-8.17	-7.979	102.7
19X	0.0564	0.2116	-0.03226	-0.1783	0.0835	-0.0095	9.808	9.964	85.97
19XY	0.05716	0.2094	-0.01373	-0.1910	0.0869	0.0148	-9.695	9.961	85.99
19Y	0.0572	0.216	0.02228	-0.1923	0.0703	0.0098	-9.695	-9.536	86.02
20X	0.03425	0.1628	-0.0287	-0.1560	0.0703	-0.0077	11.27	11.4	69.47
20XY	0.03466	0.158	-0.01207	-0.1641	0.0726	0.0237	-11.21	11.4	69.49
20Y	0.03811	0.1627	0.02062	-0.1672	0.0576	0.0180	-11.2	-11.08	69.52
21X	0.01718	0.1167	-0.02412	-0.1682	0.0340	-0.0235	12.7	12.8	53.48
21XY	0.01725	0.1107	-0.01009	-0.1657	0.0346	0.0380	-12.66	12.79	53.49
21Y	0.02424	0.1163	0.01744	-0.1566	0.0403	0.0315	-12.66	-12.56	53.52
22X	0.01578	0.05617	-0.01455	-0.0547	-0.0001	-0.0645	14.82	14.86	29.99
22XY	0.01588	0.05233	-0.007863	-0.0646	-0.0123	0.0626	-14.78	14.85	29.99
22Y	0.0106	0.05851	0.0112	-0.0806	0.0345	0.0540	-14.79	-14.74	30.01
23X	0.01228	0.1552	-0.002037	-0.1210	-0.0164	0.0147	0.01228	16.31	15
24Y	0.01612	0.03428	-0.01301	0.0379	0.0332	-0.0920	-16.13	0.03428	14.99
25X	0.0118	0.04017	-0.005886	-0.1259	0.0513	-0.1378	16.16	16.19	14.99
25XY	0.01267	0.03428	-0.003665	-0.1153	0.0381	0.1416	-16.14	16.18	15
25Y	0.002699	0.03456	0.005319	-0.1319	0.0288	0.1205	-16.15	-16.12	15.01
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
26P	12.69	0.0	-33.76	0.0	0.0	105.74	0.0	0.0	111.72	0.0	12.24	0.0	0.1	0.0	0.0	2.87	0.0	0.0
26X	-26.91	0.0	-28.36	0.0	0.0	-298.49	0.0	0.0	301.04	0.0	12.63	0.0	-3.8	0.0	0.0	2.89	0.0	0.0
26XY	14.70	0.0	-15.99	0.0	0.0	-159.30	0.0	0.0	160.78	0.0	10.40	0.0	-3.9	0.0	0.0	-3.33	0.0	0.0
26Y	-32.10	0.0	-51.16	0.0	0.0	274.13	0.0	0.0	280.71	0.0	9.86	0.0	-0.4	0.0	0.0	-2.63	0.0	0.0

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

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

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0000	0.5266	-0.3278	0.0000	-0.5266	0.3278	0.3026	0.6687	0.0002
2P	2.7390	1.9766	-0.5648	-2.7390	-1.9766	0.5648	0.2952	0.6727	0.0633
3P	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2832	0.6322	0.0003
4P	0.0000	0.7056	-0.4238	0.0000	-0.7056	0.4238	0.2637	0.5964	0.0002
5P	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.2595	0.5998	0.0494
6P	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2437	0.5602	-0.0000
7P	0.0000	0.7056	-0.4248	0.0000	-0.7056	0.4248	0.2244	0.5261	-0.0002
8P	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.2208	0.5288	0.0583
9P	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2050	0.4918	-0.0005
10P	0.0000	1.4116	-1.0104	-0.0000	-1.4116	1.0104	0.1876	0.4612	-0.0009
11P	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.1852	0.4634	0.0422
12P	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1725	0.4352	-0.0003
13P	0.0000	1.1110	-0.8036	0.0000	-1.1110	0.8036	0.1557	0.4056	0.0003
14P	0.0000	2.4420	-0.9436	0.0000	-2.4420	0.9436	0.1376	0.3741	0.0007
15P	0.0000	1.1400	-0.8216	0.0000	-1.1400	0.8216	0.1206	0.3429	0.0011
16P	0.0000	1.6420	-0.6616	0.0000	-1.6420	0.6616	0.1054	0.3160	0.0011
17P	0.0000	0.7820	-0.5766	0.0000	-0.7820	0.5766	0.0914	0.2898	0.0011
18P	0.0000	2.1610	-0.9326	0.0000	-2.1610	0.9326	0.0793	0.2692	0.0005
19P	0.0000	2.1570	-0.9226	0.0000	-2.1570	0.9226	0.0553	0.2169	0.0008
20P	0.0000	3.1723	-2.0026	0.0000	-3.1723	2.0026	0.0370	0.1668	0.0011
21P	0.0000	2.8223	-1.5160	0.0000	-2.8223	1.5160	0.0227	0.1219	0.0011
22P	0.0000	2.7723	-1.5030	0.0000	-2.7723	1.5030	0.0081	0.0619	0.0011
23P	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0022	0.1556	-0.0086
24P	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	-0.0007	0.0402	-0.0211
25P	0.0000	2.6493	-1.3490	-0.0000	-2.6493	1.3490	0.0017	0.0404	-0.0006
26P	0.0000	1.0563	-1.0920	-12.6902	32.7077	106.8289	0.0000	0.0000	0.0000
1X	0.0000	0.5266	-0.3278	0.0000	-0.5266	0.3278	0.3097	0.6685	-0.0423
1XY	1.8900	5.8226	0.4012	-1.8900	-5.8226	-0.4012	0.3099	0.6762	-0.0190
1Y	-1.4490	5.5136	-2.3598	1.4490	-5.5136	2.3598	0.3025	0.6761	0.0232
2X	2.7390	1.9766	-0.5648	-2.7390	-1.9766	0.5648	0.3189	0.6724	-0.0827
3X	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2898	0.6320	-0.0419
3XY	-1.0710	-2.1274	-0.9468	1.0710	2.1274	0.9468	0.2896	0.6387	-0.0187
3Y	0.6300	-1.4714	-0.8538	-0.6300	1.4714	0.8538	0.2834	0.6387	0.0233
4X	0.0000	0.7056	-0.4238	0.0000	-0.7056	0.4238	0.2696	0.5960	-0.0412
4XY	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2695	0.6022	-0.0182
4Y	0.0000	1.2966	-0.6058	0.0000	-1.2966	0.6058	0.2637	0.6022	0.0230
5X	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.2758	0.5991	-0.0689
6X	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2492	0.5610	-0.0398
6XY	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2488	0.5657	-0.0175
6Y	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2442	0.5657	0.0222
7X	0.0000	0.7056	-0.4248	0.0000	-0.7056	0.4248	0.2290	0.5256	-0.0386
7XY	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2288	0.5305	-0.0169
7Y	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2245	0.5304	0.0214
8X	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.2361	0.5281	-0.0781
9X	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2098	0.4931	-0.0368
9XY	0.0000	0.3466	-0.2318	0.0000	-0.3466	0.2318	0.2089	0.4962	-0.0161
9Y	0.0000	1.2716	-0.5958	0.0000	-1.2716	0.5958	0.2060	0.4971	0.0200
10X	0.0000	1.4116	-1.0104	-0.0000	-1.4116	1.0104	0.1907	0.4607	-0.0343
10XY	0.0000	1.0076	-0.7934	0.0000	-1.0076	0.7934	0.1910	0.4648	-0.0153
10Y	0.0000	1.0076	-0.7934	0.0000	-1.0076	0.7934	0.1874	0.4646	0.0181
11X	4.3560	4.0846	-1.1808	-4.3560	-4.0846	1.1808	0.1952	0.4629	-0.0601
12X	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1769	0.4360	-0.0358
12XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1754	0.4392	-0.0155
12Y	0.0000	1.4590	-0.8756	0.0000	-1.4590	0.8756	0.1738	0.4401	0.0199
13X	0.0000	1.1110	-0.8036	0.0000	-1.1110	0.8036	0.1599	0.4066	-0.0371
13XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1583	0.4099	-0.0157
13Y	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1571	0.4105	0.0217

14X	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1419	0.3744	-0.0378
14XY	0.0000	1.5220	-0.8496	0.0000	-1.5220	0.8496	0.1400	0.3777	-0.0158
14Y	0.0000	2.4720	-1.2236	0.0000	-2.4720	1.2236	0.1393	0.3790	0.0229
15X	0.0000	1.1400	-0.8216	0.0000	-1.1400	0.8216	0.1249	0.3444	-0.0379
15XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1230	0.3471	-0.0157
15Y	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1222	0.3476	0.0239
16X	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1095	0.3159	-0.0374
16XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.1081	0.3184	-0.0156
16Y	0.0000	1.6750	-0.9606	0.0000	-1.6750	0.9606	0.1068	0.3200	0.0240
17X	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.0966	0.2920	-0.0362
17XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.0944	0.2937	-0.0151
17Y	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.0930	0.2932	0.0239
18X	0.0000	1.1590	-0.8306	0.0000	-1.1590	0.8306	0.0839	0.2674	-0.0349
18XY	0.0000	0.6610	-0.5616	-0.0000	-0.6610	0.5616	0.0836	0.2685	-0.0148
18Y	0.0000	1.6970	-0.9696	-0.0000	-1.6970	0.9696	0.0802	0.2713	0.0231
19X	0.0000	1.1390	-0.8186	0.0000	-1.1390	0.8186	0.0564	0.2116	-0.0323
19XY	0.0000	0.6610	-0.5616	0.0000	-0.6610	0.5616	0.0572	0.2094	-0.0137
19Y	0.0000	1.7130	-0.9756	0.0000	-1.7130	0.9756	0.0572	0.2160	0.0223
20X	0.0000	2.1763	-1.9016	0.0000	-2.1763	1.9016	0.0342	0.1628	-0.0287
20XY	0.0000	1.7173	-1.6536	0.0000	-1.7173	1.6536	0.0347	0.1580	-0.0121
20Y	0.0000	2.7473	-2.0596	0.0000	-2.7473	2.0596	0.0381	0.1627	0.0206
21X	0.0000	1.6033	-1.3880	0.0000	-1.6033	1.3880	0.0172	0.1167	-0.0241
21XY	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0173	0.1107	-0.0101
21Y	0.0000	2.3073	-1.5850	0.0000	-2.3073	1.5850	0.0242	0.1163	0.0174
22X	0.0000	1.5923	-1.3830	0.0000	-1.5923	1.3830	0.0158	0.0562	-0.0146
22XY	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0159	0.0523	-0.0079
22Y	0.0000	2.2763	-1.5720	0.0000	-2.2763	1.5720	0.0106	0.0585	0.0112
23X	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0123	0.1552	-0.0020
24Y	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0161	0.0343	-0.0130
25X	0.0000	1.2703	-1.2090	0.0000	-1.2703	1.2090	0.0118	0.0402	-0.0059
25XY	0.0000	1.0563	-1.0920	0.0000	-1.0563	1.0920	0.0127	0.0343	-0.0037
25Y	0.0000	2.4823	-1.6540	0.0000	-2.4823	1.6540	0.0027	0.0346	0.0053
26X	0.0000	1.0563	-1.0920	26.9097	27.3079	-297.3961	0.0000	0.0000	0.0000
26XY	0.0000	1.0563	-1.0920	-14.7021	14.9366	-158.2113	0.0000	0.0000	0.0000
26Y	0.0000	1.0563	-1.0920	32.0964	50.1073	275.2261	0.0000	0.0000	0.0000

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	3.425	50.00	50.00	6.85
2	3.425	50.00	50.00	6.85
3	6.087	50.00	50.00	12.17
4	6.087	50.00	50.00	12.17
5	6.087	50.00	50.00	12.17
6	6.087	50.00	50.00	12.17
7	6.087	50.00	50.00	12.17
8	6.087	50.00	50.00	12.17
9	6.170	50.00	50.00	12.34
10	1.431	50.00	50.00	2.86
11	1.404	50.00	50.00	2.81
12	1.702	50.00	50.00	3.40
13	2.758	50.00	50.00	5.52
14	1.931	50.00	50.00	3.86

15	1.954	50.00	50.00	3.91
16	1.971	50.00	50.00	3.94
17	3.434	50.00	50.00	6.87
18	2.799	50.00	50.00	5.60
19	2.766	50.00	50.00	5.53
20	2.983	50.00	50.00	5.97
21	2.618	50.00	50.00	5.24
22	1.770	50.00	50.00	3.54
23	2.354	50.00	50.00	4.71
24	2.346	50.00	50.00	4.69
25	3.752	50.00	50.00	7.50
26	3.204	50.00	50.00	6.41
27	3.154	50.00	50.00	6.31
28	2.973	50.00	50.00	5.95
29	1.743	50.00	50.00	3.49
30	0.620	50.00	50.00	1.24
31	0.417	50.00	50.00	0.83
32	1.814	50.00	50.00	3.63
33	0.972	50.00	50.00	1.94
34	6.135	50.00	50.00	12.27
35	2.563	50.00	50.00	5.13
37	0.620	50.00	50.00	1.24
38	0.823	50.00	50.00	1.65
39	0.823	50.00	50.00	1.65
40	0.824	50.00	50.00	1.65
41	0.824	50.00	50.00	1.65
42	1.736	50.00	50.00	3.47
43	1.736	50.00	50.00	3.47
44	1.371	50.00	50.00	2.74
45	1.371	50.00	50.00	2.74
46	1.405	50.00	50.00	2.81
47	1.405	50.00	50.00	2.81
49	1.426	50.00	50.00	2.85
51	1.403	50.00	50.00	2.81
53	2.890	50.00	50.00	5.78
55	2.121	50.00	50.00	4.24
57	2.109	50.00	50.00	4.22
59	1.754	50.00	50.00	3.51

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.4574	0.2909	-0.02532	-0.1177	0.3175	0.8625	4.082	-3.334	190
2P	0.5896	0.2362	0.01034	-0.1206	0.2969	0.9143	0.5896	-11.76	190
3P	0.4243	0.2772	-0.02519	-0.1251	0.3201	0.8295	4.049	-3.348	184
4P	0.3904	0.2627	-0.02468	-0.1466	0.3432	0.7965	4.015	-3.362	178
5P	0.4885	0.2105	0.00625	-0.1131	0.2632	0.9027	0.4885	-9.789	178
6P	0.3529	0.2436	-0.02383	-0.1423	0.3560	0.6908	3.978	-3.381	172
7P	0.3173	0.229	-0.02297	-0.1422	0.3284	0.6573	3.942	-3.396	166
8P	0.4182	0.187	0.01252	-0.1397	0.2401	0.6996	0.4182	-11.81	166
9P	0.2846	0.2124	-0.0219	-0.1280	0.3006	0.6114	3.91	-3.413	160
10P	0.2553	0.2011	-0.02051	-0.1129	0.2657	0.5655	3.88	-3.424	154
11P	0.3219	0.1647	0.002236	-0.0749	0.2007	0.6058	0.3219	-9.835	154
12P	0.2365	0.1934	-0.02054	-0.1325	0.2469	0.5373	4.335	-3.905	148.8
13P	0.2155	0.1854	-0.02048	-0.1066	0.2226	0.5066	4.9	-4.499	142.3
14P	0.1933	0.1771	-0.02029	-0.1034	0.1985	0.4679	5.56	-5.19	134.7
15P	0.173	0.169	-0.02001	-0.0861	0.1779	0.4312	6.261	-5.919	126.7
16P	0.1547	0.1628	-0.01972	-0.0861	0.1555	0.3932	6.963	-6.645	118.7
17P	0.1392	0.1557	-0.01919	-0.0641	0.1392	0.3591	7.668	-7.373	110.7
18P	0.1239	0.1527	-0.01905	-0.0650	0.1444	0.3210	8.374	-8.097	102.7
19P	0.08869	0.1278	-0.01692	-0.1243	0.1337	0.2388	9.841	-9.624	85.98
20P	0.06016	0.0998	-0.01425	-0.1048	0.1035	0.1703	11.3	-11.14	69.49
21P	0.03702	0.07572	-0.01162	-0.0903	0.0835	0.1061	12.72	-12.6	53.49
22P	0.01216	0.04043	-0.00706	-0.1005	0.0433	0.0136	14.81	-14.76	29.99
23P	0.003721	0.08981	-0.007814	-0.0452	0.0043	0.0165	0.003721	-16.06	14.99
24P	-0.003904	0.01299	-0.0003097	0.0332	-0.0098	0.0318	16.15	0.01299	15
25P	0.003484	0.01324	-0.003172	-0.0857	0.0178	-0.0605	16.15	-16.14	15
26P	0	0	0	0.0000	0.0000	0.0000	17.5	-17.5	0
1X	0.3469	0.2897	-0.0389	-0.1189	0.2903	0.8496	3.972	3.915	190
1XY	0.3479	0.1791	-0.002139	-0.1177	0.2939	0.8490	-3.277	3.804	190
1Y	0.4584	0.1794	0.01225	-0.1148	0.3163	0.8631	-3.167	-3.446	190
2X	0.2199	0.2337	-0.03898	-0.1360	0.2900	0.8833	0.2199	12.23	190
3X	0.3167	0.2761	-0.03866	-0.1333	0.2938	0.8183	3.942	3.901	184
3XY	0.3175	0.167	-0.001985	-0.1023	0.2940	0.8162	-3.307	3.792	184
3Y	0.4252	0.1675	0.01235	-0.1023	0.3208	0.8317	-3.2	-3.458	184
4X	0.2864	0.2613	-0.03805	-0.1282	0.2875	0.7868	3.911	3.886	178
4XY	0.2871	0.1564	-0.00164	-0.0889	0.2884	0.7835	-3.338	3.781	178
4Y	0.3913	0.1567	0.01197	-0.0864	0.3387	0.8001	-3.234	-3.468	178
5X	0.1939	0.208	-0.03461	-0.1486	0.3025	0.8564	0.1939	10.21	178
6X	0.2582	0.2457	-0.03661	-0.1685	0.2670	0.6924	3.883	3.871	172
6XY	0.2588	0.1492	-0.001736	-0.0589	0.2661	0.6861	-3.366	3.774	172
6Y	0.3538	0.1499	0.01123	-0.0547	0.3596	0.6983	-3.271	-3.475	172
7X	0.231	0.2282	-0.03522	-0.1357	0.2544	0.6621	3.856	3.853	166
7XY	0.2314	0.1418	-0.002003	-0.0742	0.2564	0.6552	-3.394	3.767	166
7Y	0.3178	0.1427	0.01046	-0.0692	0.3252	0.6662	-3.307	-3.482	166
8X	0.1306	0.1842	-0.03277	-0.0973	0.2869	0.7019	0.1306	12.18	166
9X	0.2056	0.2149	-0.03331	-0.1301	0.2452	0.6203	3.831	3.84	160
9XY	0.2058	0.134	-0.002566	-0.0688	0.2409	0.6116	-3.419	3.759	160
9Y	0.2854	0.1354	0.009255	-0.0732	0.3009	0.6236	-3.34	-3.49	160
10X	0.1815	0.2003	-0.03097	-0.1198	0.2025	0.5785	3.806	3.825	154
10XY	0.1819	0.1263	-0.003187	-0.0693	0.2078	0.5680	-3.443	3.751	154
10Y	0.2555	0.1267	0.00756	-0.0629	0.2651	0.5810	-3.369	-3.498	154

11X	0.1154	0.1629	-0.03061	-0.1349	0.2401	0.6024	0.1154	10.16	154
12X	0.1605	0.1945	-0.03161	-0.1097	0.1684	0.5499	4.259	4.292	148.8
12XY	0.1603	0.1161	-0.002596	-0.0536	0.1770	0.5384	-3.938	4.214	148.8
12Y	0.2373	0.1175	0.008693	-0.0414	0.2437	0.5536	-3.861	-3.98	148.8
13X	0.1363	0.1866	-0.03207	-0.1118	0.1587	0.5158	4.82	4.871	142.3
13XY	0.1359	0.1049	-0.001965	-0.0471	0.1600	0.5045	-4.548	4.789	142.3
13Y	0.2162	0.1063	0.009774	-0.0445	0.2236	0.5216	-4.468	-4.578	142.3
14X	0.1107	0.1781	-0.03211	-0.0966	0.1379	0.4767	5.478	5.545	134.7
14XY	0.1103	0.09285	-0.001378	-0.0425	0.1425	0.4654	-5.257	5.46	134.7
14Y	0.1942	0.09453	0.01052	-0.0382	0.2000	0.4832	-5.173	-5.272	134.7
15X	0.08653	0.1705	-0.03187	-0.0920	0.1263	0.4384	6.175	6.258	126.7
15XY	0.08596	0.08153	-0.0007736	-0.0378	0.1249	0.4273	-6.002	6.17	126.7
15Y	0.1736	0.08279	0.01114	-0.0363	0.1762	0.4463	-5.914	-6.005	126.7
16X	0.06454	0.1629	-0.03126	-0.0753	0.1071	0.4006	6.873	6.971	118.7
16XY	0.06445	0.0711	-0.0002995	-0.0355	0.1145	0.3900	-6.744	6.879	118.7
16Y	0.1557	0.0724	0.01127	-0.0305	0.1605	0.4083	-6.652	-6.736	118.7
17X	0.04551	0.1581	-0.03024	-0.0683	0.1029	0.3655	7.575	7.687	110.7
17XY	0.04438	0.06168	0.0002262	-0.0298	0.1020	0.3544	-7.485	7.591	110.7
17Y	0.1392	0.06291	0.01132	-0.0292	0.1377	0.3738	-7.39	-7.466	110.7
18X	0.02695	0.1504	-0.02935	-0.1001	0.0852	0.3259	8.277	8.4	102.7
18XY	0.0281	0.0535	0.0005622	-0.0277	0.0689	0.3174	-8.222	8.303	102.7
18Y	0.1258	0.05415	0.01094	-0.0258	0.1271	0.3380	-8.124	-8.196	102.7
19X	0.005765	0.1222	-0.02661	-0.1176	0.0255	0.2464	9.758	9.874	85.97
19XY	0.0087	0.038	0.0005619	-0.0256	0.0298	0.2420	-9.743	9.79	86
19Y	0.09289	0.03921	0.01085	-0.0208	0.1369	0.2625	-9.659	-9.713	86.01
20X	-0.005795	0.09625	-0.02308	-0.0996	0.0156	0.1821	11.23	11.34	69.48
20XY	-0.004053	0.02616	0.000495	-0.0214	0.0208	0.1750	-11.24	11.27	69.5
20Y	0.06264	0.02682	0.01037	-0.0192	0.1090	0.1983	-11.18	-11.21	69.51
21X	-0.01276	0.07175	-0.01894	-0.0941	0.0048	0.1286	12.67	12.75	53.48
21XY	-0.011	0.01677	0.0003444	-0.0188	0.0059	0.1180	-12.69	12.7	53.5
21Y	0.03948	0.01752	0.008947	-0.0128	0.0862	0.1507	-12.64	-12.66	53.51
22X	-0.01332	0.03657	-0.01191	-0.0919	-0.0267	0.0634	14.79	14.84	29.99
22XY	-0.0116	0.006859	6.687e-005	-0.0172	-0.0182	0.0496	-14.81	14.81	30
22Y	0.01365	0.007867	0.006086	-0.0118	0.0555	0.1086	-14.79	-14.79	30.01
23X	-0.005255	-0.001364	-5.757e-005	-0.0467	0.0333	0.0186	-0.005255	16.15	15
24Y	0.0006621	0.001876	0.001207	-0.0049	0.0022	-0.0078	-16.15	0.001876	15
25X	-0.005293	0.01293	-0.006344	-0.0812	-0.0374	0.0265	16.14	16.16	14.99
25XY	-0.005217	0.001843	-0.0001939	-0.0123	-0.0305	0.0171	-16.16	16.15	15
25Y	0.004033	0.002142	0.003387	-0.0062	0.0350	0.1128	-16.15	-16.15	15
26X	0	0	0	0.0000	0.0000	0.0000	17.5	17.5	0
26XY	0	0	0	0.0000	0.0000	0.0000	-17.5	17.5	0
26Y	0	0	0	0.0000	0.0000	0.0000	-17.5	-17.5	0

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

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
26P	-8.20	0.0	-7.94	0.0	0.0	-56.93	0.0	0.0	58.06	0.0	2.51	0.0	-0.5	0.0	0.0	1.09	0.0	0.0
26X	-12.30	0.0	-17.43	0.0	0.0	-195.08	0.0	0.0	196.24	0.0	2.60	0.0	1.4	0.0	0.0	-0.24	0.0	0.0
26XY	2.25	0.0	-2.94	0.0	0.0	-25.14	0.0	0.0	25.41	0.0	0.25	0.0	1.3	0.0	0.0	-0.21	0.0	0.0
26Y	-14.75	0.0	-13.81	0.0	0.0	117.10	0.0	0.0	118.83	0.0	0.01	0.0	-0.9	0.0	0.0	-1.76	0.0	0.0

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

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

	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(ft)	(ft)
1P	0.0000	0.1959	-0.6102	0.0000	-0.1959	0.6102	0.4574	0.2909	-0.0253
2P	13.2000	0.4098	-0.5551	-13.2000	-0.4098	0.5551	0.5896	0.2362	0.0103
3P	0.0000	0.3038	-0.4396	0.0000	-0.3038	0.4396	0.4243	0.2772	-0.0252
4P	0.0000	0.3691	-0.9907	0.0000	-0.3691	0.9907	0.3904	0.2627	-0.0247
5P	19.8000	0.5004	-0.7741	-19.8000	-0.5004	0.7741	0.4885	0.2105	0.0062
6P	0.0000	0.2949	-0.4567	-0.0000	-0.2949	0.4567	0.3529	0.2436	-0.0238
7P	0.0000	0.4074	-1.1620	0.0000	-0.4074	1.1620	0.3173	0.2290	-0.0230
8P	0.0000	2.1164	-3.2978	0.0000	-2.1164	3.2978	0.4182	0.1870	0.0125
9P	0.0000	0.3109	-0.5565	0.0000	-0.3109	0.5565	0.2846	0.2124	-0.0219
10P	0.0000	0.4145	-1.2399	0.0000	-0.4145	1.2399	0.2553	0.2011	-0.0205
11P	0.0000	2.1164	-3.2571	0.0000	-2.1164	3.2571	0.3219	0.1647	0.0022
12P	0.0000	0.2489	-0.5767	0.0000	-0.2489	0.5767	0.2365	0.1934	-0.0205
13P	0.0000	0.4728	-1.2608	0.0000	-0.4728	1.2608	0.2155	0.1854	-0.0205
14P	0.0000	0.8724	-1.7634	0.0000	-0.8724	1.7634	0.1933	0.1771	-0.0203
15P	0.0000	0.5487	-1.4593	0.0000	-0.5487	1.4593	0.1730	0.1690	-0.0200
16P	0.0000	0.6573	-1.2557	0.0000	-0.6573	1.2557	0.1547	0.1628	-0.0197
17P	0.0000	0.4334	-0.9780	0.0000	-0.4334	0.9780	0.1392	0.1557	-0.0192
18P	0.0000	1.0863	-2.6254	0.0000	-1.0863	2.6254	0.1239	0.1527	-0.0191
19P	0.0000	1.2342	-3.0033	0.0000	-1.2342	3.0033	0.0887	0.1278	-0.0169
20P	0.0000	1.2374	-3.3604	0.0000	-1.2374	3.3604	0.0602	0.0998	-0.0143
21P	0.0000	1.4801	-4.3213	0.0000	-1.4801	4.3213	0.0370	0.0757	-0.0116
22P	0.0000	1.4623	-4.6368	0.0000	-1.4623	4.6368	0.0122	0.0404	-0.0071
23P	0.0000	0.6056	-0.9003	0.0000	-0.6056	0.9003	0.0037	0.0898	-0.0078
24P	0.0000	0.0000	-0.9003	0.0000	0.0000	0.9003	-0.0039	0.0130	-0.0003
25P	0.0000	0.9254	-2.6435	0.0000	-0.9254	2.6435	0.0035	0.0132	-0.0032
26P	0.0000	0.2883	-0.9808	8.2004	7.6513	-55.9481	0.0000	0.0000	0.0000
1X	0.0000	0.0670	-0.6102	-0.0000	-0.0670	0.6102	0.3469	0.2897	-0.0389
1XY	0.8280	1.8550	-1.4562	-0.8280	-1.8550	1.4562	0.3479	0.1791	-0.0021
1Y	0.0690	0.7129	-2.5992	-0.0690	-0.7129	2.5992	0.4584	0.1794	0.0122
2X	0.0000	1.4660	-1.8091	0.0000	-1.4660	1.8091	0.2199	0.2337	-0.0390
3X	0.0000	0.0000	-0.4396	0.0000	0.0000	0.4396	0.3167	0.2761	-0.0387
3XY	-0.6400	-1.1610	-1.8096	0.6400	1.1610	1.8096	0.3175	0.1670	-0.0020
3Y	-0.2580	0.5068	-1.7896	0.2580	-0.5068	1.7896	0.4252	0.1675	0.0124
4X	0.0000	0.1340	-0.9907	0.0000	-0.1340	0.9907	0.2864	0.2613	-0.0381
4XY	0.0000	0.0000	-0.5377	0.0000	0.0000	0.5377	0.2871	0.1564	-0.0016
4Y	0.0000	0.4931	-1.9177	0.0000	-0.4931	1.9177	0.3913	0.1567	0.0120
5X	0.0000	1.9930	-3.2571	0.0000	-1.9930	3.2571	0.1939	0.2080	-0.0346
6X	0.0000	0.0000	-0.4567	-0.0000	0.0000	0.4567	0.2582	0.2457	-0.0366
6XY	0.0000	0.0000	-0.4567	-0.0000	0.0000	0.4567	0.2588	0.1492	-0.0017
6Y	0.0000	0.2949	-0.4567	-0.0000	-0.2949	0.4567	0.3538	0.1499	0.0112
7X	0.0000	0.1340	-1.1620	0.0000	-0.1340	1.1620	0.2310	0.2282	-0.0352
7XY	0.0000	0.0000	-0.7060	0.0000	0.0000	0.7060	0.2314	0.1418	-0.0020
7Y	0.0000	0.2734	-0.7060	0.0000	-0.2734	0.7060	0.3178	0.1427	0.0105
8X	0.0000	1.9930	-3.2978	0.0000	-1.9930	3.2978	0.1306	0.1842	-0.0328
9X	0.0000	0.0000	-0.5565	0.0000	0.0000	0.5565	0.2056	0.2149	-0.0333
9XY	0.0000	0.0000	-0.5565	0.0000	-0.0000	0.5565	0.2058	0.1340	-0.0026
9Y	0.0000	0.5619	-1.8995	0.0000	-0.5619	1.8995	0.2854	0.1354	0.0093
10X	0.0000	0.1510	-1.2399	0.0000	-0.1510	1.2399	0.1815	0.2003	-0.0310
10XY	0.0000	0.0000	-0.7259	-0.0000	0.0000	0.7259	0.1819	0.1263	-0.0032
10Y	0.0000	0.2635	-0.7259	-0.0000	-0.2635	0.7259	0.2555	0.1267	0.0076
11X	0.0000	1.9930	-3.2571	0.0000	-1.9930	3.2571	0.1154	0.1629	-0.0306
12X	0.0000	0.0000	-0.5767	0.0000	-0.0000	0.5767	0.1605	0.1945	-0.0316
12XY	0.0000	0.0000	-0.5767	0.0000	-0.0000	0.5767	0.1603	0.1161	-0.0026
12Y	0.0000	0.4649	-1.7357	0.0000	-0.4649	1.7357	0.2373	0.1175	0.0087
13X	0.0000	0.1690	-1.2608	0.0000	-0.1690	1.2608	0.1363	0.1866	-0.0321
13XY	0.0000	0.0000	-0.6868	0.0000	-0.0000	0.6868	0.1359	0.1049	-0.0020
13Y	0.0000	0.3038	-0.6868	0.0000	-0.3038	0.6868	0.2162	0.1063	0.0098

14X	0.0000	0.0000	-0.7844	0.0000	0.0000	0.7844	0.1107	0.1781	-0.0321
14XY	0.0000	0.2670	-1.4184	0.0000	-0.2670	1.4184	0.1103	0.0929	-0.0014
14Y	0.0000	0.8724	-2.7984	0.0000	-0.8724	2.7984	0.1942	0.0945	0.0105
15X	0.0000	0.1810	-1.4593	0.0000	-0.1810	1.4593	0.0865	0.1705	-0.0319
15XY	0.0000	0.0000	-0.8423	0.0000	0.0000	0.8423	0.0860	0.0815	-0.0008
15Y	0.0000	0.3677	-0.8423	0.0000	-0.3677	0.8423	0.1736	0.0828	0.0111
16X	0.0000	0.0000	-0.8877	0.0000	0.0000	0.8877	0.0645	0.1629	-0.0313
16XY	0.0000	0.0000	-0.8877	0.0000	0.0000	0.8877	0.0644	0.0711	-0.0003
16Y	0.0000	0.6573	-2.3597	0.0000	-0.6573	2.3597	0.1557	0.0724	0.0113
17X	0.0000	0.0000	-0.9340	0.0000	-0.0000	0.9340	0.0455	0.1581	-0.0302
17XY	0.0000	0.0000	-0.9340	0.0000	0.0000	0.9340	0.0444	0.0617	0.0002
17Y	0.0000	0.3974	-0.9340	0.0000	-0.3974	0.9340	0.1392	0.0629	0.0113
18X	0.0000	0.1880	-2.2494	0.0000	-0.1880	2.2494	0.0269	0.1504	-0.0293
18XY	0.0000	0.0000	-1.6104	0.0000	-0.0000	1.6104	0.0281	0.0535	0.0006
18Y	0.0000	0.8983	-3.1144	0.0000	-0.8983	3.1144	0.1258	0.0541	0.0109
19X	0.0000	0.1800	-2.6213	0.0000	-0.1800	2.6213	0.0058	0.1222	-0.0266
19XY	0.0000	0.0000	-2.0113	0.0000	0.0000	2.0113	0.0087	0.0380	0.0006
19Y	0.0000	1.0542	-3.5383	0.0000	-1.0542	3.5383	0.0929	0.0392	0.0108
20X	0.0000	0.1730	-2.9864	0.0000	-0.1730	2.9864	-0.0058	0.0963	-0.0231
20XY	0.0000	0.0000	-2.3984	0.0000	0.0000	2.3984	-0.0041	0.0262	0.0005
20Y	0.0000	1.0644	-3.8934	0.0000	-1.0644	3.8934	0.0626	0.0268	0.0104
21X	0.0000	0.2070	-3.8573	0.0000	-0.2070	3.8573	-0.0128	0.0717	-0.0189
21XY	0.0000	0.0000	-3.1533	0.0000	0.0000	3.1533	-0.0110	0.0168	0.0003
21Y	0.0000	1.2701	-4.9703	0.0000	-1.2701	4.9703	0.0395	0.0175	0.0089
22X	0.0000	0.2030	-4.1938	0.0000	-0.2030	4.1938	-0.0133	0.0366	-0.0119
22XY	0.0000	0.0000	-3.5018	0.0000	0.0000	3.5018	-0.0116	0.0069	0.0001
22Y	0.0000	1.2593	-5.2728	0.0000	-1.2593	5.2728	0.0136	0.0079	0.0061
23X	0.0000	0.0000	-0.9003	-0.0000	0.0000	0.9003	-0.0053	-0.0014	-0.0001
24Y	0.0000	0.0000	-0.9003	0.0000	0.0000	0.9003	0.0007	0.0019	0.0012
25X	0.0000	0.0810	-2.1265	0.0000	-0.0810	2.1265	-0.0053	0.0129	-0.0063
25XY	0.0000	0.0000	-1.8485	0.0000	-0.0000	1.8485	-0.0052	0.0018	-0.0002
25Y	0.0000	0.8444	-3.9185	0.0000	-0.8444	3.9185	0.0040	0.0021	0.0034
26X	0.0000	0.0000	-0.9808	12.2997	17.4291	-194.0979	0.0000	0.0000	0.0000
26XY	0.0000	0.0000	-0.9808	-2.2504	2.9377	-24.1548	0.0000	0.0000	0.0000
26Y	0.0000	0.2883	-0.9808	14.7494	13.5210	118.0831	0.0000	0.0000	0.0000

Crossing Diagonal Check for Load Case "NESX Heavy Broken Wire" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	RLX	RLY	RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
23P	23Y	Long only	-0.05	-0.39	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
23Y	23P	Long only	-0.39	-0.05	16.02	0.500	0.750	0.500	143.07	137.62	5	11.35	1.000	190.76	163.52	6
33P	33Y	Long only	-2.49	-1.71	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6
33Y	33P	Long only	-1.71	-2.49	41.16	0.750	0.500	0.500	95.87	101.90	2	33.73	1.000	122.48	121.53	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	13.218	50.00	50.00	26.44

2	2.329	50.00	50.00	4.66
3	19.821	50.00	50.00	39.64
4	3.818	50.00	50.00	7.64
5	3.919	50.00	50.00	7.84
6	3.853	50.00	50.00	7.71
7	3.884	50.00	50.00	7.77
8	3.818	50.00	50.00	7.64
9	2.696	50.00	50.00	5.39
10	1.980	50.00	50.00	3.96
11	1.981	50.00	50.00	3.96
12	1.797	50.00	50.00	3.59
13	2.931	50.00	50.00	5.86
14	2.450	50.00	50.00	4.90
15	3.241	50.00	50.00	6.48
16	3.692	50.00	50.00	7.38
17	4.036	50.00	50.00	8.07
18	5.130	50.00	50.00	10.26
19	5.421	50.00	50.00	10.84
20	4.008	50.00	50.00	8.02
21	1.967	50.00	50.00	3.93
22	1.417	50.00	50.00	2.83
23	2.841	50.00	50.00	5.68
24	3.247	50.00	50.00	6.49
25	3.581	50.00	50.00	7.16
26	4.568	50.00	50.00	9.14
27	4.862	50.00	50.00	9.72
28	2.801	50.00	50.00	5.60
29	1.443	50.00	50.00	2.89
30	0.641	50.00	50.00	1.28
31	0.534	50.00	50.00	1.07
32	1.878	50.00	50.00	3.76
33	1.070	50.00	50.00	2.14
34	2.499	50.00	50.00	5.00
35	2.243	50.00	50.00	4.49
37	0.614	50.00	50.00	1.23
38	1.057	50.00	50.00	2.11
39	1.000	50.00	50.00	2.00
40	1.231	50.00	50.00	2.46
41	1.170	50.00	50.00	2.34
42	1.307	50.00	50.00	2.61
43	1.249	50.00	50.00	2.50
44	1.347	50.00	50.00	2.69
45	1.272	50.00	50.00	2.54
46	1.559	50.00	50.00	3.12
47	1.470	50.00	50.00	2.94
49	2.257	50.00	50.00	4.51
51	2.627	50.00	50.00	5.25
53	2.991	50.00	50.00	5.98
55	3.863	50.00	50.00	7.73
57	4.199	50.00	50.00	8.40
59	2.128	50.00	50.00	4.26

*** 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 Comp. Use %	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
Leg1	6x6x3/8	SAE	6X6X0.375	33.0	22.24	Comp	22.24	5X	-28.622	NESX Hea	128.698	163.200	303.750	1.000	1.000	1.000	60.50
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	39.68	Tens	36.01	8X	-86.664	NESC Ext	240.633	301.600	629.999	1.000	1.000	1.000	45.28
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	48.64	Tens	47.03	11X	-147.070	NESC Ext	312.686	414.700	1191.092	1.000	1.000	1.000	58.19
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	53.84	Tens	53.27	13X	-179.346	NESC Ext	336.697	490.100	1535.623	1.000	1.000	1.000	61.25
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	56.92	Tens	56.53	15X	-204.325	NESC Ext	361.445	527.800	1791.560	1.000	1.000	1.000	61.64
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	58.94	Comp	58.94	16X	-226.613	NESC Ext	384.502	565.500	2067.184	0.500	0.500	0.500	64.34
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	61.87	Comp	61.87	18X	-256.240	NESC Ext	414.146	603.200	2362.496	0.500	0.500	0.500	61.76
Leg8	8x8x1	SAE	8X8X1	33.0	67.12	Comp	67.12	21X	-299.854	NESC Ext	446.741	640.900	2677.496	0.500	0.500	0.500	58.16
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	62.75	Comp	62.75	24P	-10.052	NESX Hea	16.019	27.200	33.750	0.500	0.750	0.500	143.07
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.54	Comp	92.54	27XY	-24.924	NESX Hea	26.934	40.800	50.625	0.500	0.750	0.500	112.48
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	61.12	Comp	61.12	31XY	-25.158	NESX Hea	41.160	54.400	84.375	0.750	0.500	0.500	95.87
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	55.77	Comp	55.77	34P	-18.352	NESX Hea	32.903	54.400	84.375	0.767	0.535	0.535	114.00
XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	66.71	Comp	66.71	46P	-11.098	NESX Hea	16.638	40.800	50.625	0.763	0.527	0.527	177.45
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	72.78	Tens	49.45	49Y	-2.794	NESC Hea	5.650	54.400	84.375	0.764	0.529	0.529	319.36
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	89.30	Tens	82.54	55Y	-1.440	NESC Ext	1.745	54.400	84.375	0.466	0.767	0.466	570.84
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.72	Comp	47.72	82Y	-8.275	NESC Ext	17.340	40.800	50.625	0.500	1.000	0.500	181.65
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	98.31	Comp	98.31	84Y	-19.071	NESC Ext	18.928	40.800	50.625	0.500	1.000	0.500	187.24
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	68.26	Comp	68.26	88Y	-21.701	NESC Ext	31.791	81.600	101.250	0.500	1.000	0.500	191.40
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	37.73	Comp	37.73	90Y	-23.484	NESC Ext	62.237	81.600	101.250	0.500	0.500	0.500	142.08

Group Label	Comp. No.	Member Bolts	Comp. (ft)
Leg1	1	12	60.50 6.000
Leg2	1	16	45.28 6.000
Leg3	1	22	58.19 7.661
Leg4	1	26	61.25 8.065
Leg5	1	28	61.64 8.065
Leg6	1	30	64.34 16.835
Leg7	1	32	61.76 16.129
Leg8	1	34	58.16 15.121
XBR1	5	2	137.62 9.411
XBR2	2	3	114.36 9.411
XBR3	2	4	101.90 9.411
XBR4	2	4	115.50 9.322
XBR5	5	3	163.82 17.706
XBR6	5	4	271.95 24.601
XBR7	5	4	463.58 36.220
HBR1	5	3	167.02 16.500
HBR2	5	3	171.28 19.504
HBR3	5	3	174.44 25.360
HBR4			

133.58 29.600 6 3																					
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.76	Comp	54.76	73P	-22.340	NESX Hea	65.312	40.800	63.281	1.000	0.500	0.500	57.44	88.72	7.334	3	3
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.75	Comp	88.75	94Y	-9.397	NESX Hea	10.588	27.200	33.750	1.000	1.000	1.000	221.38	197.29	10.922	5	2
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	92.25	Comp	92.25	97X	-5.158	NESX Hea	5.591	27.200	33.750	1.000	1.000	1.000	268.17	232.94	9.475	5	2
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	5.47	Comp	5.47	79X	-2.302	NESC Ext	42.081	54.400	84.375	1.000	1.000	1.000	132.22	127.51	7.250	6	4
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.67	Comp	21.67	61X	-3.027	NESX Hea	13.968	27.200	33.750	0.500	0.750	0.500	155.87	147.38	10.253	5	2
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.55	Comp	55.55	78P	-3.102	NESC Ext	5.585	13.600	12.656	1.000	1.000	1.000	203.75	203.75	7.250	4	1
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.68	Comp	91.68	64P	-3.971	NESC Ext	4.332	27.200	25.312	0.500	0.750	0.500	282.84	244.13	23.335	5	2
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	61.78	Comp	61.78	65P	-1.202	NESC Hea	1.946	27.200	33.750	0.500	0.750	0.500	511.54	418.39	41.861	5	2
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	96.27	Tens	78.79	59Y	-5.509	NESC Hea	6.992	54.400	84.375	0.500	0.500	0.500	283.29	244.47	23.088	5	4
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	6x6x3/8	SAE	6X6X0.375	33.0	22.24	Comp	18.05	5Y	19.890	NESC Ext	110.204	163.200	303.750	281.250	6.000	12	3.110	0.875
Leg2	8x8x1/2	SAE	8X8X0.5	33.0	39.68	Tens	39.68	8Y	77.379	NESC Ext	195.030	301.600	629.999	699.999	6.000	16	3.680	1
Leg3	8x8x11/16	SAE	8X8X0.6875	33.0	48.64	Tens	48.64	11Y	128.689	NESC Ext	264.598	414.700	1191.092	1134.373	7.661	22	3.610	1
Leg4	8x8x3/4	SAE	8X8X0.75	33.0	53.84	Tens	53.84	13Y	155.162	NESC Ext	288.172	490.100	1535.623	1462.498	8.065	26	3.610	1
Leg5	8x8x13/16	SAE	8X8X0.8125	33.0	56.92	Tens	56.92	15Y	176.246	NESC Ext	309.643	527.800	1791.560	1706.247	8.065	28	3.590	1
Leg6	8x8x7/8	SAE	8X8X0.875	33.0	58.94	Comp	54.00	16Y	179.787	NESC Ext	332.928	565.500	2067.184	1968.747	16.835	30	3.590	1
Leg7	8x8x/15/16	SAE	8X8X0.9375	33.0	61.87	Comp	61.60	18Y	218.223	NESC Ext	354.234	603.200	2362.496	2249.997	16.129	32	3.590	1
Leg8	8x8x1	SAE	8X8X1	33.0	67.12	Comp	66.32	20Y	250.164	NESC Ext	377.189	640.900	2677.496	2549.996	15.121	34	3.570	1
XBR1	2.5x2x1/4	SAU	2.5X2X0.25	33.0	62.75	Comp	34.38	25X	8.590	NESX Hea	24.985	27.200	33.750	29.297	9.411	2	1.000	0.875
XBR2	3x2.5x1/4	SAU	3X2.5X0.25	33.0	92.54	Comp	75.89	27X	24.597	NESX Hea	32.410	40.800	50.625	45.328	9.411	3	1.000	0.875
XBR3	3x3x5/16	SAE	3X3X0.3125	33.0	61.12	Comp	56.68	31X	25.362	NESX Hea	44.745	54.400	84.375	66.504	9.411	4	1.000	0.875
XBR4	3x2.5x5/16	SAU	3X2.5X0.3125	33.0	55.77	Comp	46.93	35X	16.592	NESX Hea	35.352	54.400	84.375	62.637	9.322	4	1.000	0.875

XBR5	3.5x3x1/4	SAU	3.5X3X0.25	33.0	66.71	Comp	37.13	38X	13.411	NESX Hea	36.123	54.400	67.500	53.203	12.619	4	1.000	0.875
XBR6	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	72.78	Tens	72.78	48XY	25.647	NESC Ext	35.241	54.400	84.375	62.637	24.601	4	1.000	0.875
XBR7	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	89.30	Tens	89.30	54XY	27.493	NESC Ext	30.786	54.400	84.375	62.637	36.220	4	1.000	0.875
HBR1	3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.72	Comp	5.94	83P	2.425	NESC Hea	43.696	40.800	50.625	46.875	16.500	3	1.000	0.875
HBR2	4x4x1/4	SAE	4X4X0.25	33.0	98.31	Comp	8.06	85P	3.290	NESC Hea	51.121	40.800	50.625	46.875	19.504	3	1.000	0.875
HBR3	LL3.5x3.5x1/4	DAE	3.5X3.5X0.25	33.0	68.26	Comp	3.77	87P	3.079	NESC Hea	87.392	81.600	101.250	93.750	22.480	3	2.000	0.875
HBR4	LL4x4x1/4	DAE	4X4X0.25	33.0	37.73	Comp	4.44	91P	3.621	NESC Hea	102.242	81.600	101.250	93.750	29.600	3	2.000	0.875
Arm	5x3.5x5/16	SAU	5X3.5X0.3125	33.0	54.76	Comp	52.18	73Y	21.291	NESX Hea	67.911	40.800	63.281	44.613	7.334	3	1.000	0.875
ArmBR1	3x3x1/4	SAE	3X3X0.25	33.0	88.75	Comp	31.27	94P	8.507	NESX Hea	36.271	27.200	33.750	31.250	10.922	2	1.000	0.875
ArmBR2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	92.25	Comp	40.76	97XY	10.184	NESX Hea	24.985	27.200	33.750	28.641	9.475	2	1.000	0.875
Br1	5x3x5/16	SAU	5X3X0.3125	33.0	5.47	Comp	5.14	79P	2.696	NESC Ext	63.159	54.400	84.375	52.441	7.250	4	1.000	0.875
Br2	2.5x2x1/4	SAU	2.5X2X0.25	33.0	21.67	Comp	11.81	61P	2.950	NESX Hea	24.985	27.200	33.750	31.250	10.253	2	1.000	0.875
Br3	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.55	Comp	33.29	78X	3.209	NESC Ext	19.184	13.600	12.656	9.640	7.250	1	1.000	0.875
Br4	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.68	Comp	0.00	64X	0.000		21.917	27.200	25.312	20.707	23.335	2	1.000	0.875
Br5	2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	61.78	Comp	6.11	65X	1.662	NESC Ext	28.846	27.200	33.750	27.609	41.861	2	1.000	0.875
XBR8	2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	96.27	Tens	96.27	58Y	33.926	NESC Ext	35.241	54.400	84.375	62.637	23.088	4	1.000	0.875
XBR9	2.5x2x5/16	SAU	2.5X2X0.3125	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.17	53P	Angle
NESC Extreme	98.31	84Y	Angle
NESX Heavy Broken Wire	92.54	27XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	26.44	NESX Heavy Broken Wire	0.0
2	Clamp	6.85	NESC Extreme	0.0
3	Clamp	39.64	NESX Heavy Broken Wire	0.0

4	Clamp	12.17	NESC Extreme	0.0
5	Clamp	12.17	NESC Extreme	0.0
6	Clamp	12.17	NESC Extreme	0.0
7	Clamp	12.17	NESC Extreme	0.0
8	Clamp	12.17	NESC Extreme	0.0
9	Clamp	12.34	NESC Extreme	0.0
10	Clamp	3.96	NESC Heavy	0.0
11	Clamp	3.96	NESC Heavy	0.0
12	Clamp	3.59	NESC Heavy	0.0
13	Clamp	5.86	NESC Heavy	0.0
14	Clamp	4.90	NESC Heavy	0.0
15	Clamp	6.48	NESC Heavy	0.0
16	Clamp	7.38	NESC Heavy	0.0
17	Clamp	8.07	NESC Heavy	0.0
18	Clamp	10.26	NESC Heavy	0.0
19	Clamp	10.84	NESC Heavy	0.0
20	Clamp	8.02	NESC Heavy	0.0
21	Clamp	5.24	NESC Extreme	0.0
22	Clamp	3.54	NESC Extreme	0.0
23	Clamp	5.68	NESC Heavy	0.0
24	Clamp	6.49	NESC Heavy	0.0
25	Clamp	7.50	NESC Extreme	0.0
26	Clamp	9.14	NESC Heavy	0.0
27	Clamp	9.72	NESC Heavy	0.0
28	Clamp	5.95	NESC Extreme	0.0
29	Clamp	3.49	NESC Extreme	0.0
30	Clamp	1.28	NESC Heavy	0.0
31	Clamp	1.07	NESC Heavy	0.0
32	Clamp	3.76	NESC Heavy	0.0
33	Clamp	2.14	NESC Heavy	0.0
34	Clamp	12.27	NESC Extreme	0.0
35	Clamp	5.13	NESC Extreme	0.0
37	Clamp	1.24	NESC Extreme	0.0
38	Clamp	2.11	NESC Heavy	0.0
39	Clamp	2.00	NESC Heavy	0.0
40	Clamp	2.46	NESC Heavy	0.0
41	Clamp	2.34	NESC Heavy	0.0
42	Clamp	3.47	NESC Extreme	0.0
43	Clamp	3.47	NESC Extreme	0.0
44	Clamp	2.74	NESC Extreme	0.0
45	Clamp	2.74	NESC Extreme	0.0
46	Clamp	3.12	NESC Heavy	0.0
47	Clamp	2.94	NESC Heavy	0.0
49	Clamp	4.51	NESC Heavy	0.0
51	Clamp	5.25	NESC Heavy	0.0
53	Clamp	5.98	NESC Heavy	0.0
55	Clamp	7.73	NESC Heavy	0.0
57	Clamp	8.40	NESC Heavy	0.0
59	Clamp	4.26	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	1	Clamp	2P	0.000	1.599	1.809	2.414
NESC Heavy	2	Clamp	2X	0.000	1.466	1.809	2.329

NESC Heavy	3	Clamp	5P	0.000	2.116	3.257	3.884
NESC Heavy	4	Clamp	5X	0.000	1.993	3.257	3.818
NESC Heavy	5	Clamp	8P	0.000	2.116	3.298	3.919
NESC Heavy	6	Clamp	8X	0.000	1.993	3.298	3.853
NESC Heavy	7	Clamp	11P	0.000	2.116	3.257	3.884
NESC Heavy	8	Clamp	11X	0.000	1.993	3.257	3.818
NESC Heavy	9	Clamp	1Y	0.069	0.713	2.599	2.696
NESC Heavy	10	Clamp	4Y	0.000	0.493	1.918	1.980
NESC Heavy	11	Clamp	9Y	0.000	0.562	1.900	1.981
NESC Heavy	12	Clamp	12Y	0.000	0.465	1.736	1.797
NESC Heavy	13	Clamp	14Y	0.000	0.872	2.798	2.931
NESC Heavy	14	Clamp	16Y	0.000	0.657	2.360	2.450
NESC Heavy	15	Clamp	18Y	0.000	0.898	3.114	3.241
NESC Heavy	16	Clamp	19Y	0.000	1.054	3.538	3.692
NESC Heavy	17	Clamp	20Y	0.000	1.064	3.893	4.036
NESC Heavy	18	Clamp	21Y	0.000	1.270	4.970	5.130
NESC Heavy	19	Clamp	22Y	0.000	1.259	5.273	5.421
NESC Heavy	20	Clamp	25Y	0.000	0.844	3.918	4.008
NESC Heavy	21	Clamp	14P	0.000	0.872	1.763	1.967
NESC Heavy	22	Clamp	16P	0.000	0.657	1.256	1.417
NESC Heavy	23	Clamp	18P	0.000	1.086	2.625	2.841
NESC Heavy	24	Clamp	19P	0.000	1.234	3.003	3.247
NESC Heavy	25	Clamp	20P	0.000	1.237	3.360	3.581
NESC Heavy	26	Clamp	21P	0.000	1.480	4.321	4.568
NESC Heavy	27	Clamp	22P	0.000	1.462	4.637	4.862
NESC Heavy	28	Clamp	25P	0.000	0.925	2.643	2.801
NESC Heavy	29	Clamp	14XY	0.000	0.267	1.418	1.443
NESC Heavy	30	Clamp	1P	0.000	0.196	0.610	0.641
NESC Heavy	31	Clamp	3P	0.000	0.304	0.440	0.534
NESC Heavy	32	Clamp	3Y	-0.258	0.507	1.790	1.878
NESC Heavy	33	Clamp	17P	0.000	0.433	0.978	1.070
NESC Heavy	34	Clamp	1XY	0.828	1.855	1.456	2.499
NESC Heavy	35	Clamp	3XY	-0.640	-1.161	1.810	2.243
NESC Heavy	37	Clamp	1X	0.000	0.067	0.610	0.614
NESC Heavy	38	Clamp	4P	0.000	0.369	0.991	1.057
NESC Heavy	39	Clamp	4X	0.000	0.134	0.991	1.000
NESC Heavy	40	Clamp	7P	0.000	0.407	1.162	1.231
NESC Heavy	41	Clamp	7X	0.000	0.134	1.162	1.170
NESC Heavy	42	Clamp	10P	0.000	0.415	1.240	1.307
NESC Heavy	43	Clamp	10X	0.000	0.151	1.240	1.249
NESC Heavy	44	Clamp	13P	0.000	0.473	1.261	1.347
NESC Heavy	45	Clamp	13X	0.000	0.169	1.261	1.272
NESC Heavy	46	Clamp	15P	0.000	0.549	1.459	1.559
NESC Heavy	47	Clamp	15X	0.000	0.181	1.459	1.470
NESC Heavy	49	Clamp	18X	0.000	0.188	2.249	2.257
NESC Heavy	51	Clamp	19X	0.000	0.180	2.621	2.627
NESC Heavy	53	Clamp	20X	0.000	0.173	2.986	2.991
NESC Heavy	55	Clamp	21X	0.000	0.207	3.857	3.863
NESC Heavy	57	Clamp	22X	0.000	0.203	4.194	4.199
NESC Heavy	59	Clamp	25X	0.000	0.081	2.126	2.128
NESC Extreme	1	Clamp	2P	2.739	1.977	0.565	3.425
NESC Extreme	2	Clamp	2X	2.739	1.977	0.565	3.425
NESC Extreme	3	Clamp	5P	4.356	4.085	1.181	6.087
NESC Extreme	4	Clamp	5X	4.356	4.085	1.181	6.087
NESC Extreme	5	Clamp	8P	4.356	4.085	1.181	6.087
NESC Extreme	6	Clamp	8X	4.356	4.085	1.181	6.087
NESC Extreme	7	Clamp	11P	4.356	4.085	1.181	6.087
NESC Extreme	8	Clamp	11X	4.356	4.085	1.181	6.087
NESC Extreme	9	Clamp	1Y	-1.449	5.514	2.360	6.170

NESC Extreme	10	Clamp	4Y	0.000	1.297	0.606	1.431
NESC Extreme	11	Clamp	9Y	0.000	1.272	0.596	1.404
NESC Extreme	12	Clamp	12Y	0.000	1.459	0.876	1.702
NESC Extreme	13	Clamp	14Y	0.000	2.472	1.224	2.758
NESC Extreme	14	Clamp	16Y	0.000	1.675	0.961	1.931
NESC Extreme	15	Clamp	18Y	0.000	1.697	0.970	1.954
NESC Extreme	16	Clamp	19Y	0.000	1.713	0.976	1.971
NESC Extreme	17	Clamp	20Y	0.000	2.747	2.060	3.434
NESC Extreme	18	Clamp	21Y	0.000	2.307	1.585	2.799
NESC Extreme	19	Clamp	22Y	0.000	2.276	1.572	2.766
NESC Extreme	20	Clamp	25Y	0.000	2.482	1.654	2.983
NESC Extreme	21	Clamp	14P	0.000	2.442	0.944	2.618
NESC Extreme	22	Clamp	16P	0.000	1.642	0.662	1.770
NESC Extreme	23	Clamp	18P	0.000	2.161	0.933	2.354
NESC Extreme	24	Clamp	19P	0.000	2.157	0.923	2.346
NESC Extreme	25	Clamp	20P	0.000	3.172	2.003	3.752
NESC Extreme	26	Clamp	21P	0.000	2.822	1.516	3.204
NESC Extreme	27	Clamp	22P	0.000	2.772	1.503	3.154
NESC Extreme	28	Clamp	25P	0.000	2.649	1.349	2.973
NESC Extreme	29	Clamp	14XY	0.000	1.522	0.850	1.743
NESC Extreme	30	Clamp	1P	0.000	0.527	0.328	0.620
NESC Extreme	31	Clamp	3P	0.000	0.347	0.232	0.417
NESC Extreme	32	Clamp	3Y	0.630	-1.471	0.854	1.814
NESC Extreme	33	Clamp	17P	0.000	0.782	0.577	0.972
NESC Extreme	34	Clamp	1XY	1.890	5.823	-0.401	6.135
NESC Extreme	35	Clamp	3XY	-1.071	-2.127	0.947	2.563
NESC Extreme	37	Clamp	1X	0.000	0.527	0.328	0.620
NESC Extreme	38	Clamp	4P	0.000	0.706	0.424	0.823
NESC Extreme	39	Clamp	4X	0.000	0.706	0.424	0.823
NESC Extreme	40	Clamp	7P	0.000	0.706	0.425	0.824
NESC Extreme	41	Clamp	7X	0.000	0.706	0.425	0.824
NESC Extreme	42	Clamp	10P	0.000	1.412	1.010	1.736
NESC Extreme	43	Clamp	10X	0.000	1.412	1.010	1.736
NESC Extreme	44	Clamp	13P	0.000	1.111	0.804	1.371
NESC Extreme	45	Clamp	13X	0.000	1.111	0.804	1.371
NESC Extreme	46	Clamp	15P	0.000	1.140	0.822	1.405
NESC Extreme	47	Clamp	15X	0.000	1.140	0.822	1.405
NESC Extreme	49	Clamp	18X	0.000	1.159	0.831	1.426
NESC Extreme	51	Clamp	19X	0.000	1.139	0.819	1.403
NESC Extreme	53	Clamp	20X	0.000	2.176	1.902	2.890
NESC Extreme	55	Clamp	21X	0.000	1.603	1.388	2.121
NESC Extreme	57	Clamp	22X	0.000	1.592	1.383	2.109
NESC Extreme	59	Clamp	25X	0.000	1.270	1.209	1.754
NESX Heavy Broken Wire	1	Clamp	2P	13.200	0.410	0.555	13.218
NESX Heavy Broken Wire	2	Clamp	2X	0.000	1.466	1.809	2.329
NESX Heavy Broken Wire	3	Clamp	5P	19.800	0.500	0.774	19.821
NESX Heavy Broken Wire	4	Clamp	5X	0.000	1.993	3.257	3.818
NESX Heavy Broken Wire	5	Clamp	8P	0.000	2.116	3.298	3.919
NESX Heavy Broken Wire	6	Clamp	8X	0.000	1.993	3.298	3.853
NESX Heavy Broken Wire	7	Clamp	11P	0.000	2.116	3.257	3.884
NESX Heavy Broken Wire	8	Clamp	11X	0.000	1.993	3.257	3.818
NESX Heavy Broken Wire	9	Clamp	1Y	0.069	0.713	2.599	2.696
NESX Heavy Broken Wire	10	Clamp	4Y	0.000	0.493	1.918	1.980
NESX Heavy Broken Wire	11	Clamp	9Y	0.000	0.562	1.900	1.981
NESX Heavy Broken Wire	12	Clamp	12Y	0.000	0.465	1.736	1.797
NESX Heavy Broken Wire	13	Clamp	14Y	0.000	0.872	2.798	2.931
NESX Heavy Broken Wire	14	Clamp	16Y	0.000	0.657	2.360	2.450
NESX Heavy Broken Wire	15	Clamp	18Y	0.000	0.898	3.114	3.241
NESX Heavy Broken Wire	16	Clamp	19Y	0.000	1.054	3.538	3.692

NESX Heavy Broken Wire	17	Clamp	20Y	0.000	1.064	3.893	4.036
NESX Heavy Broken Wire	18	Clamp	21Y	0.000	1.270	4.970	5.130
NESX Heavy Broken Wire	19	Clamp	22Y	0.000	1.259	5.273	5.421
NESX Heavy Broken Wire	20	Clamp	25Y	0.000	0.844	3.918	4.008
NESX Heavy Broken Wire	21	Clamp	14P	0.000	0.872	1.763	1.967
NESX Heavy Broken Wire	22	Clamp	16P	0.000	0.657	1.256	1.417
NESX Heavy Broken Wire	23	Clamp	18P	0.000	1.086	2.625	2.841
NESX Heavy Broken Wire	24	Clamp	19P	0.000	1.234	3.003	3.247
NESX Heavy Broken Wire	25	Clamp	20P	0.000	1.237	3.360	3.581
NESX Heavy Broken Wire	26	Clamp	21P	0.000	1.480	4.321	4.568
NESX Heavy Broken Wire	27	Clamp	22P	0.000	1.462	4.637	4.862
NESX Heavy Broken Wire	28	Clamp	25P	0.000	0.925	2.643	2.801
NESX Heavy Broken Wire	29	Clamp	14XY	0.000	0.267	1.418	1.443
NESX Heavy Broken Wire	30	Clamp	1P	0.000	0.196	0.610	0.641
NESX Heavy Broken Wire	31	Clamp	3P	0.000	0.304	0.440	0.534
NESX Heavy Broken Wire	32	Clamp	3Y	-0.258	0.507	1.790	1.878
NESX Heavy Broken Wire	33	Clamp	17P	0.000	0.433	0.978	1.070
NESX Heavy Broken Wire	34	Clamp	1XY	0.828	1.855	1.456	2.499
NESX Heavy Broken Wire	35	Clamp	3XY	-0.640	-1.161	1.810	2.243
NESX Heavy Broken Wire	37	Clamp	1X	0.000	0.067	0.610	0.614
NESX Heavy Broken Wire	38	Clamp	4P	0.000	0.369	0.991	1.057
NESX Heavy Broken Wire	39	Clamp	4X	0.000	0.134	0.991	1.000
NESX Heavy Broken Wire	40	Clamp	7P	0.000	0.407	1.162	1.231
NESX Heavy Broken Wire	41	Clamp	7X	0.000	0.134	1.162	1.170
NESX Heavy Broken Wire	42	Clamp	10P	0.000	0.415	1.240	1.307
NESX Heavy Broken Wire	43	Clamp	10X	0.000	0.151	1.240	1.249
NESX Heavy Broken Wire	44	Clamp	13P	0.000	0.473	1.261	1.347
NESX Heavy Broken Wire	45	Clamp	13X	0.000	0.169	1.261	1.272
NESX Heavy Broken Wire	46	Clamp	15P	0.000	0.549	1.459	1.559
NESX Heavy Broken Wire	47	Clamp	15X	0.000	0.181	1.459	1.470
NESX Heavy Broken Wire	49	Clamp	18X	0.000	0.188	2.249	2.257
NESX Heavy Broken Wire	51	Clamp	19X	0.000	0.180	2.621	2.627
NESX Heavy Broken Wire	53	Clamp	20X	0.000	0.173	2.986	2.991
NESX Heavy Broken Wire	55	Clamp	21X	0.000	0.207	3.857	3.863
NESX Heavy Broken Wire	57	Clamp	22X	0.000	0.203	4.194	4.199
NESX Heavy Broken Wire	59	Clamp	25X	0.000	0.081	2.126	2.128

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	26.540	-0.001	62.322	3593.222	-34.483	21.097
NESC Extreme	65.016	31.614	20.904	8605.540	5382.514	38.121
NESX Heavy Broken Wire	23.735	32.999	58.585	3119.542	5997.917	377.497

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 57016.4
Total: 57016.4

*** End of Report

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Subject:	Foundation Analysis CL&P Tower # Dist West River x-ing (Uplift Pier)
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Foundation Analysis

(Uplift Pier)

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 22·1.1·kips = 24.2·kips	(User Input from PLS node 26XY)
Compression =	Comp := 160·1.1·kips = 176·kips	(User Input from PLS node 26XY)
Uplift =	Uplift := 274·1.1·kips = 301.4·kips	(User Input from PLS node 26Y)

Tower Properties:

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

Foundation Properties:

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

Subgrade Properties:

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

Calculated Data:

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

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

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 100ft^2$

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

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

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

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

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

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

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

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

Check Uplift:

Required Factor of Safety = $F_S := 1$

$ActualFS := \frac{Mass_{Tot}}{Uplift} = 1.52$

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

Uplift_Check = "OK"

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pier}} + \frac{Shear \cdot \left(P_H + Pd_t\right)}{S_{pad}} = 4.6 \cdot ksf$

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

Bearing_Check = "OK"

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Subject:	Foundation Analysis CL&P Tower # Dist West River x-ing (Compression Pier)
Location:	Old Saybrook, CT
Rev. 0: 9/7/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.16

Foundation Analysis

(Compression Pier)

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 39·1.1·kips = 42.9·kips	(User Input from PLS node 26X)
Compression =	Comp := 299·1.1·kips = 328.9·kips	(User Input from PLS node 26X)
Uplift =	Uplift := 106·1.1·kips = 116.6·kips	(User Input from PLS node 26P)

Tower Properties:

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

Foundation Properties:

Pier Height =	$P_H := 0 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 0 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 0 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0 \cdot ft$	(User Input)
Pad Width 1 =	$Pd_{w1} := 10 \cdot ft$	(User Input)
Pad Width 2 =	$Pd_{w2} := 25 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 7.5 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 110 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

Calculated Data:

Cross Sectional Area of Pad = $A_{pier} := Pd_{w1} \cdot Pd_{w2} = 250 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{Pd_{w2} \cdot Pd_{w1}^2}{6} = 417 \cdot ft^3$

Volume of the Concrete Pad = $V_{pad} := Pd_{w1} \cdot Pd_{w2} \cdot Pd_t = 1875 \cdot ft^3$

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

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 1875 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 281.2 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1$

$ActualFS := \frac{Mass_{Conc}}{Uplift} = 2.41$

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

Uplift_Check = "OK"

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pier}} + \frac{Shear \cdot \left(P_H + Pd_t \right)}{S_{pad}} = 3.21 \cdot ksf$

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

Bearing_Check = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTV2042	DATE:	03/09/2016	RF DESIGN ENG:	Md Mateen	RF PERF ENG:		RFDS PROGRAM TYPE:	2017 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:		RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 2C
REVISION:	Final	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	MM093Q@ATT.COM	RF PERF EMAIL:		State:	Final
INITIATIVE /PROJECT:	LTE 2C 1900 A3-A4 w/ Bronze Standard configuration. GSM is Decommissioned it will be removed.					TRIDENT:		Status:	Approved
						GSM FREQUENCY:	850	RFDS ID:	1111492
						UMTS FREQUENCY:	850, 1900	RFDS Version:	2.00
						LTE FREQUENCY:	700, 1900	Created By:	mm093q
								Date Created:	3/9/2016 9:44:48 AM
								Date Updated:	7/13/2016 2:45:39 PM
								Updated By:	mm093q
						I-PLAN JOB # 1:	NER-RCTB-12-04132	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 2C
						I-PLAN JOB # 2:		IPLAN PRD GRP || SUB GRP #2:	
						I-PLAN JOB # 3:		IPLAN PRD GRP || SUB GRP #3:	
						I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:	

Section 2 - LOCATION INFORMATION

USID:	59408	FA LOCATION CODE:	10035291	LOCATION NAME:	OLD SAYBROOK FERRY RD	ORACLE PTN # 1:		PACE JOB # 1:	MRCTB018143
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:		PACE JOB # 2:	
ADDRESS:	226 FERRY ROAD	CITY:	OLD SAYBROOK	STATE:	CT	ORACLE PTN # 3:		PACE JOB # 3:	
ZIP CODE:	06475	COUNTY:	MIDDLESEX	MSA / RSA:		ORACLE PTN # 4:		PACE JOB # 4:	
LATITUDE (D-M-S):	41d 19m10.77204s	LONGITUDE (D-M-S):	-72d -21m-5.796s	LAT (DEC. DEG.):	41.3196589	SEARCH RING NAME:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	CT-2042 OLDSAYBROOK FERRY RD FROM RT 9 SOUTH EXIT 1 TO I 95 SOUTH EXIT 68 STAY TO THE RIGHT FOLLOW TO RT 1 TAKE A LEFT AT STOP SIGN FOLLOW RT 1 FERRY ROAD 1 2 MILES TO NORTHEAST UTILITIES TOWER SITE AT THE BASE FROM I 95 NORTH EXT 67 RT 154 BEAR RIGHT TO RT 1 AT LIGHT TURN LEFT RT 1 FOLLOW 1 5 MILES TO RIVER FOR NORTHEAST UTILITIES TOWER. SITE IS A GROUND LEVEL SHELTERCIRCUIT ID'S .. DEMARC LOCATED INSIDE SHELTERGSM: DHXV238755 ET76 DHXV238756 ET84POWER CO:CL&P 18002862000METER# 88-702-414					SEARCH RING ID:		CASPR INITIATIVE # 1:	
						BTA:		CASPR INITIATIVE # 2:	
						LONG (DEC. DEG.):	-72.3516100	CASPR INITIATIVE # 3:	
						BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE # 4:	
						AM STUDY REQ'D (Y/N):	No		
						FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	SELF SUPPORT	MARKET LOCATION 700 MHz Band:		
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:		
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	0.00			MARKET LOCATION 1900 MHz Band:		
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:		
						MARKET LOCATION WCS Band:		
						MARKET LOCATION Future Band:		

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR B	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR C	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR B	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR C	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS							
RBS ID:	96576	96577	197245	300969	350902							
CTS COMMON ID:	032D2042	319D2042	CTV2042	CTU2042	CTL02042							
CELL ID / BCF:	032D2042	032D2042	CTV2042	CTV2042	CTL02042							
BTA/TID:	184G	184P	184U	184W	184L							
4-DIGIT SITE ID:	2042	2042	2042	2042	2042							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	GROUND	GROUND	INTERNAL	INTERNAL	INTERNAL							
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	SOUTH	CT SOUTH-EAST	CT SOUTH-EAST	CT-NORTH	CT-SOUTH							
RF DISTRICT:	SOUTH	NPO TRIAGE	MIDDLETOWN	NPO TRIAGE	NPO TRIAGE							
OPS ZONE:	NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS							
RF ZONE:	BCT03 - NEW LONDON	HOTSEAT	BCT03	BCT03	HOTSEAT							
BASE STATION TYPE:	BASE	BASE	OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:	OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD							
DISASTER PRIORITY:	0	1	1	0	3							

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS							
RBS ID:			197245	300969	350902							
CTS COMMON ID:			CTV2042	CTU2042	CTL02042							
CELL ID / BCF:			CTV2042	CTV2042	CTL02042							
BTA/TID:			184U	184W	184L							
4-DIGIT SITE ID:			2042	2042	2042							
COW OR TOY?:			No	No	No							
CELL SITE TYPE:			SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:			MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:			INTERNAL	INTERNAL	INTERNAL							
ORIGINATING CO:			CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:			GOLD	GOLD	GOLD							
OPS DISTRICT:			CT-North	CT-North	CT-South							
RF DISTRICT:			Middletown	NPO Triage	NPO Triage							
OPS ZONE:			NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS	NE_CT_S_MDSX_SE_CS							
RF ZONE:			BCT03	BCT03	Hotseat							
BASE STATION TYPE:			OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:			OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD	OLD SAYBROOK FERRY RD							
DISASTER PRIORITY:			1	0	3							

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:	MIDDLETOWN-GSM MTSO-BSC-3	MIDDLETOWN-GSM MTSO-BSC-3	MIDDLETOWN RNC05	MIDDLETOWN RNC05	FF01							
LAC:	05003	05003	05990	05990								
RAC:												
EQUIPMENT VENDOR:	NOKIA	NOKIA	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	ULTRASITE	3206 INDOOR	3206 INDOOR	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:	0	0	0	0	2042							
PARENT NAME:	MIDDLETOWN-GSM MTSO-BSC-3	MIDDLETOWN-GSM MTSO-BSC-3	MIDDLETOWN RNC05	MIDDLETOWN RNC05	FF01							

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:			MDTWCTNICRBR05	MDTWCTNICRBR05	FF01							
LAC:			05990	05990								
RAC:												
EQUIPMENT VENDOR:			ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:			3206 INDOOR	3206 INDOOR	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:			Yes	Yes	Yes							
NODE B NUMBER:			0	0	2042							
PARENT NAME:			MIDDLETOWN RNC05	MIDDLETOWN RNC05								

Section 8 - RBS/SECTOR ASSOCIATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS														
CTS Common ID	032D2042	319D2042	CTV2042	CTU2042	CTL02042														
Soft Sector IDs	319G20421	319P20421	CTV20421	CTU20427	CTL02042_7A_1														
	319G20422	319P20423	CTV20422	CTU20428	CTL02042_7B_1														
	319G20423	319P20428	CTV20423	CTU20429	CTL02042_7C_1														
			CTV2042A																
			CTV2042B																
			CTV2042C																

Section 8 - RBS/SECTOR ASSOCIATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS														
CTS Common ID			CTV2042	CTU2042	CTL02042														
Soft Sector IDs			CTV20421	CTU20427	CTL02042_7A_1														
			CTV20422	CTU20428	CTL02042_7B_1														
			CTV20423	CTU20429	CTL02042_7C_1														
			CTV2042A		CTL02042_9A_1														
			CTV2042B		CTL02042_9B_1														
			CTV2042C		CTL02042_9C_1														

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
USEID (excluding Hard Sector)	59408.850.25G.1	59408.1900.25G.1	59408.850.3G.1	59408.1900.3G.2	59408.850.3G.2																				
SECTOR A **SOFT SECTOR ID**	319G20421	319P20421	CTV20421	CTU20427	CTV2042A	CTL02042_7A_1																			
SECTOR B	319G20422	319P20428	CTV20422	CTU20428	CTV2042B	CTL02042_7B_1																			
SECTOR C	319G20423	319P20423	CTV20423	CTU20429	CTV2042C	CTL02042_7C_1																			
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - SOFT SECTOR ID - final

	GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
USEID (excluding Hard Sector)			59408.850.3G.1	59408.1900.3G.2	59408.850.3G.2																				
SECTOR A **SOFT SECTOR ID**			CTV20421	CTU20427	CTV2042A	CTL02042_7A_1	CTL02042_9A_1																		
SECTOR B			CTV20422	CTU20428	CTV2042B	CTL02042_7B_1	CTL02042_9B_1																		
SECTOR C			CTV20423	CTU20429	CTV2042C	CTL02042_7C_1	CTL02042_9C_1																		
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - existing

	GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
USEID (excluding Hard Sector)	59408.850.25G.1	59408.1900.25G.1	59408.850.3G.1	59408.1900.3G.2	59408.850.3G.2																				
SECTOR A **CELL NUMBER**						15																			
SECTOR B						16																			
SECTOR C						17																			
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - final

	GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
USEID (excluding Hard Sector)			59408.850.3G.1	59408.1900.3G.2	59408.850.3G.2																				
SECTOR A **CELL NUMBER**						15	8																		
SECTOR B						16	9																		
SECTOR C						17	10																		
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 10 - CID/SAC - existing

		GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																				
SECTOR A	CID/SAC	20421	20421	20421	20427	60421																						
SECTOR B		20422	20428	20422	20428	60422																						
SECTOR C		20423	20423	20423	20429	60423																						
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 10 - CID/SAC - final

		GSM 1ST 850	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																				
SECTOR A	CID/SAC			20421	20427	60421																						
SECTOR B				20422	20428	60422																						
SECTOR C				20423	20429	60423																						
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 15A - CURRENT SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET		AM-X-CD-14-65-00T-RET	AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW		KMW	KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9		48X11.8X5.9	48X11.8X5.9			
ANTENNA WEIGHT	36.4		36.4	36.4			
AZIMUTH	143		23	143			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195		195	195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	1		0	1			
FEEDER AMOUNT	2		2	2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	INTERNAL		INTERNAL	INTERNAL			
SURGE ARRESTOR (QTY/MODEL)			2 Andrew APTDC-BDFDM-DBW Broadband	1 Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017			2 KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				1 Powerwave / 7070			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			1 K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 RRUS-11				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59408.A.850.3G.1	CTV20421	CTV20421		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411									
	PORT 2		59408.A.850.3G.1	CTV2042A	CTV2042A		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411									
	PORT 3		59408.A.1900.3G.2	CTU20427	CTU20427		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (1900)	275.070411									
ANTENNA POSITION 3	PORT 1		59408.A.700.4G.1	CTL02042_7A_1	CTL02042_7A_1		LTE 700	AM-X-CD-14-65-00T-RET_725MHz_04DT	14.1		4	BOTTOM	RFS 1-5/8 (1900)	275.070411									

ANTENNA POSITION 4	**PORT 1**		59408.A.850.25G.1	319G20421			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411					22.38	306.9			

Section 15B - CURRENT SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET		AM-X-CD-14-65-00T-RET	AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW		KMW	KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9		48X11.8X5.9	48X11.8X5.9			
ANTENNA WEIGHT	36.4		36.4	36.4			
AZIMUTH	263		143	263			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195		195	195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	1		0	1			
FEEDER AMOUNT	2		2	2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	INTERNAL		INTERNAL	INTERNAL			
SURGE ARRESTOR (QTY/MODEL)			2 Andrew APTDC-BDFDM-DBW Broadband	1 Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017			2 KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			1 K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 RRUS-11				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59408.B.850.3G.1	CTV20422	CTV20422		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411									
	PORT 2		59408.B.850.3G.1	CTV2042B	CTV2042B		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411									
	PORT 3		59408.B.1900.3G.2	CTU20428	CTU20428		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (1900)	275.070411									
ANTENNA POSITION 3	PORT 1		59408.B.700.4G.1	CTL02042_7B_1	CTL02042_7B_1		LTE 700	AM-X-CD-14-65-00T-RET_725MHz_02DT	14.1		2	BOTTOM	RFS 1-5/8 (1900)	275.070411									
ANTENNA POSITION 4	PORT 1		59408.B.850.25G.1	319G20422			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411					22.38	306.9			

Section 15C - CURRENT SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET		AM-X-CD-14-65-00T-RET	AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW		KMW	KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9		48X11.8X5.9	48X11.8X5.9			
ANTENNA WEIGHT	36.4		36.4	36.4			
AZIMUTH	23		263	23			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195		195	195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT	2		2	2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	INTERNAL		INTERNAL	INTERNAL			
SURGE ARRESTOR (QTY/MODEL)			2 Andrew APTDC-BDFDM-DBW Broadband	1 Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017			2 KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			1 K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 RRUS-11				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59408.C.850.3G.1	CTV20423	CTV20423		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411									
	PORT 2		59408.C.850.3G.1	CTV2042C	CTV2042C		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411									
	PORT 3		59408.C.1900.3G.2	CTU20429	CTU20429		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (1900)	275.070411									
ANTENNA POSITION 3	PORT 1		59408.C.700.4G.1	CTL02042_7C_1	CTL02042_7C_1		LTE 700	AM-X-CD-14-65-00T-RET_725MHz_04DT	14.1		4	BOTTOM	RFS 1-5/8 (1900)	275.070411									
ANTENNA POSITION 4	PORT 1		59408.C.850.25G.1	319G20423			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411					22.38	306.9			

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		SBNHH-1D65A					
ANTENNA VENDOR		Andrew					
ANTENNA SIZE (H x W x D)		55X11.9X7.1					
ANTENNA WEIGHT		33.5					
AZIMUTH		23					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		195					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)		4 Andrew APTDC-BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		1 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 CCI DTMABP7819VG12A					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-12+RRUS-A2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3	59408.A.1900.4G.tmp1	59408.A.1900.4G.1	CTL02042_9A_1	CTL02042_9A_1		LTE 1900	SBNHH-1D65A_1930MHz_04DT	16.9		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		3	

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		SBNHH-1D65A					
ANTENNA VENDOR		Andrew					
ANTENNA SIZE (H x W x D)		55X11.9X7.1					
ANTENNA WEIGHT		33.5					
AZIMUTH		143					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		195					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)		4 Andrew APTDC-BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		1 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 CCI DTMABP7819VG12A					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-12+RRUS-A2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3	59408.B.1900.4G.tmp1	59408.B.1900.4G.1	CTL02042_9B_1	CTL02042_9B_1		LTE 1900	SBNHH-1D65A_1930MHz_02DT	16.9		2	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		11	

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		SBNHH-1D65A					
ANTENNA VENDOR		Andrew					
ANTENNA SIZE (H x W x D)		55X11.9X7.1					
ANTENNA WEIGHT		33.5					
AZIMUTH		263					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		195					
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal					
SURGE ARRESTOR (QTY/MODEL)		4 Andrew APTDC-BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		1 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 CCI DTMABP7819VG12A					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-12+RRUS-A2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 3	59408.C.1900.4G.tmp1	59408.C.1900.4G.1	CTL02042_9C_1	CTL02042_9C_1		LTE 1900	SBNHH-1D65A_1930MHz_04DT	16.9		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		19	

Section 17A - FINAL SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET	SBNHH-1D65A		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW	Andrew		KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9	55X11.9X7.1		48X11.8X5.9			
ANTENNA WEIGHT	36.4	33.5		36.4			
AZIMUTH	143	23		143			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195	195		195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	1	0		1			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)	6	Andrew APTDC-BDFDM-DBW Broadband	1	Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017	1 Kaelus DBC2055F1V1-2	2	KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)			1	Powerwave / 7070			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)	2 CCI DTMABP7819VG12A	1	Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860		1	K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-11						
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1 RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59408.A.850.3G.1	59408.A.850.3G.1	CTV20421	CTV20421		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411						320.63		1	
	PORT 2	59408.A.850.3G.1,59408.A.850.3G.2	59408.A.850.3G.1	CTV2042A	CTV2042A		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411						320.63		2	
	PORT 3	59408.A.1900.3G.2	59408.A.1900.3G.2	CTU20427	CTU20427		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (850)	275.070411						372.39		1	
ANTENNA POSITION 2	PORT 1	59408.A.700.4G.1	59408.A.700.4G.1	CTL02042_7A_1	CTL02042_7A_1		LTE 700	SBNHH-1D65A_725MHz_04DT	14.1		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						629.5061		3	
	PORT 3	59408.A.1900.4G.tmp1	59408.A.1900.4G.1	CTL02042_9A_1	CTL02042_9A_1		LTE 1900	SBNHH-	16.9		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		3	

								1D65A_1930MHz_04DT															
ANTENNA POSITION 4	**PORT 1**		59408.A.850.25G.1	319G20421			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411					22.38	306.9		7	

Section 17B - FINAL SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET	SBNHH-1D65A		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW	Andrew		KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9	55X11.9X7.1		48X11.8X5.9			
ANTENNA WEIGHT	36.4	33.5		36.4			
AZIMUTH	263	143		263			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195	195		195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	1	0		1			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		6 Andrew APTDC-BDFDM-DBW Broadband		1 Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017	1 Kaelus DBC2055F1V1-2		2 KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)	2 CCI DTMABP7819VG12A		1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			1 K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-11					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-12+RRUS-A2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59408.B.850.3G.1	59408.B.850.3G.1	CTV20422	CTV20422		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411						320.63		9	
	PORT 2	59408.B.850.3G.1,59408.B.850.3G.2	59408.B.850.3G.1	CTV2042B	CTV2042B		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411						320.63		10	
	PORT 3	59408.B.1900.3G.2	59408.B.1900.3G.2	CTU20428	CTU20428		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (850)	275.070411						372.39		9	
ANTENNA POSITION 2	PORT 1	59408.B.700.4G.1	59408.B.700.4G.1	CTL02042_7B_1	CTL02042_7B_1		LTE 700	SBNHH-1D65A_725MHz_02DT	14.1		2	BOTTOM	RFS 1-5/8 (1900)	275.070411						629.5061		11	
	PORT 3	59408.B.1900.4G.tmp1	59408.B.1900.4G.1	CTL02042_9B_1	CTL02042_9B_1		LTE 1900	SBNHH-1D65A_1930MHz_02	16.9		2	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		11	

								DT															
ANTENNA POSITION 4	**PORT 1**		59408.B.850.25G.1	319G20422			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_02DT	14.8		2	None	RFS 1-5/8 (850)	275.070411					22.38	306.9		15	

Section 17C - FINAL SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET	SBNHH-1D65A		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	KMW	Andrew		KMW			
ANTENNA SIZE (H x W x D)	48X11.8X5.9	55X11.9X7.1		48X11.8X5.9			
ANTENNA WEIGHT	36.4	33.5		36.4			
AZIMUTH	23	263		23			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	195	195		195			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)	6	Andrew APTDC-BDFDM-DBW Broadband	1	Polyphaser 1000860			
DIPLEXER (QTY/MODEL)	2 KMW / KDXCV0012017	1 Kaelus DBC2055F1V1-2	2	KMW / KDXCV0012017			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)	2 CCI DTMABP7819VG12A	1	Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860		1	K SBT 782-10253			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-11						
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1 RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2	LTE 1900 will be 2C at the site with Bronze Standard configuration, replace the exisiting LTE Antenna with Hex port antenna and move to POS2, Add LTE 1900 RRUS-12+RRUS-A2, Install Diplexer, TMA and 2 1-5/8 Coax, Swap DUL with DUS +XMU						
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PC:PA2C:PB:PA2B:_:_:_:_:_:_:_:_:D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59408.C.850.3G.1	59408.C.850.3G.1	CTV20423	CTV20423		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411						320.63		17	
	PORT 2	59408.C.850.3G.1,59408.C.850.3G.2	59408.C.850.3G.1	CTV2042C	CTV2042C		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411						320.63		18	
	PORT 3	59408.C.1900.3G.2	59408.C.1900.3G.2	CTU20429	CTU20429		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_02DT	16.29		2	None	RFS 1-5/8 (850)	275.070411						372.39		17	
ANTENNA POSITION 2	PORT 1	59408.C.700.4G.1	59408.C.700.4G.1	CTL02042_7C_1	CTL02042_7C_1		LTE 700	SBNHH-1D65A_725MHz_04DT	14.1		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						629.5061		19	
	PORT 3	59408.C.1900.4G.tmp1	59408.C.1900.4G.1	CTL02042_9C_1	CTL02042_9C_1		LTE 1900	SBNHH-1D65A_1930MHz_04	16.9		4	BOTTOM	RFS 1-5/8 (1900)	275.070411						2133.0449		19	

								DT															
ANTENNA POSITION 4	**PORT 1**		59408.C.850.25G.1	319G20423			GSM 850	AM-X-CD-14-65-00T-RET_850MHz_04DT	14.8		4	None	RFS 1-5/8 (850)	275.070411					22.38	306.9		23	

Diagram - Sector	A	Diagram File Name - CT2042_A_B_C_BrnzStand_2C_Rev3.vsd					
Atoll Site Name -	CTV2042	Location Name -	OLD SAYBROOK FERRY RD	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

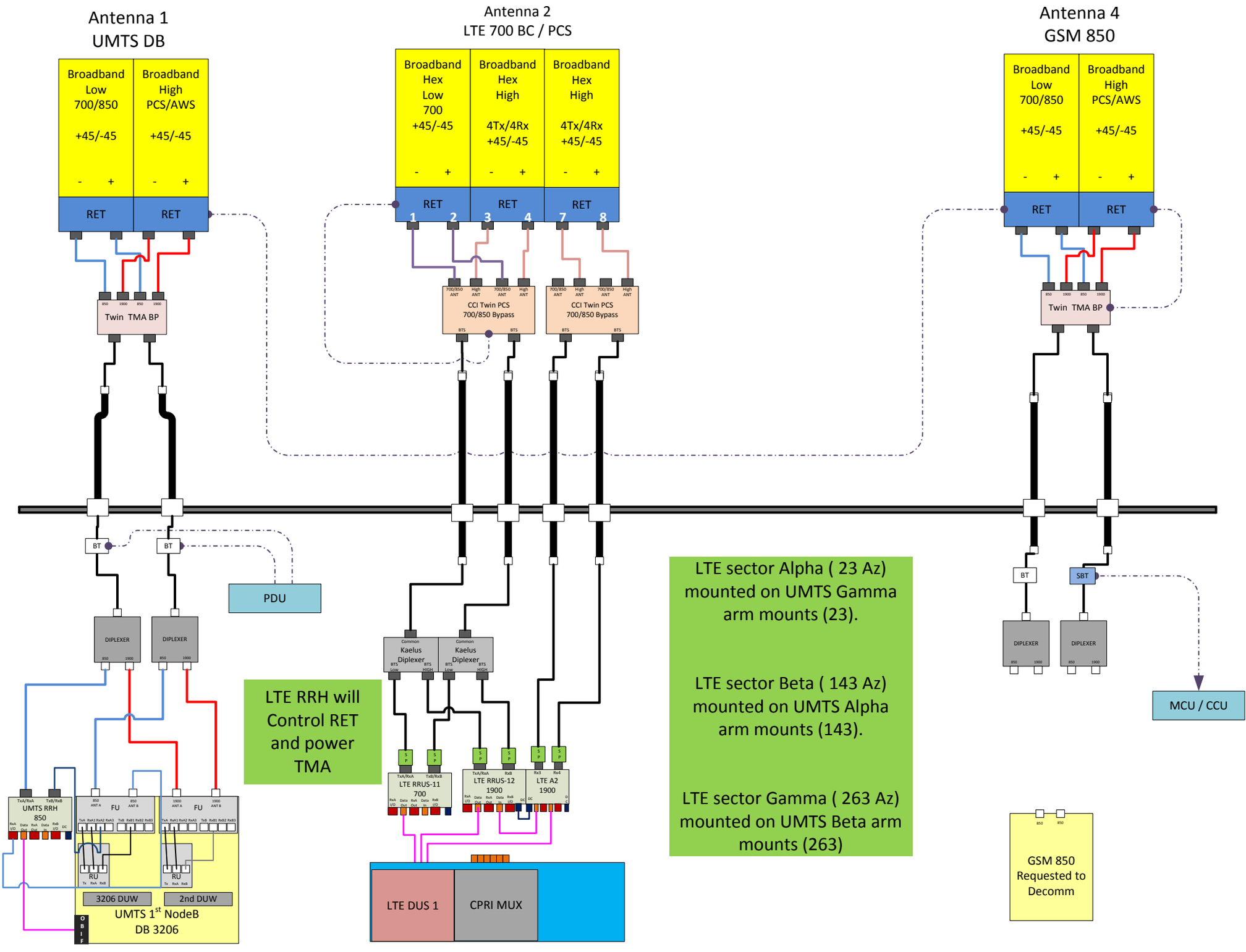


Diagram - Sector	B	Diagram File Name - CT2042_A_B_C_BrnzStand_2C_Rev3.vsd					
Atoll Site Name -	CTV2042	Location Name -	OLD SAYBROOK FERRY RD	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

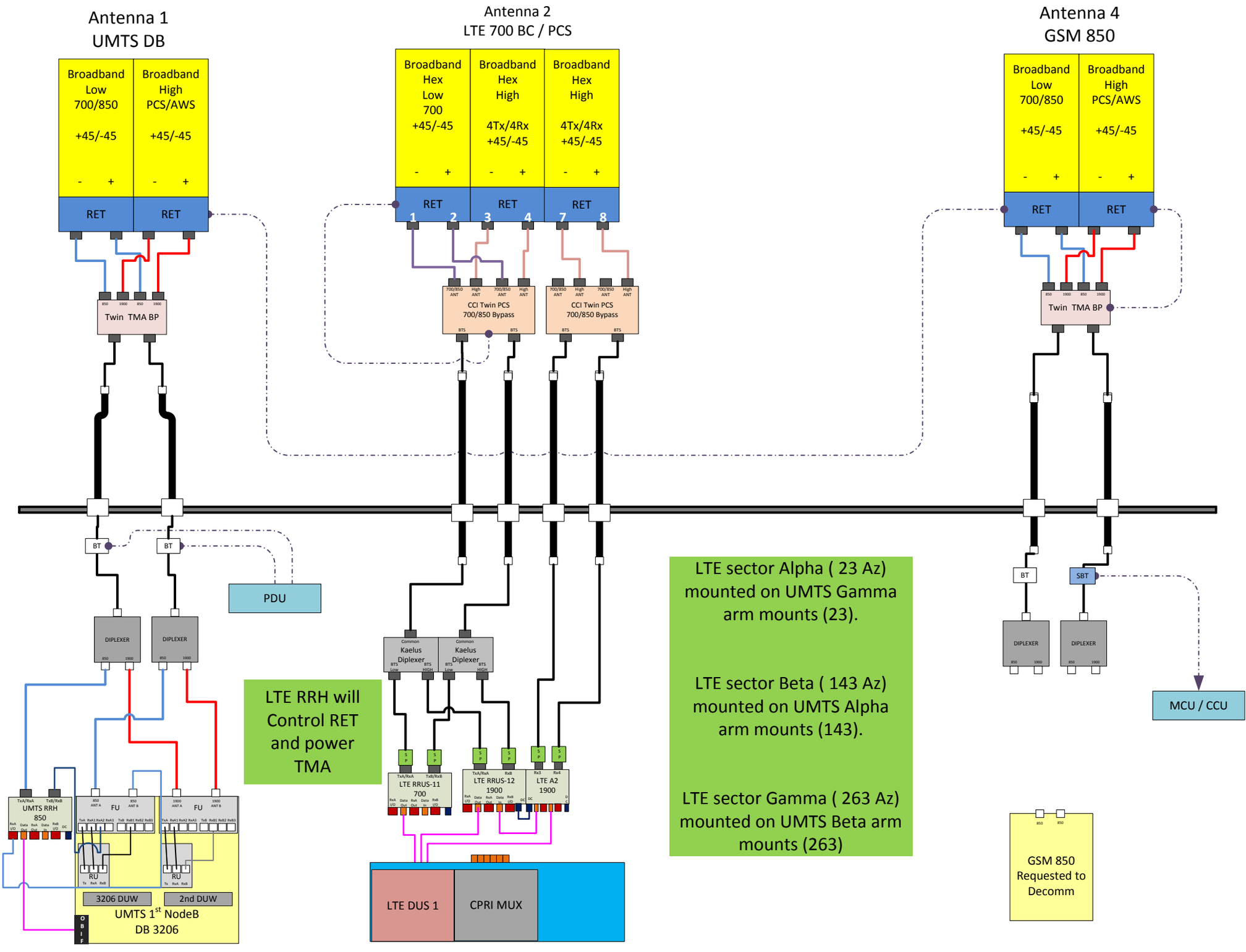
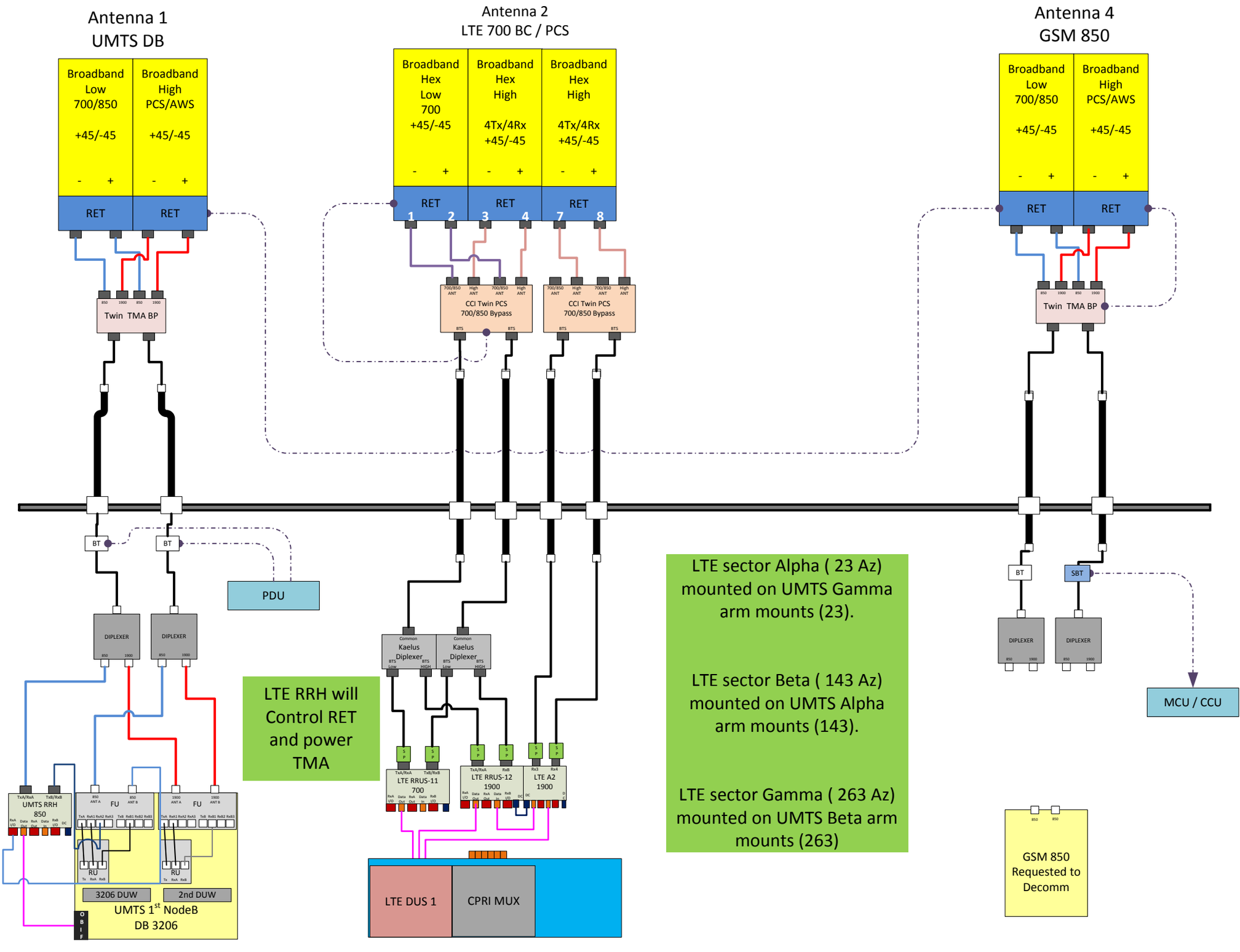


Diagram - Sector	C	Diagram File Name - CT2042_A_B_C_BrnzStand_2C_Rev3.vsd					
Atoll Site Name -	CTV2042	Location Name -	OLD SAYBROOK FERRY RD	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							



NOTES			
Date Time (Central)	Version	ATTUID	Note
3/22/2016 9:15:16 AM	1.00	dr701e	Updated RFDS with PACE number

WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
03/29/2016	Preliminary / In Progress	mm093q	Preliminary / Submitted for Approval	AB014M	Promote	LTE Preliminary RFDS
04/14/2016	Preliminary / Submitted for Approval	AB014M	Preliminary / Approved	BG144B	Promote	
05/16/2016	Preliminary / Approved	BG144B	Preliminary / Modification Recommended	om636a	Demote	Demote // Change to RRUS-12, add XMU and change to Pos 2
06/09/2016	Preliminary / Modification Recommended	om636a	Preliminary / In Progress	om636a	Accept	
06/09/2016	Preliminary / In Progress	om636a	Preliminary / Submitted for Approval	AB014M	Promote	RFDS revised with RRUS-12 & A2 at bottom and moved to POS2
06/14/2016	Preliminary / Submitted for Approval	AB014M	Preliminary / Approved	BG144B	Promote	
07/11/2016	Preliminary / Approved	BG144B	Final / RF Approval	MM093Q	Promote	Needs Final
07/13/2016	Final / RF Approval	MM093Q	Final / Approved	BG144B	Promote	Final RFDS

Product Specifications

COMMSCOPE®

POWERED BY ANDREW

SBNHH-1D65A

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	13.6	13.7	16.5	16.9	17.1	17.6
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS, dB	16	13	13	13	12	12
Front-to-Back Ratio at 180°, dB	25	27	28	28	27	29
CPR at Boresight, dB	20	16	20	23	17	20
CPR at Sector, dB	10	5	11	6	1	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
	0 ° | 13.4	0 ° | 13.4	0 ° | 16.0	0 ° | 16.3	0 ° | 16.5	0 ° | 17.0
Gain by Beam Tilt, average, dBi	9 ° | 13.1	9 ° | 13.1	5 ° | 16.2	5 ° | 16.5	5 ° | 16.8	5 ° | 17.3
	18 ° | 12.7	18 ° | 12.7	10 ° | 16.1	10 ° | 16.5	10 ° | 16.6	10 ° | 16.9
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
USLS, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz

Product Specifications

SBNHH-1D65A

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1409.0 mm | 55.5 in
Width	301.0 mm | 11.9 in
Net Weight	15.2 kg | 33.5 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
RET System	Teletilt®

Regulatory Compliance/Certifications

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

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Twin Triple Band "Active PCS with 700 and 850 Band Pass-thru" Dual Duplexed TMA

Tel: 201-342-3338 Fax: 201-342-3339 www.cciproducts.com

General Information

CCI's Twin Triple Band (700 Band, Cellular and PCS) TMA contains two triple band TMA's in a single housing. The PCS TMA is full band and fully duplexed, while the 700 Band and Cellular RF is bypassed and combined (Diplexed) with the PCS RF signal. High linearity improves the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports EDGE/GSM, UMTS and LTE BTS equipment. It provides a convenient package for sites upgraded to triple or quad antenna configurations. The twin TMA package reduces tower loading, leasing, and installation costs. Unit count on the tower is cut in half. An excellent match for two branch receive diversity applications using triple polarization antennas. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Model
DTMABP7819VG12A

Contents:

Features:

- Small, lightweight, twin unit
- Triple Band Dual Duplexed (PCS with 700 Band & Cellular Bypass)
- Optional AISG 2.0 compatible unit
- AISG TMA detects BTS port that DC voltage and AISG sampling is applied to, and automatically switches to utilize that port
- AISG TMA operates at constant power
- AISG TMA may be powered by a standard PDU
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system consists of a twin outdoor triple band tower mount unit which combine separate PCS, 700 Band & Cellular antennas onto a single BTS port. The PCS path of the tower mount unit is dual duplexed to separate the low-power uplink signals from the high-power downlink signals at the antenna port, amplifies the low-level uplink signals using an ultra-low noise amplifier (LNA), and recombines the two paths at the BTS port. The 700 Band & Cellular path is ultra low loss and passive. Both paths are diplexed at the BTS port. The tower mount units consist of eight band-pass filters, two redundant low-noise amplifiers, bypass failure circuitry, and bias tee's which are all housed in an IP65 moisture proof enclosure, with IP68 Immersion proof connectors suited to long-life masthead mounting. The unit provides protection against lightning strikes via a multi-stage surge protection circuit. DC power and control is provided via the feeder cable from the BTS or a Power Distribution Unit (PDU). Optional AISG 2.0 DC power and control is provided via the feeder cable from the BTS using the AISG 2.0 and 3GPP standard. The optional AISG TMA detects which BTS port has DC Voltage/AISG Sampling applied and automatically switches to utilize that port. Additionally the AISG TMA operates at constant power when powered by an AISG 2.0 Compatible Site Control Unit, but may be powered by a "Standard Power distribution Unit. A separate AISG connector is also provided to allow direct AISG connection or "Daisy Chaining" to multiple AISG products at the top of the tower.

An optional indoor site control unit (SCU) is available to power up to up to 32 AISG modules per sector and to provide the all the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains triple redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

Twin Triple Band "Active AWS with 700 and 850 Band Pass-thru" TMA Typical Specifications

Description	Typical Specifications
Electrical Specifications	
700 Band & Cellular Frequency Range	698 to 894 MHz
PCS Receive Frequency Range	1850 – 1910 MHz
PCS Transmit Frequency Range	1930 - 1990 MHz
PCS Amplifier Gain	6 to 12 dB Adjustable in 0.25 dB steps via AISG
PCS Gain Variation	±1.0 dB
PCS System Noise Figure	1.4 dB (@ +25°C),1.6 dB (@ +65°C), At 1910 MHz: 1.7 dB (@ +25°C), 1.9 dB (@ +65°C)
PCS Input Third Order Intercept Point	+12 dBm Min @ Max. Gain
Input/Output Return Loss	18 dB Min. all ports, 15 dB Min. Bypass Mode
Insertion Loss	
700 Band & Cellular Passband	< 0.2 dB, 0.1 dB typical
PCS Transmit Passband	0.4 dB Typical
PCS Transmit Passband Ripple	±0.2 dB
PCS Bypass Mode, Rx Passband	1.6 dB (@ +25°C),1.8 dB (@ +65°C), At 1910 MHz: 2.3 dB (@ +25°C), 2.5 dB (@ +65°C)
PCS Bypass Mode, Rx Passband Ripple	±1 dB
Filter Characteristics	
700 Band & Cellular Path Rejection	70 dB @ 1850 - 1990 MHz
PCS Path Rejection	80 dB @ 698 - 894 MHz
Continuous Average Power	200 Watts max
Peak Envelope Power	2 kW max
Intermodulation Performance	
IMD at ANT port in Rx Band	-112 dBm Min. (2 x +43 dBm tones)
Operating Voltage	+10V to +30V DC provided via coax or AISG
Power Consumption	≤ 2.1 Watts
Mechanical Specifications	
Connectors	DIN 7-16 Female (Long Neck) x 6, AISG x 1
Dimensions (Body Only)	10.63" (H) x 11.02" (W) x 3.78" (D); (270 (H) x 280 (W) x 96 (D) mm)
Dimensions (with Bracket)	14.25" (H) x 11.46" (W) x 4.17" (D); (362 (H) x 291 (W) x 106 (D) mm)
Weight (w/o Bracket)	19.18 Lbs. (8.7 Kg)
Mounting	Pole/Wall Mounting Bracket
Environmental Specifications	
Operating Temperature	-40˚ C to +65˚C
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5
Enclosure	IP65 (Unit Body), IP68 (Connector)
MTBF	>500,000 hours

All specifications are subject to change. The latest specifications are available at www.cciproducts.com

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

GEOTECHNICAL ENGINEERING

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Glastonbury, CT 06033

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

February 24, 2011

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

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

Dear Mr. Lynn:

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

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

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

Old Saybrook NEU Tower (see boring B-1)

Gravel FILL to 12"

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

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

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

Old Lyme NEU Tower (see boring B-2)

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

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

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

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

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

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

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

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

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

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

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

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

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

If you have any questions please call me.

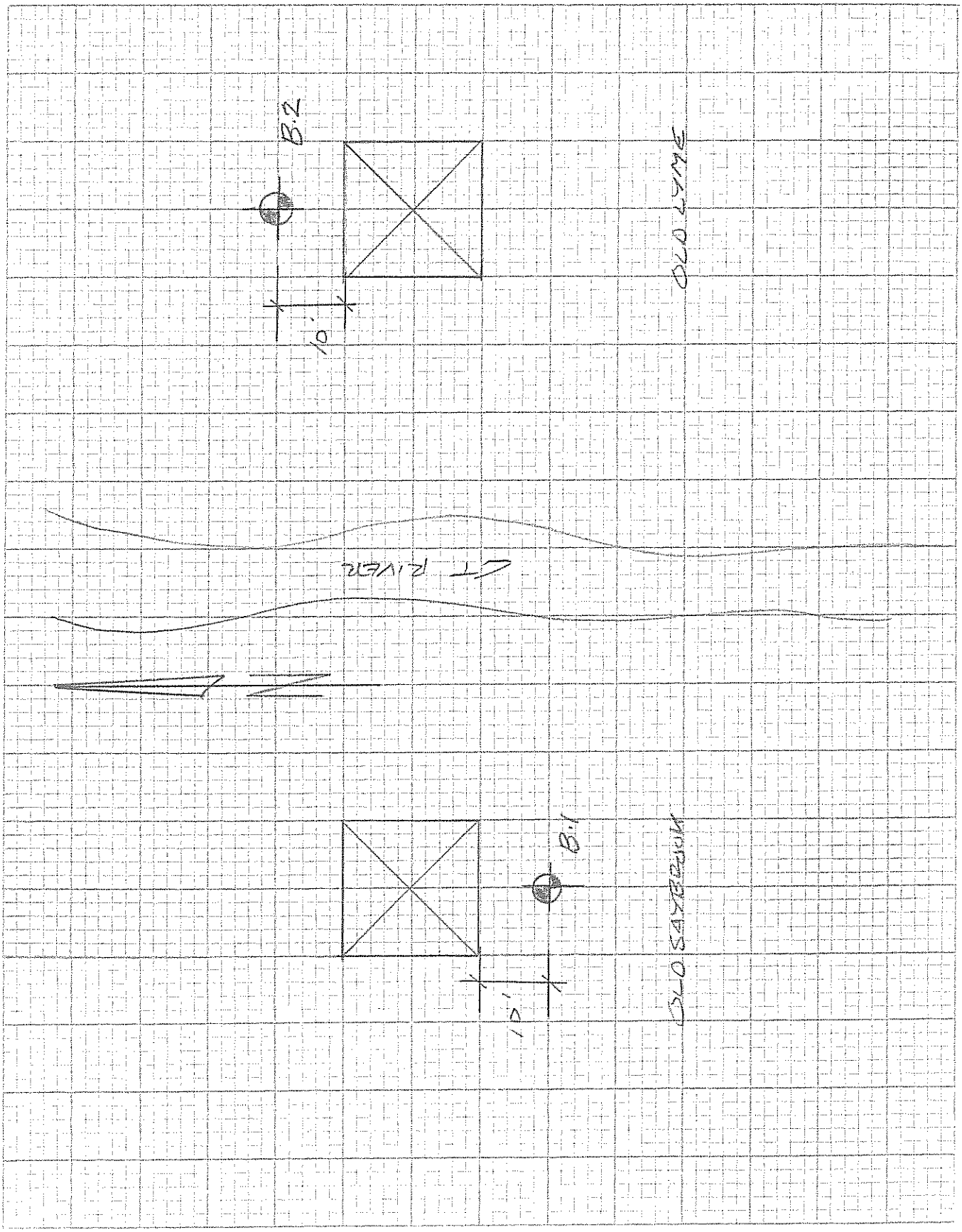
Very truly yours,

Max Welti, P.E.

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

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

CLIENT CENTER ENVIRONMENTAL
PROJECT NEW TOWER FOUNDATION
SUBJECT GLOSAVERDE LONG LANE CT
BY MW DATE 2/22/11 SHEET NO.



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

CLIENT
CENTEK ENGINEERING

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

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

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-1

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

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

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

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

DRILLER: D. BROMLEY
INSPECTOR:

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

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

CLIENT
CENTEK ENGINEERING

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

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

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. B-2

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

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

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

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

DRILLER: D. BROMLEY
INSPECTOR:

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

EBI Consulting
environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT2042

Old Saybrook
226 Ferry Road
Old Saybrook, CT 06475

October 2, 2016

EBI Project Number: 6216004446

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	1.31 %

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

EBI Consulting
environmental | engineering | due diligence

October 2, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2042 – Old Saybrook**

EBI Consulting was directed to analyze the proposed AT&T facility located at **226 Ferry Road, Old Saybrook, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) 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 AT&T Wireless antenna facility located at **226 Ferry Road, Old Saybrook, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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 UMTS channels (850 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 (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

7) For the following calculations the sample point was the top of a 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.

8) The antennas used in this modeling are the **KMW AM-X-CD-14-65-00T-RET and the Commscope SBNHH-1D65A** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **195 feet** above ground level (AGL) for **Sector A**, **195 feet** above ground level (AGL) for **Sector B** and **195 feet** above ground level (AGL) for Sector C.

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

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET
Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,664.56	ERP (W):	2,664.56	ERP (W):	2,664.56
Antenna A1 MPE%	**0.35 %**	Antenna B1 MPE%	**0.35 %**	Antenna C1 MPE%	**0.35 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A2 MPE%	**0.77 %**	Antenna B2 MPE%	**0.77 %**	Antenna C2 MPE%	**0.77 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET
Gain:	12.65 dBd	Gain:	12.65 dBd	Gain:	12.65 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts
ERP (W):	1,104.46	ERP (W):	1,104.46	ERP (W):	1,104.46
Antenna A3 MPE%	**0.20 %**	Antenna B3 MPE%	**0.20 %**	Antenna C3 MPE%	**0.20 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**1.31 %**
No Additional Carrier Emissions Listed in CSC Activs Database	NA
Site Total MPE %:	**1.31 %**

AT&T Sector A Total:	1.31 %
AT&T Sector B Total:	1.31 %
AT&T Sector C Total:	1.31 %
Site Total:	1.31 %

AT&T _ Frequency Band / Technology 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
AT&T 850 MHz UMTS	2	552.23	195	1.11	850 MHz	567	0.20%
AT&T 1900 MHz (PCS) UMTS	2	780.05	195	1.57	1900 MHz (PCS)	1000	0.15%
AT&T 700 MHz LTE	2	940.05	195	1.89	700 MHz	467	0.41%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	195	3.61	1900 MHz (PCS)	1000	0.35%
AT&T 850 MHz GSM	2	552.23	195	1.11	850 MHz	567	0.20%
						Total:	1.31%

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 AT&T 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:

AT&T Sector	Power Density Value (%)
Sector A:	1.31 %
Sector B:	1.31 %
Sector C:	1.31 %
AT&T Maximum Total (per sector):	1.31 %
Site Total:	1.31 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **1.31 %** 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.