



**QC Development**

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July 31, 2020

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

**Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT5046**  
**29 Willruss Court, Norwalk, CT 06850**  
**N 41.12580555**  
**W 73.43275000**

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 105-foot level of the existing 94-foot utility Pole at 29 Willruss Court, Norwalk, CT. The tower and property are owned by Connecticut Light & Power (dba Eversource). AT&T now intends to remove (3) KMW antennas and install (3) Andrew SBNHH-1D65A antennas. AT&T will also remove (3) Kaelus Tower Mounted Amplifiers (TMA) and replace them with six (6) Andrew TMAs. The new antennas and TMAs will also be installed at the 105' level of the tower.

AT&T's use of this facility was originally approved by the Siting Council on April 12, 2000 in Petition # 446. Since no further modification to the overall facility height is proposed, this modification complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Honorable Harry Rilling, Mayor of the City of Norwalk, as elected official and to the Norwalk Planning and Zoning Department, as well as to the tower and property owner.

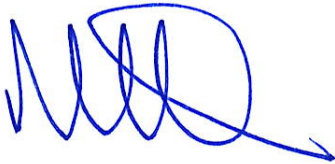
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts  
QC Development  
Consultant for AT&T

#### Attachments

cc: Mayor Harry Rilling - Elected Official  
Steven Kleppin – Director of Planning & Zoning  
Chris Gelinas (Eversource) - Tower and Property Owner

## Power Density

### Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							3.35%
AT&T UMTS	2	325	104	0.0243	850	0.5667	0.43%
AT&T LTE	2	612	104	0.0458	700	0.4667	0.98%
AT&T LTE	2	736	104	0.0551	850	0.5667	0.97%
AT&T LTE	4	1040	104	0.1558	1900	1.0000	1.56%
AT&T LTE	4	728	104	0.1090	2100	1.0000	1.09%
AT&T LTE	4	763	104	0.1143	2300	1.0000	1.14%
Site Total							9.52%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

### Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							3.35%
AT&T UMTS	1	272	105	0.0100	850	0.5667	0.18%
AT&T LTE	2	1476	105	0.0471	700	0.4667	1.01%
AT&T LTE	1	2951	105	0.0542	700	0.4667	1.16%
AT&T LTE	1	1000	105	0.0367	850	0.5667	0.65%
AT&T 5G	1	1000	105	0.0367	850	0.5667	0.65%
AT&T LTE	2	3664	105	0.2689	1900	1.0000	2.69%
AT&T LTE	1	3837	105	0.1344	2100	1.0000	1.34%
AT&T LTE	1	1285	105	0.0471	2300	1.0000	0.47%
Site Total							11.50%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880





# WIRELESS COMMUNICATIONS FACILITY

## CT5046 - LTE 6C

### NORWALK CENTER

### 1 WILL RUSS COURT

### NORWALK, CT 06850

#### GENERAL NOTES

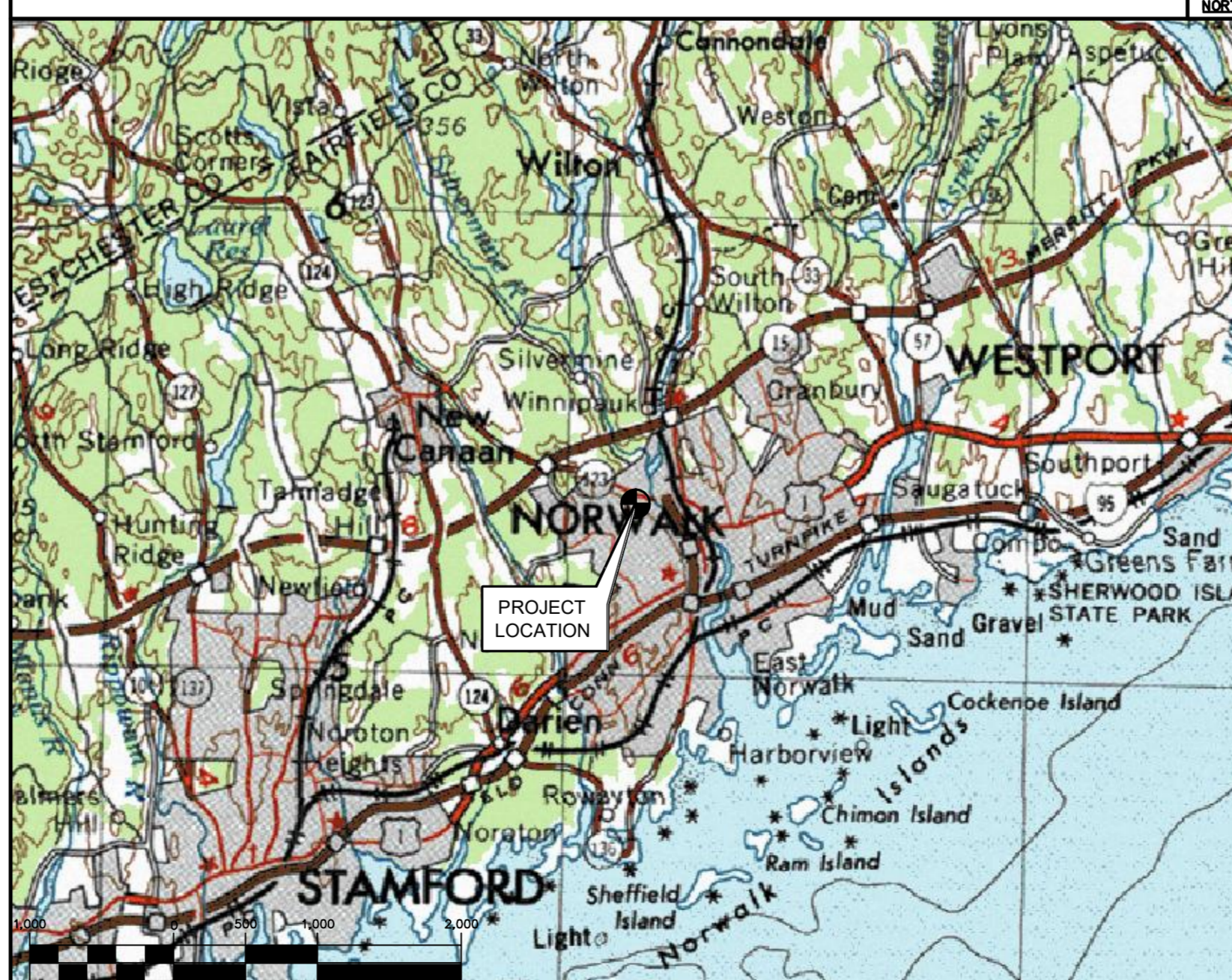
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2018 CONNECTICUT FIRE SAFETY CODE AND, 2018 NATIONAL ELECTRICAL 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:	TO:
500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	1 WILL RUSS COURT NORWALK, CONNECTICUT
1. TURN LEFT ONTO CAPITAL BLVD.	0.36 MI
2. TURN LEFT ONTO WEST ST.	0.27 MI
3. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN.	0.30 MI
4. MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	9.59 MI
5. TAKE EXIT 40A TOWARD US-7 S/NORWALK.	47.29 MI
6. MERGE ONTO MAIN AVE.	0.09 MI
7. MAIN AVE BECOMES MAIN ST.	0.84 MI
8. TURN RIGHT ONTO NEW CANAAN AVE/CT-123.	0.31 MI
9. STAY STRAIGHT TO GO ONTO PONUS AVE.	0.41 MI
10. TURN RIGHT TO STAY ON PONUS AVE.	0.08 MI
11. TAKE THE 1ST LEFT ONTO WILLRUSS ST.	0.12 MI
12. TAKE THE 1ST RIGHT ONTO WILLRUSS CT.	0.03 MI
13. WILLRUSS CT, NORWALK, CT 06850-2613, 1 WILLRUSS CT IS ON THE LEFT.	0.01 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. AT EACH ANTENNA SECTOR:
    - REMOVE KMW ANTENNA AT POS. 3. AND REPLACE WITH ANDREW ANTENNA AT POS. 3. (TOTAL OF 3)
    - REPLACE EXISTING TMAs WITH NEW TMAs (TOTAL OF 6)
  - B. AT THE EQUIPMENT SHELTER
    - SWAP (3) EXISTING RRUS-12'S AND (3) EXISTING 4426 B66'S FOR (3) 8843 B2/B66A'S.
    - INSTALL (1) DC12 BOX AT EQUIPMENT
    - INSTALL (3) NEW RRUS-E2 B29'S.
    - INSTALL (6) NEW TRIPLEXERS
    - REMOVE (1) EXISTING XMU UNIT WITHIN EXISTING LTE CABINET
    - INSTALL (1) IDLE CABLE
  - C. INSTALL (6) 1-1/4" Ø COAX CABLES FROM EQUIPMENT SHELTER TO ANTENNAS.

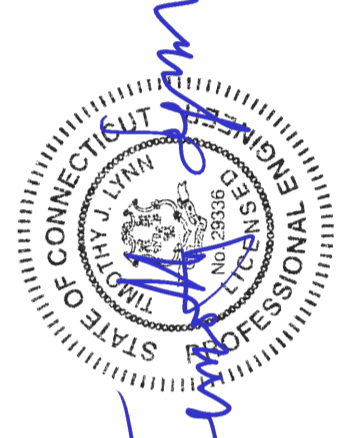
#### PROJECT INFORMATION

AT&T SITE NUMBER:	CT5046
AT&T SITE NAME:	NORWALK CENTER
SITE ADDRESS:	1 WILL RUSS COURT NORWALK, CT 06850
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE ID NUMBER:	PAGE JOB 1 - MRCTB041320 PAGE JOB 2 - MRCTB041343
AT&T FA LOCATION CODE:	10071181
ENGINEER:	CEN TEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-07'-33.11" N LONGITUDE: 73°-25'-57.89" W GROUND ELEVATION: ±102' 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 ANTENNA SCHEDULE	0
C-1	PLANS AND ELEVATION	0
C-2	ANTENNA CONFIGURATION DETAILS	0
C-3	DETAILS	0
E-1	SCHEMATIC DIAGRAM AND NOTES	0
E-2	WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

PROFESSIONAL ENGINEER SEAL



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 Branford, CT 06405  
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**AT&T MOBILITY**  
 WIRELESS COMMUNICATIONS FACILITY  
**NORWALK CENTER**  
 CT5046 - LTE 6C  
 1 WILL RUSS COURT  
 NORWALK, CT 06850

DATE: 12/16/19  
 SCALE: AS NOTED  
 JOB NO. 19157.00

TITLE SHEET

**T-1**  
 Sheet No. 1 of 8

REV.	DATE	BY	CHK'D	DESCRIPTION
0	6/29/20	TJL	CFC	CONSTRUCTION DRAWINGS



**NOTES AND SPECIFICATIONS**

**DESIGN BASIS:**

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

**DESIGN CRITERIA:**

**ANTENNA MAST**

- WIND LOAD: PER TIA 222 G - 93 MPH (NOMINAL)
- RISK CATEGORY: III (BASED ON IBC TABLE 1604.5)

**TRANSMISSION TOWER**

- WIND LOAD: PER NESC C2-2012 SECTION 25 RULE 250B - 4PSF
- WIND LOAD: PER NESC C2-2012 SECTION 25 RULE 250C - 110MPH
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

**GENERAL NOTES:**

- ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
- 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.
- 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.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
- 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.
- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
- REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

**STRUCTURAL STEEL**

- 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
- 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.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC COATING (HOT-DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- 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.
- CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- 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.
- LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- FABRICATE BEAMS WITH MILL CAMBER UP.
- 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.
- COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

**ANTENNA SCHEDULE**

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA Ø HEIGHT	AZIMUTH	(E/P) TMA/DIPLXER/TRIPLEXER/QUADPLEXER (QTY)	(E/P) RRU (QTY)	(E/P) FEEDER/LENGTH (QTY)	(E/P) SURGE ARRESTOR (QTY)	RRU	SIZE (INCHES) (L x W x D)
A1	EXISTING	UMTS 850/LTE 700/1900/WCS	QUINTEL (QS46512-6)	52 x 12 x 10.8	105'	30'	TMA: (E) TMA21X23B68-31-43 (2) ON TOWER QUADPLEXER: (E) QBC0007F1V51-1 (4) AT EQUIP	(E) RRUS-32 (1), (P) RRUS-E2 B29, (P) 8843 B2/B66A AT EQUIPMENT	(E) ANDREW 1 1/2" COAX (4) LENGTH: 145.04'	(E) ANDREW: APTDC-BDFDM (4)	RRUS-11	19.7 x 17 x 7.2
A3	PROPOSED	LTE 700/AWS/850/5G 850	ANDREW (SBNHH-1D65A)	55 x 11.9 x 7.1	105'	30'	TMA: (P) TMA8PD7823VG12A (2) ON TOWER TRIPLEXER: (E) TPX-070821 (2) AT EQUIP. (P) TPX-070821 (2) AT EQUIP.	(E) RRUS-11 (1), (E) 4478 B5 AT EQUIPMENT	(P) (2) 1-1/4" COAX LENGTH: 145.04' (E) (2) 1-1/4" COAX	(E) POLYPHASER: TSXDC-4310FM (4)	4478 B5	16.5 x 13.4 x 7.7
B1	EXISTING	UMTS 850/LTE 700/1900/WCS	QUINTEL (QS46512-6)	52 x 12 x 10.8	105'	150'	TMA: (E) TMA21X23B68-31-43 (2) ON TOWER QUADPLEXER: (E) QBC0007F1V51-1 (4) AT EQUIP	(E) RRUS-32 (1), (P) RRUS-E2 B29, (P) 8843 B2/B66A AT EQUIPMENT	(E) ANDREW 1 1/2" COAX (4) LENGTH: 145.04'	(E) ANDREW: APTDC-BDFDM (4)	RRUS-32	27.2 x 12.1 x 7
B3	PROPOSED	LTE 700/AWS/850/5G 850	ANDREW (SBNHH-1D65A)	55 x 11.9 x 7.1	105'	150'	TMA: (P) TMA8PD7823VG12A (2) ON TOWER TRIPLEXER: (E) TPX-070821 (2) AT EQUIP. (P) TPX-070821 (2) AT EQUIP.	(E) RRUS-11 (1), (E) 4478 B5 AT EQUIPMENT	(P) (2) 1-1/4" COAX LENGTH: 145.04' (E) (2) 1-1/4" COAX	(E) POLYPHASER: TSXDC-4310FM (4)	RRUS-E2 B29	20.4 x 18.5 x 7.5
C1	EXISTING	UMTS 850/LTE 700/1900/WCS	QUINTEL (QS46512-6)	52 x 12 x 10.8	105'	270'	TMA: (E) TMA21X23B68-31-43 (2) ON TOWER QUADPLEXER: (E) QBC0007F1V51-1 (4) AT EQUIP	(E) RRUS-32 (1), (P) RRUS-E2 B29, (P) 8843 B2/B66A AT EQUIPMENT	(E) ANDREW 1 1/2" COAX (4) LENGTH: 145.04'	(E) ANDREW: APTDC-BDFDM (4)	8843 B2/B66A	14.9 x 13.2 x 10.9
C3	PROPOSED	LTE 700/AWS/850/5G 850	ANDREW (SBNHH-1D65A)	55 x 11.9 x 7.1	105'	270'	TMA: (P) TMA8PD7823VG12A (2) ON TOWER TRIPLEXER: (E) TPX-070821 (2) AT EQUIP. (P) TPX-070821 (2) AT EQUIP.	(E) RRUS-11 (1), (E) 4478 B5 AT EQUIPMENT	(P) (2) 1-1/4" COAX LENGTH: 145.04' (E) (2) 1-1/4" COAX	(E) POLYPHASER: TSXDC-4310FM (4)		

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DATE: 12/16/19  
SCALE: AS NOTED  
JOB NO. 19157.00

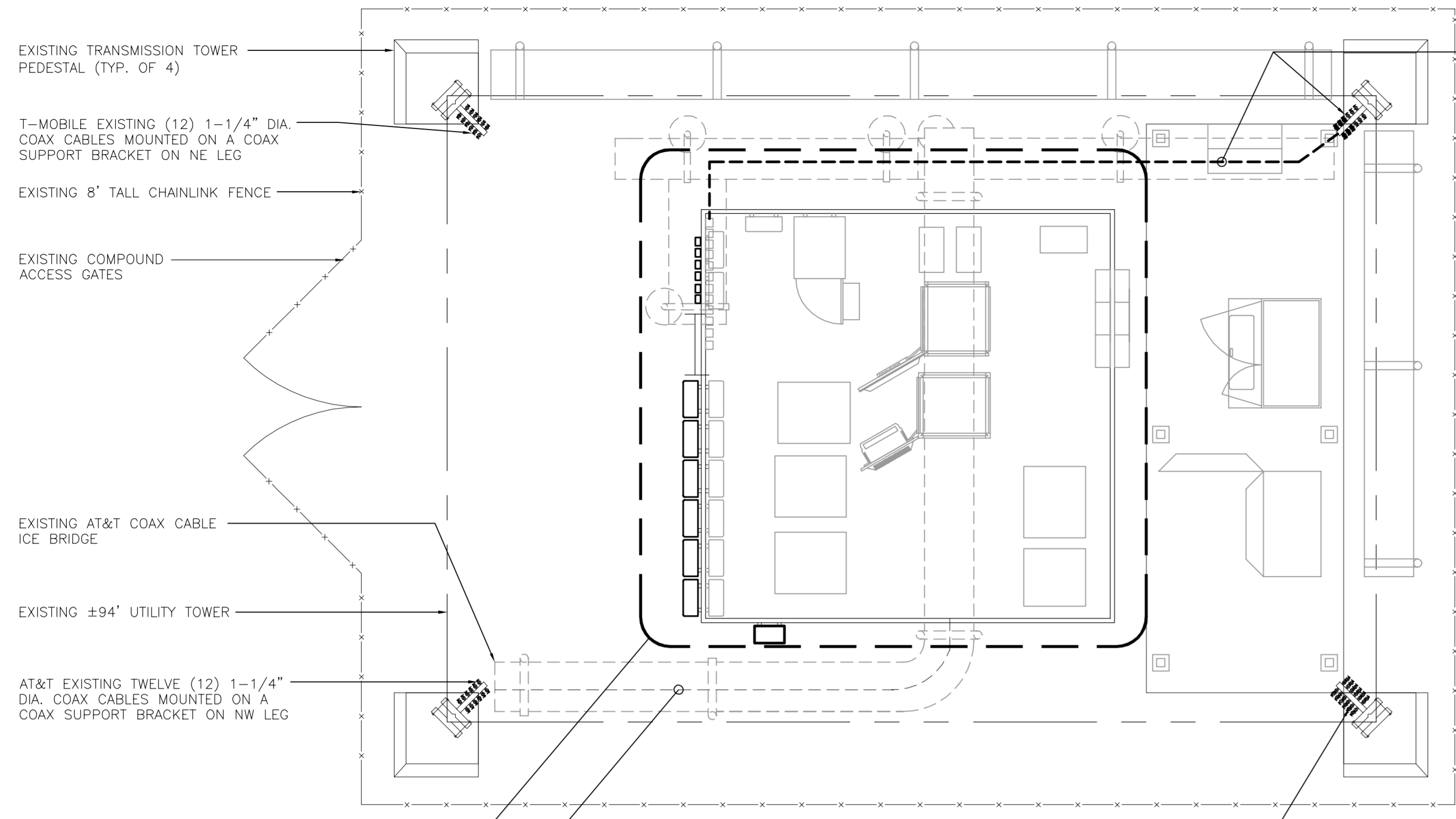
NOTES,  
SPECIFICATIONS &  
ANTENNA  
SCHEDULE

**N-1**

Sheet No. 2 of 8

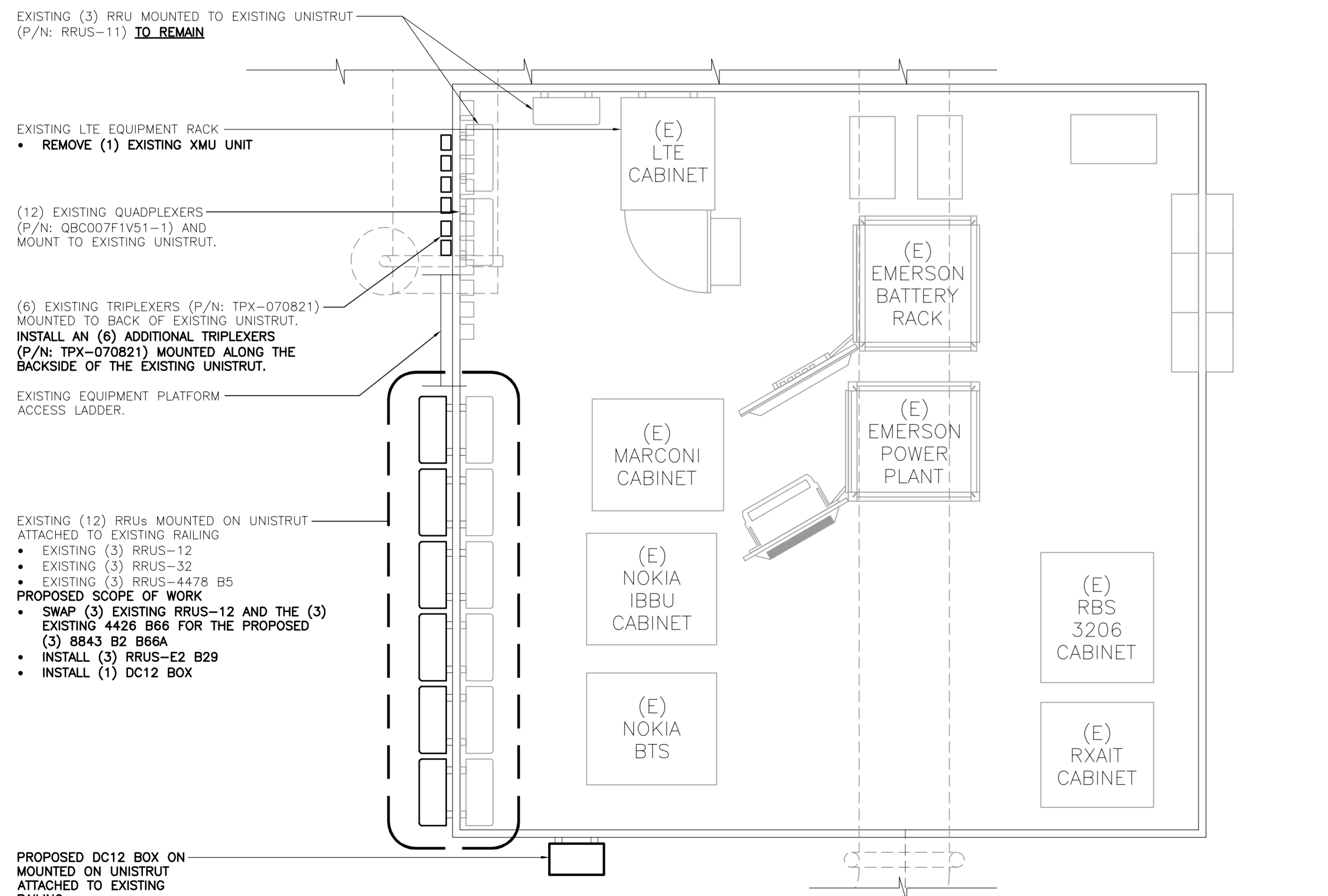
CONSTRUCTION DRAWINGS  
DRAWN BY: CHK'D BY: CFC  
DATE: 6/29/20  
REV. 0





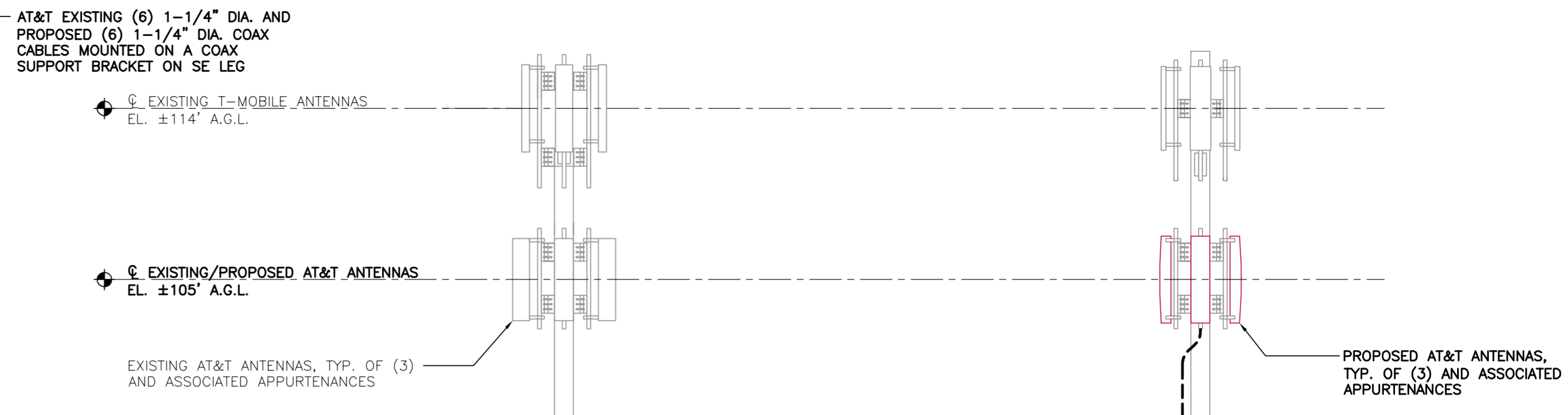
**1 COMPOUND PLAN**  
 SCALE: 1/4" = 1'  
 APPROXIMATE NORTH

GRAPHIC SCALE  
 ( IN FEET )  
 1/4 inch = 1 ft.



**2 EQUIPMENT LAYOUT PLAN - PROPOSED**  
 SCALE: 1/2" = 1'  
 APPROXIMATE NORTH

GRAPHIC SCALE  
 ( IN FEET )  
 1/2 inch = 1 ft.



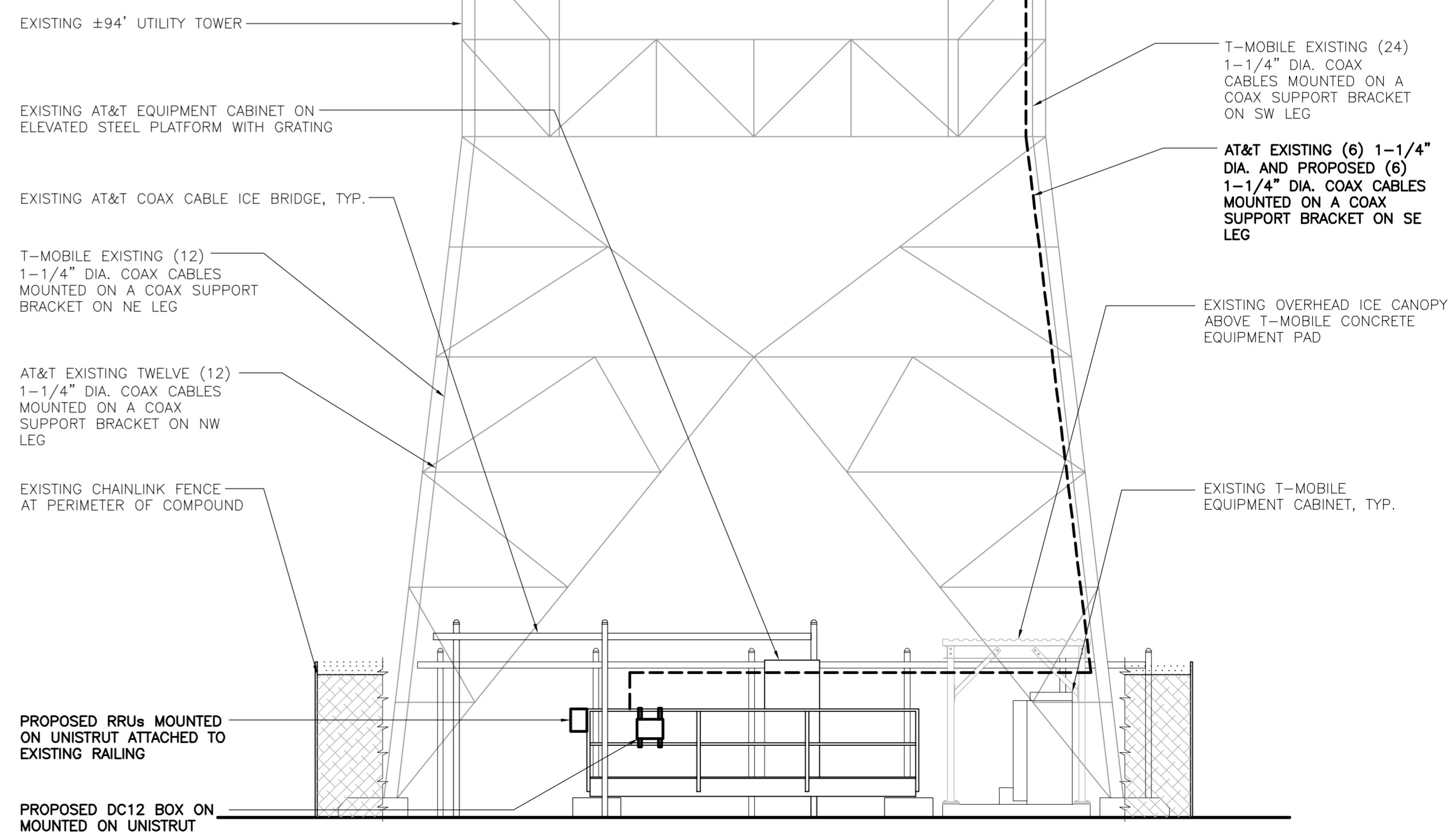
**TOWER STRUCTURAL NOTES:**

- REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 19157.00, DATED 05/18/2020 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
- ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CENTEK ENGINEERING, INC. AND FINAL AT&T RF DATA SHEET.

**NOTES:**

- A.G.L. = ABOVE GRADE LEVEL

**NOTE:**  
 SOME ANTENNA EQUIPMENT (BY OTHERS) NOT SHOWN FOR CLARITY.



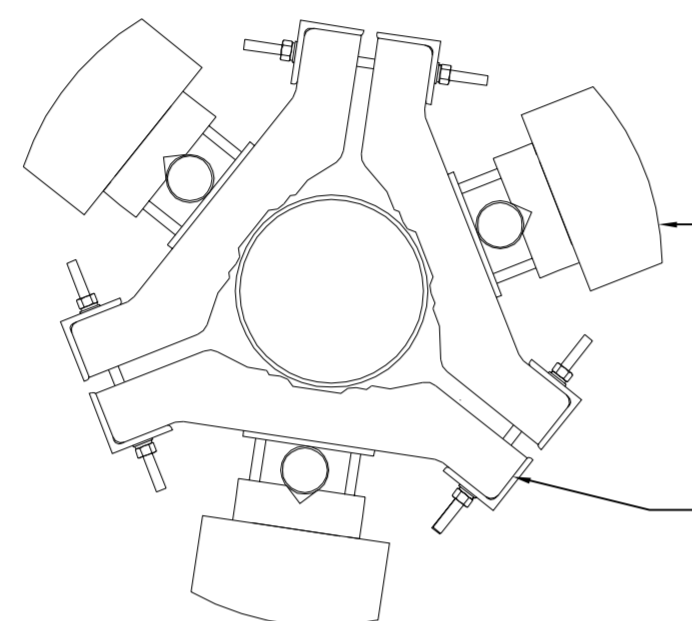
**3 PARTIAL SOUTHWEST ELEVATION - PROPOSED**  
 SCALE: 3/16" = 1'-0"

PROFESSIONAL ENGINEER SEAL	CONSTRUCTION DRAWINGS
	DATE: 6/29/20
	DATE: 12/16/19
	SCALE: AS NOTED
	JOB NO. 19157.00
2031 489-0360 2031 489-8387 632 North Branford Road Branford, CT 06405 www.CentekEng.com	PLANS AND ELEVATION
<b>AT&amp;T MOBILITY</b> WIRELESS COMMUNICATIONS FACILITY <b>NORWALK CENTER</b> CT5046 - LTE 6C 1 WILL RUSS COURT NORWALK, CT 06850	<b>C-1</b> Sheet No. 3 of 8



1A  
C-2

0'  
LTE 700/1900/850  
ALPHA SECTOR  
POSITION 3



120'  
LTE 700/1900/850  
BETA SECTOR  
POSITION 3

EXISTING AT&T PANEL ANTENNA POS.3,  
TYP. (1) PER SECTOR, TOTAL (3)  
(P/N: KMW AM-X-CD-14-65-00T-RET)  
WITH (3) KAELUS TMA2093FXVX-1 TWIN  
TMA 850 BP **TO BE REMOVED AND REPLACED**

EXISTING UNIVERSAL TRI-BRACKET  
MOUNT ASSEMBLY ATTACHED TO  
EXISTING ANTENNA SUPPORT MAST  
**TO REMAIN.**

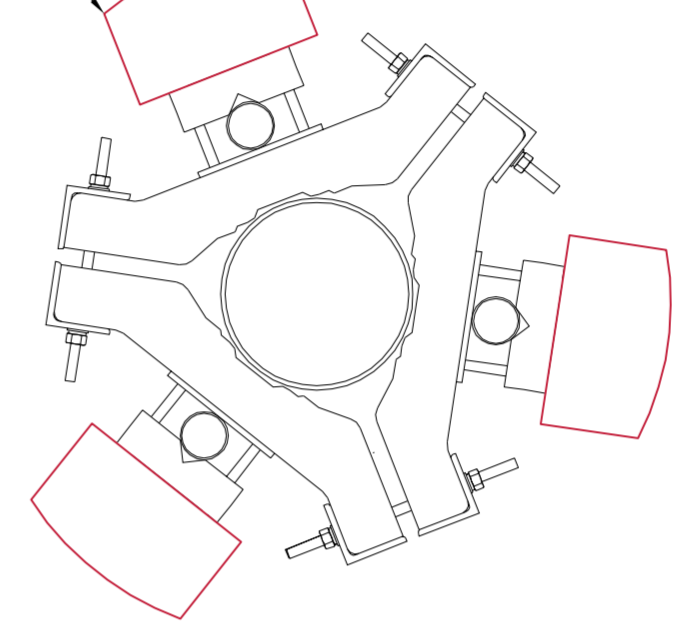
240'  
LTE 700/1900/850  
GAMMA SECTOR  
POSITION 3

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



2A  
C-2

30'  
LTE 700/AWS/850/5G 850  
ALPHA SECTOR  
POSITION 3

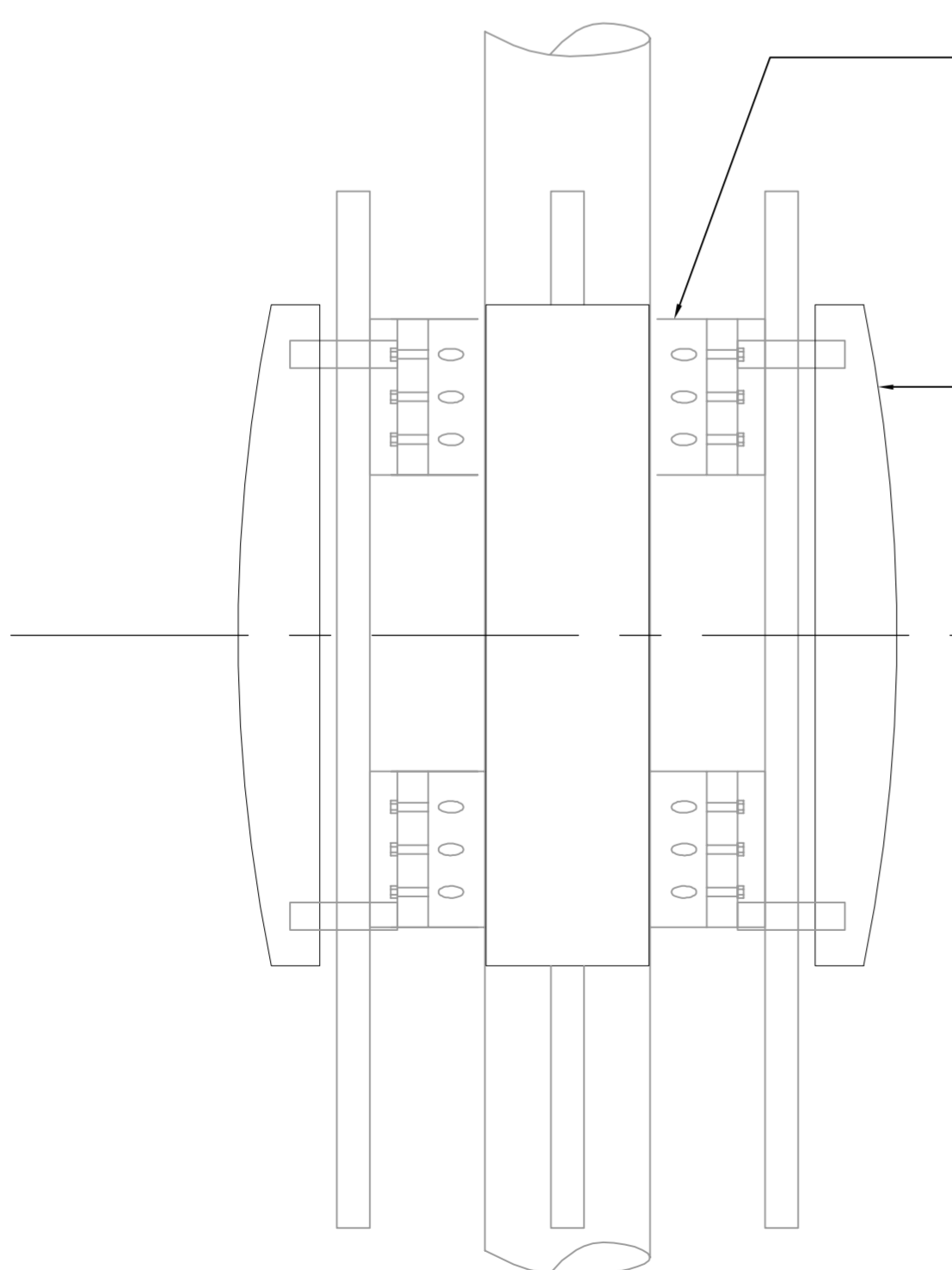


150'  
LTE 700/AWS/850/5G 850  
BETA SECTOR  
POSITION 3

PROPOSED AT&T PANEL ANTENNA POS.3,  
TYP. (1) PER SECTOR, TOTAL (3)  
(P/N: SBNHH-1D65A)  
WITH (6) TWIN TMA MOUNTED BELOW  
ANTENNAS.  
(P/N: TMABPD7823VG12A)

270'  
LTE 700/AWS/850/5G 850  
GAMMA SECTOR  
POSITION 3

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

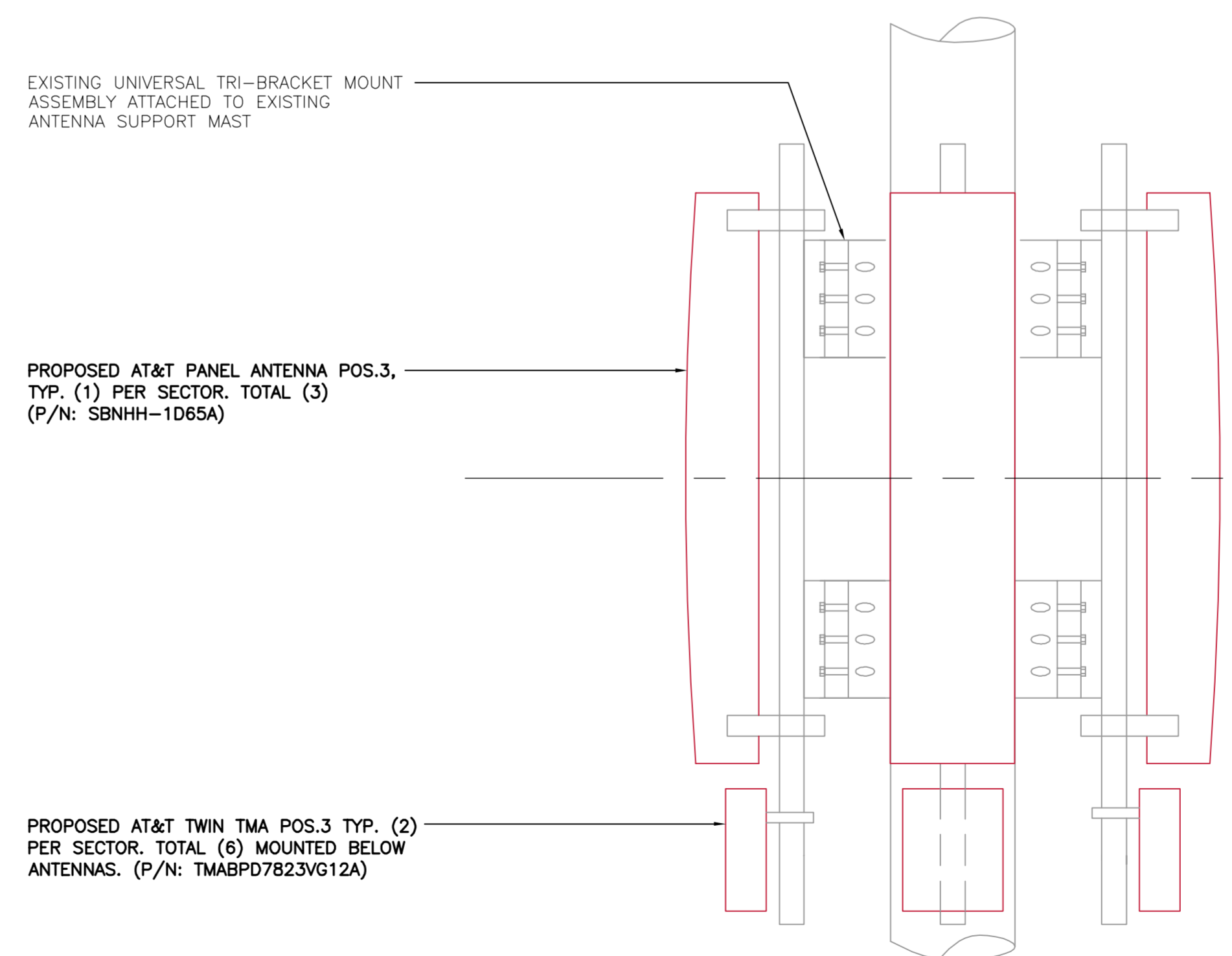


EXISTING UNIVERSAL TRI-BRACKET  
ASSEMBLY ATTACHED TO EXISTING  
ANTENNA SUPPORT MAST

EXISTING AT&T PANEL ANTENNA POS.3,  
TYP. (1) PER SECTOR, TOTAL (3)  
(P/N: KMW AM-X-CD-14-65-00T-RET)  
WITH (3) KAELUS TMA2093FXVX-1 TWIN  
TMA 850 BP **TO BE REMOVED AND REPLACED**

EXISTING AT&T ANTENNAS  
EL. ±105' A.G.L.

1A  
C-2  
**EXISTING ANTENNA ELEVATION**  
SCALE: 1" = 1'-0"



EXISTING UNIVERSAL TRI-BRACKET MOUNT  
ASSEMBLY ATTACHED TO EXISTING  
ANTENNA SUPPORT MAST

PROPOSED AT&T PANEL ANTENNA POS.3,  
TYP. (1) PER SECTOR, TOTAL (3)  
(P/N: SBNHH-1D65A)

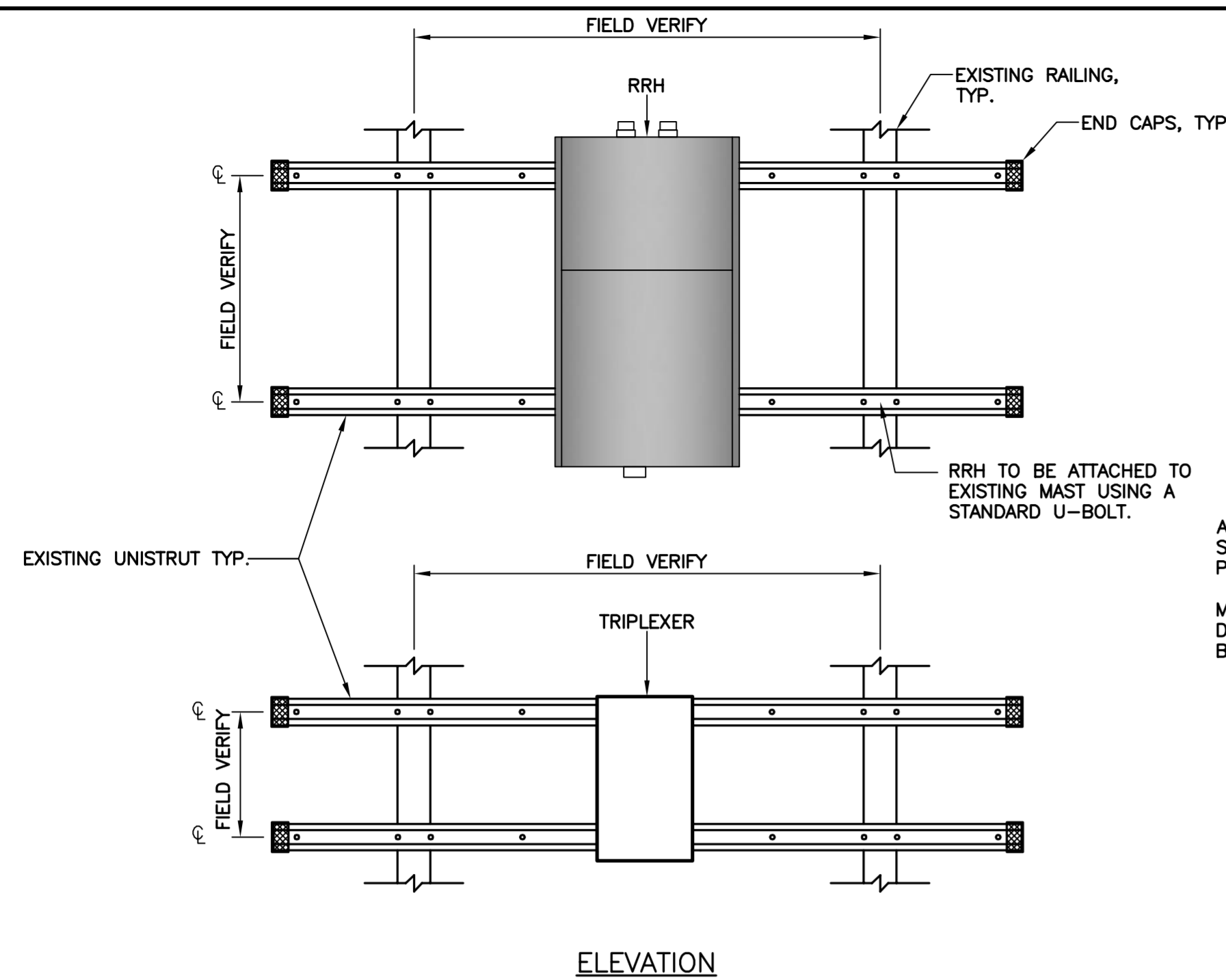
PROPOSED AT&T TWIN TMA POS.3 TYP. (2)  
PER SECTOR, TOTAL (6) MOUNTED BELOW  
ANTENNAS. (P/N: TMABPD7823VG12A)

PROPOSED AT&T ANTENNAS  
EL. ±105' A.G.L.

2A  
C-2  
**PROPOSED ANTENNA ELEVATION**  
SCALE: 1" = 1'-0"

PROFESSIONAL ENGINEER SEAL	CONSTRUCTION DRAWINGS
	CFC
	TJL
	DATE
	6/29/20
Centered on Solutions (203) 488-0380 (203) 488-8387 Fax 63-2 North Branford Road Branford, CT 06405 www.CentekEng.com	REV.
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY <b>NORWALK CENTER</b> CT5046 - LTE 6C 1 WILL RUSS COURT NORWALK, CT 06850	0
DATE: 12/16/19	
SCALE: AS NOTED	
JOB NO. 19157.00	
ANTENNA CONFIGURATION DETAILS	
<b>C-2</b>	
Sheet No. 4 of 8	



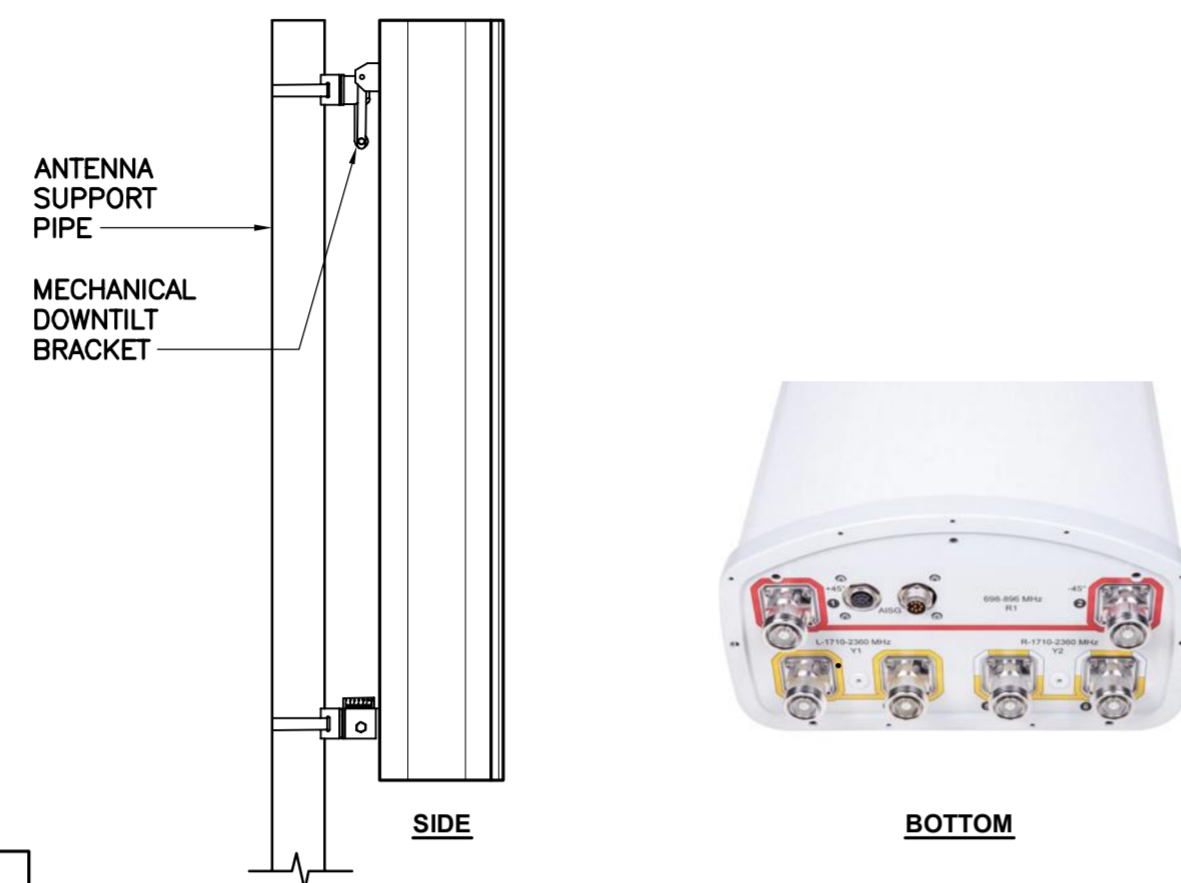


ELEVATION

NOTES:

- INSTALL ANCHORS/FASTENERS A MAXIMUM OF 0'-6" ON CENTERS TOTAL OF (9) FASTENERS PER UNISTRUT.
  - HILTI HTB TOUGLER BOLT 3/8" WITH SRH SCREW.
  - \*SRH SCREW\* DENOTES 3/8" x 2 1/2" LONG MACHINE SCREW WITH ROUND HEAD (COMBINATION SLOTTED/PHILLIPS)
- MOUNT RRU AND TRIPLEXER TO EXISTING RAILING WITH STANDARD UNISTRUT BOLTING HARDWARE.
- NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

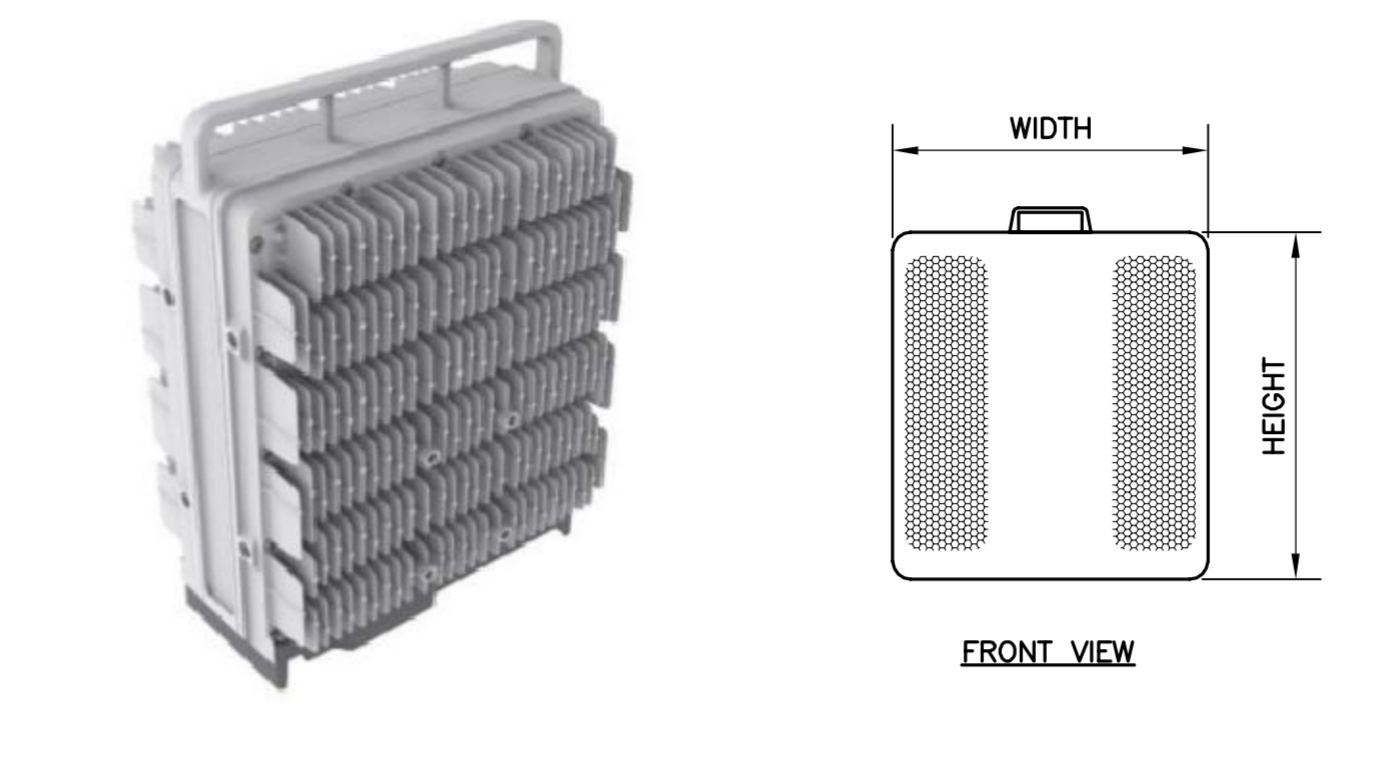
1 TYPICAL RRUS MOUNTING DETAIL  
C-3 NOT TO SCALE



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.

2 PROPOSED ANTENNA DETAIL  
C-3 NOT TO SCALE

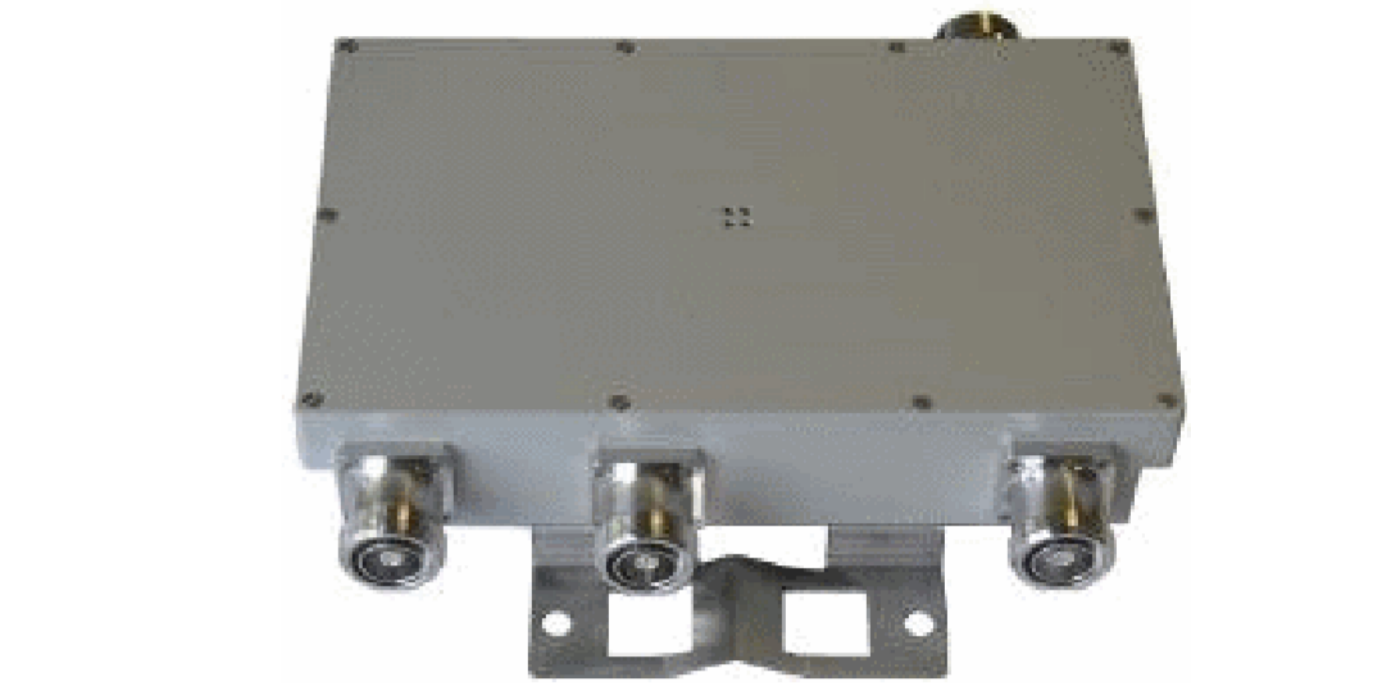


RRU (REMOTE RADIO UNIT)

EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRU5 E2	20.4"L x 18.5"W x 7.5"D	59.52 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: 8843 B2, B66A	14.9"L x 13.2"W x 10.9"D	72.0 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

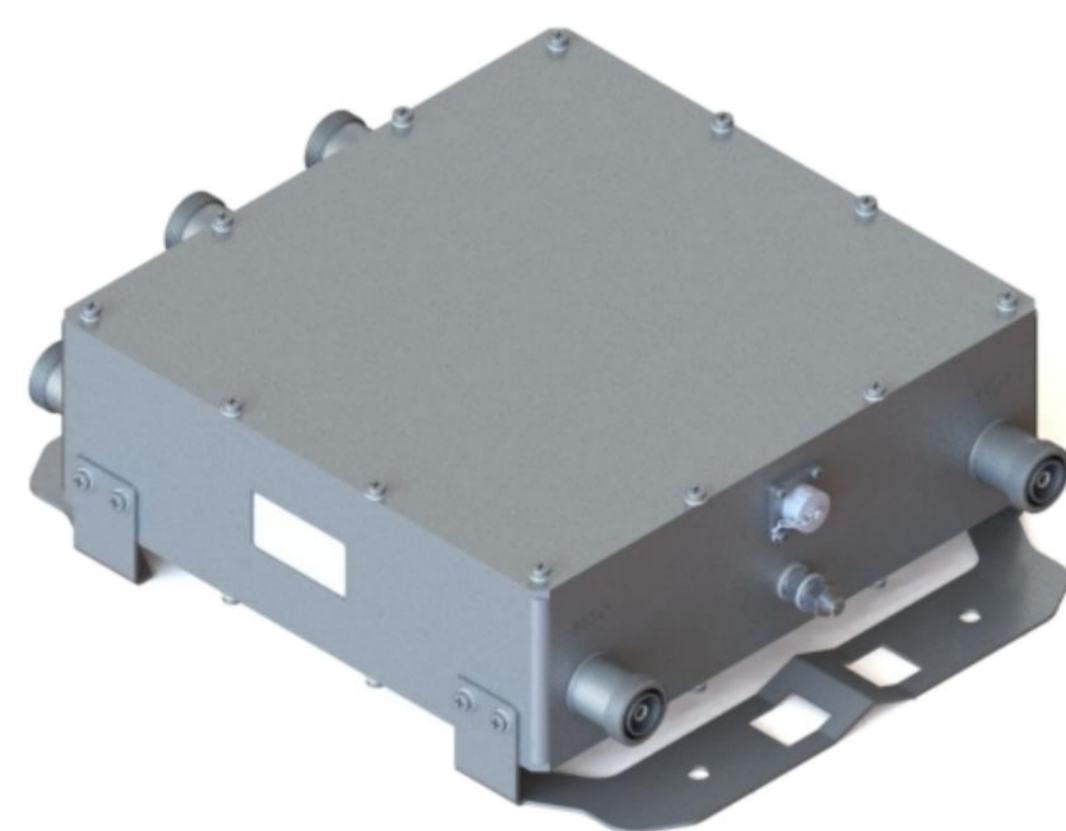
3 ERICSSON RRUS DETAIL  
C-3 NOT TO SCALE



EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TPX-070821	5.83"H x 9.65"W x 2.05"D	7.5 LBS.

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

4 CCI - TPX-070821 DETAIL  
C-3 NOT TO SCALE

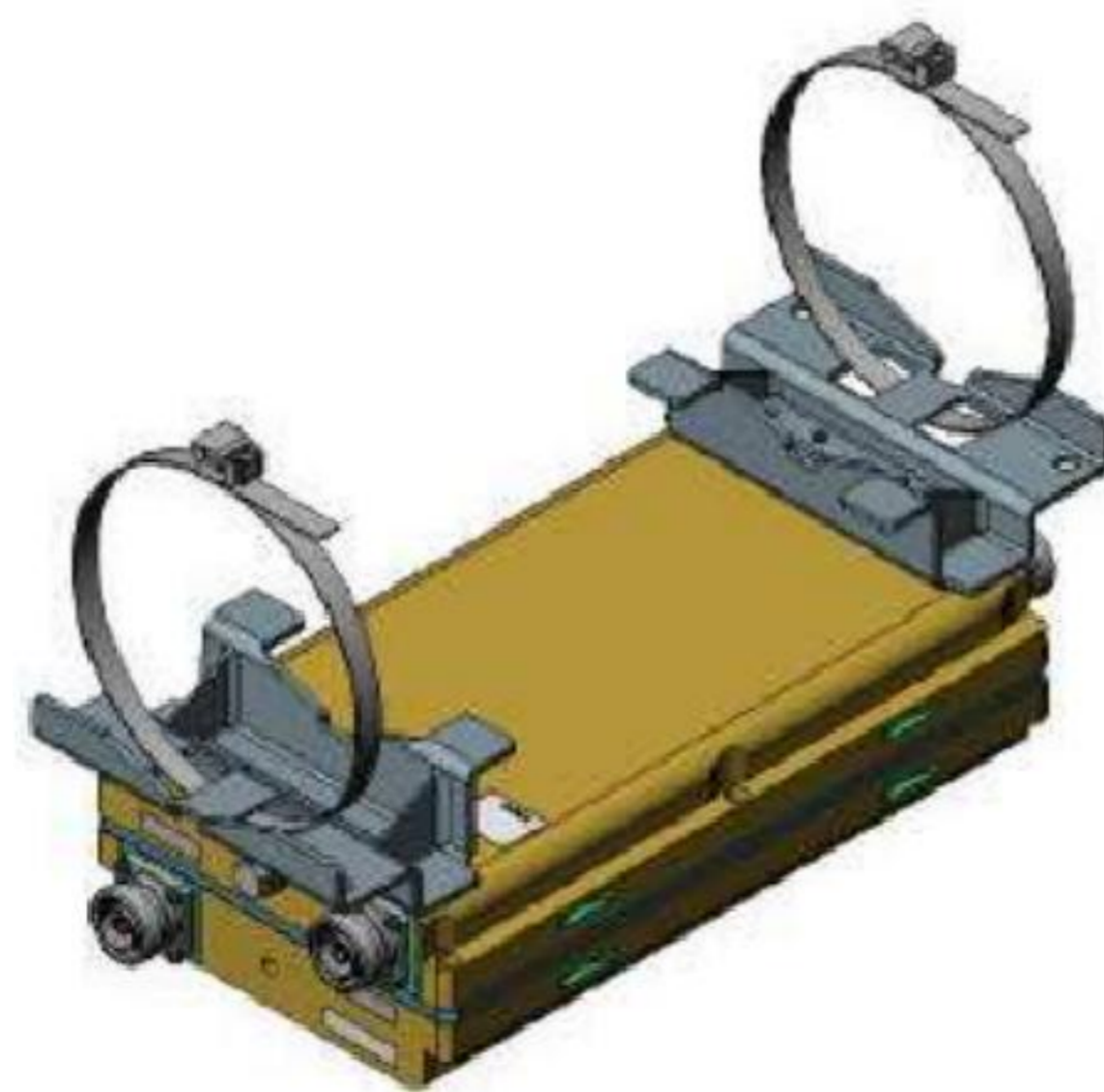


TMA (TOWER MOUNTED AMPLIFIER)

EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: CCI MODEL: TMABPD7823VG12	10.63"L x 11.04"W x 3.75"D	25.0 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

5 CCI TMA DETAIL  
C-3 NOT TO SCALE



COMMSCOPE MOUNTING STRAP

6 TMA MOUNTING DETAIL  
C-3 NOT TO SCALE



SURGE ARESSTOR

EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: POLYPHASER MODEL: TSXDC-4310FM	3.07"H x 1.49"W x 1.65"D	1.32 LBS.

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

7 POLYPHASER - TSXDC-4310FM DETAIL  
C-3 NOT TO SCALE



SURGE ARESSTOR

EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: APTDC-B0FDM-DB	3.46"H x 1.65"W	1.32 LBS.

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

8 POLYPHASER - TSXDC-4310FM DETAIL  
C-3 NOT TO SCALE

REV.	DATE	BY	CHK'D	DESCRIPTION
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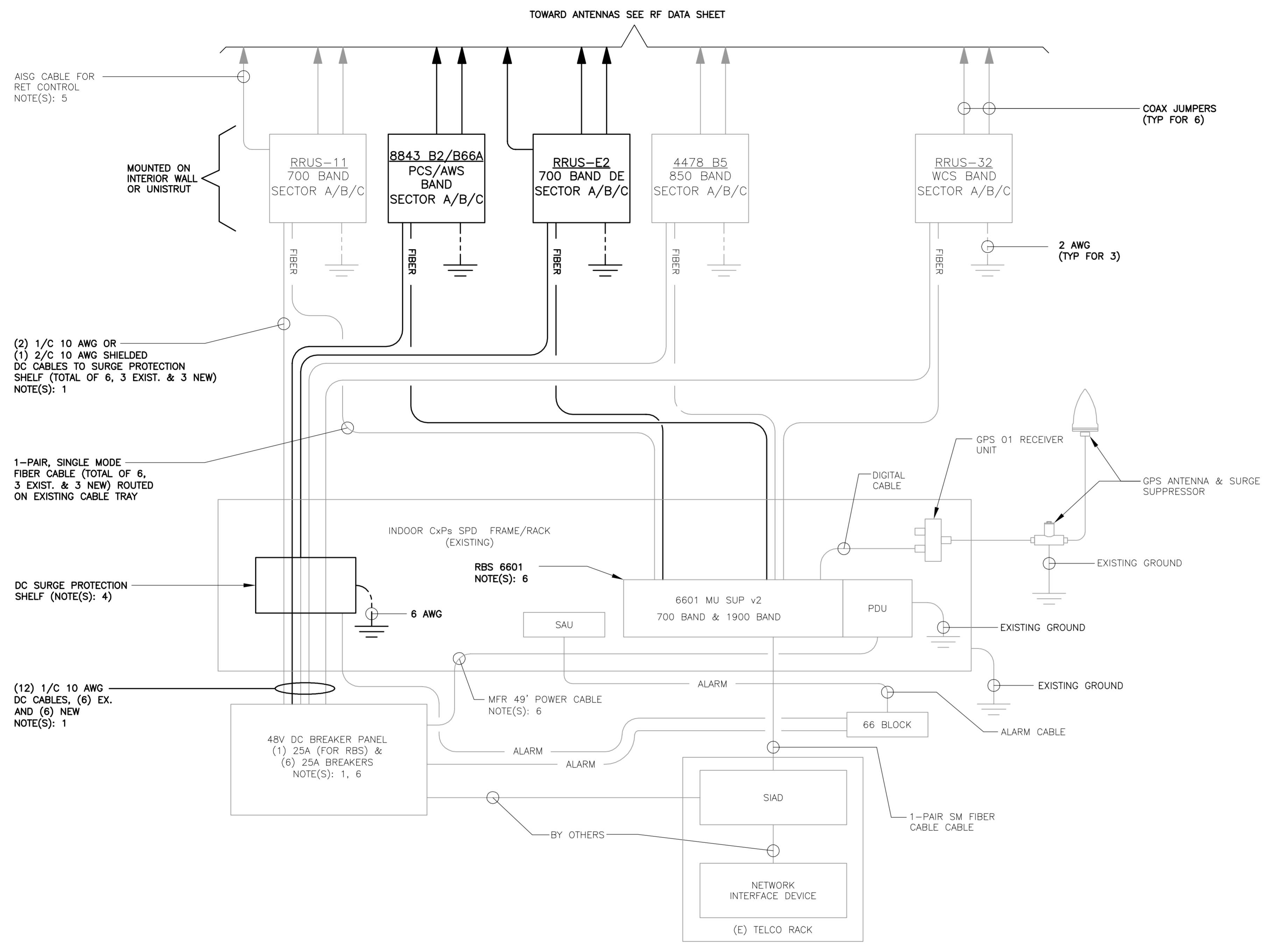
DETAILS



## 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.

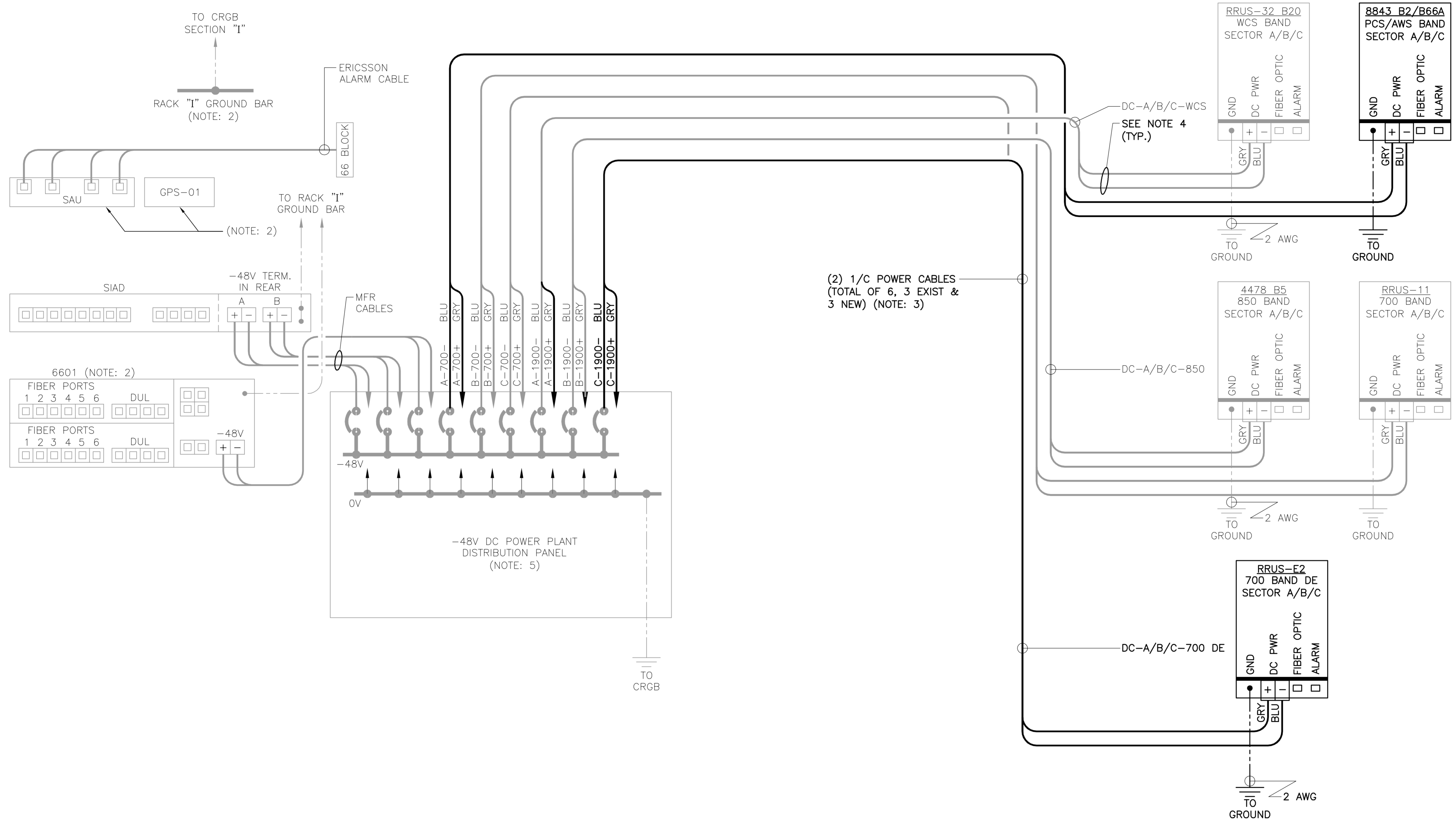


**SCHMATIC DIAGRAM NOTES:**

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.

PROFESSIONAL ENGINEER SEAL				DATE	DRAWN BY	CHK'D BY	DESCRIPTION
				6/29/20	TJL	CFC	CONSTRUCTION DRAWINGS
				0			
 							
		(203) 488-0360 (203) 488-8387 Fax 63-2 North Branford Road Branford, CT 06405 www.CentekEng.com					
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY <b>NORWALK CENTER</b> CT5046 - LTE 6C 1 WILL RUSS COURT NORWALK, CT 06850							
DATE:		12/16/19					
SCALE:		AS NOTED					
JOB NO.		19157.00					
SCHEMATIC DIAGRAM AND NOTES							
<b>E-1</b>							
Sheet No.		6 of 8					





**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.

REV.	0	DATE	6/29/20	TJL	CFC	CONSTRUCTION DRAWINGS
BY		CHK'D				

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

**CENTEK** engineering  
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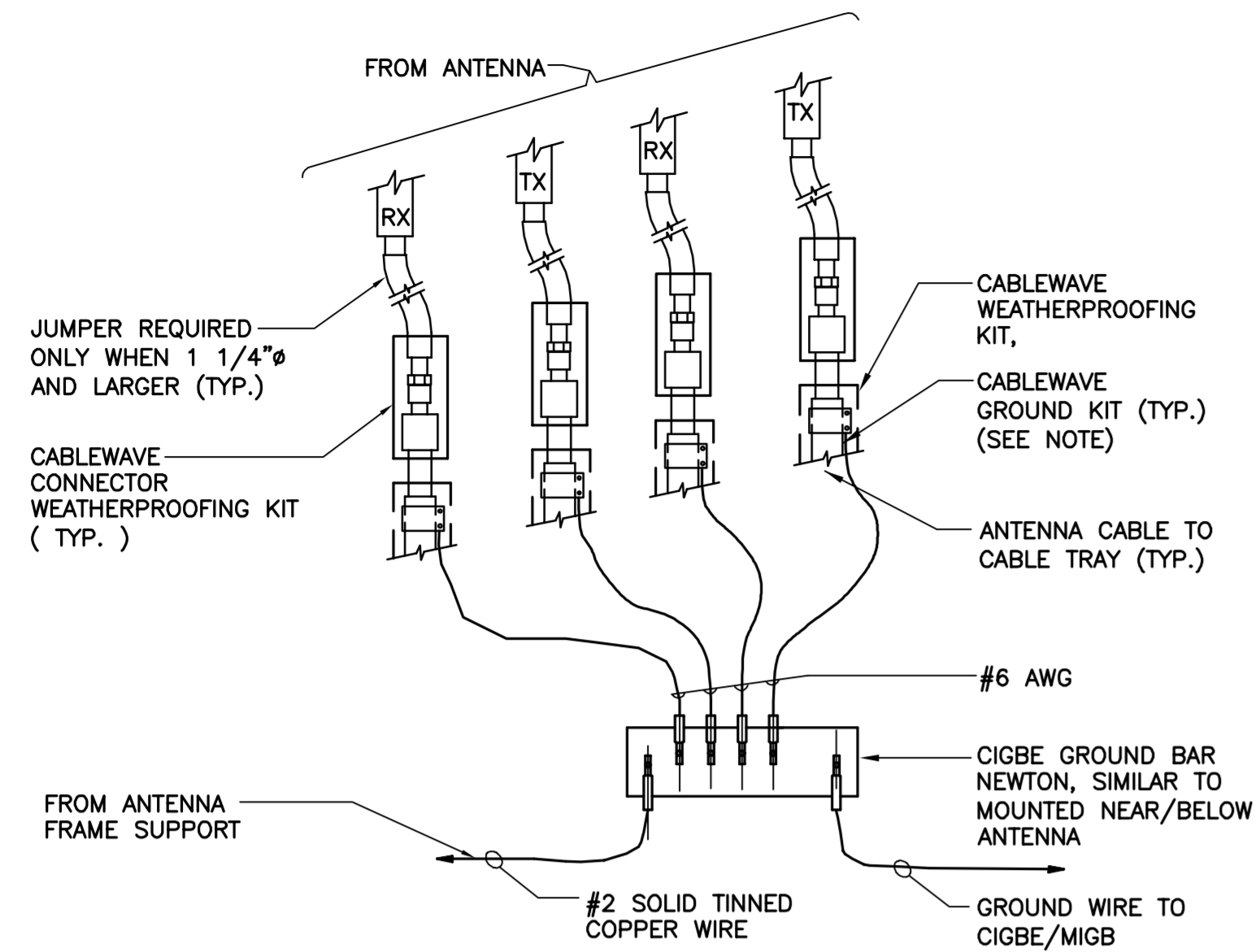
AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**NORWALK CENTER**  
CT5046 - LTE 6C  
1 WILL RUSS COURT  
NORWALK, CT 06850

DATE: 12/16/19  
SCALE: AS NOTED  
JOB NO. 19157.00

WIRING DIAGRAM

**E-2**  
Sheet No. 7 of 8

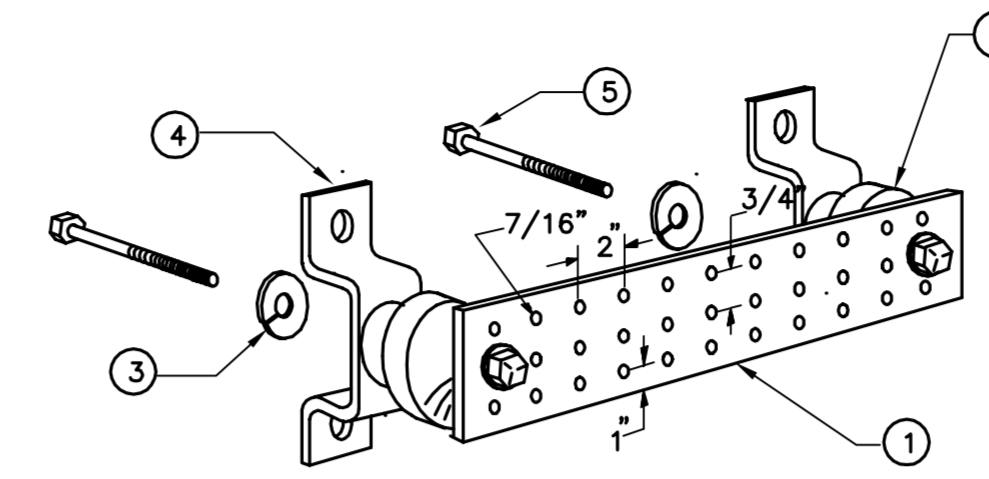




**NOTE:**

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

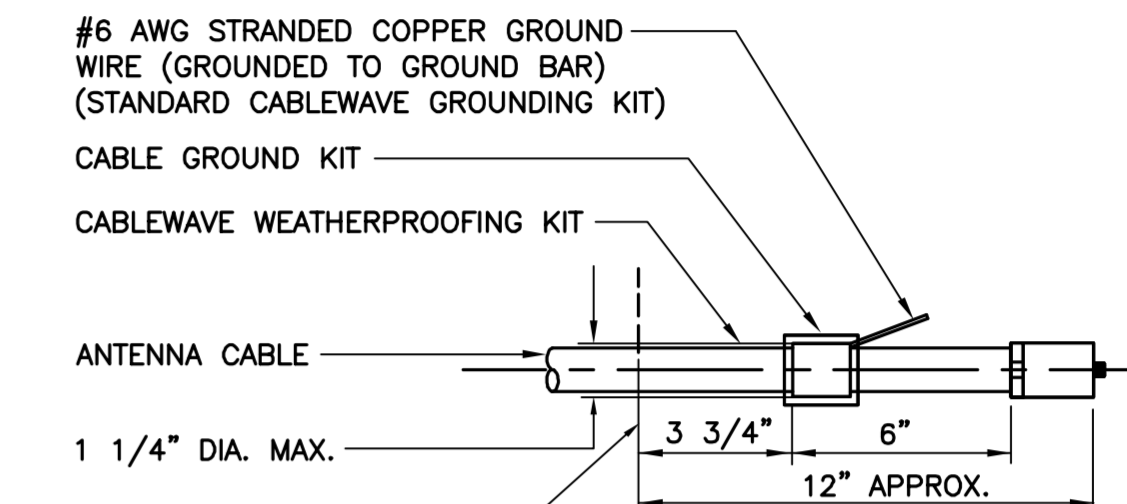
**1 CONNECTION OF GROUND WIRES TO GROUND BAR**  
E-3 NOT TO SCALE



**LEGEND**

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

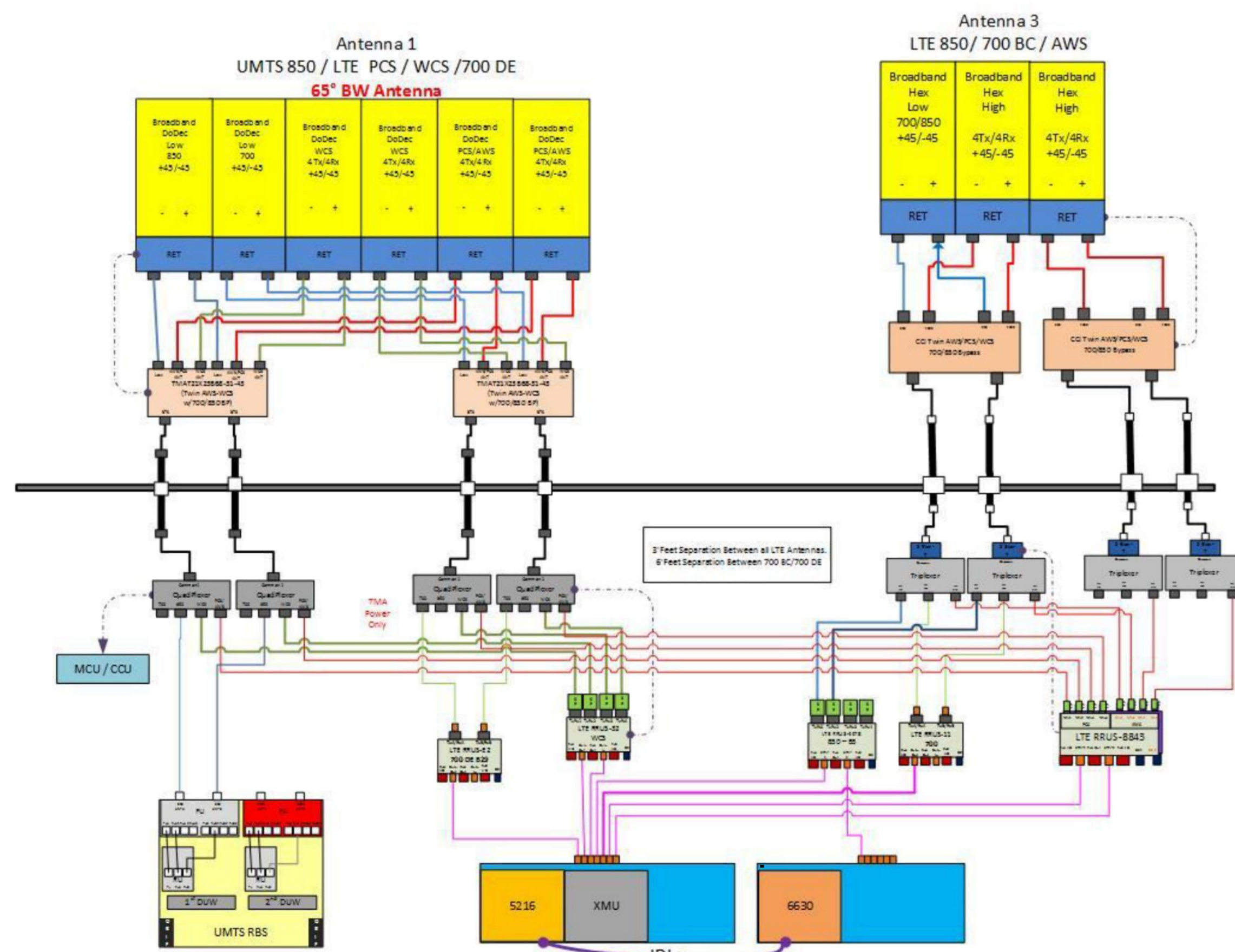
**2 GROUND BAR DETAIL**  
E-3 NOT TO SCALE



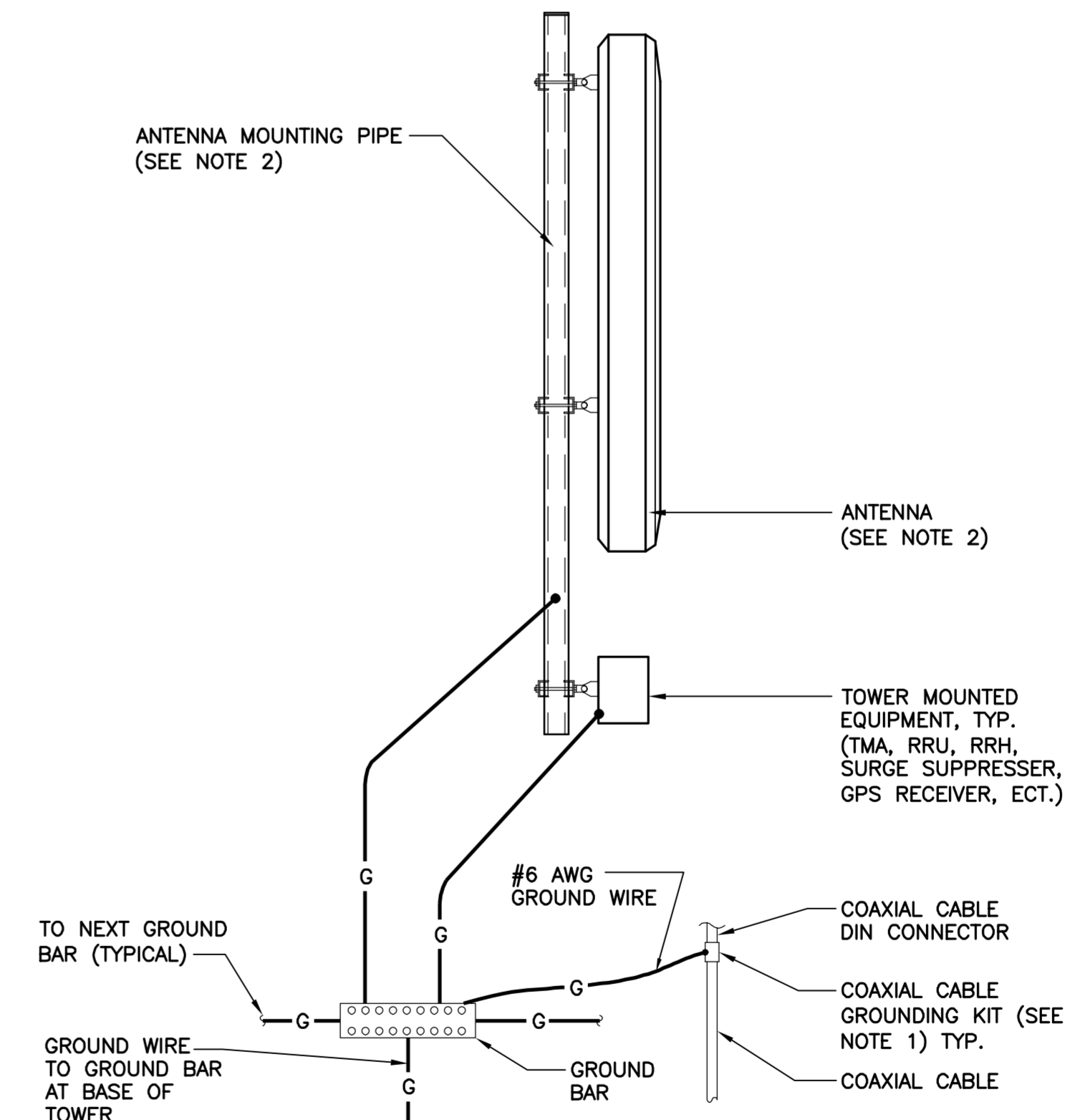
**NOTE:**

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

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



**4 RF PLUMBING DIAGRAM**  
E-3 NOT TO SCALE



**NOTES:**

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

**5 TYPICAL ANTENNA GROUNDING DETAIL**  
E-3 NOT TO SCALE

REV.	DATE	BY	CHK'D	DESCRIPTION
0	6/29/20	TJL	CFC	CONSTRUCTION DRAWINGS

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STATE OF CONNECTICUT  
JULIAN J. LEWIS  
REGISTERED PROFESSIONAL ENGINEER  
ELECTRICAL



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NORWALK, CT 06850

DATE: 12/16/19  
SCALE: AS NOTED  
JOB NO. 19157.00

TYPICAL ELECTRICAL DETAILS

**E-3**  
Sheet No. 8 of 8



**Structural Analysis of  
Antenna Mast and Tower**

*Eversource Structure No. 1102  
94' Electric Transmission Lattice Tower*

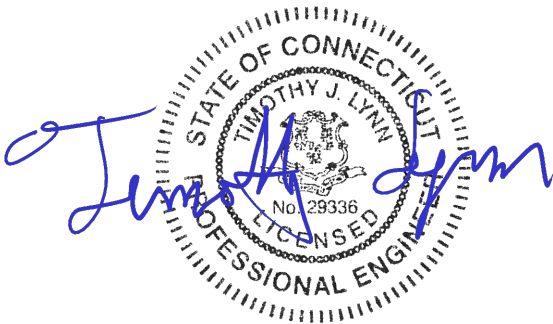
*AT&T Site #: CT5046  
AT&T Site Name: Norwalk Center  
Project: Antenna Retrofit/LTE6C  
PACE #: MRCTB041320/ MRCTB041343  
PT #: 2051A0Q667/ 2051A0Q6AT  
FA #: 10071181*

*1 Willruss Court  
Norwalk, CT*

*CEN TEK Project No. 19157.00*

*~~Date: November 13, 2019~~*

*Rev 4: May 18, 2020*



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



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## Introduction

The purpose of this report is to analyze the existing antenna mast and 94' utility tower located on Willruss Court in Norwalk, CT for the proposed antenna and equipment upgrade by AT&T.

The existing and proposed loads consist of the following:

- **T-MOBILE (Existing):**  
**Antennas:** Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas and three (3) Bias Tees mounted the existing North mast with a RAD center elevation of 114-ft above tower base plate.  
**Coax Cables:** Twelve (12) 1-1/4" Ø coax cables running on the Northeast leg of the tower.
- **T-MOBILE (Existing):**  
**Antennas:** Three (3) RFS APXVAARR24\_43 panel antennas and three (3) Bias Tees mounted the existing South mast with a RAD center elevation of 114-ft above tower base plate.  
**Coax Cables:** Twenty-Four (24) 1-1/4" Ø coax cables running on the Southwest leg of the tower.
- **AT&T (Existing to Remain):**  
**Antennas:** Three (3) Quintel QS46512-2 panel antennas and six (6) Commscope TMA21X23B68-31-43 TMAs mounted on the existing mounted on the existing North mast with a RAD center elevation of 105-ft above tower base plate.  
**Coax Cables:** Six (6) 1-1/4" Ø coax cables running on the Southeast leg of the tower and twelve (12) 1-1/4" Ø coax cables running on the Northwest leg of the tower.
- **AT&T (Existing to Remove):**  
**Antennas:** Three (3) KMW AM-X-CD-14-65 panel antennas and three (3) Kaelus TMA2093F00V1-1 TMAs mounted on the existing South mast with a RAD center elevation of 105-ft above tower base plate.
- **AT&T (Proposed):**  
**Antennas:** **Three (3) Andrew SBNHH-1D65A panel antennas and six (6) Andrew TMABPD7823VG12A TMA's mounted on the existing South mast with a RAD center elevation of 105-ft above tower base plate.**  
**Coax Cables:** **Six (6) 1-1/4" Ø coax cables running on the Southeast leg of the 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 existing mast consisting of a 12” sch. 80 pipe conforming to ASTM A53 Grade B (Fy = 35ksi) connected at four points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast in order to obtain reactions needed for analyzing the utility tower structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA loading and for NESC loading are listed in report Sections 6 and 8 respectively.

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.

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 C2-2012 and Eversource 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 Eversource Design Criteria Table, NESC C2-2012 ~ Construction Grade B, and ASCE Manual No. 10-97, “Design of Latticed Steel Transmission Structures”.

Load cases considered:

Load Case 1: NESC Heavy

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

Load Case 2: NESC Extreme

Wind Speed.....	110 mph <sup>(1)</sup>
Radial Ice Thickness.....	0”

Note 1: NESC C2-2012, Section 25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

Load Case 1: NESC Heavy Broken Wire

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



▪ MAST ASSEMBLY ANALYSIS

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

Load cases considered:

Load Case 1:

Wind Speed..... 93 mph <sup>(2018 CSBC Appendix-N)</sup>  
 Radial Ice Thickness..... 0"

Load Case 2:

Wind Pressure..... 50 mph wind pressure  
 Radial Ice Thickness..... 0.75"

Results

▪ ANTENNA MAST

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

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12" Sch. X-Strong	Bending	92.3%	<b>PASS</b>
HSS6x6x1/4	Bending	99.6%	<b>PASS</b>
Connection	Shear	18.3%	<b>PASS</b>

▪ 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 **98.88%** occurs in the utility tower under the **NESC Heavy Broken Wire** loading condition.

TOWER SECTION:

The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g80XY	98.88%	<b>PASS</b>



▪ FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 3-ft square tapering to 6-ft square x 9.5-ft long reinforced concrete piers and four (4) 11-ft square x 3-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by one (1) anchor stub per leg. Foundation information was obtained from NUSCO drawing # 01135-60003.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	43.25 kips	71.09 kips	129.31 kips
NESC Extreme Wind	40.13 kips	90.06 kips	118.02 kips
NESC Heavy Broken Wire	44.94 kips	89.44 kips	129.32 kips

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

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Required FS <sup>(1)</sup>	Proposed Loading FS <sup>(2)</sup>	Result
Reinf. Conc. Pad & Pier	Uplift	1.0	2.53	<b>PASS</b>
	Bearing Pressure	9 ksf	1.87 ksf	<b>PASS</b>

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.

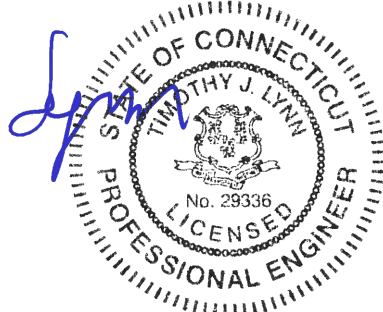
Please feel free to call with any questions or comments.

Respectfully Submitted by:

Prepared by:



Timothy J. Lynn, PE  
 Structural Engineer




Fernando J. Palacios  
 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 - 3 D

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 drawing/editing environment: draw, generate, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, trim, extend, etc.
- Versatile drawing grids (orthogonal, radial, skewed, DXF underlay)
- Universal snaps and object snaps allow drawing without grids
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet based, save/recall selections with locking
- True spreadsheet editing with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and graphics
- Open multiple spreadsheets simultaneously
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability, automatic timed backup
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, geodesic domes, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection custom shape libraries
- Light Gage Shapes: AISI, SSMA, Dale/Incor, Dietrich, Marino\WARE
- Import DXF, RISA-2D, STAAD and CIS/2 files
- Export DXF, SDNF and CIS/2 files
- Robust two-way link with Revit Structure 2019
- Link with Tekla Structures 2018

### Design Codes:

- Steel Design Codes: AISC 360-16/10/05: ASD & LRFD, AISC 2nd & 3rd: LRFD, AISC 9th: ASD, CSA S16-14/09/05/01/CSA-S16.1-94, BS 5950-1: 2000, EN 1993-1-1:2014/2005, ENV 1993-1-1:1992, IS 800: 2007/1998, AS 4100-1998, NZS 3404: 1997
- Seismic design per AISC 341-10/05, including 358 prequalified connections
- Concrete Design Codes: ACI 318-14/11/08/05/02/99, CSA A23.3-14/04/94, NTC-DF 2004, BS 8110-1: 1997, BS EN 1992-1-1: 2004+A1: 2014/2004, EN 1992-1-1:1992, IS 456: 2000, AS 3600-2001, NZS 3101: 1995, SBC 304-2007
- Cold Formed Steel Design Codes: AISI S100-16/12/10/07: ASD & LRFD, AISI NAS-04/01: ASD & LRFD, AISI 1999: ASD & LRFD, CSA S136-16/12/10/07/04/01: LSD, CANACERO 16: ASD, CANACERO 12/10/07/04/01: ASD & LRFD
- Aluminum Design Codes: AA ADM1-15/10: ASD & LRFD, AA ADM1-05: ASD
- Wood Design Codes: AWC NDS-18/15/12: ASD, AF&PA NDS-08/05/01/97/91: ASD, CSA 086-14/09 Ultimate, Structural Composite Lumber, multi-ply, full sawn, Glulam, shear walls
- Masonry Design Codes: TMS 402-16: ASD & Strength, ACI 530-13/11/08/05/02: ASD & Strength, ACI 530-99: ASD, UBC 1997: ASD & Strength
- Stainless Steel Design Code: AISC 360-10: ASD & LRFD
- Wind loads are generated automatically (ASCE 7-16/10/05/02/98/95, NBC 15/10/05, NTC 2004, & IS 875: 1987) for building-type structures, including partial wind cases
- Seismic loads are generated automatically (ASCE 7-16/10/05/02, CBC 2001, IBC 2000, UBC 1997, NBC 15/10/05, NTC 2004, & IS 1893: 2002) for building-type structures, including accidental torsion

#### Analysis Features:

- Analysis of 1D members (beams, columns, braces, etc.) using Finite Element Method
- Analysis of 2D elements (plates, walls) using Finite Element Method
- Analysis of 3D elements (solids) using Finite Element Method
- Partial fixity member end releases using rotational spring constants
- Time History Analysis
- Accelerated true sparse solver for static analysis
- Flexible modeling of P-Delta effects
- Accelerated Sparse Lanczos dynamics solver, very fast and robust
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS with automatic calc of scaling factors
- Automatic inclusion of mass offset (5% or user defined) for dynamics when integrated with RISAFloor
- Ritz vector dynamic solver
- True physical member modeling (members are aware of interior joints)
- Plate/shell elements with plane stress only option
- 8 node solid elements
- High end mesh generation — draw a polygon with any number of sides to create a mesh of well formed quadrilateral (NO triangular) elements
- Automatic rigid diaphragm modeling with detachable joints
- Area loads with one-way or two-way distributions with optional “blow through” distribution for loading open structures
- Plate thermal loads
- Simultaneous moving loads, AASHTO/custom for bridges, cranes...
- Torsional warping calculations for stiffness, stress and design of hot rolled steel
- Member end releases, rigid end offsets, analysis offsets
- Enforced joint displacements
- One Way members, for tension only bracing, slipping, etc.
- One Way springs, for modeling soils and other effects
- Euler members: Compression up to buckling load, then disable
- Stress calculations on any arbitrary shape
- Inactivate members, plates, solids and diaphragms without deleting them
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members, plates and solids

#### Graphics Features:

- Unlimited simultaneous model view windows
- “True to scale” rendering with translucency, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamically zoom, pan, rotate, scroll, snap views
- Font and color control
- Saved views to quickly restore frequent or desired views
- Rendered or wire-frame animations of deflected model and mode shapes
- Animation of moving loads with speed control
- Distance tool for measuring between points
- Force/moment summation about any arbitrary cut line
- High quality customizable graphics printing

#### Design Features:

- Designs/optimizes concrete, hot rolled & cold formed steel, masonry, wood and aluminum
- Program selected or user-defined rebar layouts for flexure and shear
- Concrete beam detailing (Rectangular, T and L).
- Concrete column interaction diagrams



- Concrete wall design including in-plane, out-of-plane & bearing loads
- Automatic spectra generation for ASCE 7, NBC, IS 1893, NTC
- Extensive user controlled generation of load combinations
- Intelligent unbraced length calculations for physical members
- Tapered wide flange design per AISC Design Guide 25
- Masonry wall design for in-plane and out-of-plane
- Wood Shapes: Complete NDS species/grade and Glulam database
- Complete wood wall design for bearing & shear walls: Segmented, Perforated & Force Transfer Around Openings design methods
- Strap and Hold Down design for Wood Shear Walls
- Seismic design of concrete walls using ACI 318-14 Chapter 18
- Concrete seismic coupling beams for multi-story walls with diaphragms

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours on plates, solid stresses/forces with smoothing and animation
- Spreadsheet results with sorting and filtering of: deflections, forces, stresses, optimized sizes for strength or deflection, code designs, concrete reinforcing, material takeoffs, etc.
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams

## 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, 2009
  - NESC 2002, 2007, 2012, 2017
  - IEC 60826:2003, 2017
  - IS 802 : 1995, 2015
  - ISEC-NCR-83
  - EN50341-1:2001 and 2012 (CENELEC)
  - EN50341-3-2:2001 (Belgium NNA)
  - EN50341-3-9:2001, EN50341-2-9:2015, 2017 (UK NNA)
  - EN50341-3-17:2001 (Portugal NNA)
  - EN50341-2-22:2016 (Poland NNA)
  - AS/NZS 7000:2010, 2016
  - ESAA C(b)1-2003 (Austalia)
  - TPNZ (New Zealand)
  - REE (Spain)
  - SP 16.13330.2011 (SNiP Russia)
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems



- Design checks according to (PLS can add strength checks for other standards):
  - ASCE 10
  - AS 3995 (Australian Standard 3995)
  - BS 8100 (British Standard 8100)
  - EN50341-1 2001 and 2012 (CENELEC, both empirical and analytical methods are available)
  - EN50341-2-9:2015, 2017 (UK NNA)
  - ECCS 1985
  - NGT-ECCS
  - PN-90/B-03200
  - EN50341-2-22:2016 (Poland NNA)
  - SP 16.13330.2011 (SNiP Russia)
  - 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* <sup>(1)</sup>

*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-G covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required strength.

ANSI Standard C2-2017 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

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

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

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

| Note 1: Prepared from documentation provide from Northeast Utilities.



## PCS Mast

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

## ELECTRIC TRANSMISSION TOWER

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource 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 2017 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.

Overhead Transmission Standards

Attachment A  
Eversource Design Criteria

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
	Conductors:		Conductor Loads Provided by ES					
High Wind Condition	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	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
	Conductors:		Conductor Loads Provided by ES					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 x Gust Response Factor Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
	Conductors:		Conductor Loads Provided by ES					

\*Only for structures installed after 2007

Communication Antennas on Transmission Structures

Eversource Approved by: CPS (CT/WMA) JCC (NH/EMA)	Design	OTRM 059	Rev. 1 11/19/2018
		Page 8 of 10	



**Overhead Transmission Standards**

determined from NESC applied loading conditions (not TIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition. With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource 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 Eversource).
- c) Electric Transmission Structure

- i) The loads from the wireless communication equipment components based on NESC and Eversource 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)
- ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	See Below Table

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

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

- d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource 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.

<b>Communication Antennas on Transmission Structures</b>			
<b>Eversource</b> Approved by: CPS (CT/WMA) JCC (NH/EMA)	<b>Design</b>	<b>OTRM 059</b>	<b>Rev. 1</b> <b>11/19/2018</b>
		<b>Page 3 of 10</b>	

T-MOBILE (EXISTING):  
 EXISTING THREE (3) RFS  
 APX16DWV-16DWVS PANEL  
 ANTENNAS AND THREE (3)  
 BIAS TEES FLUSH MOUNTED.

☉ T-MOBILE ANTENNAS  
 EL. ±114'-0" ATB

☉ AT&T ANTENNAS  
 EL. ±105'-0" ATB

AT&T (EXISTING):  
 EXISTING THREE (3) QUINTEL  
 QS46512-2 AND SIX (6)  
 COMMSCOPE TMA21X23B68-31-43  
 TMA's FLUSH MOUNTED.

☉ TOP CONNECTION  
 EL. ±83'-6" ATB

EXISTING 12" SCH. 80  
 (O.D. = 12.75") X 55'  
 LONG PIPE MAST

☉ BOTTOM CONNECTION  
 EL. ±62'-0" ATB

T-MOBILE EXISTING (12)  
 1-1/4" DIA. COAX CABLES  
 MOUNTED ON A COAX SUPPORT  
 BRACKET ON NE LEG

AT&T EXISTING TWELVE (12)  
 AND 1-1/4" DIA. COAX  
 CABLES MOUNTED ON A COAX  
 SUPPORT BRACKET ON NW  
 LEG

EXIST. GRADE

T-MOBILE (EXISTING):  
 EXISTING THREE (3) RFS  
 APXVAARR24\_43 PANEL  
 ANTENNAS AND THREE (3)  
 BIAS TEES MOUNTED ON (2)  
 UNIVERSAL RING MOUNTS  
 (P/N LWR4).

☉ T-MOBILE ANTENNAS  
 EL. ±114'-0" ATB

☉ AT&T ANTENNAS  
 EL. ±105'-0" ATB

AT&T (PROPOSED): THREE (3)  
 ANDREW SBNHH-1D65A PANEL  
 ANTENNAS AND SIX (6) KAELOS  
 TMABPD7823VG12A TMA'S  
 MOUNTED ON UNIVERSAL  
 TRI-BRACKET.

EXISTING 12" SCH. 80  
 (O.D. = 12.75") X 55'  
 LONG PIPE MAST

EXISTING 94' TALL STEEL  
 TRANSMISSION STRUCTURE  
 NO. 1102

T-MOBILE EXISTING (24)  
 1-1/4" DIA. COAX  
 CABLES MOUNTED ON A  
 COAX SUPPORT BRACKET  
 ON SW LEG

AT&T EXISTING (6) AND  
 PROPOSED (6) 1-1/4"  
 DIA. COAX CABLES  
 MOUNTED ON A COAX  
 SUPPORT BRACKET ON  
 SE LEG

1  
 SK-2

1 TOWER & MAST ELEVATION  
 SK-1 SCALE: NOT TO SCALE

REVISIONS		
00	11/12/19	ISSUED FOR REVIEW

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

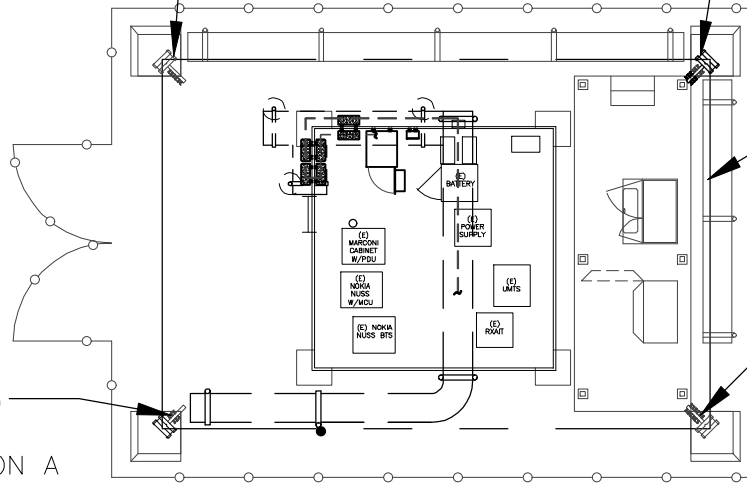
CT5046  
 EVERSOURCE 1102  
 WILLRUSS COURT  
 NORWALK, CT 06850

PROJECT NO: 19157.00  
 DRAWN BY: FJP  
 CHECKED BY: TJL  
 SCALE: AS NOTED  
 DATE: 11/12/19

TOWER AND MAST  
 ELEVATION  
**SK-1**  
 DWG. 1 OF 2

T-MOBILE EXISTING (12)  
1-1/4" DIA. COAX CABLES  
MOUNTED ON A COAX  
SUPPORT BRACKET ON NE LEG

AT&T EXISTING (6) AND  
PROPOSED (6) 1-1/4"  
DIA. COAX CABLES  
MOUNTED ON A COAX  
SUPPORT BRACKET ON SE  
LEG



EXISTING 94' TALL CL&P  
STEEL TRANSMISSION  
STRUCTURE NO. 1102

T-MOBILE EXISTING  
(24) 1-1/4" DIA.  
COAX CABLES MOUNTED  
ON A COAX SUPPORT  
BRACKET ON SW LEG

AT&T EXISTING (12)  
1-1/4" DIA. COAX  
CABLES MOUNTED ON A  
COAX SUPPORT  
BRACKET ON NW LEG

1  
SK-2

# TOWER PLAN

SCALE: NOT TO SCALE



TRUE  
NORTH

REVISIONS		
00	11/12/19	ISSUED FOR REVIEW

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CT5046  
EVERSOURCE 1102  
WILLRUSS COURT  
NORWALK, CT 06850

PROJECT NO:	19157.00
DRAWN BY:	FJP
CHECKED BY:	TJL
SCALE:	AS NOTED
DATE:	11/12/19



TOWER AND COAX  
PLAN  
**SK-2**  
DWG. 2 OF 2



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

**Wind Speeds**

Basic Wind Speed =	V := 93	mph	(User Input - 2018 CSBC Appendix N)
Basic Wind Speed with Ice =	V <sub>i</sub> := 50	mph	(User Input per Annex B of TIA-222-G)
Basic Wind Speed Service Loads =	V <sub>Ser</sub> := 60	mph	(User Input - TIA-222-G Section 2.8.3)

**Input**

Structure Type =	Structure_Type := Lattice		(User Input)
Structure Category =	SC := III		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	h := 94	ft	(User Input)
Height to Center of At&t Antennas =	Z <sub>AT&amp;T</sub> := 105	ft	(User Input)
Height to Center of T-Mobile Antennas =	Z <sub>T-M0</sub> := 114	ft	(User Input)
Height to Center of Mast =	Z <sub>Mast1</sub> := 90	ft	(User Input)
Radial Ice Thickness =	t <sub>i</sub> := 0.75	in	(User Input per Annex B of TIA-222-G)
Radial Ice Density =	I <sub>d</sub> := 56.00	pcf	(User Input)
Topographic Factor =	K <sub>zt</sub> := 1.0		(User Input)
	K <sub>a</sub> := 1.0		(User Input)
Gust Response Factor =	G <sub>H</sub> := 1.35		(User Input)

**Output**

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

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

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

$$I_{ice} := \begin{cases} \text{if } SC = 1 & = 1.25 \\ \text{if } SC = 2 & = 1.00 \\ \text{if } SC = 3 & = 1.25 \\ \text{if } SC = 4 & = 1.00 \\ \text{if } SC = 5 & = 1.25 \end{cases} \quad \text{(Per Section 2.8.3 of TIA-222-G)}$$

Wind Direction Probability Factor (Service) =

$$K_{dSer} := \begin{cases} \text{if } Structure\_Type = Pole & = 0.85 \\ \text{if } Structure\_Type = Lattice & = 0.85 \end{cases} \quad \text{(Per Section 2.8.3 of TIA-222-G)}$$

Importance Factor (Service) =

$$I_{Ser} := 1$$

$$K_{iz} := \left( \frac{Z_{T-Mo}}{33} \right)^{0.1} = 1.132$$

$$t_{izT-Mo} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.122$$

Velocity Pressure Coefficient Antennas =

$$K_{Z_{T-Mo}} := 2.01 \cdot \left( \left( \frac{Z_{T-Mo}}{z_g} \right) \right)^{\frac{2}{\alpha}} = 1.301$$

Velocity Pressure w/o Ice Antennas =

$$q_{Z_{T-Mo}} := 0.00256 \cdot K_d \cdot K_{Z_{T-Mo}} \cdot V^2 \cdot I_{Wind} = 28.158$$

Velocity Pressure with Ice Antennas =

$$q_{Z_{ice.T-Mo}} := 0.00256 \cdot K_d \cdot K_{Z_{T-Mo}} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.078$$

Velocity Pressure Service =

$$q_{Z_{T-Mo.Ser}} := 0.00256 \cdot K_{dSer} \cdot K_{Z_{T-Mo}} \cdot V_{Ser}^2 \cdot I_{Ser} = 10.192$$

$$K_{iz} := \left( \frac{Z_{AT\&T}}{33} \right)^{0.1} = 1.123$$

$$t_{izAT\&T} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.105$$

Velocity Pressure Coefficient Antennas =

$$K_{Z_{AT\&T}} := 2.01 \cdot \left( \left( \frac{Z_{AT\&T}}{z_g} \right) \right)^{\frac{2}{\alpha}} = 1.279$$

Velocity Pressure w/o Ice Antennas =

$$q_{Z_{AT\&T}} := 0.00256 \cdot K_d \cdot K_{Z_{AT\&T}} \cdot V^2 \cdot I_{Wind} = 27.675$$

Velocity Pressure with Ice Antennas =

$$q_{Z_{ice.AT\&T}} := 0.00256 \cdot K_d \cdot K_{Z_{AT\&T}} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.956$$

Velocity Pressure Service =

$$q_{Z_{AT\&T.Ser}} := 0.00256 \cdot K_{dSer} \cdot K_{Z_{AT\&T}} \cdot V_{Ser}^2 \cdot I_{Ser} = 10.017$$

$$K_{izMast1} := \left( \frac{Z_{Mast1}}{33} \right)^{0.1} = 1.106$$

$$t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 2.073$$

Velocity Pressure Coefficient Mast =

$$K_{Z_{Mast1}} := 2.01 \cdot \left( \left( \frac{Z_{Mast1}}{z_g} \right) \right)^{\frac{2}{\alpha}} = 1.238$$

Velocity Pressure w/o Ice Mast =

$$q_{Z_{Mast1}} := 0.00256 \cdot K_d \cdot K_{Z_{Mast1}} \cdot V^2 \cdot I_{Wind} = 26.791$$

Velocity Pressure with Ice Mast =

$$q_{Z_{ice.Mast1}} := 0.00256 \cdot K_d \cdot K_{Z_{Mast1}} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.734$$

Velocity Pressure Service =

$$q_{Z_{Mast1.Ser}} := 0.00256 \cdot K_{dSer} \cdot K_{Z_{Mast1}} \cdot V_{Ser}^2 \cdot I_{Ser} = 9.697$$

**Development of Wind & Ice Load on Mast**

**Mast Data:** (12" Sch. Pipe 80 Pipe) (User Input)

Mast Shape = Round (User Input)

Mast Diameter =  $D_{mast} := 12.75$  in (User Input)

Mast Length =  $L_{mast} := 55$  ft (User Input)

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

Mast Aspect Ratio =  $C := \sqrt{I \cdot K_{Z_{Mast1}}} \cdot V \cdot \frac{D_{mast}}{12} = 110$

Mast Force Coefficient =  $CF_{mast} = 0.6$

**Wind Load (without ice)**

Mast Projected Surface Area =  $A_{mast} := \frac{D_{mast}}{12} = 1.063$  sf/ft

Total Mast Wind Force =  $q_{Z_{Mast1}} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 23$  plf **BLC 5,8**

**Wind Load (with ice)**

Mast Projected Surface Area w/ Ice =  $A_{ICE_{mast}} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.408$  sf/ft

Total Mast Wind Force w/ Ice =  $q_{Z_{Ice.Mast1}} \cdot G_H \cdot CF_{mast} \cdot A_{ICE_{mast}} = 8$  plf **BLC 4,7**

**Wind Load (Service)**

Total Mast Wind Force Service Loads =  $q_{Z_{Mast1.Ser}} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 8$  plf **BLC 6,8**

**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 =  $A_{i_{mast}} := \frac{\pi}{4} \cdot ((D_{mast} + t_{izMast1} \cdot 2)^2 - D_{mast}^2) = 96.5$  sq in

Weight of Ice on Mast =  $W_{ICE_{mast}} := I_d \cdot \frac{A_{i_{mast}}}{144} = 38$  plf **BLC 3**



**Development of Wind & Ice Load on Antennas**

**Antenna Data:** (AT&T)

Antenna Model =	Andrew SBNHH-1D65A	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 55$	in (User Input)
Antenna Width =	$W_{ant} := 11.9$	in (User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in (User Input)
Antenna Weight =	$WT_{ant} := 33.5$	lbs (User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$	
Antenna Force Coefficient =	$Ca_{ant} = 1.29$	

**Wind Load (without ice)**

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.6$	sf

**Total Antenna Wind Force =**  $F_{ant} := qZ_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 659$  lbs **BLC 5,8**

**Wind Load (with ice)**

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T})}{144} = 6.6$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.9$	sf

**Total Antenna Wind Force w/ Ice =**  $F_{i_{ant}} := qZ_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 242$  lbs **BLC 4,7**

**Wind Load (Service)**

**Total Antenna Wind Force Service Loads =**  $F_{ant.Ser} := qZ_{AT\&T.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 239$  lbs **BLC 6,9**

**Gravity Load (without ice)**

**Weight of All Antennas =**  $WT_{ant} \cdot N_{ant} = 101$  lbs **BLC 2**

**Gravity Loads (ice only)**

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4647$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T}) \cdot (T_{ant} + 2 \cdot t_{izAT\&T}) - V_{ant}$	= 6142
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 199$	cu in lbs

**Weight of Ice on All Antennas =**  $W_{ICEant} \cdot N_{ant} = 597$  lbs **BLC 3**

**Development of Wind & Ice Load on TMA's**

<b>TMA Data:</b>	(AT&T)	
TMA Model =	CCI TMABPD7823VG12A	
TMA Shape =	Flat	(User Input)
TMA Height =	$L_{TMA} := 10.7$	in (User Input)
TMA Width =	$W_{TMA} := 11.1$	in (User Input)
TMA Thickness =	$T_{TMA} := 3.8$	in (User Input)
TMA Weight =	$WT_{TMA} := 25$	lbs (User Input)
Number of TMAs=	$N_{TMA} := 6$	(User Input)
TMA Aspect Ratio =	$AR_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1.0$	
TMA Force Coefficient =	$Ca_{TMA} = 1.2$	

**Wind Load (without ice)**

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.8$	sf
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.9$	sf

**Total TMA Wind Force =**  $F_{TMA} := qZ_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 222$  lbs **BLC 5,8**

**Wind Load (with ice)**

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{izAT\&T}) \cdot (W_{TMA} + 2 \cdot t_{izAT\&T})}{144} = 1.6$
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 9.5$ sf

**Total Antenna Wind Force w/ Ice =**  $F_{i_{TMA}} := qZ_{ice,AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 107$  lbs **BLC 4,7**

**Wind Load (Service)**

**Total TMA Wind Force Service Loads =**  $F_{TMA, Ser} := qZ_{AT\&T, Ser} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 80$  lbs **BLC 6,9**

**Gravity Load (without ice)**

**Weight of All TMAs=**  $WT_{TMA} \cdot N_{TMA} = 150$  lbs **BLC 2**

**Gravity Loads (ice only)**

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 451$	cu in
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{izAT\&T}) \cdot (W_{TMA} + 2 \cdot t_{izAT\&T}) \cdot (T_{TMA} + 2 \cdot t_{izAT\&T}) - V_{TMA}$	$= 1377$
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 45$	cu in lbs

**Weight of Ice on All TMAs =**  $W_{ICETMA} \cdot N_{TMA} = 268$  lbs **BLC 3**

**Development of Wind & Ice Load on Mounts**

**Mount Data:** (AT&T)

Mounting Type = Tri-Bracket and Pipes

MountShape = Flat (User Input)

Mount Surface Area= CaAa := 0 sf (User Input)

Mount Surface Area/Ice= CaAa<sub>ice</sub> := 0 sf (User Input)

Mount Weight = WT<sub>mnt</sub> := 265 lbs (User Input)

Mount Weight w/ Ice= WT<sub>mnt.ice</sub> := 300 lbs (User Input)

**Wind Load (without ice)**

Total Mount Wind Force =  $F_{mnt} := qZ_{AT\&T} \cdot G_H \cdot CaAa = 0$  lbs **BLC 5,8**

**Wind Load (with ice)**

Total Mount Wind Force =  $F_{mnt} := qZ_{AT\&T} \cdot G_H \cdot CaAa_{ice} = 0$  lbs **BLC 4,7**

**Wind Load (Service)**

Total Mount Wind Force =  $F_{mnt} := qZ_{AT\&T.Ser} \cdot G_H \cdot CaAa = 0$  lbs **BLC 6,9**

**Gravity Loads (without Service)**

Weight of All Mounts WT<sub>mnt</sub> = 265 lbs **BLC 2**

**Gravity Loads (ice only)**

Weight of All Mounts WT<sub>mnt.ice</sub> - WT<sub>mnt</sub> = 35 lbs **BLC 3**



**Development of Wind & Ice Load on Antennas**

**Antenna Data:** (T-Mobile)

Antenna Model = RFS APXVAARR24\_43-U-NA20

Antenna Shape = Flat (User Input)

Antenna Height =  $L_{ant} := 95.9$  in (User Input)

Antenna Width =  $W_{ant} := 24$  in (User Input)

Antenna Thickness =  $T_{ant} := 8.7$  in (User Input)

Antenna Weight =  $WT_{ant} := 153.3$  lbs (User Input)

Number of Antennas =  $N_{ant} := 3$  (User Input)

Antenna Aspect Ratio =  $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$

Antenna Force Coefficient =  $Ca_{ant} = 1.27$

**Wind Load (without ice)**

Surface Area for One Antenna =  $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$  sf

Antenna Projected Surface Area =  $A_{ant} := SA_{ant} \cdot N_{ant} = 48$  sf

Total Antenna Wind Force =  $F_{ant} := qZ_{T-Mo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 2308$  lbs **BLC 5,8**

**Wind Load (with ice)**

Surface Area for One Antenna w/ Ice =  $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izT-Mo}) \cdot (W_{ant} + 2 \cdot t_{izT-Mo})}{144} = 19.6$  sf

Antenna Projected Surface Area w/ Ice =  $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 58.9$  sf

Total Antenna Wind Force w/ Ice =  $F_{i_{ant}} := qZ_{ice.T-Mo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 713$  lbs **BLC 4,7**

**Wind Load (Service)**

Total Antenna Wind Force Service Loads =  $F_{ant.Ser} := qZ_{T-Mo.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 836$  lbs **BLC 6,9**

**Gravity Load (without ice)**

Weight of All Antennas =  $WT_{ant} \cdot N_{ant} = 460$  lbs **BLC 2**

**Gravity Loads (ice only)**

Volume of Each Antenna =  $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$  cu in

Volume of Ice on Each Antenna =  $V_{ice} := (L_{ant} + 2 \cdot t_{izT-Mo}) \cdot (W_{ant} + 2 \cdot t_{izT-Mo}) \cdot (T_{ant} + 2 \cdot t_{izT-Mo}) - V_{ant} = 2 \cdot 10^4$

Weight of Ice on Each Antenna =  $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 538$  lbs

Weight of Ice on All Antennas =  $W_{ICEant} \cdot N_{ant} = 1613$  lbs **BLC 3**

**Development of Wind & Ice Load on Antennas**

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

**Wind Load (without ice)**

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf

**Total Antenna Wind Force =**  $F_{ant} := qZ_{T-Mo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 20$  lbs **BLC 5,8**

**Wind Load (with ice)**

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izT-Mo}) \cdot (W_{ant} + 2 \cdot t_{izT-Mo})}{144} = 0.5$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.6$	sf

**Total Antenna Wind Force w/ Ice =**  $F_{i_{ant}} := qZ_{ice.T-Mo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 19$  lbs **BLC 4,7**

**Wind Load (Service)**

**Total Antenna Wind Force Service Loads =**  $F_{ant.Ser} := qZ_{T-Mo.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 7$  lbs **BLC 6,9**

**Gravity Load (without ice)**

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

**Gravity Loads (ice only)**

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izT-Mo}) \cdot (W_{ant} + 2 \cdot t_{izT-Mo}) \cdot (T_{ant} + 2 \cdot t_{izT-Mo}) - V_{ant} = 448$	

**Weight of Ice on Each Antenna =**  $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 15$  lbs

**Weight of Ice on All Antennas =**  $W_{ICEant} \cdot N_{ant} = 44$  lbs **BLC 3**

**Development of Wind & Ice Load on Mounts**

**Mount Data:** (T-Mobile)

Mounting Type = SitePro Universal Ring Mount x2 w/ (3) 2 Std. x 9' long pipe masts

MountShape = Flat (User Input)

Mount Surface Area= CaAa := 0 sf (User Input)

Mount Surface Area/Ice= CaAa<sub>ice</sub> := 0 sf (User Input)

Mount Weight = WT<sub>mnt</sub> := 650 lbs (User Input)

Mount Weight w/ Ice= WT<sub>mnt.ice</sub> := 725 lbs (User Input)

**Wind Load (without ice)**

Total Mount Wind Force =  $F_{mnt} := q_{Z_{AT\&T}} \cdot G_H \cdot CaAa = 0$  lbs **BLC 5,8**

**Wind Load (with ice)**

Total Mount Wind Force =  $F_{mnt} := q_{Z_{AT\&T}} \cdot G_H \cdot CaAa_{ice} = 0$  lbs **BLC 4,7**

**Wind Load (Service)**

Total Mount Wind Force =  $F_{mnt} := q_{Z_{AT\&T.Ser}} \cdot G_H \cdot CaAa = 0$  lbs **BLC 6,9**

**Gravity Loads (without Service)**

Weight of All Mounts WT<sub>mnt</sub> = 650 lbs **BLC 2**

**Gravity Loads (ice only)**

Weight of All Mounts WT<sub>mnt.ice</sub> - WT<sub>mnt</sub> = 75 lbs **BLC 3**



**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIAX 1-1/4"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{\text{coax}} := 1.55$	in	(User Input)
Coax Cable Length =	$L_{\text{coax}} := 20$	ft	(User Input)
Weight of Coax per foot =	$Wt_{\text{coax}} := 0.66$	plf	(User Input)
Total Number of Coax =	$N_{\text{coax}} := 36$		(User Input) (12 AT&T & 24 T-Mobile)
Total Number of Exterior Coax =	$Ne_{\text{coax}} := 36$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{\text{coax}} := 6$		(User Input)
Coax aspect ratio =	$Ar_{\text{coax}} := \frac{(L_{\text{coax}} \cdot 12)}{D_{\text{coax}}} = 154.8$		
Coax Cable Force Factor Coefficient =	$Ca_{\text{coax}} = 1.2$		

**Wind Load (without ice)**

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

Total Coax Wind Force =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{Mast1}} \cdot G_H \cdot A_{\text{coax}} = 34$  plf **BLC 5,8**

**Wind Load (with ice)**

Coax projected surface area w/ Ice =  $A_{\text{ICE}_{\text{coax}}} := \frac{(NP_{\text{coax}} \cdot D_{\text{coax}} + 2 \cdot t_{\text{izMast1}})}{12} = 1.1$  sf/ft

Total Coax Wind Force w/ Ice =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{ice.Mast1}} \cdot G_H \cdot A_{\text{ICE}_{\text{coax}}} = 12$  plf **BLC 4,7**

**Wind Load (Service )**

Total Coax Wind Force Service Loads =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{Mast1.Ser}} \cdot G_H \cdot A_{\text{coax}} = 12$  plf **BLC 6,9**

**Gravity Loads (without ice)**

Weight of all cables w/o ice  $WT_{\text{coax}} := Wt_{\text{coax}} \cdot N_{\text{coax}} = 24$  plf **BLC 2**

**Gravity Loads (ice only)**

Ice Area per Linear Foot =  $Ai_{\text{coax}} := \frac{\pi}{4} \cdot ((D_{\text{coax}} + 2 \cdot t_{\text{izMast1}})^2 - D_{\text{coax}}^2) = 23.6$  sq in

Ice Weight All Coax per foot =  $WTi_{\text{coax}} := Ne_{\text{coax}} \cdot Id \cdot \frac{Ai_{\text{coax}}}{144} = 330$  plf **BLC 3**

**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIAX 1-1/4"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{\text{coax}} := 1.55$	in	(User Input)
Coax Cable Length =	$L_{\text{coax}} := 20$	ft	(User Input)
Weight of Coax per foot =	$Wt_{\text{coax}} := 0.66$	plf	(User Input)
Total Number of Coax =	$N_{\text{coax}} := 24$		(User Input) (24 T-Mobile)
Total Number of Exterior Coax =	$Ne_{\text{coax}} := 24$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{\text{coax}} := 6$		(User Input)
Coax aspect ratio =	$Ar_{\text{coax}} := \frac{(L_{\text{coax}} \cdot 12)}{D_{\text{coax}}} = 154.8$		
Coax Cable Force Factor Coefficient =	$Ca_{\text{coax}} = 1.2$		

**Wind Load (without ice)**

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

Total Coax Wind Force =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{Mast1}} \cdot G_H \cdot A_{\text{coax}} = 34$  plf **BLC 5,8**

**Wind Load (with ice)**

Coax projected surface area w/ Ice =  $A_{\text{ICE}_{\text{coax}}} := \frac{(NP_{\text{coax}} \cdot D_{\text{coax}} + 2 \cdot t_{\text{izMast1}})}{12} = 1.1$  sf/ft

Total Coax Wind Force w/ Ice =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{ice.Mast1}} \cdot G_H \cdot A_{\text{ICE}_{\text{coax}}} = 12$  plf **BLC 4,7**

**Wind Load (Service )**

Total Coax Wind Force Service Loads =  $F_{\text{coax}} := Ca_{\text{coax}} \cdot qZ_{\text{Mast1.Ser}} \cdot G_H \cdot A_{\text{coax}} = 12$  plf **BLC 6,9**

**Gravity Loads (without ice)**

Weight of all cables w/o ice  $WT_{\text{coax}} := Wt_{\text{coax}} \cdot N_{\text{coax}} = 16$  plf **BLC 2**

**Gravity Loads (ice only)**

Ice Area per Linear Foot =  $Ai_{\text{coax}} := \frac{\pi}{4} \cdot ((D_{\text{coax}} + 2 \cdot t_{\text{izMast1}})^2 - D_{\text{coax}}^2) = 23.6$  sq in

Ice Weight All Coax per foot =  $WTi_{\text{coax}} := Ne_{\text{coax}} \cdot Id \cdot \frac{Ai_{\text{coax}}}{144} = 220$  plf **BLC 3**

**Development of Wind & Ice Load on Brace Member**

**Member Data:**

	HSS 6X6X1/4	
Shape =	Flat	(User Input)
Height=	$H_{mem} := 6$	in (User Input)
Width =	$W_{mem} := 6$	in (User Input)
Thickness=	$t_{mem} := \frac{1}{4}$	in (User Input)
Length=	$L_{mem} := 42$	in (User Input)
Member aspect ratio =	$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 7$	
Member Force Coefficient =	$Ca_{mem} = 1.4$	

**Wind Load (without ice)**

Member projected surface area =  $A_{mem} := \frac{H_{mem}}{12} = 0.5$  sf/ft

Total Member Wind Force =  $F_{mem} := Ca_{mem} \cdot qZ_{Mast1} \cdot G_H \cdot A_{mem} = 25$  plf **BLC 5,8**

**Wind Load (with ice)**

Member projected surface area w/ Ice =  $A_{ICE_{mem}} := \frac{(H_{mem} + 2 \cdot t_{izMast1})}{12} = 0.8$  sf/ft

Total Member Wind Force w/ Ice =  $F_{i_{mem}} := Ca_{mem} \cdot qZ_{ice.Mast1} \cdot G_H \cdot A_{ICE_{mem}} = 11$  plf **BLC 4,7**

**Wind Load (Service )**

Total Member Wind Force Service Loads =  $F_{mem} := Ca_{mem} \cdot qZ_{Mast1.Ser} \cdot G_H \cdot A_{mem} = 9$  plf **BLC 6,9**

**Gravity Loads (without ice)**

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

**Gravity Loads (ice only)**

Ice Area per Linear Foot =  $A_{i_{Mem}} := (W_{mem} + 2 \cdot t_{izMast1}) \cdot (H_{mem} + 2 \cdot t_{izMast1}) - W_{mem} \cdot H_{mem} = 67$  sq in

Ice Weight on Member=  $WT_{ice.mem} := Id \cdot \frac{A_{i_{Mem}}}{144} = 26$  plf **BLC 3**

**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Standard 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-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	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 Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...A [in2]	Iyy [in4]	Izz [in4]	J [in4]	
1	Mast	PIPE_12.0X	Column	Pipe	A53 Gr. B	Typical	17.5	339	339	678
2	Brace	HSS6X6X4	Beam	Tube	A500 Gr.46	Typical	5.24	28.6	28.6	45.6
3	Rein Brace	HSS6X6X8	Beam	Tube	A500 Gr.46	Typical	9.74	48.3	48.3	81.1

### Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...Lcomp bot[...L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Mast	33	Segment	Segment	Lbyy				Lateral
2	M2	Rein Brace	2.25			Lbyy				Lateral
3	M3	Rein Brace	7	3.5	3.5	3.5	3.5	3.5		Lateral
4	M4	Rein Brace	2.25			Lbyy				Lateral
5	M5	Brace	2.25			Lbyy				Lateral
6	M6	Brace	7			Lbyy				Lateral
7	M7	Brace	2.25			Lbyy				Lateral
8	M8	Mast	22							Lateral

### Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N3			Mast	Column	Pipe	A53 Gr. B	Typical
2	M2	N8	N12			Rein Brace	Beam	Tube	A500 Gr...	Typical
3	M3	N12	N11			Rein Brace	Beam	Tube	A500 Gr...	Typical
4	M4	N11	N7			Rein Brace	Beam	Tube	A500 Gr...	Typical
5	M5	N6	N10			Brace	Beam	Tube	A500 Gr...	Typical
6	M6	N10	N9			Brace	Beam	Tube	A500 Gr...	Typical
7	M7	N9	N5			Brace	Beam	Tube	A500 Gr...	Typical
8	M8	N3	N4			Mast	Column	Pipe	A53 Gr. B	Typical

### Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	0	21.5	0	0	
3	N3	0	33	0	0	
4	N4	0	55	0	0	
5	N5	-2.25	0	3.5	0	
6	N6	-2.25	0	-3.5	0	
7	N7	-2.25	21.5	3.5	0	
8	N8	-2.25	21.5	-3.5	0	
9	N9	0	0	3.5	0	
10	N10	0	0	-3.5	0	
11	N11	0	21.5	3.5	0	
12	N12	0	21.5	-3.5	0	

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	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	M8	Y	-.101	10
2	M8	Y	-.15	10
3	M8	Y	-.265	10
4	M8	Y	-.46	19
5	M8	Y	-.006	19
6	M8	Y	-.65	19

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	-.597	10
2	M8	Y	-.268	10
3	M8	Y	-.035	10
4	M8	Y	-1.613	19
5	M8	Y	-.044	19
6	M8	Y	-.075	19

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	X	.242	10
2	M8	X	.107	10
3	M8	X	.713	19
4	M8	X	.019	19

**Member Point Loads (BLC 5 : (x) TIA Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	X	.659	10
2	M8	X	.222	10
3	M8	X	2.308	19
4	M8	X	.02	19

**Member Point Loads (BLC 6 : (x) Service Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	X	.239	10
2	M8	X	.08	10
3	M8	X	.836	19
4	M8	X	.007	19

**Member Point Loads (BLC 7 : (z) TIA Wind with Ice)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Z	.242	10
2	M8	Z	.107	10

**Member Point Loads (BLC 7 : (z) TIA Wind with Ice) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
3	M8	Z	.713	19
4	M8	Z	.019	19

**Member Point Loads (BLC 8 : (z) TIA Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Z	.659	10
2	M8	Z	.222	10
3	M8	Z	2.308	19
4	M8	Z	.02	19

**Member Point Loads (BLC 9 : (z)Service Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Z	.239	10
2	M8	Z	.08	10
3	M8	Z	.836	19
4	M8	Z	.007	19

**Member Distributed Loads (BLC 2 : Weight of Appurtenances)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-24	-24	23	33
2	M8	Y	-24	-24	0	8
3	M8	Y	-16	-16	8	15

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-38	-38	0	0
2	M8	Y	-38	-38	0	0
3	M1	Y	-330	-330	23	33
4	M8	Y	-330	-330	0	8
5	M8	Y	-220	-220	8	15
6	M2	Y	-26	-26	0	0
7	M3	Y	-26	-26	0	0
8	M4	Y	-26	-26	0	0
9	M5	Y	-26	-26	0	0
10	M6	Y	-26	-26	0	0
11	M7	Y	-26	-26	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	8	8	0	0
2	M8	X	8	8	0	7.5
3	M8	X	8	8	12.5	15
4	M1	X	12	12	23	33
5	M8	X	12	12	0	7.5
6	M8	X	12	12	12.5	15
7	M3	X	11	11	0	0
8	M6	X	11	11	0	0



**Member Distributed Loads (BLC 5 : (x) TIA Wind)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M1	X	23	23	0	0
2	M8	X	23	23	0	7.5
3	M8	X	23	23	12.5	15
4	M1	X	34	34	23	33
5	M8	X	34	34	0	7.5
6	M8	X	34	34	12.5	15
7	M3	X	25	25	0	0
8	M6	X	25	25	0	0

**Member Distributed Loads (BLC 6 : (x) Service Wind)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M1	X	8	8	0	0
2	M8	X	8	8	0	7.5
3	M8	X	8	8	12.5	15
4	M1	X	12	12	23	33
5	M8	X	12	12	0	7.5
6	M8	X	12	12	12.5	15
7	M3	X	9	9	0	0
8	M6	X	9	9	0	0

**Member Distributed Loads (BLC 7 : (z) TIA Wind with Ice)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M1	Z	8	8	0	0
2	M8	Z	8	8	0	7.5
3	M8	Z	8	8	12.5	15
4	M1	Z	12	12	23	33
5	M8	Z	12	12	0	7.5
6	M8	Z	12	12	12.5	15
7	M2	Z	11	11	0	0
8	M5	Z	11	11	0	0

**Member Distributed Loads (BLC 8 : (z) TIA Wind)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M1	Z	23	23	0	0
2	M8	Z	23	23	0	7.5
3	M8	Z	23	23	12.5	15
4	M1	Z	34	34	23	33
5	M8	Z	34	34	0	7.5
6	M8	Z	34	34	12.5	15
7	M2	Z	25	25	0	0
8	M5	Z	25	25	0	0

**Member Distributed Loads (BLC 9 : (z) Service Wind)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M1	Z	8	8	0	0
2	M8	Z	8	8	0	7.5
3	M8	Z	8	8	12.5	15
4	M1	Z	12	12	23	33
5	M8	Z	12	12	0	7.5
6	M8	Z	12	12	12.5	15

### Member Distributed Loads (BLC 9 : (z)Service Wind) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
7	M2	Z	9	9	0	0
8	M5	Z	9	9	0	0

### Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					6	3		
3	Weight of Ice Only	None					6	11		
4	(x) TIA Wind with Ice	None					4	8		
5	(x) TIA Wind	None					4	8		
6	(x)Service Wind	None					4	8		
7	(z) TIA Wind with Ice	None					4	8		
8	(z) TIA Wind	None					4	8		
9	(z)Service Wind	None					4	8		

### Load Combinations

Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	1.2D + 1.6W (X-d...	Yes	Y	1	1.2	2	1.2	5	1.6				
2	0.9D + 1.6W (X-d...	Yes	Y	1	.9	2	.9	5	1.6				
3	1.2D + 1.0Di + 1...	Yes	Y	1	1.2	2	1.2	3	1	4	1		
4	1.0D+1.0W Servi...	Yes	Y	1	1	2	1	6	1				
5	1.2D + 1.6W (Z-d...	Yes	Y	1	1.2	2	1.2	8	1.6				
6	0.9D + 1.6W (Z-d...	Yes	Y	1	.9	2	.9	8	1.6				
7	1.2D + 1.0Di + 1...	Yes	Y	1	1.2	2	1.2	3	1	7	1		
8	1.0D+1.0W Servi...	Yes	Y	1	1	2	1	9	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	-1.331	8	5.206	3	-1.286	4	0	8	0	8	0	8
		min	-8.17	1	-7.355	6	-6.777	5	0	1	0	1	0	1
3	N7	max	4.246	6	11.24	5	5.09	1	0	8	0	8	0	8
		min	-8.17	1	-2.28	2	-6.266	6	0	1	0	1	0	1
5	N5	max	3.987	1	5.373	1	2.339	6	0	8	0	8	0	8
		min	-1.709	6	-.61	6	-2.526	1	0	1	0	1	0	1
7	N6	max	3.987	1	5.373	1	2.719	5	0	8	0	8	0	8
		min	.763	8	1.563	8	.71	4	0	1	0	1	0	1
9	Totals:	max	0	8	20.045	7	0	4						
		min	-8.365	1	5.434	2	-7.985	5						

### Envelope Joint Displacements

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC	
1	N1	max	-.005	6	-.119	6	0	4	0	4	0	4	6.518e-03	2
		min	-.067	1	-.497	3	-.065	5	-4.445e-03	5	-2.98e-04	5	-6.134e-04	7
3	N2	max	.078	1	-.12	6	.101	5	1.36e-02	5	7.933e-04	5	-7.129e-04	6
		min	.003	6	-.502	3	0	1	0	1	0	1	-1.999e-02	1
5	N3	max	4.932	1	-.121	6	4.066	5	4.103e-02	5	7.933e-04	5	-7.207e-04	6



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC		
6	min	.102	6	-.507	3	0	1	0	1	0	1	-4.752e-02	1	
7	N4	max	20.291	1	-.123	6	17.703	5	5.559e-02	5	7.933e-04	5	-7.254e-04	6
8	min	.293	6	-.511	3	0	1	0	1	0	1	-6.213e-02	1	
9	N5	max	0	8	0	8	0	8	-1.984e-03	8	2.715e-03	5	1.568e-03	6
10	min	0	1	0	1	0	1	-7.061e-03	1	-3.361e-04	1	-1.244e-02	3	
11	N6	max	0	8	0	8	0	8	7.061e-03	1	2.774e-03	5	-4.408e-03	4
12	min	0	1	0	1	0	1	-8.332e-04	6	9.454e-05	4	-1.252e-02	7	
13	N7	max	0	8	0	8	0	8	5.265e-03	6	4.203e-04	1	-6.463e-03	4
14	min	0	1	0	1	0	1	-3.917e-03	3	-4.272e-03	5	-1.874e-02	5	
15	N8	max	0	8	0	8	0	8	8.047e-03	5	-1.062e-04	4	1.087e-02	6
16	min	0	1	0	1	0	1	-1.87e-03	2	-4.314e-03	5	-1.694e-02	1	
17	N9	max	0	6	.04	6	0	4	-1.984e-03	8	1.456e-03	5	1.228e-03	6
18	min	0	1	-.317	3	-.064	5	-7.061e-03	1	2.957e-04	4	-9.798e-03	3	
19	N10	max	0	8	-.111	4	0	1	7.061e-03	1	1.276e-03	6	-3.272e-03	4
20	min	0	1	-.321	7	-.064	5	-8.332e-04	6	-1.051e-03	1	-1.016e-02	7	
21	N11	max	0	1	-.172	4	.1	5	5.265e-03	6	-3.121e-04	4	-5.574e-03	8
22	min	0	6	-.479	5	0	4	-3.917e-03	3	-2.243e-03	5	-1.756e-02	1	
23	N12	max	0	1	.276	6	.1	5	8.047e-03	5	1.235e-03	1	8.488e-03	6
24	min	0	8	-.462	1	0	1	-1.87e-03	2	-2.134e-03	6	-1.756e-02	1	

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

Member	Shape	Code Check	Lo...	LC	She...Lo...	phi*P..phi*P..phi*...	phi*...	Eqn							
1	M1	PIPE 12.0X	.923	21...	1	.055	21...	1	524...	551.25	184...	184...	...	H1-...	
2	M2	HSS6X6X8	.466	2.25	6	.069	2.25	y	6	399...	403...	68.31	68.31	...	H1-...
3	M3	HSS6X6X8	.947	3.5	5	.534	7	y	5	393...	403...	68.31	68.31	1	H3-6
4	M4	HSS6X6X8	.582	0	5	.106	2.25	y	5	399...	403...	68.31	68.31	...	H1-...
5	M5	HSS6X6X4	.470	2.25	1	.088	0	y	1	214...	216...	38.64	38.64	...	H1-...
6	M6	HSS6X6X4	.996	3.5	1	.464	7	y	1	198...	216...	38.64	38.64	...	H3-6
7	M7	HSS6X6X4	.470	0	1	.088	2.25	y	1	214...	216...	38.64	38.64	...	H1-...
8	M8	PIPE 12.0X	.509	0	1	.037	0	1	458...	551.25	184...	184...	...	H1-...	

### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N8	-8.17	-1.75	-5.09	0	0	0
2	1	N7	-8.17	-1.75	5.09	0	0	0
3	1	N5	3.987	5.373	-2.526	0	0	0
4	1	N6	3.987	5.373	2.526	0	0	0
5	1	Totals:	-8.365	7.245	0			
6	1	COG (ft):	X: -.043	Y: 32.678	Z: 0			



### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N8	-8.051	-2.28	-5.016	0	0	0
2	2	N7	-8.051	-2.28	5.016	0	0	0
3	2	N5	3.869	4.997	-2.451	0	0	0
4	2	N6	3.869	4.997	2.451	0	0	0
5	2	Totals:	-8.365	5.434	0			
6	2	COG (ft):	X: -.043	Y: 32.678	Z: 0			

### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N8	-2.753	5.206	-1.718	0	0	0
2	3	N7	-2.753	5.206	1.718	0	0	0
3	3	N5	1.843	4.817	-1.161	0	0	0
4	3	N6	1.843	4.817	1.161	0	0	0
5	3	Totals:	-1.819	20.045	0			
6	3	COG (ft):	X: -.029	Y: 34.324	Z: 0			

### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N8	-2.061	.942	-1.286	0	0	0
2	4	N7	-2.061	.942	1.286	0	0	0
3	4	N5	1.125	2.077	-.71	0	0	0
4	4	N6	1.125	2.077	.71	0	0	0
5	4	Totals:	-1.872	6.037	0			
6	4	COG (ft):	X: -.043	Y: 32.678	Z: 0			

### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N8	-4.926	-6.852	-6.777	0	0	0
2	5	N7	4.163	11.24	-6.222	0	0	0
3	5	N5	-1.626	-.264	2.295	0	0	0
4	5	N6	2.389	3.12	2.719	0	0	0
5	5	Totals:	0	7.245	-7.985			
6	5	COG (ft):	X: -.043	Y: 32.678	Z: 0			





Company : CENTEK Engineering, INC.  
 Designer : FJP  
 Job Number : 19157.00  
 Model Name : South Mast - Tower # 1102

Mar 23, 2020  
 9:15 AM  
 Checked By: TJL

### Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N8	-4.821	-7.355	-6.703	0	0	0
2	6	N7	4.246	10.642	-6.266	0	0	0
3	6	N5	-1.709	-.61	2.339	0	0	0
4	6	N6	2.283	2.757	2.645	0	0	0
5	6	Totals:	0	5.434	-7.985			
6	6	COG (ft):	X: -.043	Y: 32.678	Z: 0			

### **Joint Reactions**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	7	N8	-2.035	4.101	-2.072	0	0	0
2	7	N7	-.074	8.049	-.736	0	0	0
3	7	N5	.616	3.579	-.107	0	0	0
4	7	N6	1.492	4.316	1.2	0	0	0
5	7	Totals:	0	20.045	-1.714			
6	7	COG (ft):	X: -.029	Y: 34.324	Z: 0			



Company : CENTEK Engineering, INC.  
 Designer : FJP  
 Job Number : 19157.00  
 Model Name : South Mast - Tower # 1102

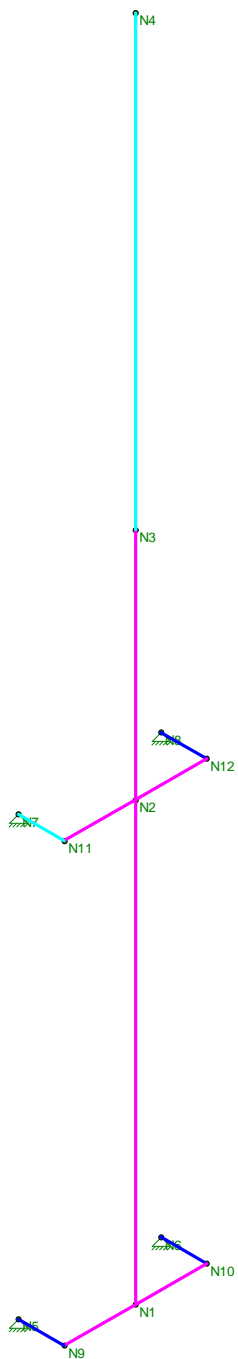
Mar 23, 2020  
 9:16 AM  
 Checked By: TJL

### Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	8	N8	-1.331	-.197	-1.659	0	0	0
2	8	N7	.708	3.868	-1.256	0	0	0
3	8	N5	-.14	.802	.374	0	0	0
4	8	N6	.763	1.563	.754	0	0	0
5	8	Totals:	0	6.037	-1.786			
6	8	COG (ft):	X: -.043	Y: 32.678	Z: 0			



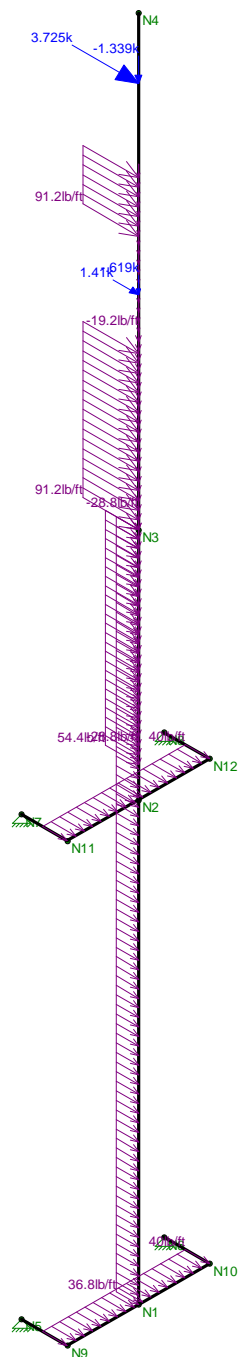
Code Check ( Env )	
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Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Envelope Only Solution

CENTEK Engineering, INC.	South Mast - Tower # 1102 Unity Check	
FJP		Mar 23, 2020 at 9:09 AM
19157.00		TIA South Mast.r3d





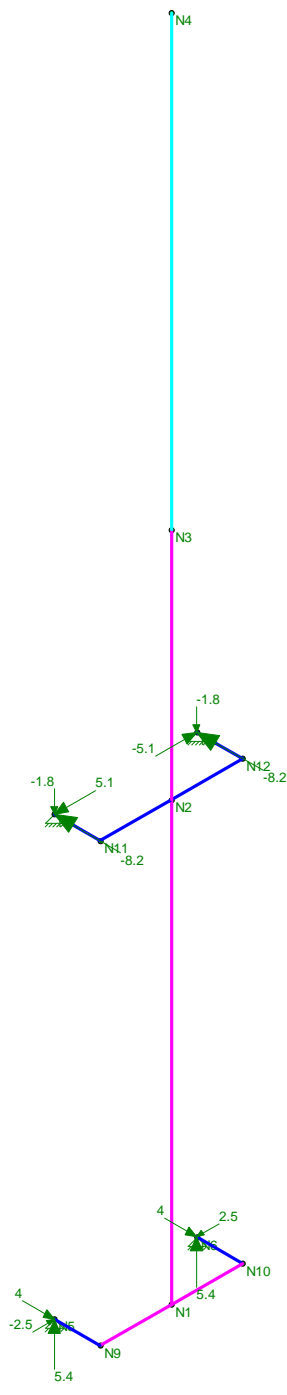
Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #1 Loads	
FJP		Mar 23, 2020 at 9:09 AM
19157.00		TIA South Mast.r3d



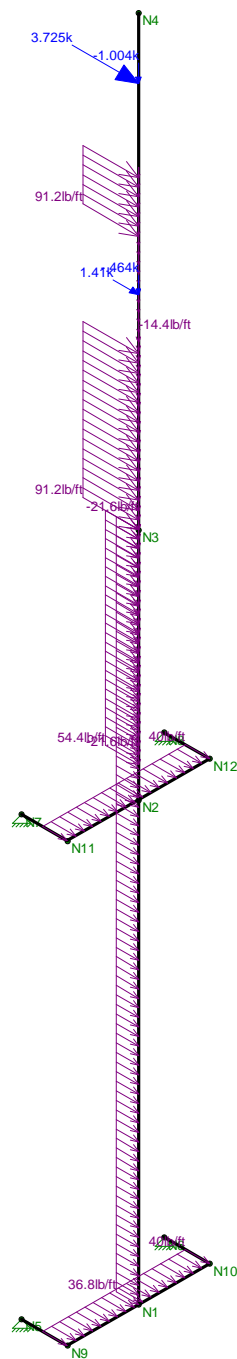
Code Check (LC 1)

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Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #1 Reactions	
FJP		Mar 23, 2020 at 9:11 AM
19157.00		TIA South Mast.r3d



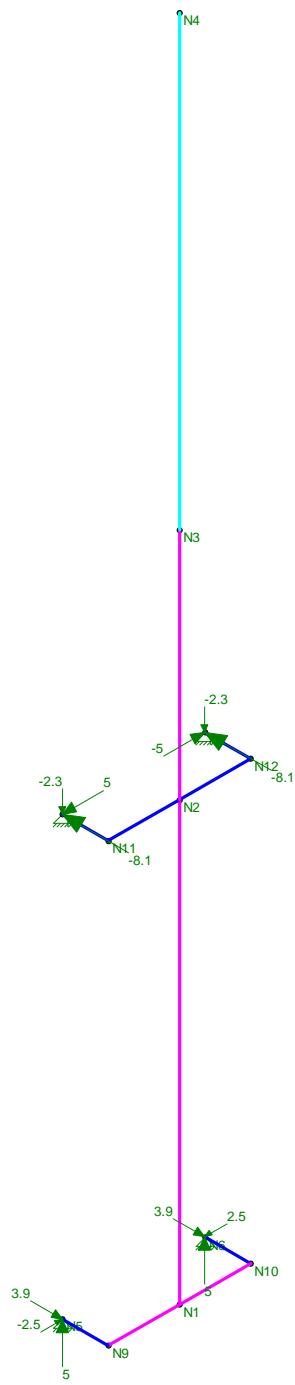
Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #2 Loads	
FJP		Mar 23, 2020 at 9:09 AM
19157.00		TIA South Mast.r3d



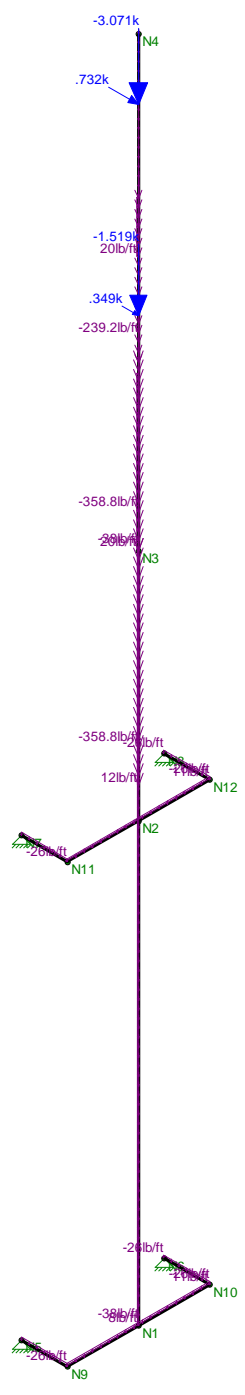
Code Check (LC 2)

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #2 Reactions	Mar 23, 2020 at 9:12 AM
FJP		TIA South Mast.r3d
19157.00		



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

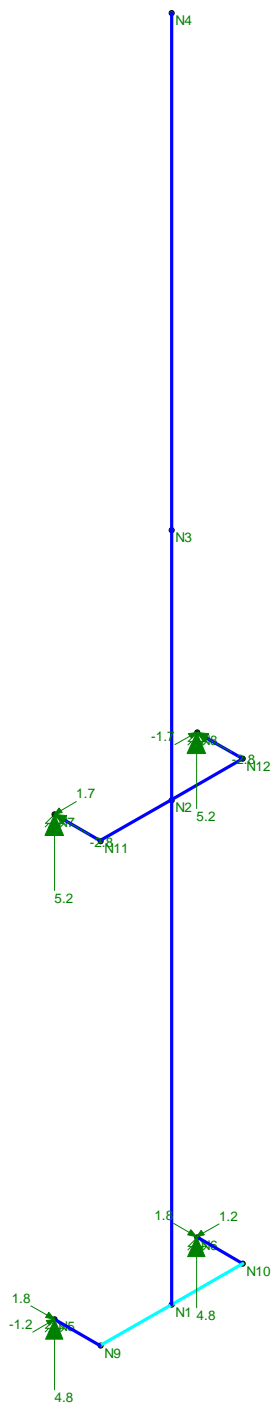
CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #3 Loads	
FJP		Mar 23, 2020 at 9:09 AM
19157.00		TIA South Mast.r3d





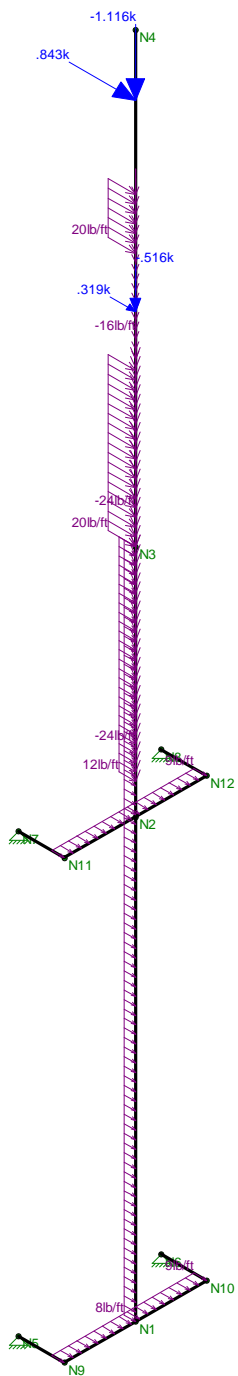
Code Check (LC 3)

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #3 Reactions	
FJP		Mar 23, 2020 at 9:12 AM
19157.00		TIA South Mast.r3d



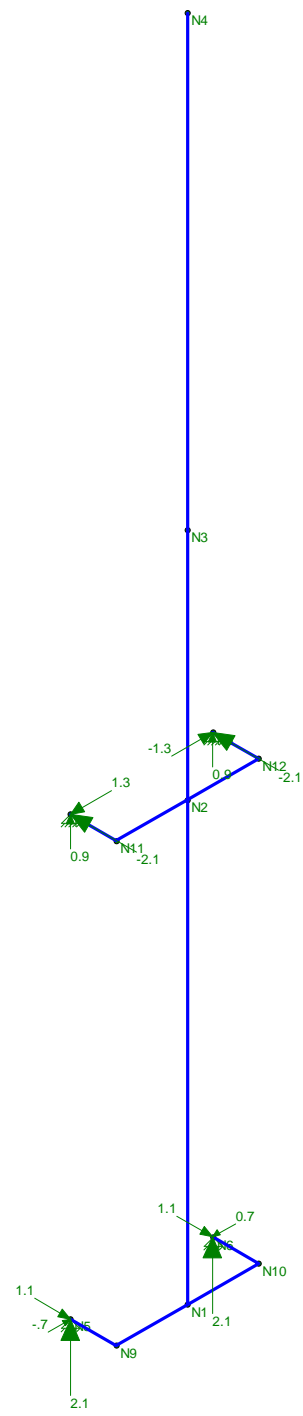
Loads: LC 4, 1.0D+1.0W Service (X-Direction)

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #4 Loads	
FJP		Mar 23, 2020 at 9:10 AM
19157.00		TIA South Mast.r3d



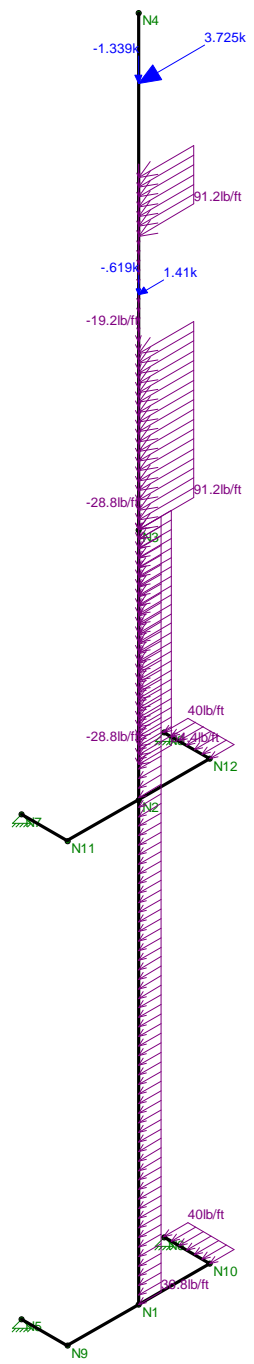
Code Check (LC 4)

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #4 Reactions	
FJP		Mar 23, 2020 at 9:13 AM
19157.00		TIA South Mast.r3d



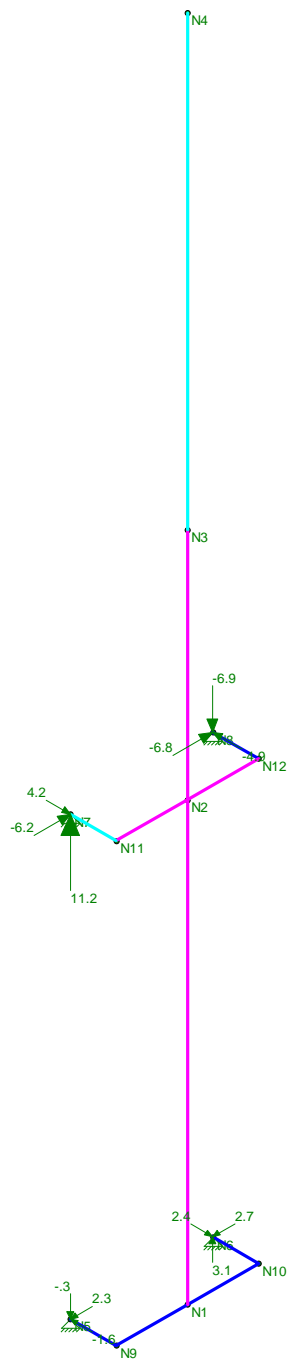
Loads: LC 5, 1.2D + 1.6W (Z-direction)

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #5 Loads	
FJP		Mar 23, 2020 at 9:10 AM
19157.00		TIA South Mast.r3d



Code Check (LC 5)

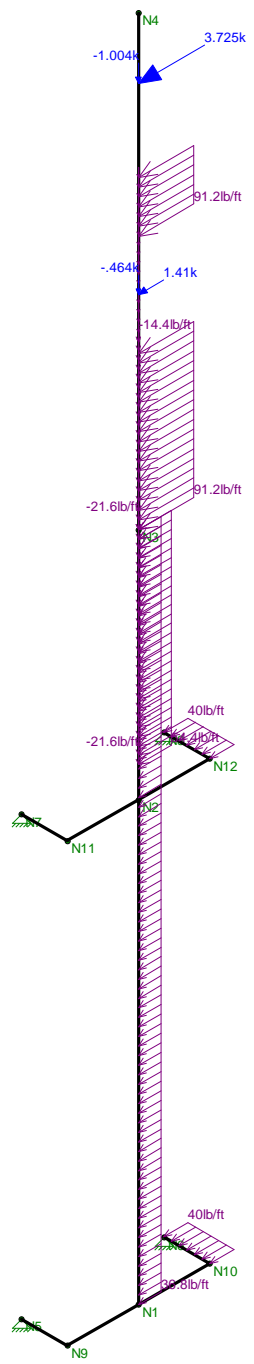
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #5 Reactions	
FJP		Mar 23, 2020 at 9:13 AM
19157.00		TIA South Mast.r3d





Loads: LC 6, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.
FJP
19157.00

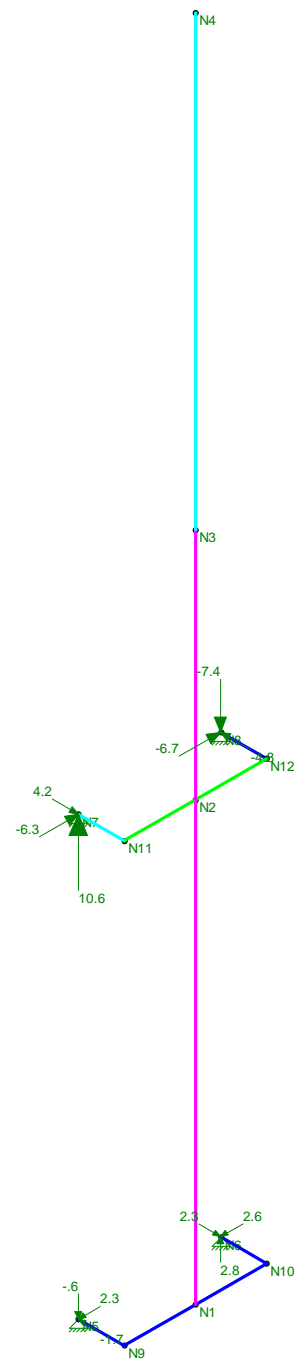
South Mast - Tower # 1102
LC #6 Loads

Mar 23, 2020 at 9:10 AM
TIA South Mast.r3d



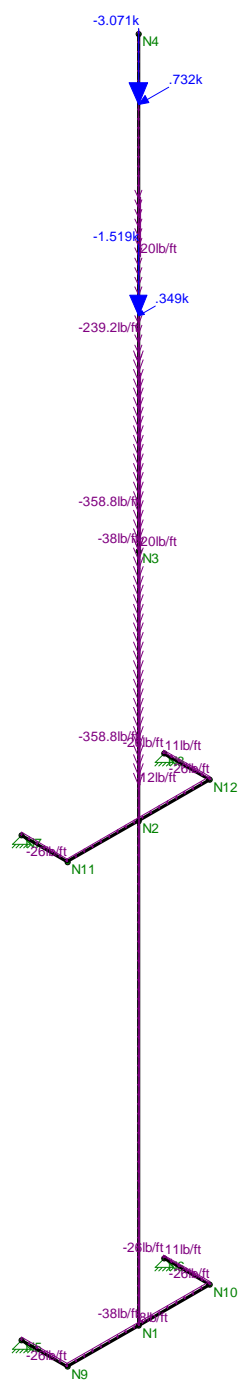
Code Check (LC 6)

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #6 Reactions	
FJP		Mar 23, 2020 at 9:14 AM
19157.00		TIA South Mast.r3d



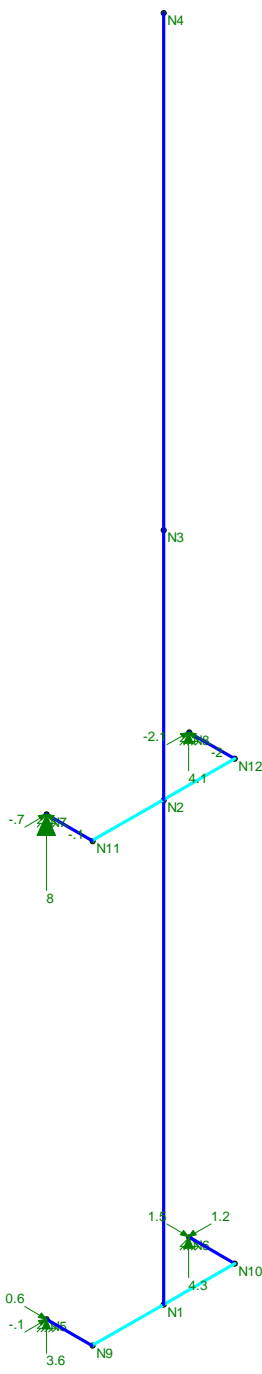
Loads: LC 7, 1.2D + 1.0Di + 1.0Wi (Z-direction)

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #7 Loads	
FJP		Mar 23, 2020 at 9:10 AM
19157.00		TIA South Mast.r3d



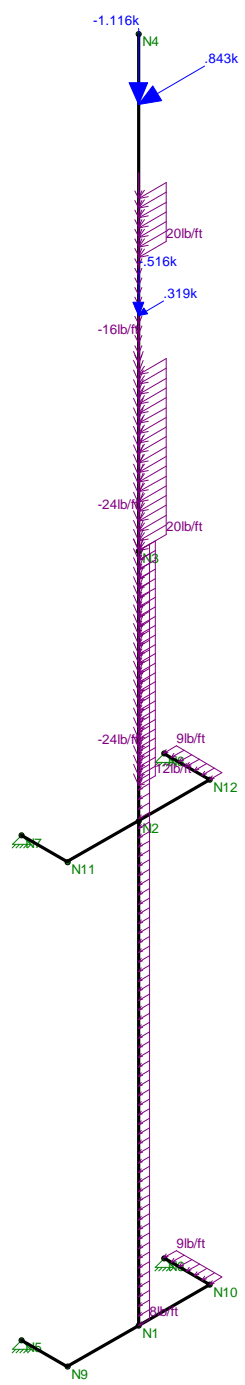
Code Check  
( LC 7 )

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #7 Reactions	
FJP		Mar 23, 2020 at 9:15 AM
19157.00		TIA South Mast.r3d



Loads: LC 8, 1.0D+1.0W Service (Z-Direction)

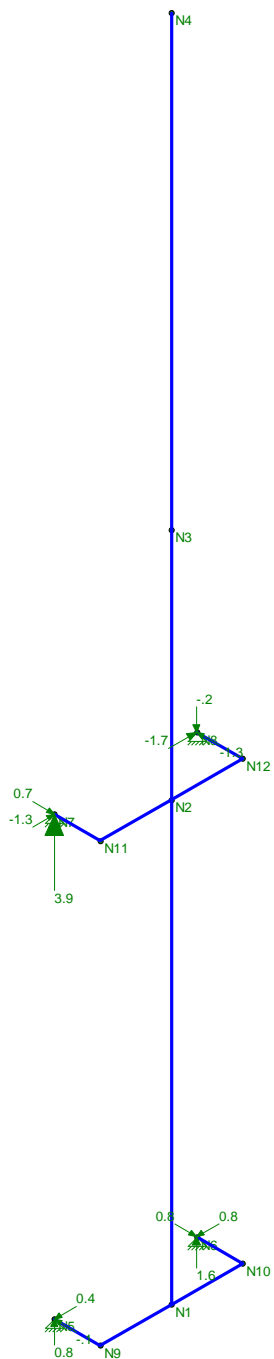
CENTEK Engineering, INC.	South Mast - Tower # 1102 LC #8 Loads	
FJP		Mar 23, 2020 at 9:10 AM
19157.00		TIA South Mast.r3d





Code Check  
( LC 8 )

- No Calc
- > 1.0
- .90-1.0
- .75-.90
- .50-.75
- 0-.50



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.  
FJP  
19157.00

South Mast - Tower # 1102  
LC #8 Reactions

Mar 23, 2020 at 9:15 AM  
TIA South Mast.r3d

Column: **M8**

Shape: **PIPE\_12.0X**

Material: **A53 Gr. B**

Length: **22 ft**

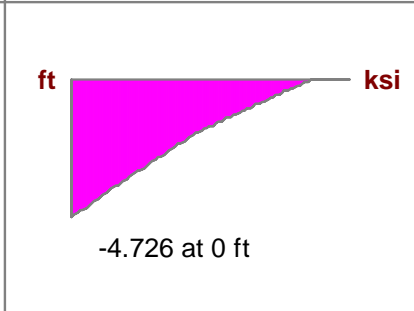
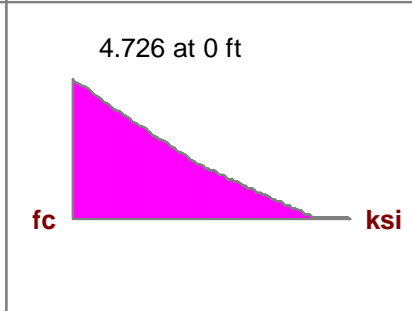
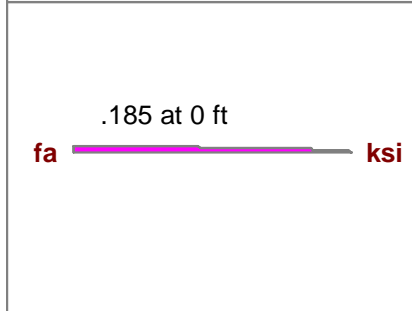
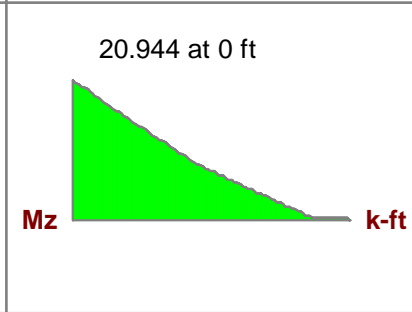
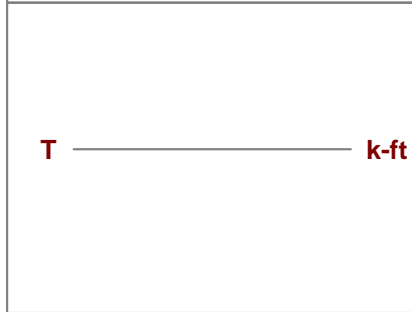
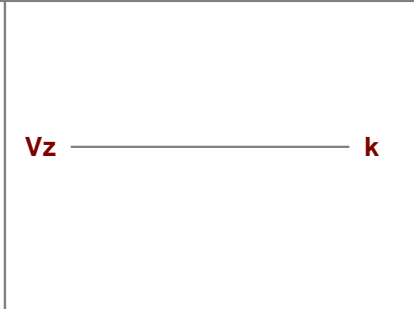
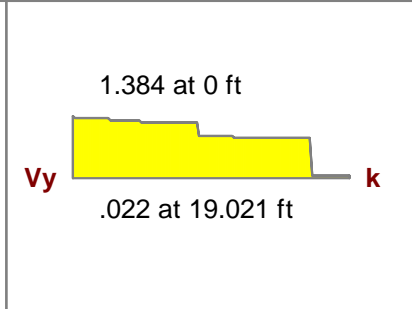
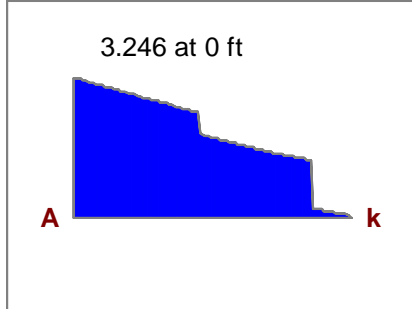
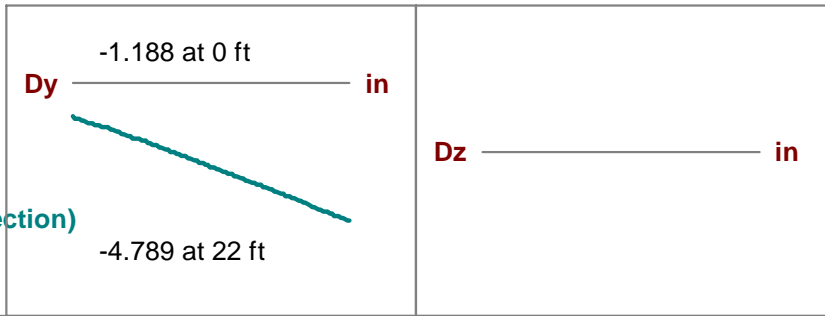
I Joint: **N3**

J Joint: **N4**

**LC 4: 1.0D+1.0W Service (X-Direction)**

Code Check: **0.117 (bending)**

Report Based On 97 Sections



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

**Direct Analysis Method**

Max Bending Check **0.117**  
 Location **0 ft**  
 Equation **H1-1b**

Max Shear Check **0.008 (s)**  
 Location **0 ft**  
 Max Defl Ratio **L/73**

Bending

**Compact**

Compression

**Non-Slender**

Fy **35 ksi**  
 phi\*Pnc **458.537 k**  
 phi\*Pnt **551.25 k**  
 phi\*Mny **184.275 k-ft**  
 phi\*Mnz **184.275 k-ft**  
 phi\*Vny **165.375 k**  
 phi\*Vnz **165.375 k**  
 phi\*Tn **173.622 k-ft**  
 Cb **2.038**

y-y      z-z  
 Lb **22 ft**      **22 ft**  
 KL/r **59.982**      **59.982**  
 L Comp Flange **22 ft**  
 L-torque **22 ft**  
 Tau\_b **1**

Column: **M8**

Shape: **PIPE\_12.0X**

Material: **A53 Gr. B**

Length: **22 ft**

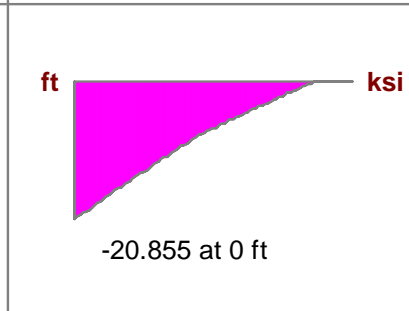
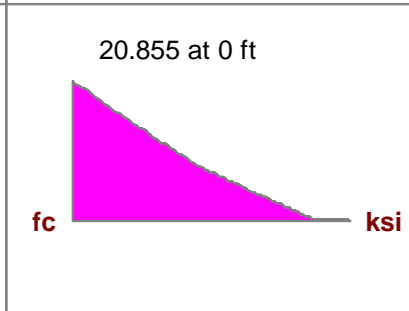
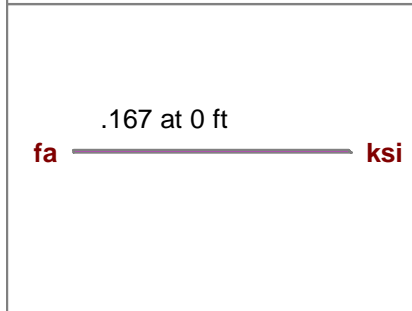
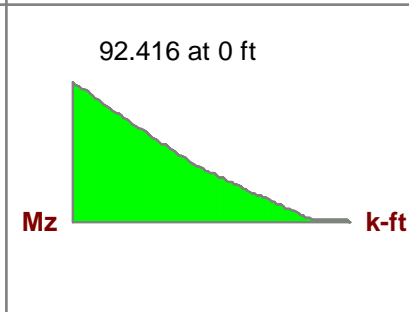
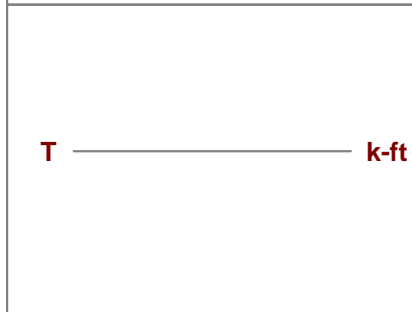
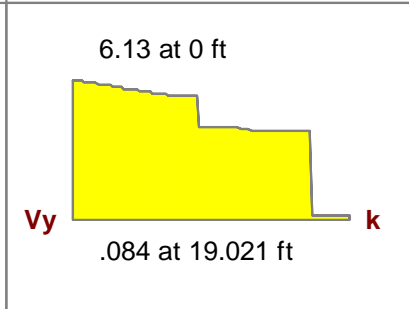
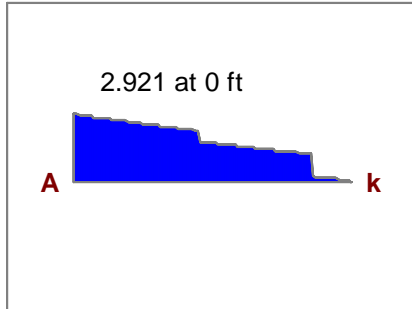
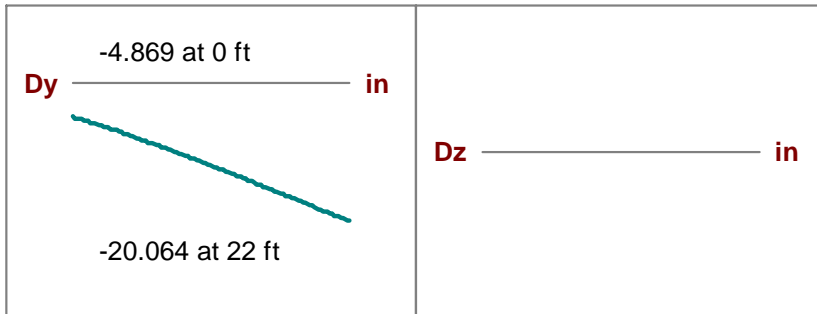
I Joint: **N3**

J Joint: **N4**

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

Code Check: **0.505 (bending)**

Report Based On 97 Sections



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

**Direct Analysis Method**

Max Bending Check **0.505**  
 Location **0 ft**  
 Equation **H1-1b**

Max Shear Check **0.037 (s)**  
 Location **0 ft**  
 Max Defl Ratio **L/17**

Bending

**Compact**

Compression

**Non-Slender**

Fy **35 ksi**  
 phi\*Pnc **458.537 k**  
 phi\*Pnt **551.25 k**  
 phi\*Mny **184.275 k-ft**  
 phi\*Mnz **184.275 k-ft**  
 phi\*Vny **165.375 k**  
 phi\*Vnz **165.375 k**  
 phi\*Tn **173.622 k-ft**  
 Cb **2.041**

y-y      z-z  
 Lb **22 ft**      **22 ft**  
 KL/r **59.982**      **59.982**  
 L Comp Flange **22 ft**  
 L-torque **22 ft**  
 Tau\_b **1**

**Flange Bolt and Flange Plate Analysis:****Input Data:**Tower Reactions:

Overturing Moment =	OM := 93-ft-kips	(Input From RisaTower)
Shear Force =	Shear := 6.2-kips	(Input From RisaTower)
Axial Force =	Axial := 2.9-kips	(Input From RisaTower)

Flange Bolt Data:

UseAST MA325

Number of Flange Bolts =	N := 8	(User Input)
Diameter of Bolt Circle =	D <sub>bc</sub> := 17-in	(User Input)
Bolt Minimum Tensile Strength =	F <sub>ub</sub> := 120-ksi	(User Input)
Bolt Modulus =	E := 29000-ksi	(User Input)
Diameter of Flange Bolts =	D := 1.00-in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

UseAST MA572 Grade 50

Plate Yield Strength =	F <sub>ybp</sub> := 50-ksi	(User Input)
Flange Plate Thickness =	t <sub>bp</sub> := 1-in	(User Input)
Flange Plate Diameter =	D <sub>bp</sub> := 20-in	(User Input)
Outer Pole Diameter =	D <sub>pole</sub> := 12.8-in	(User Input)

**Geometric Layout Data:**

Distance from Bolts to Centroid of Pole:

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

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

$$d_i := \begin{cases} \theta \leftarrow 2\pi \cdot \left(\frac{i}{N}\right) & d_1 = 6.01 \text{ in} & d_7 = -6.01 \text{ in} \\ d \leftarrow R_{bc} \cdot \sin(\theta) & d_2 = 8.50 \text{ in} & d_8 = -0.00 \text{ in} \\ & d_3 = 6.01 \text{ in} \\ & d_4 = 0.00 \text{ in} \\ & d_5 = -6.01 \text{ in} \\ & d_6 = -8.50 \text{ in} \end{cases}$$

Critical Distances For Bending in Plate:

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

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

$MA_1 = 0.00 \text{ in} \quad MA_7 = 0.00 \text{ in}$   
 $MA_2 = 2.10 \text{ in} \quad MA_8 = 0.00 \text{ in}$   
 $MA_3 = 0.00 \text{ in}$   
 $MA_4 = 0.00 \text{ in}$   
 $MA_5 = 0.00 \text{ in}$   
 $MA_6 = 0.00 \text{ in}$

Effective Width of Flangeplate for Bending =  $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 12.3 \text{ in}$

**Flange Bolt Analysis :**

Calculated Flange Bolt Properties:

Polar Moment of Inertia =  $I_p := \sum_i (d_i)^2 = 289 \cdot \text{in}^2$

Gross Area of Bolt =  $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot \text{in}^2$

Net Area of Bolt =  $A_n := \frac{\pi}{4} \cdot \left( D - \frac{0.9743 \cdot \text{in}}{n} \right)^2 = 0.606 \cdot \text{in}^2$

Net Diameter =  $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot \text{in}$

Radius of Gyration of Bolt =  $r := \frac{D_n}{4} = 0.22 \cdot \text{in}$

Section Modulus of Bolt =  $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot \text{in}^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force =  $T_{\text{Max}} := \text{OM} \cdot \frac{R_{bc}}{I_p} - \frac{\text{Axial}}{N} = 32.5 \cdot \text{kips}$

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

Design Tensile Strength =  $\Phi R_{nt} := (0.75 \cdot F_{ub} \cdot 0.75 \cdot A_g) = 53 \cdot \text{kips}$

Bolt Tension % of Capacity =  $\frac{T_{\text{Max}}}{\Phi R_{nt}} = 61.23 \cdot \%$

Condition1 =  $\text{Condition1} := \text{if} \left( \frac{T_{\text{Max}}}{\Phi R_{nt}} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$

Condition1 = "OK"

Design Shear Strength =  $\Phi R_{nv} := (0.75 \cdot 0.45 \cdot F_{ub} \cdot A_g) = 31.8 \cdot \text{kips}$

Condition2 =  $\text{Condition2} := \text{if} \left[ \left( \frac{V_{\text{Max}}}{\Phi R_{nv}} \right)^2 + \left( \frac{T_{\text{Max}}}{\Phi R_{nt}} \right)^2 \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right]$

Condition2 = "OK"



**Flange Plate Analysis:**

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

$C_1 = 23.6$ -kips       $C_7 = -22.8$ -kips  
 $C_2 = 33.2$ -kips       $C_8 = 0.4$ -kips  
 $C_3 = 23.6$ -kips  
 $C_4 = 0.4$ -kips  
 $C_5 = -22.8$ -kips  
 $C_6 = -32.5$ -kips

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{4 \cdot C_i \cdot M A_i}{(B_{eff} t_{bp}^2)} = 22.7 \text{ ksi}$$

Allowable Bending Stress in Plate =

$$F_{bp} := 0.9 \cdot F_{y_{bp}} = 45 \text{ ksi}$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 50.4\%$$

Condition3 =

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

Condition2 = "Ok"

**Mast Connection to Tower:**

Reactions:

Moment = Moment := 0-kips (Input From Risa-3D)

Vertical = Vertical := 11.2-kips (Input From Risa-3D)

Horizontal x-dir = Horizontal<sub>x</sub> := 8.2-kips (Input From Risa-3D)

Horizontal z-dir = Horizontal<sub>z</sub> := 6.8-kips (Input From Risa-3D)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = D := 0.75-in (User Input)

Number of Bolts = N<sub>b</sub> := 4 (User Input)

Design Tensile Strength = F<sub>t</sub> := 29.8-kips (User Input)

Design Shear Strength = F<sub>v</sub> := 17.9-kips (User Input)

Shear Force = 
$$f_v := \frac{\sqrt{\text{Horizontal}_z^2 + \text{Vertical}^2}}{N_b} = 3.3\text{-kips}$$

Bolt Shear % of Capacity = 
$$\frac{f_v}{F_v} = 18.3\%$$

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

Bolt\_Shear = "OK"

Tension Force = 
$$f_t := \frac{\text{Horizontal}_x}{N_b} = 2.1\text{-kips}$$

Bolt Tension % of Capacity = 
$$\frac{f_t}{F_t} = 6.88\%$$

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

Bolt\_Tension = "OK"

**Basic Components**

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 Figure 250-2(e) )
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

**Factors for Extreme Wind Calculation**

Elevation of Top of Mast Above Grade =	TME := 117	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 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left( \frac{TME}{900} \right)^{\frac{2}{9.5}} = 1.308$		(NESC 2012 Table 250-2)
Exposure Factor =	$Es := 0.346 \cdot \left( \frac{33}{(0.67 \cdot TME)} \right)^{\frac{1}{7}} = 0.306$		(NESC 2012 Table 250-3)
Response Term =	$Bs := \frac{1}{\left( 1 + 0.375 \cdot \frac{TME}{220} \right)} = 0.834$		(NESC 2012 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left( 1 + \left( 2.7 \cdot Es \cdot Bs^{\frac{1}{2}} \right) \right)}{kv^2} = 0.858$		(NESC 2012 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.8$	psf	(NESC 2012 Section 250.C.2)

**Shape Factors**

Shape Factor for Round Members =	Cd <sub>R</sub> := 1.3	(User Input)
Shape Factor for Flat Members =	Cd <sub>F</sub> := 1.6	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	Cd <sub>coax</sub> := 1.6	(User Input)

**Overload Factors**

**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

**Development of Wind & Ice Load on Mast**

**Mast Data:** (12" Sch. 80)

Mast Shape = Round (User Input)  
 Mast Diameter =  $D_{mast} := 12.8$  in (User Input)  
 Mast Length =  $L_{mast} := 55$  ft (User Input)  
 Mast Thickness =  $t_{mast} := 0.5$  in (User Input)

**Wind Load (NESC Extreme)**

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

Total Mast Wind Force (Below Top of Tower) =	$qz \cdot Cd_R \cdot A_{mast} = 48$		plf	<b>BLC 5</b>
Total Mast Wind Force (Below Top of Tower) =	$qz \cdot Cd_{coax} \cdot A_{mast} = 59$	Coax on Mast	plf	<b>BLC 5</b>
Total Mast Wind Force (Above Top of Tower) =	$qz \cdot Cd_{coax} \cdot A_{mast} \cdot m = 74$	Coax on Mast	plf	<b>BLC 5</b>

**Wind Load (NESE Heavy)**

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

Total Mast Wind Force w/ Ice =	$p \cdot Cd_R \cdot A_{ICE_{mast}} = 6$		plf	<b>BLC 4</b>
Total Mast Wind Force w/ Ice =	$p \cdot Cd_{coax} \cdot A_{ICE_{mast}} = 7$	Coax on Mast	plf	<b>BLC 4</b>

**Gravity Loads (without ice)**

Weight of the Mast =	Self Weight (Computed internally by Risa-3D)	plf	<b>BLC 1</b>
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**Gravity Loads (ice only)**

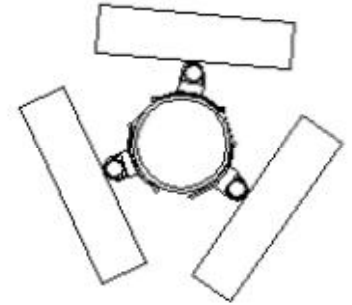
Ice Area per Linear Foot =  $Ai_{mast} := \frac{\pi}{4} \cdot ((D_{mast} + Ir \cdot 2)^2 - D_{mast}^2) = 20.9$  sq in

Weight of Ice on Mast =	$W_{ICE_{mast}} := Id \cdot \frac{Ai_{mast}}{144} = 8$	plf	<b>BLC 3</b>
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**Development of Wind & Ice Load on Antennas**

**Antenna Data:**

	(AT&T)	
Antenna Model =	Andrew SBNHH-1D65A	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 55$	in (User Input)
Antenna Width =	$W_{ant} := 11.9$	in (User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in (User Input)
Antenna Weight =	$WT_{ant} := 33.5$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.6$	sf

**Total Antenna Wind Force =**  $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 948$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.1$	sf

**Total Antenna Wind Force w/ Ice =**  $F_{i_{ant}} := p \cdot Cd_F \cdot A_{ICEant} = 96$  lbs **BLC 4**

**Gravity Load (without ice)**

**Weight of All Antennas =**  $WT_{ant} \cdot N_{ant} = 101$  lbs **BLC 2**

**Gravity Load (ice only)**

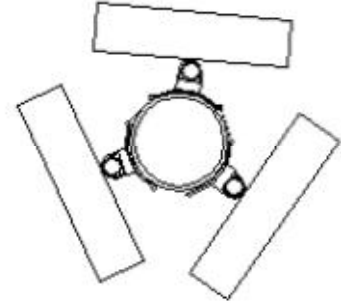
Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4647$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1204$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 39$	lbs

**Weight of Ice on All Antennas =**  $W_{ICEant} \cdot N_{ant} = 117$  lbs **BLC 3**

**Development of Wind & Ice Load on TMA's**

**TMA Data:**

	(AT&T)	
TMA Model =	CCI TMABPD7823VG12A	
TMA Shape =	Flat	(User Input)
TMA Height =	$L_{TMA} := 10.7$	in (User Input)
TMA Width =	$W_{TMA} := 11.1$	in (User Input)
TMA Thickness =	$T_{TMA} := 3.8$	in (User Input)
TMA Weight =	$WT_{TMA} := 25$	lbs (User Input)
Number of TMA's =	$N_{TMA} := 6$	(User Input)



**Wind Load (NESC Extreme Wind)**

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

Surface Area for One TMA =  
 TMA Projected Surface Area =

$$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.8 \quad \text{sf}$$

$$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.9 \quad \text{sf}$$

**Total TMA Wind Force =**

$$F_{TMA} := qz \cdot C_d \cdot A_{TMA} \cdot m = 344 \quad \text{lbs} \quad \text{BLC 5}$$

**Wind Load (NESC Heavy Wind)**

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

Surface Area for One TMA w/ Ice =  
 TMA Projected Surface Area w/ Ice =

$$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot 1r) \cdot (W_{TMA} + 2 \cdot 1r)}{144} = 1 \quad \text{sf}$$

$$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5.9 \quad \text{sf}$$

**Total TMA Wind Force w/ Ice =**

$$F_{i_{TMA}} := p \cdot C_d \cdot A_{ICETMA} = 38 \quad \text{lbs} \quad \text{BLC 4}$$

**Gravity Load (without ice)**

**Weight of All TMA's =**

$$Wgt_{TMA} := (WT_{TMA} \cdot N_{TMA}) = 150 \quad \text{lbs} \quad \text{BLC 2}$$

**Gravity Load (ice only)**

Volume of Each TMA =

$$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 451 \quad \text{cu in}$$

Volume of Ice on Each TMA =

$$V_{ice} := (L_{TMA} + 2 \cdot 1r) \cdot (W_{TMA} + 2 \cdot 1r) \cdot (T_{TMA} + 2 \cdot 1r) - V_{TMA} = 228 \quad \text{cu in}$$

Weight of Ice on Each TMA =

$$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot 1d = 7 \quad \text{lbs}$$

**Weight of Ice on All TMA's =**

$$Wgt_{ice.TMA} := (W_{ICETMA} \cdot N_{TMA}) = 44 \quad \text{lbs} \quad \text{BLC 3}$$



**Development of Wind & Ice Load on Antenna Mounts**

**Mount Data:**

(AT&T)

Mount Type: Microflect Universal Tri-Bracket

Mount Shape = Flat (User Input)

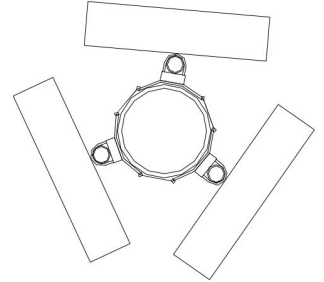
Pipe Mount Length =  $L_{mnt} := 72$  in (User Input)

2 inch Pipe Mount Linear Weight =  $W_{mnt} := 3.66$  plf (User Input)

Pipe Mount Outside Diameter =  $D_{mnt} := 2.375$  in (User Input)

Number of Mounting Pipes =  $N_{mnt} := 3$  (User Input)

Tri-Bracket Weight =  $W_{tb,mnt} := 197$  lbs (User Input)



**Wind Load (NESC Extreme)**

*Assumes Mount is Shielded by Antenna*

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

Total Mount Wind Force =  $F_{mnt} := qz \cdot C_dF \cdot A_{mnt} \cdot m = 0$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Mount is Shielded by Antenna*

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

Total Mount Wind Force =  $F_{i,mnt} := p \cdot C_dF \cdot A_{ICEmnt} = 0$  lbs **BLC 4**

**Gravity Loads (without ice)**

Weight Each Pipe Mount =  $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 22$  lbs

Weight of All Mounts =  $WT_{mnt} \cdot N_{mnt} + W_{tb,mnt} = 263$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Pipe =  $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 319$  cu in

Volume of Ice on Each Pipe =  $V_{ice} := \left( \frac{\pi}{4} \cdot ((D_{mnt} + 1))^2 \cdot (L_{mnt} + 1) \right) - V_{mnt} = 334$  cu in

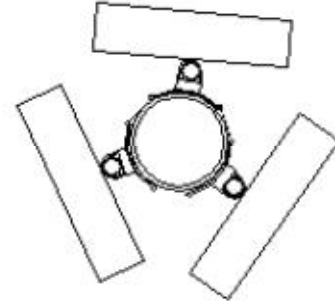
Weight of Ice each mount (incl, hardware) =  $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 11$  lbs

Weight of Ice on All Mounts =  $W_{ICEmnt} \cdot N_{mnt} + 5 = 37$  lbs **BLC 3**

**Development of Wind & Ice Load on Antennas**

**Antenna Data:**

	(T-Mobile)	
Antenna Model =	RFS APXVAARR24_43	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 95.9$	in (User Input)
Antenna Width =	$W_{ant} := 24$	in (User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in (User Input)
Antenna Weight =	$WT_{ant} := 153$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf

**Total Antenna Wind Force =**  $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 3333$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 16.8$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.5$	sf

**Total Antenna Wind Force w/ Ice =**  $F_{i_{ant}} := p \cdot Cd_F \cdot A_{ICEant} = 323$  lbs **BLC 4**

**Gravity Load (without ice)**

**Weight of All Antennas =**  $WT_{ant} \cdot N_{ant} = 459$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 3474$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot \rho_d = 113$	lbs

**Weight of Ice on All Antennas =**  $W_{ICEant} \cdot N_{ant} = 338$  lbs **BLC 3**

**Development of Wind & Ice Load on Antennas**

**Antenna Data:**

(T-Mobile)

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

**Wind Load (NESC Extreme)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna =

$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$  sf

Antenna Projected Surface Area =

$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$  sf

**Total Antenna Wind Force =**

$F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 30$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =

$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.2$  sf

Antenna Projected Surface Area w/ Ice =

$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.6$  sf

**Total Antenna Wind Force w/ Ice =**

$F_{i_{ant}} := p \cdot Cd_F \cdot A_{ICEant} = 4$  lbs **BLC 4**

**Gravity Load (without ice)**

**Weight of All Antennas =**

$WT_{ant} \cdot N_{ant} = 6$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Antenna =

$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$  cu in

Volume of Ice on Each Antenna =

$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 52$  cu in

Weight of Ice on Each Antenna =

$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$  lbs

**Weight of Ice on All Antennas =**

$W_{ICEant} \cdot N_{ant} = 5$  lbs **BLC 3**

**Development of Wind & Ice Load on Antenna Mounts**

**Mount Data:**

(T-Mobile)

Mount Type:

SitePro Universal Ring Mount x2 w/ (3) 2 Std. x 9' long pipe masts

Mount Shape =

Flat (User Input)

Mount Projected Surface Area =

$CaAa := 0$  sf (User Input)

Mount Projected Surface Area w/ Ice =

$CaAa_{ice} := 0$  sf (User Input)

Number of Mounting Pipes =

$WT_{mnt} := 650$  lbs (User Input)

Tri-Bracket Weight =

$WT_{mnt.ice} := 725$  lbs

**Wind Load (NESC Extreme)**

**Assumes Mount is Shielded by Antenna**

Mount Projected Surface Area =

$A_{mnt} := 0.0$  sf

Total Mount Wind Force =

$F_{mnt} := qz \cdot Cd_F \cdot A_{mnt} \cdot m = 0$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

**Assumes Mount is Shielded by Antenna**

Mount Projected Surface Area w/ Ice =

$A_{ICEmnt} := 0.0$  sf

Total Mount Wind Force =

$F_{i_{mnt}} := p \cdot Cd_F \cdot A_{ICEmnt} = 0$  lbs **BLC 4**

**Gravity Loads (without ice)**

Weight Each Pipe Mount =

$WT_{mnt} := 650$  lbs

**Gravity Load (ice only)**

Weight of Ice on All Mounts =

$WT_{mnt.ice} - WT_{mnt} = 75$  lbs **BLC 3**

**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIAX 1-1/4"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{\text{coax}} := 1.55$	in	(User Input)
Coax Cable Length =	$L_{\text{coax}} := 20$	ft	(User Input)
Weight of Coax per foot =	$Wt_{\text{coax}} := 0.66$	plf	(User Input)
Total Number of Coax =	$N_{\text{coax}} := 36$		(User Input) (12 AT&T & 24 T-Mobile)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{\text{coax}} := 6$		(User Input)

**Wind Load (NESC Extreme)**

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

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

**Wind Load (NESC Heavy)**

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

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

**Gravity Loads (without ice)**

Weight of all cables w/o ice  $WT_{\text{coax}} := Wt_{\text{coax}} \cdot N_{\text{coax}} = 24$  plf **BLC 2**

**Gravity Load (ice only)**

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

Ice Weight All Coax per foot =  $WTi_{\text{coax}} := Id \cdot \left( N_{\text{coax}} \cdot \frac{Ai_{\text{coax}}}{144} \right) = 45$  plf **BLC 3**

**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIAX 1-1/4"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.55$	in	(User Input)
Coax Cable Length =	$L_{coax} := 20$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 0.66$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 24$		(User Input) (24 T-Mobile)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 6$		(User Input)

**Wind Load (NESC Extreme)**

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

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

**Wind Load (NESC Heavy)**

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

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

**Gravity Loads (without ice)**

Weight of all cables w/o ice =  $WT_{coax} := Wt_{coax} \cdot N_{coax} = 16$  plf **BLC 2**

**Gravity Load (ice only)**

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

Ice Weight All Coax per foot =  $WTi_{coax} := Id \cdot \left( N_{coax} \cdot \frac{Ai_{coax}}{144} \right) = 30$  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 =  $qz \cdot Cd_F \cdot A_{mem} = 28$  plf **BLC 5,7**

**Wind Load (NESE Heavy)**

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

Total Member Wind Force w/ Ice =  $p \cdot Cd_F \cdot A_{ICE_{mem}} = 4$  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 =  $A_{i_{mem}} := (W_{mem} + 2 \cdot Ir) \cdot (H_{mem} + 2 \cdot Ir) - W_{mem} \cdot H_{mem} = 13$  sq in

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

**Basic Components**

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 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 := 118	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 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left( \frac{TME}{900} \right)^{\frac{2}{9.5}} = 1.31$		(NESC 2012 Table 250-2)
Exposure Factor =	$Es := 0.346 \left[ \frac{33}{(0.67 \cdot TME)} \right]^{\frac{1}{7}} = 0.305$		(NESC 2012 Table 250-3)
Response Term =	$Bs := \frac{1}{\left( 1 + 0.375 \cdot \frac{TME}{220} \right)} = 0.833$		(NESC 2012 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[ 1 + \left( 2.7 \cdot Es \cdot Bs \cdot \frac{1}{2} \right) \right]}{kv^2} = 0.857$		(NESC 2012 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.8$	psf	(NESC 2012 Section 250.C.2)

**Shape Factors**

Shape Factor for Round Members =	Cd <sub>R</sub> := 1.3	(User Input)
Shape Factor for Flat Members =	Cd <sub>F</sub> := 1.6	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	Cd <sub>coax</sub> := 1.6	(User Input)

**Overload Factors**

**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

**Development of Wind & Ice Load on Mast**

**Mast Data:**

(12" Sch. 80)

Mast Shape =	Round	(User Input)
Mast Diameter =	$D_{mast} := 12.8$ in	(User Input)
Mast Length =	$L_{mast} := 55$ ft	(User Input)
Mast Thickness =	$t_{mast} := 0.5$ in	(User Input)

**Wind Load (NESC Extreme)**

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

Total Mast Wind Force (Below Top of Tower) =  $qz \cdot C_dR \cdot A_{mast} = 48$  plf **BLC 5**

Total Mast Wind Force (Below Top of Tower) =  $qz \cdot C_{d_{coax}} \cdot A_{mast} = 59$  Coax on Mast plf **BLC 5**

Total Mast Wind Force (Above Top of Tower) =  $qz \cdot C_{d_{coax}} \cdot A_{mast} \cdot m = 74$  Coax on Mast plf **BLC 5**

**Wind Load (NESE Heavy)**

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

Total Mast Wind Force w/ Ice =  $p \cdot C_{dR} \cdot A_{ICE_{mast}} = 6$  plf **BLC 4**

Total Mast Wind Force w/ Ice =  $p \cdot C_{d_{coax}} \cdot A_{ICE_{mast}} = 7$  Coax on Mast 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)**

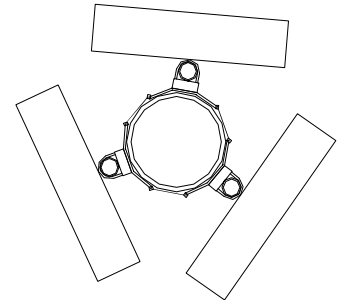
Ice Area per Linear Foot =  $A_{i_{mast}} := \frac{\pi}{4} [(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2] = 20.9$  sq in

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

**Development of Wind & Ice Load on Antennas**

Antenna Data:

Antenna Model =	Quintel QS46512-2	(AT&T)
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 52$ in	(User Input)
Antenna Width =	$W_{ant} := 12$ in	(User Input)
Antenna Thickness =	$T_{ant} := 10.8$ in	(User Input)
Antenna Weight =	$WT_{ant} := 75$ 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 =

$$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.3 \quad \text{sf}$$

Antenna Projected Surface Area =

$$A_{ant} := SA_{ant} \cdot N_{ant} = 13 \quad \text{sf}$$

Total Antenna Wind Force =

$$F_{ant} := qz \cdot C_d \cdot F \cdot A_{ant} = 904 \quad \text{lbs} \quad \text{BLC 5}$$

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =

$$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.8 \quad \text{sf}$$

Antenna Projected Surface Area w/ Ice =

$$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14.4 \quad \text{sf}$$

Total Antenna Wind Force w/ Ice =

$$F_{ant} := p \cdot C_d \cdot F \cdot A_{ICEant} = 92 \quad \text{lbs} \quad \text{BLC 4}$$

**Gravity Load (without ice)**

Weight of All Antennas =

$$WT_{ant} \cdot N_{ant} = 225 \quad \text{lbs} \quad \text{BLC 2}$$

**Gravity Load (ice only)**

Volume of Each Antenna =

$$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6739 \quad \text{cu in}$$

Volume of Ice on Each Antenna =

$$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1391 \quad \text{cu in}$$

Weight of Ice on Each Antenna =

$$W_{ICEant} := \frac{V_{ice}}{1728} \cdot \rho_{ice} = 45 \quad \text{lbs}$$

Weight of Ice on All Antennas =

$$W_{ICEant} \cdot N_{ant} = 135 \quad \text{lbs} \quad \text{BLC 3}$$

**Development of Wind & Ice Load on TMA's**

TMA Data:

TMA Model =  
 TMA Shape =  
 TMA Height =  
 TMA Width =  
 TMA Thickness =  
 TMA Weight =  
 Number of TMA's =

(AT&T)

Commscope TMAT21X23B68-31-43

Flat (User Input)

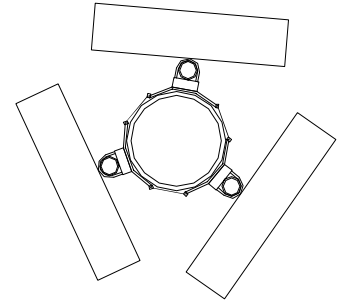
$L_{TMA} := 9.7$  in (User Input)

$W_{TMA} := 11.0$  in (User Input)

$T_{TMA} := 3.9$  in (User Input)

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

$N_{TMA} := 6$  (User Input)



**Wind Load (NESC Extreme Wind)**

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

Surface Area for One TMA =

$$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.7 \quad \text{sf}$$

TMA Projected Surface Area =

$$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.4 \quad \text{sf}$$

Total TMA Wind Force =

$$F_{TMA} := qz \cdot C_d \cdot A_{TMA} \cdot m = 309 \quad \text{lbs} \quad \text{BLC 5}$$

**Wind Load (NESC Heavy Wind)**

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

Surface Area for One TMA w/ Ice =

$$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 0.9 \quad \text{sf}$$

TMA Projected Surface Area w/ Ice =

$$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5.3 \quad \text{sf}$$

Total TMA Wind Force w/ Ice =

$$F_{iTMA} := p \cdot C_d \cdot A_{ICETMA} = 34 \quad \text{lbs} \quad \text{BLC 4}$$

**Gravity Load (without ice)**

Weight of All TMA's =

$$Wgt_{TMA} := (WT_{TMA} \cdot N_{TMA}) = 132 \quad \text{lbs} \quad \text{BLC 2}$$

**Gravity Load (ice)**

Volume of Each TMA =

$$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 416 \quad \text{cu in}$$

Volume of Ice on Each TMA =

$$V_{ice} := (L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir) \cdot (T_{TMA} + 2 \cdot Ir) - V_{TMA} = 213 \quad \text{cu in}$$

Weight of Ice on Each TMA =

$$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7 \quad \text{lbs}$$

Weight of Ice on All TMA's =

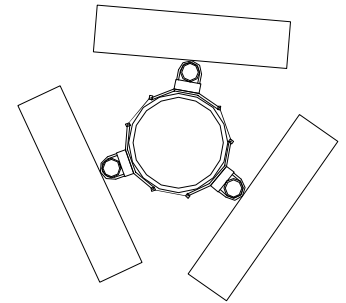
$$Wgt_{ice.TMA} := (W_{ICETMA} \cdot N_{TMA}) = 41 \quad \text{lbs} \quad \text{BLC 3}$$

**Development of Wind & Ice Load on Antenna Mounts**

**Mount Data:**

Mount Type:  
 Mount Shape =  
 Pipe Mount Length =  
 2 inch Pipe Mount Linear Weight =  
 Pipe Mount Outside Diameter =  
 Number of Mounting Pipes =  
 Tri-Bracket Weight =

(AT&T)  
 Microflex Universal Tri-Bracket  
 Flat (User Input)  
 $L_{mnt} := 72$  in (User Input)  
 $W_{mnt} := 3.66$  plf (User Input)  
 $D_{mnt} := 2.375$  in (User Input)  
 $N_{mnt} := 3$  (User Input)  
 $W_{tb.mnt} := 197$  lbs (User Input)



**Wind Load (NESC Extreme)**

*Assumes Mount is Shielded by Antenna*

Mount Projected Surface Area =

$A_{mnt} := 0.0$  sf

Total Mount Wind Force =

$F_{mnt} := qz \cdot C_d \cdot A_{mnt} \cdot m = 0$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Mount is Shielded by Antenna*

Mount Projected Surface Area w/ Ice =

$A_{ICEmnt} := 0.0$  sf

Total Mount Wind Force =

$F_{mnt} := p \cdot C_d \cdot A_{ICEmnt} = 0$  lbs **BLC 4**

**Gravity Loads (without ice)**

Weight Each Pipe Mount =

$W_{Tmnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 22$  lbs

Weight of All Mounts =

$W_{Tmnt} \cdot N_{mnt} + W_{tb.mnt} = 263$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Pipe =

$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 319$  cu in

Volume of Ice on Each Pipe =

$V_{ice} := \left[ \frac{\pi}{4} \cdot \left[ (D_{mnt} + 1)^2 \right] \cdot (L_{mnt} + 1) \right] - V_{mnt} = 334$  cu in

Weight of Ice each mount (incl. hardware) =

$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot \rho_{ice} = 11$  lbs

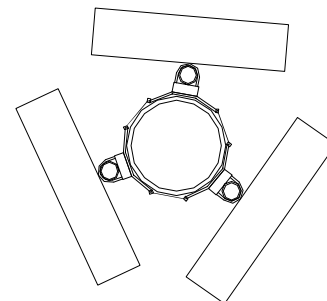
Weight of Ice on All Mounts =

$W_{ICEmnt} \cdot N_{mnt} + 5 = 37$  lbs **BLC 3**

**Development of Wind & Ice Load on Antennas**

**Antenna Data:**

Antenna Model =	(T-Mobile)	RFSAPX16DWV-16DWVS
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 55.9$	in (User Input)
Antenna Width =	$W_{ant} := 13$	in (User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in (User Input)
Antenna Weight =	$WT_{ant} := 40.7$	lbs (User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)



**Wind Load (NESC Extreme)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna =

$$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5 \quad sf$$

Antenna Projected Surface Area =

$$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1 \quad sf$$

Total Antenna Wind Force =

$$F_{ant} := qz \cdot C_d \cdot A_{ant} = 1053 \quad lbs \quad \text{BLC 5}$$

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =

$$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5 \quad sf$$

Antenna Projected Surface Area w/ Ice =

$$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6 \quad sf$$

Total Antenna Wind Force w/ Ice =

$$F_{i_{ant}} := p \cdot C_d \cdot A_{ICEant} = 106 \quad lbs \quad \text{BLC 4}$$

**Gravity Load (without ice)**

Weight of All Antennas =

$$WT_{ant} \cdot N_{ant} = 122 \quad lbs \quad \text{BLC 2}$$

**Gravity Load (ice only)**

Volume of Each Antenna =

$$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289 \quad cu \text{ in}$$

Volume of Ice on Each Antenna =

$$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017 \quad cu \text{ in}$$

Weight of Ice on Each Antenna =

$$W_{ICEant} := \frac{V_{ice}}{1728} \cdot \rho = 33 \quad lbs$$

Weight of Ice on All Antennas =

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



**Development of Wind & Ice Load on Antennas**

**Antenna Data:**

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

**Wind Load (NESC Extreme)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf

**Total Antenna Wind Force =**

$F_{ant} := qz \cdot C_d \cdot A_{ant} = 30$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.2$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.6$	sf

**Total Antenna Wind Force w/ Ice =**

$F_{ant} := p \cdot C_d \cdot A_{ICEant} = 4$  lbs **BLC 4**

**Gravity Load (without ice)**

**Weight of All Antennas =**

$WT_{ant} \cdot N_{ant} = 6$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1) \cdot (W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 52$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot \rho = 2$	lbs

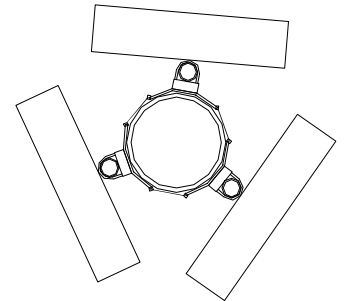
**Weight of Ice on All Antennas =**

$W_{ICEant} \cdot N_{ant} = 5$  lbs **BLC 3**

**Development of Wind & Ice Load on Antenna Mounts**

**Mount Data:**

Mount Type:	(T-Mobile)	Microfect Universal Tri-Bracket
Mount Shape =	Flat	(User Input)
Pipe Mount Length =	$L_{mnt} := 72$	in (User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf (User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in (User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$	(User Input)
Tri-Bracket Weight =	$W_{tb.mnt} := 197$	lbs (User Input)



**Wind Load (NESC Extreme)**

*Assumes Mount is Shielded by Antenna*

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

Total Mount Wind Force =  $F_{mnt} := qz \cdot C_dF \cdot A_{mnt} \cdot m = 0$  lbs **BLC 5**

**Wind Load (NESC Heavy)**

*Assumes Mount is Shielded by Antenna*

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

Total Mount Wind Force =  $F_{i_mnt} := p \cdot C_dF \cdot A_{ICEmnt} = 0$  lbs **BLC 4**

**Gravity Loads (without ice)**

Weight Each Pipe Mount =  $W_{T_{mnt}} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 22$  lbs

Weight of All Mounts =  $W_{T_{mnt}} \cdot N_{mnt} + W_{tb.mnt} = 263$  lbs **BLC 2**

**Gravity Load (ice only)**

Volume of Each Pipe =  $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 319$  cu in

Volume of Ice on Each Pipe =  $V_{ice} := \left[ \frac{\pi}{4} \cdot (D_{mnt} + 1)^2 \cdot (L_{mnt} + 1) \right] - V_{mnt} = 334$  cu in

Weight of Ice each mount (incl. hardware) =  $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot \rho_d = 11$  lbs

Weight of Ice on All Mounts =  $W_{ICEmnt} \cdot N_{mnt} + 5 = 37$  lbs **BLC 3**

**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIAX 1-1/4"	
Shape =	Round	(User Input)
Coax Outside Diameter =	$D_{coax} := 1.55$	in (User Input)
Coax Cable Length =	$L_{coax} := 20$	ft (User Input)
Weight of Coax per foot =	$Wt_{coax} := 0.66$	plf (User Input)
Total Number of Coax =	$N_{coax} := 24$	(User Input) (12AT&T & 12 T-Mobile)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 6$	(User Input)

**Wind Load (NESC Extreme)**

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

**Total Coax Wind Force (Above NU Structure) =**

$F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 54$  plf **BLC 5**

**Wind Load (NESC Heavy)**

Coax projected surface area w/ Ice =  $A_{ICE_{coax}} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot 1r)}{12} = 0.9$  ft

**Total Coax Wind Force w/ Ice =**

$F_{i_{coax}} := p \cdot Cd_{coax} \cdot A_{ICE_{coax}} = 5$  plf **BLC 4**

**Gravity Loads (without ice)**

**Weight of all cables w/o ice**

$WT_{coax} := Wt_{coax} \cdot N_{coax} = 16$  plf **BLC 2**

**Gravity Load (ice only)**

**Ice Area per Linear Foot =**

$A_{i_{coax}} := \frac{\pi}{4} [(D_{coax} + 2 \cdot 1r)^2 - D_{coax}^2] = 3.2$  sq in

**Ice Weight All Coax per foot =**

$WT_{i_{coax}} := Id \cdot \left( N_{coax} \cdot \frac{A_{i_{coax}}}{144} \right) = 30$  plf **BLC 3**

**Development of Wind & Ice Load on Coax Cables**

**Coax Cable Data:**

Coax Type =	HELIX 1-1/4"	
Shape =	Round	(User Input)
Coax Outside Diameter =	$D_{\text{coax}} := 1.55$	in (User Input)
Coax Cable Length =	$L_{\text{coax}} := 20$	ft (User Input)
Weight of Coax per foot =	$Wt_{\text{coax}} := 0.66$	plf (User Input)
Total Number of Coax =	$N_{\text{coax}} := 12$	(User Input) (12 T-Mobile)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{\text{coax}} := 3$	(User Input)

**Wind Load (NESC Extreme)**

Coax projected surface area =  $A_{\text{coax}} := \frac{(NP_{\text{coax}} \cdot D_{\text{coax}})}{12} = 0.4$  ft

**Total Coax Wind Force (Above NU Structure) =**

$F_{\text{coax}} := qz \cdot Cd_{\text{coax}} \cdot A_{\text{coax}} \cdot m = 27$  plf **BLC 5**

**Wind Load (NESC Heavy)**

Coax projected surface area w/ Ice =  $A_{\text{ICE}_{\text{coax}}} := \frac{(NP_{\text{coax}} \cdot D_{\text{coax}} + 2 \cdot 1r)}{12} = 0.5$  ft

**Total Coax Wind Force w/ Ice =**

$F_{\text{coax}} := p \cdot Cd_{\text{coax}} \cdot A_{\text{ICE}_{\text{coax}}} = 3$  plf **BLC 4**

**Gravity Loads (without ice)**

**Weight of all cables w/o ice**

$WT_{\text{coax}} := Wt_{\text{coax}} \cdot N_{\text{coax}} = 8$  plf **BLC 2**

**Gravity Load (ice only)**

**Ice Area per Linear Foot =**

$A_{\text{ice}_{\text{coax}}} := \frac{\pi}{4} [(D_{\text{coax}} + 2 \cdot 1r)^2 - D_{\text{coax}}^2] = 3.2$  sq in

**Ice Weight All Coax per foot =**

$WT_{\text{ice}_{\text{coax}}} := Id \cdot \left( N_{\text{coax}} \cdot \frac{A_{\text{ice}_{\text{coax}}}}{144} \right) = 15$  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 =  $qz \cdot C_dF \cdot A_{mem} = 28$  plf **BLC 5,7**

**Wind Load (NESE Heavy)**

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

Total Member Wind Force w/ Ice =  $p \cdot C_dF \cdot A_{ICE_{mem}} = 4$  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 =  $A_{i_{mem}} := (W_{mem} + 2 \cdot lr) \cdot (H_{mem} + 2 \cdot lr) - W_{mem} \cdot H_{mem} = 13$  sq in

Weight of Ice on Member =  $W_{ICE_{mem}} := I_d \cdot \frac{A_{i_{mem}}}{144} = 5$  plf **BLC 3**











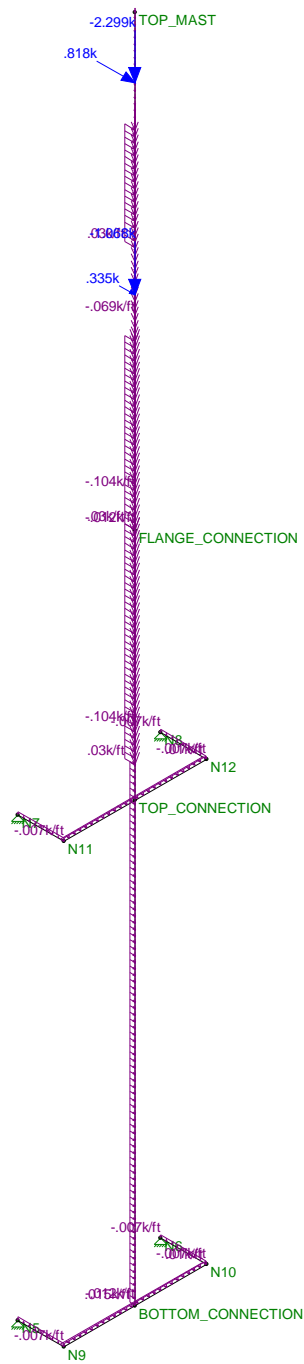


**Joint Reactions (By Combination)**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N7	-2.698	2.237	1.679	0	0	0
2	1	N8	-2.698	2.237	-1.679	0	0	0
3	1	N5	1.535	3.869	-.967	0	0	0
4	1	N6	1.535	3.869	.967	0	0	0
5	1	Totals:	-2.327	12.212	0			
6	1	COG (ft):	X: -.028	Y: 33.99	Z: 0			

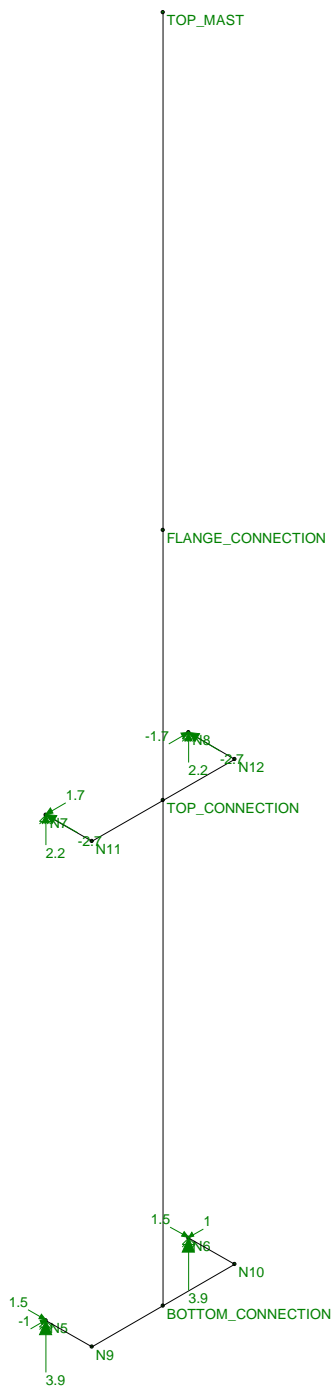
**Joint Reactions (By Combination)**

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
7	2	N7	-8.458	-1.833	5.258	0	0	0
8	2	N8	-8.458	-1.833	-5.258	0	0	0
9	2	N5	3.985	4.778	-2.516	0	0	0
10	2	N6	3.985	4.778	2.516	0	0	0
11	2	Totals:	-8.945	5.89	0			
12	2	COG (ft):	X: -.031	Y: 33.094	Z: 0			



Loads: LC 1, NESC Heavy Wind on PCS Mast

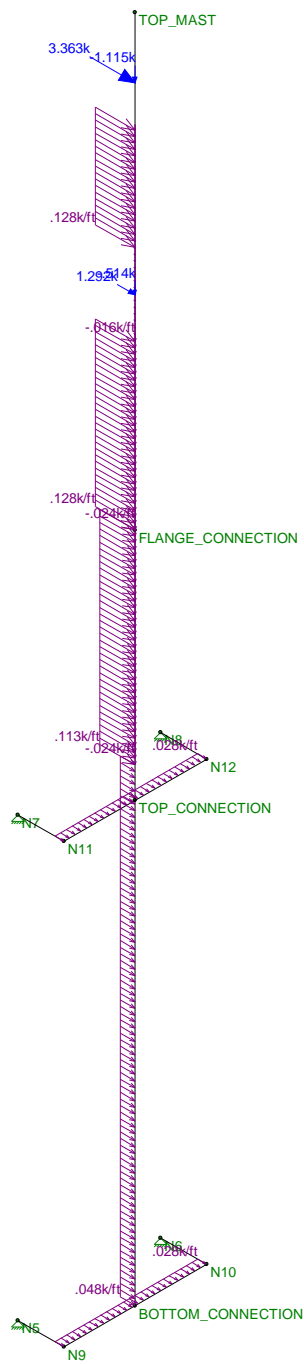
CENTEK Engineering, Inc.	South Mast - Tower # 1102 LC #1 Loads	Nov 11, 2019 at 5:04 PM
FJP		NESC South Mast.r3d
19157.00		



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

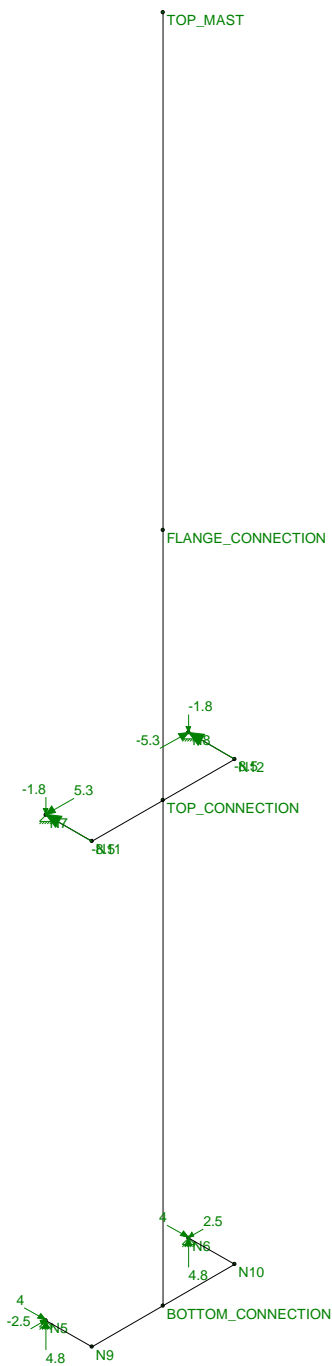
CENTEK Engineering, Inc.	South Mast - Tower # 1102 LC #1 Reactions	Nov 11, 2019 at 5:15 PM
FJP		NESC South Mast.r3d
19157.00		





Loads: LC 2, NESC Extreme Wind on PCS Mast

CENTEK Engineering, Inc.	South Mast - Tower # 1102 LC #2 Loads	Nov 11, 2019 at 5:05 PM
FJP		NESC South Mast.r3d
19157.00		



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

CENTEK Engineering, Inc.	South Mast - Tower # 1102 LC #2 Reactions	
FJP		Nov 11, 2019 at 5:15 PM
19157.00		NESC South Mast.r3d

**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Standard 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-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

**(Global) Model Settings, Continued**

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	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	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.2
2	A992	29000	11154	.3	.65	.49	50	1.1	65	1.2
3	A500 Gr.B (42)	29000	11154	.3	.65	.49	42	1.3	58	1.1
4	A500 Gr. B (46)	29000	11154	.3	.65	.49	46	1.5	58	1.2
5	A500 Gr. C (46)	29000	11154	.3	.65	.49	46	1.5	62	1.2
6	A500 Gr. C (50)	29000	11154	.3	.65	.49	50	1.5	62	1.2
7	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2
8	A36	29000	11154	.3	.65	.49	36	1.5	58	1.2

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	Mast	PIPE 12.0X	Column	Pipe	A53 Gr. B	Typical	17.5	339	339	678
2	Brace	HSS6X6X4	Beam	Tube	A500 Gr. B (...)	Typical	5.24	28.6	28.6	45.6

### Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y swayz	sway	Function
1	M1	Mast	36			Lbyy									Lateral
2	M2	Mast	20			Lbyy									Lateral
3	M3	Brace	2.25			Lbyy									Lateral
4	M4	Brace	7			Lbyy									Lateral
5	M5	Brace	2.25			Lbyy									Lateral
6	M6	Brace	2.25			Lbyy									Lateral
7	M7	Brace	7			Lbyy									Lateral
8	M8	Brace	2.25			Lbyy									Lateral

### Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Ru...
1	M1	BOTTO...	FLANGE...			Mast	Column	Pipe	A53 Gr. B	Typical
2	M2	FLANGE...	TOP_M...			Mast	Column	Pipe	A53 Gr. B	Typical
3	M3	N8	N12			Brace	Beam	Tube	A500 Gr...	Typical
4	M4	N12	N11			Brace	Beam	Tube	A500 Gr...	Typical
5	M5	N11	N7			Brace	Beam	Tube	A500 Gr...	Typical
6	M6	N6	N10			Brace	Beam	Tube	A500 Gr...	Typical
7	M7	N10	N9			Brace	Beam	Tube	A500 Gr...	Typical
8	M8	N9	N5			Brace	Beam	Tube	A500 Gr...	Typical

### Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	BOTTOM_CONNECTION	0	0	0	0	
2	TOP_CONNECTION	0	21.5	0	0	
3	FLANGE_CONNECTION	0	36	0	0	
4	TOP_MAST	0	56	0	0	
5	N5	2.25	0	3.5	0	
6	N6	2.25	0	-3.5	0	
7	N7	2.25	21.5	3.5	0	
8	N8	2.25	21.5	-3.5	0	
9	N9	0	0	3.5	0	
10	N10	0	0	-3.5	0	
11	N11	0	21.5	3.5	0	
12	N12	0	21.5	-3.5	0	

### Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	BOTTOM_CONNEC...						
2	TOP_CONNECTION						
3	FLANGE_CONNECTI...						

**Joint Boundary Conditions (Continued)**

	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]
4	TOP_MAST						
5	N7	Reaction	Reaction	Reaction			
6	N8	Reaction	Reaction	Reaction			
7	N11						
8	N12						
9	N5	Reaction	Reaction	Reaction			
10	N6	Reaction	Reaction	Reaction			
11	N9						
12	N10						

**Member Point Loads (BLC 2 : Weight of PCS Structure)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.225	6
2	M2	Y	-.132	6
3	M2	Y	-.263	6
4	M2	Y	-.122	16
5	M2	Y	-.006	16
6	M2	Y	-.263	16

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.135	6
2	M2	Y	-.041	6
3	M2	Y	-.037	6
4	M2	Y	-.099	16
5	M2	Y	-.005	16
6	M2	Y	-.037	16

**Member Point Loads (BLC 4 : NESC Heavy Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.092	6
2	M2	X	.034	6
3	M2	X	.106	16
4	M2	X	.004	16

**Member Point Loads (BLC 5 : NESC Extreme Wind)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.904	6
2	M2	X	.309	6
3	M2	X	1.053	16
4	M2	X	.03	16

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/... Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.016	-.016 23	36
2	M2	Y	-.016	-.016 0	4
3	M2	Y	-.008	-.008 4	15

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	0	0
2	M2	Y	-.008	-.008	0	0
3	M1	Y	-.03	-.03	23	36
4	M2	Y	-.03	-.03	0	4
5	M2	Y	-.015	-.015	4	15
6	M5	Y	-.005	-.005	0	0
7	M4	Y	-.005	-.005	0	0
8	M3	Y	-.005	-.005	0	0
9	M8	Y	-.005	-.005	0	0
10	M7	Y	-.005	-.005	0	0
11	M6	Y	-.005	-.005	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.006	.006	0	23
2	M1	X	.007	.007	23	36
3	M2	X	.007	.007	0	4
4	M2	X	.007	.007	8	15
5	M1	X	.005	.005	23	36
6	M2	X	.005	.005	0	4
7	M2	X	.003	.003	8	15
8	M4	X	.004	.004	0	0
9	M7	X	.004	.004	0	0

**Member Distributed Loads (BLC 5 : NESC Extreme Wind)**

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.048	.048	0	23
2	M1	X	.059	.059	23	32
3	M1	X	.074	.074	32	36
4	M2	X	.074	.074	0	4
5	M2	X	.074	.074	8	15
6	M1	X	.054	.054	23	36
7	M2	X	.054	.054	0	4
8	M2	X	.027	.027	8	15
9	M4	X	.028	.028	0	0
10	M7	X	.028	.028	0	0

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self Weight (PCS Mast)	None		-1						
2	Weight of PCS Structure	None					6	3		
3	Weight of Ice Only on PCS Struct	None					6	11		
4	NESC Heavy Wind	None					4	9		
5	NESC Extreme Wind	None					4	10		





### Load Combinations

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	NESC Heavy Wind on P...	Yes			1	1.5	2	1.5	3	1.5	4	2.5												
2	NESC Extreme Wind on...	Yes			1	1	2	1	5	1														
3	Self Weight				1	1																		

### Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	max	-0.816	1	2.939	2	-0.501	1	0	2	0	2	0	2
2		min	-4.913	2	2.936	1	-3.039	2	0	1	0	1	0	1
3	N8	max	-0.816	1	2.939	2	3.039	2	0	2	0	2	0	2
4		min	-4.913	2	2.936	1	.501	1	0	1	0	1	0	1
5	N5	max	1.643	2	2.095	1	1.043	2	0	2	0	2	0	2
6		min	-0.064	1	-0.381	2	-0.033	1	0	1	0	1	0	1
7	N6	max	1.643	2	2.095	1	.033	1	0	2	0	2	0	2
8		min	-0.064	1	-0.381	2	-1.043	2	0	1	0	1	0	1
9	Totals:	max	-1.76	1	10.062	1	0	2						
10		min	-6.54	2	5.116	2	0	1						



Company : CENTEK Engineering, Inc.  
Designer : TJL  
Job Number : 18000.55  
Model Name : North Mast - Tower # 1102

Feb 21, 2019  
9:55 AM  
Checked By: CAG

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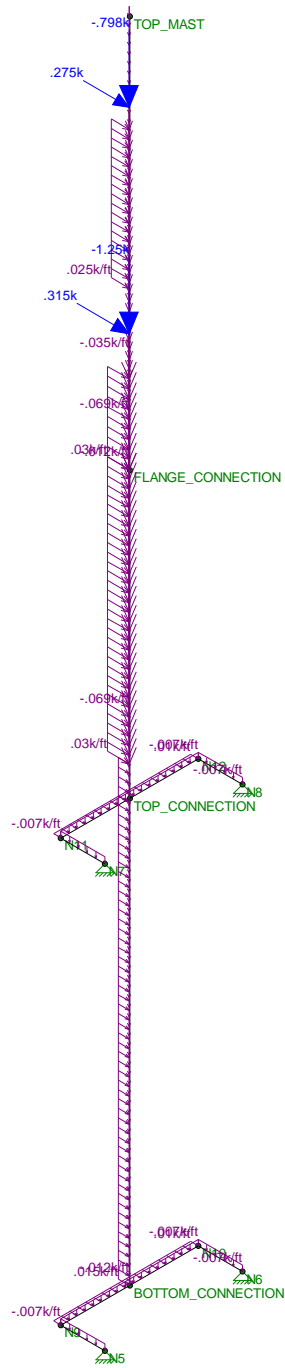
### Joint Reactions

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LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	N7	-0.816	2.936	-0.501	0	0	0
2	N8	-0.816	2.936	0.501	0	0	0
3	N5	-0.064	2.095	-0.033	0	0	0
4	N6	-0.064	2.095	0.033	0	0	0
5	Totals:	-1.76	10.062	0			
6	COG (ft):	X: .034	Y: 31.36	Z: 0			

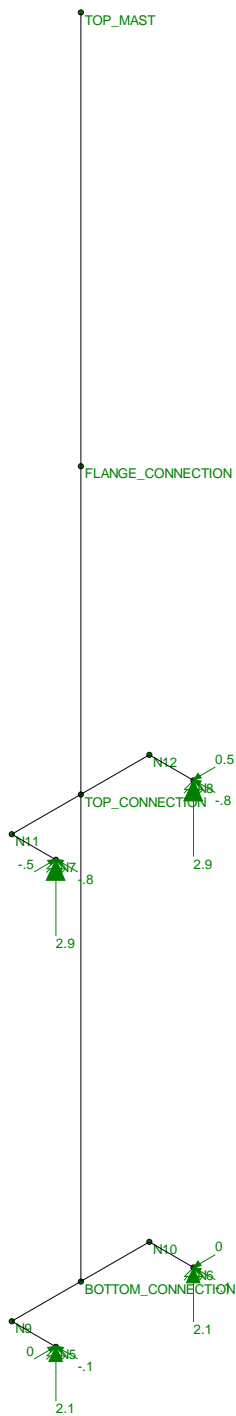
### **Joint Reactions**

LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N7	-4.913	2.939	-3.039	0	0
2	2	N8	-4.913	2.939	3.039	0	0
3	2	N5	1.643	-.381	1.043	0	0
4	2	N6	1.643	-.381	-1.043	0	0
5	2	Totals:	-6.54	5.116	0		
6	2	COG (ft):	X: .035	Y: 30.635	Z: 0		



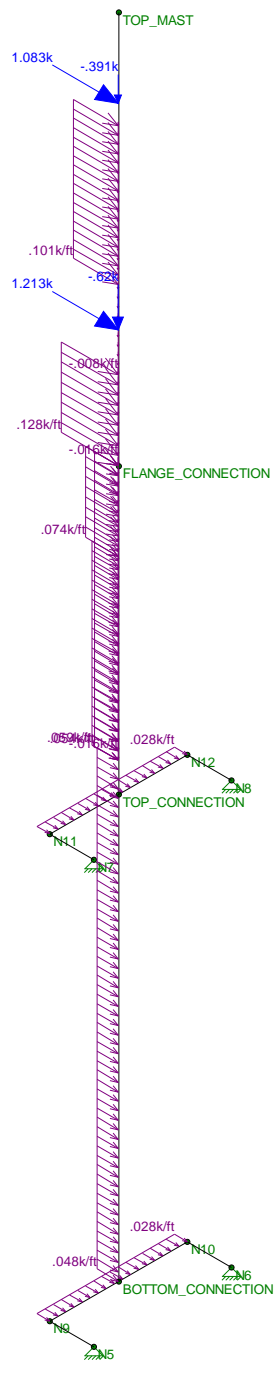
Loads: LC 1, NESC Heavy Wind on PCS Mast

CENTEK Engineering, Inc.	North Mast - Tower # 1102 LC #1 Loads	Feb 21, 2019 at 9:54 AM
TJL		NESC North Mast.r3d
18000.55		



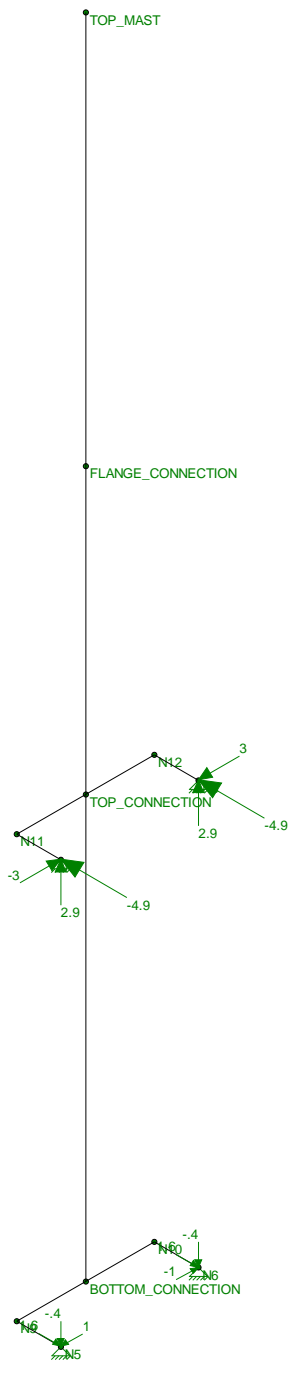
Results for LC 1, NESC Heavy Wind on PCS Mast  
 Reaction and Moment Units are k and k-ft

CENTEK Engineering, Inc.	North Mast - Tower # 1102 LC #1 Reactions	
TJL		Feb 21, 2019 at 9:54 AM
18000.55		NESC North Mast.r3d



Loads: LC 2, NESC Extreme Wind on PCS Mast

CENTEK Engineering, Inc.	North Mast - Tower # 1102 LC #2 Loads	
TJL		Feb 21, 2019 at 9:54 AM
18000.55		NESC North Mast.r3d



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

CENTEK Engineering, Inc.	North Mast - Tower # 1102 LC #2 Reactions	
TJL		Feb 21, 2019 at 9:55 AM
18000.55		NESC North Mast.r3d



**Coax Cable on CL&P Tower**

**NW LEG - (AT&T)**

Distance Between Coax Cable Attach Points =

Coaxial Cable Span =  $Coax_{span} := \begin{bmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 13.25 \\ 31.75 \end{bmatrix} \cdot ft$  (User Input)

Diameter of Coax Cable =  $D_{coax} := 1.55 \cdot in$  (User Input)

Weight of Coax Cable =  $W_{coax} := 0.66 \cdot plf$  (User Input)

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

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

Extreme Wind Pressure =  $qz := 35 \cdot psf$  (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 =  $A_{ice} := (NP_{coax} \cdot D_{coax} + 2 \cdot Ir) = 10.3 \text{ in}$

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

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

Weight of Ice on All Coax Cables =  $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 15 \text{ plf}$

Heavy Vertical Load =

$$\text{Heavy}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HV}} \right)}$$

Heavy Transverse Load =

$$\text{Heavy}_{\text{Trans}} := \overrightarrow{\left( \rho \cdot A_{\text{ice}} \cdot C_{d_{\text{coax}}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HW}} \right)}$$

$$\text{Heavy}_{\text{Vert}} = \begin{bmatrix} 344 \\ 344 \\ 344 \\ 344 \\ 456 \\ 1093 \end{bmatrix} \text{ lb}$$

$$\text{Heavy}_{\text{Trans}} = \begin{bmatrix} 137 \\ 137 \\ 137 \\ 137 \\ 182 \\ 436 \end{bmatrix} \text{ lb}$$

Extreme Vertical Load =

$$\text{Extreme}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EV}} \right)}$$

Extreme Transverse Load =

$$\text{Extreme}_{\text{Trans}} := \overrightarrow{\left( (q_z \cdot A \cdot C_{d_{\text{coax}}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EW}} \right)}$$

$$\text{Extreme}_{\text{Vert}} = \begin{bmatrix} 79 \\ 79 \\ 79 \\ 79 \\ 105 \\ 251 \end{bmatrix} \text{ lb}$$

$$\text{Extreme}_{\text{Trans}} = \begin{bmatrix} 434 \\ 434 \\ 434 \\ 434 \\ 575 \\ 1378 \end{bmatrix} \text{ lb}$$

**Coax Cable on CL&P Tower**

**NE LEG - (T-MOBILE)**

Distance Between Coax Cable Attach Points =

Coaxial Cable Span =  $Coax_{span} := \begin{bmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 13.25 \\ 31.75 \end{bmatrix} \cdot ft$  (User Input)

Diameter of Coax Cable =  $D_{coax} := 1.55 \cdot in$  (User Input)

Weight of Coax Cable =  $W_{coax} := 0.66 \cdot plf$  (User Input)

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

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

Extreme Wind Pressure =  $qz := 35 \cdot psf$  (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 =  $A_{ice} := (NP_{coax} \cdot D_{coax} + 2 \cdot Ir) = 10.3 \text{ in}$

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

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

Weight of Ice on All Coax Cables =  $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 15 \text{ plf}$

Heavy Vertical Load =

$$\text{Heavy}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HV}} \right)}$$

Heavy Transverse Load =

$$\text{Heavy}_{\text{Trans}} := \overrightarrow{\left( \rho \cdot A_{\text{ice}} \cdot C_{d_{\text{coax}}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HW}} \right)}$$

$$\text{Heavy}_{\text{Vert}} = \begin{bmatrix} 344 \\ 344 \\ 344 \\ 344 \\ 456 \\ 1093 \end{bmatrix} \text{ lb}$$

$$\text{Heavy}_{\text{Trans}} = \begin{bmatrix} 137 \\ 137 \\ 137 \\ 137 \\ 182 \\ 436 \end{bmatrix} \text{ lb}$$

Extreme Vertical Load =

$$\text{Extreme}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EV}} \right)}$$

Extreme Transverse Load =

$$\text{Extreme}_{\text{Trans}} := \overrightarrow{\left( (q_z \cdot A \cdot C_{d_{\text{coax}}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EW}} \right)}$$

$$\text{Extreme}_{\text{Vert}} = \begin{bmatrix} 79 \\ 79 \\ 79 \\ 79 \\ 105 \\ 251 \end{bmatrix} \text{ lb}$$

$$\text{Extreme}_{\text{Trans}} = \begin{bmatrix} 434 \\ 434 \\ 434 \\ 434 \\ 575 \\ 1378 \end{bmatrix} \text{ lb}$$

**Coax Cable on CL&P Tower**

**SE LEG - (AT&T)**

Distance Between Coax Cable Attach Points =

Coaxial Cable Span =  $Coax_{span} := \begin{bmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 13.25 \\ 31.75 \end{bmatrix} \cdot ft$  (User Input)

Diameter of Coax Cable =  $D_{coax} := 1.55 \cdot in$  (User Input)

Weight of Coax Cable =  $W_{coax} := 0.66 \cdot plf$  (User Input)

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

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

Extreme Wind Pressure =  $qz := 35 \cdot psf$  (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 =  $A_{ice} := (NP_{coax} \cdot D_{coax} + 2 \cdot Ir) = 10.3 \text{ in}$

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

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

Weight of Ice on All Coax Cables =  $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 15 \text{ plf}$

Heavy Vertical Load =

$$\text{Heavy}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HV}} \right)}$$

Heavy Transverse Load =

$$\text{Heavy}_{\text{Trans}} := \overrightarrow{\left( \rho \cdot A_{\text{ice}} \cdot C_{d_{\text{coax}}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HW}} \right)}$$

$$\text{Heavy}_{\text{Vert}} = \begin{bmatrix} 344 \\ 344 \\ 344 \\ 344 \\ 456 \\ 1093 \end{bmatrix} \text{ lb}$$

$$\text{Heavy}_{\text{Trans}} = \begin{bmatrix} 137 \\ 137 \\ 137 \\ 137 \\ 182 \\ 436 \end{bmatrix} \text{ lb}$$

Extreme Vertical Load =

$$\text{Extreme}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EV}} \right)}$$

Extreme Transverse Load =

$$\text{Extreme}_{\text{Trans}} := \overrightarrow{\left( (q_z \cdot A \cdot C_{d_{\text{coax}}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EW}} \right)}$$

$$\text{Extreme}_{\text{Vert}} = \begin{bmatrix} 79 \\ 79 \\ 79 \\ 79 \\ 105 \\ 251 \end{bmatrix} \text{ lb}$$

$$\text{Extreme}_{\text{Trans}} = \begin{bmatrix} 434 \\ 434 \\ 434 \\ 434 \\ 575 \\ 1378 \end{bmatrix} \text{ lb}$$

**Coax Cable on CL&P Tower**

**SW LEG - (T-MOBILE)**

Distance Between Coax Cable Attach Points =

Coaxial Cable Span =  $Coax_{span} := \begin{bmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 13.25 \\ 31.75 \end{bmatrix} \cdot \text{ft} \quad (User Input)$

Diameter of Coax Cable =  $D_{coax} := 1.55 \cdot \text{in} \quad (User Input)$

Weight of Coax Cable =  $W_{coax} := 0.66 \cdot \text{plf} \quad (User Input)$

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

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

Extreme Wind Pressure =  $qz := 35 \cdot \text{psf} \quad (User Input)$

Heavy Wind Pressure =  $p := 4 \cdot \text{psf} \quad (User Input)$

Radial Ice Thickness =  $Ir := 0.5 \cdot \text{in} \quad (User Input)$

Radial Ice Density =  $Id := 56 \cdot \text{pcf} \quad (User Input)$

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

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

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

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

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

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

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

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

Weight of Ice on All Coax Cables =  $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 30 \text{ plf}$

Heavy Vertical Load =

$$\text{Heavy}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HV}} \right)}$$

Heavy Transverse Load =

$$\text{Heavy}_{\text{Trans}} := \overrightarrow{\left( \rho \cdot A_{\text{ice}} \cdot C_{d_{\text{coax}}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HW}} \right)}$$

$$\text{Heavy}_{\text{Vert}} = \begin{bmatrix} 688 \\ 688 \\ 688 \\ 688 \\ 912 \\ 2186 \end{bmatrix} \text{ lb}$$

$$\text{Heavy}_{\text{Trans}} = \begin{bmatrix} 137 \\ 137 \\ 137 \\ 137 \\ 182 \\ 436 \end{bmatrix} \text{ lb}$$

Extreme Vertical Load =

$$\text{Extreme}_{\text{Vert}} := \overrightarrow{\left( (N_{\text{coax}} \cdot W_{\text{coax}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EV}} \right)}$$

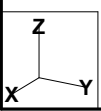
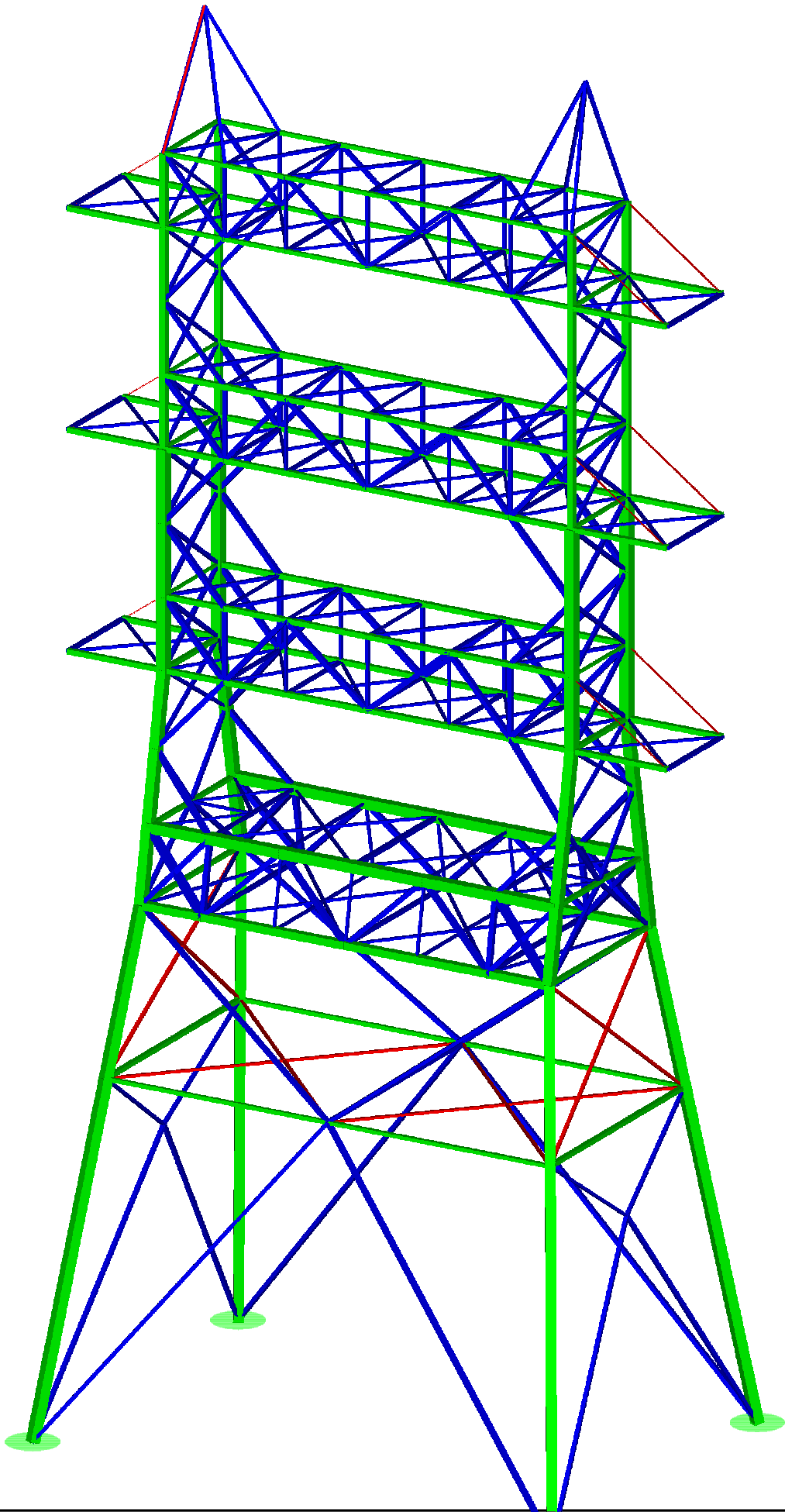
Extreme Transverse Load =

$$\text{Extreme}_{\text{Trans}} := \overrightarrow{\left( (\rho \cdot A \cdot C_{d_{\text{coax}}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EW}} \right)}$$

$$\text{Extreme}_{\text{Vert}} = \begin{bmatrix} 158 \\ 158 \\ 158 \\ 158 \\ 210 \\ 503 \end{bmatrix} \text{ lb}$$

$$\text{Extreme}_{\text{Trans}} = \begin{bmatrix} 434 \\ 434 \\ 434 \\ 434 \\ 575 \\ 1378 \end{bmatrix} \text{ lb}$$





Project Name : 19157.00 - Norwalk, CT  
Project Notes: Structure # 1102 / AT&T CT5046  
Project File : J:\Jobs\1915700.WI\04\_Structural\Backup Documentation\Pls-Tower\norwalk1102.tow  
Date run : 2:11:27 PM Tuesday, November 12, 2019  
by : Tower Version 12.50  
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "10P" will not be checked for block 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 "10X" will not be checked for block 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 "10XY" will not be checked for block 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 "10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26P" ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26X" ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26XY" ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26Y" ??  
KL/R value of 244.21 exceeds maximum of 200.00 for member "27P" ??  
KL/R value of 244.21 exceeds maximum of 200.00 for member "27X" ??  
KL/R value of 244.21 exceeds maximum of 200.00 for member "27XY" ??  
KL/R value of 244.21 exceeds maximum of 200.00 for member "27Y" ??  
Member "30P" will not be checked for block 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 "30X" will not be checked for block 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 "30XY" will not be checked for block 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 "30Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??





greater than zero); however, end, edge and spacing distances will be checked. ??  
 Member "151X" will not be checked for block 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 "151XY" will not be checked for block 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 "151Y" will not be checked for block 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 "153P" will not be checked for block 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 "153X" will not be checked for block 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 "153XY" will not be checked for block 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 "153Y" will not be checked for block 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 "155P" will not be checked for block 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 "155X" will not be checked for block 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 "155XY" will not be checked for block 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 "155Y" will not be checked for block 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 "156P" will not be checked for block 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 "156X" will not be checked for block 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 "156XY" will not be checked for block 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 "156Y" will not be checked for block 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 202.97 exceeds maximum of 200.00 for member "158P" ??  
 KL/R value of 202.97 exceeds maximum of 200.00 for member "158X" ??  
 KL/R value of 202.97 exceeds maximum of 200.00 for member "158XY" ??  
 KL/R value of 202.97 exceeds maximum of 200.00 for member "158Y" ??  
 KL/R value of 222.93 exceeds maximum of 200.00 for member "165P" ??  
 KL/R value of 250.54 exceeds maximum of 200.00 for member "166P" ??  
 KL/R value of 250.54 exceeds maximum of 200.00 for member "166X" ??  
 KL/R value of 250.54 exceeds maximum of 200.00 for member "166XY" ??  
 KL/R value of 250.54 exceeds maximum of 200.00 for member "166Y" ??  
 KL/R value of 205.25 exceeds maximum of 200.00 for member "169P" ??  
 KL/R value of 205.25 exceeds maximum of 200.00 for member "169X" ??  
 KL/R value of 205.25 exceeds maximum of 200.00 for member "169XY" ??  
 KL/R value of 205.25 exceeds maximum of 200.00 for member "169Y" ??  
 The model has 165 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\1915700.wi\04\_structural\backup documentation\pls-tower\norwalk1102.lca

\*\*\* Analysis Results:

Maximum element usage is 98.88% for Angle "80XY" in load case "NESC Heavy Broken Wire"  
 Maximum insulator usage is 25.74% for Clamp "C12" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
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Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Shear	Load Case Support Origin			Leg Force In Residual Shear		Residual Shear	Residual Shear	Residual Shear	Residual Shear	
	Total	Total	Total	Member	Leg Dir.					
Horizontal	Long.	Tran.	Joint Vert.	Member	Leg Dir.	Perpendicular	Horizontal	Horizontal	Horizontal	
Tran. Force	Force	Force	Force			To Leg	To Leg - Res.	To Leg - Long.	To Leg -	
(kips)	(kips)	(kips)	(kips)		(kips)	(kips)	(kips)	(kips)	(kips)	
20.573	-24.53	-35.62	-129.31	14P	13S	13P	134.808	20.446	20.574	-0.230
13.277	11.36	-19.22	51.10	14X	13X	13X	-54.166	13.248	13.369	-1.572
11.706	-16.01	-19.98	71.09	14XY	13XY	13XY	-74.627	11.817	11.950	2.403
15.874	22.31	-29.39	-116.16	14Y	13Y	13Y	120.860	15.770	15.874	-0.075
19.947	-21.82	-33.68	-118.02	14P	13S	13P	123.068	19.849	19.962	-0.781
16.350	17.34	-25.81	81.31	14X	13X	13X	-85.515	16.299	16.446	-1.771
15.568	-19.51	-26.05	90.06	14XY	13XY	13XY	-94.488	15.578	15.732	2.262
18.022	21.22	-31.32	-114.25	14Y	13Y	13Y	119.003	17.931	18.034	0.658
11.582	-21.03	-23.56	-102.94	14P	13S	13P	107.050	11.552	11.657	1.322
11.366	17.55	-21.77	89.44	14X	13X	13X	-93.031	11.291	11.374	-0.427
12.131	-7.34	-14.60	21.19	14XY	13XY	13XY	-23.710	12.408	12.566	3.279
23.383	23.29	-38.43	-129.32	14Y	13Y	13Y	134.904	23.308	23.429	1.469

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
NESC Heavy	7012.326	433.153	7025.691
NESC Extreme	7698.749	163.790	7700.491
NESC Heavy Broken Wire	6539.960	-1237.103	6655.937

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Top (ft)	Face Width (ft)	Tran. Bot (ft)	Face Width (ft)	Tran. Face Gross Area (ft^2)	Long. Top (ft)	Face Width (ft)	Long. Bot (ft)	Face Width (ft)	Long. Face Gross Area (ft^2)
1	94.000	50.000	106	356	0.00	7.00	276.500	28.00	44.00	1416.000				
2	50.000	0.000	58	165	7.00	26.15	828.655	30.00	38.15	1642.555				

\*\*\* 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 Comp.	Group Comp.	Angle RLX	Angle RLY	Angle RLZ	Steel L/R	Max Usage KL/R	Max Length	Usage Curve	Max No.	Comp.	Comp.	Comp.	L/R
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136.000	253.125	1.000	1.000	1.000	60.61	60.61	5.000	1	10				
	Leg2	L8x8x1/2	SAE		8X8X0.5		33.0 54.51	Comp	54.51	8XY	-74.132	NESC	Hea 245.252
136.000	337.499	1.000	1.000	1.000	37.74	37.74	5.000	1	10				
	Leg3	L8x8x1/2	SAE		8X8X0.5		33.0 47.79	Tens	40.02	10Y	-97.990	NESC	Hea 244.867
380.800	944.999	1.000	1.000	1.000	38.42	38.42	5.091	1	28				
	Leg4	L8x8x1/2	SAE		8X8X0.5		33.0 42.33	Tens	41.64	12Y	-100.596	NESC	Hea 241.598
380.800	944.999	0.500	0.500	0.500	43.81	43.81	11.611	1	28				
	Leg5	L8x8x1/2	SAE		8X8X0.5		33.0 41.88	Comp	41.88	13P	-100.647	NESC	Hea 240.308
380.800	944.999	0.250	0.250	0.250	45.77	45.77	24.257	1	28				
	TTTC	L3x3x1/4	SAE		3X3X0.25		33.0 76.80	Tens	56.82	38X	-15.456	NESC	Ext 32.243
27.200	33.750	1.000	1.000	1.000	91.22	105.61	4.500	3	2				
	TTBC	L3x3x1/4	SAE		3X3X0.25		33.0 42.71	Tens	42.24	39Y	-11.564	NESC	Hea 27.374
54.400	67.500	1.000	1.000	1.000	121.62	121.28	6.000	5	4				
	ARMTT	L4x4x1/4	SAE		4X4X0.25		33.0 39.58	Comp	39.58	67XY	-10.765	NESC	Hea 40.528
27.200	33.750	1.000	1.000	1.000	105.66	112.83	7.000	3	2				
	MTTC	L4x4x1/4	SAE		4X4X0.25		33.0 80.08	Tens	70.83	43X	-33.804	NESC	Ext 47.728
0.000	0.000	1.000	1.000	1.000	67.92	93.96	4.500	3	0				
	MTBC	L4x4x1/4	SAE		4X4X0.25		33.0 47.72	Comp	47.72	46P	-22.774	NESC	Ext 47.728
0.000	0.000	1.000	1.000	1.000	67.92	93.96	4.500	3	0				
	ARMMT	L4x4x1/4	SAE		4X4X0.25		33.0 16.10	Comp	16.10	68X	-6.526	NESC	Hea 40.528
40.800	50.625	1.000	1.000	1.000	105.66	112.83	7.000	3	3				
	BTTC	L4x4x5/16	SAE		4X4X0.3125		33.0 85.02	Tens	72.33	49X	-42.652	NESC	Ext 58.971
0.000	0.000	1.000	1.000	1.000	68.27	94.13	4.500	3	0				
	BTBC	L4x4x5/16	SAE		4X4X0.3125		33.0 49.98	Comp	49.98	52Y	-29.473	NESC	Hea 58.971
0.000	0.000	1.000	1.000	1.000	68.27	94.13	4.500	3	0				
	ARMBT	L4x4x1/4	SAE		4X4X0.25		33.0 15.68	Comp	15.68	69X	-6.354	NESC	Hea 40.528
40.800	50.625	1.000	1.000	1.000	105.66	112.83	7.000	3	3				
	BTC	8x8x1/2	SAE		8X8X0.5		33.0 21.93	Tens	17.13	55XY	-35.757	NESC	Hea 208.793
0.000	0.000	1.000	1.000	1.000	39.62	79.81	5.250	3	0				
	BBC	6x6x1/2	SAE		6X6X0.5		33.0 33.23	Tens	23.03	59P	-28.183	NESC	Ext 152.178
122.400	303.750	1.000	1.000	1.000	45.76	82.88	4.500	3	9				
	Diag1	L2x2x3/16	SAE		2X2X0.1875		33.0 26.49	Comp	26.49	15X	-3.257	NESC	Hea 12.292
27.200	25.312	0.750	0.500	0.500	131.00	128.42	8.602	5	2				
	Diag2	L2.5x2.5x1/4	SAE		2.5X2.5X0.25		33.0 46.38	Comp	46.38	16X	-11.994	NESC	Hea 25.861
27.200	33.750	0.750	0.500	0.500	105.12	108.84	8.602	2	2				
	Diag3	L3x3x5/16	SAE		3X3X0.3125		33.0 26.86	Tens	25.76	19X	-10.511	NESC	Hea 43.226
40.800	63.281	0.750	0.500	0.500	87.63	95.72	8.602	2	3				
	Diag4	L3x3x3/16	SAE		3X3X0.1875		33.0 45.40	Comp	45.40	24Y	-6.061	NESC	Hea 13.351
27.200	25.312	1.000	1.000	1.000	163.08	152.87	8.100	5	2				
	Diag5	L2.5x2x3/16	SAU		2.5X2X0.1875		33.0 91.74	Comp	91.74	25Y	-3.201	NESC	Ext 3.489
27.200	25.312	0.570	0.780	0.570	300.76	257.78	18.775	5	2				
	Diag6	L3x2x1/4	SAU		3X2X0.25		33.0 46.99	Comp	46.99	26Y	-2.612	NESC	Hea 5.559
40.800	50.625	1.000	1.000	1.000	287.31	247.53	10.415	5	3				
	Diag7	L4x4x1/4	SAE		4X4X0.25		33.0 72.20	Comp	72.20	30Y	-31.210	NESC	Hea 43.226
54.400	67.500	1.000	1.000	1.000	101.54	106.15	6.727	2	4				
	Diag8	L4x4x3/8	SAE		4X4X0.375		33.0 62.19	Comp	62.19	33XY	-39.127	NESC	Hea 62.918
68.000	126.562	1.000	1.000	1.000	103.39	107.54	6.789	2	5				
	Diag9	L3.5x3x1/4	DAS		3.5X3X0.25		33.0 80.04	Comp	80.04	34XY	-40.252	NESC	Hea 50.291
54.400	67.500	0.540	1.000	0.540	137.62	133.47	18.923	5	2				
	Diag10	L4x3x7/16	DAS		4X3X0.4375		33.0 80.48	Comp	80.48	35Y	-44.321	NESC	Hea 55.072
81.600	177.187	0.250	1.000	0.250	189.13	172.72	30.734	5	3				
	Diag11	L3x3x5/16	SAE		3X3X0.3125		33.0 75.59	Comp	75.59	29XY	-21.759	NESC	Hea 28.788
40.800	63.281	1.000	1.000	1.000	137.05	133.03	6.727	5	3				
	Diag12	L3x3x3/16	SAE		3X3X0.1875		33.0 68.34	Comp	68.34	27P	-3.575	NESC	Hea 5.231
40.800	37.969	1.000	0.333	0.333	282.96	244.21	22.141	5	3				
	Horz1	L3x3x3/16	SAE		3X3X0.1875		33.0 30.57	Comp	30.57	60XY	-4.033	NESC	Ext 13.192
40.800	37.969	0.500	0.500	0.500	164.28	153.78	16.318	5	3				
	Horz2	L3.5x3.5x1/4	SAE		3.5X3.5X0.25		33.0 38.10	Comp	38.10	61X	-9.251	NESC	Hea 24.283
40.800	50.625	0.500	0.500	0.500	147.69	141.14	17.082	5	3				
	Br1	L2x2x3/16	SAE		2X2X0.1875		33.0 44.78	Tens	0.00	65Y	0.000		1.570
13.600	12.656	1.000	1.000	1.000	359.76	359.76	11.812	4	1				
	Br2	L3x3x3/16	SAE		3X3X0.1875		33.0 46.11	Comp	46.11	66P	-4.864	NESC	Ext 10.549
13.600	12.656	0.750	0.500	0.500	171.97	171.97	17.082	4	1				
	ArmBr1	Bar 2x3/16	BAR		2 x 0.1875		33.0 56.78	Tens	0.00	72Y	0.000		0.029
27.200	25.312	1.000	1.000	1.000	1911.63	1911.63	8.602	4	2				
	ArmBr2	ArmBr2	SAE		2X2X0.25		33.0 55.80	Comp	55.80	73XY	-6.505	NESC	Hea 11.659
13.600	16.875	0.750	0.500	0.500	151.91	151.91	9.899	4	1				

40.800	50.625	1.000	1.000	1.000	127.69	125.90	7.810	5	3								
MTBr4	L3.5x3.5x1/4	SAE			3.5X3.5X0.25		33.0	79.45	Comp	79.45	88Y	-26.756	NESC	Hea	33.676		
40.800	50.625	1.000	1.000	1.000	116.31	117.24	6.727	2	3								
MTBr5	L4x4x1/4	SAE			4X4X0.25		33.0	63.45	Comp	63.45	90P	-27.427	NESC	Ext	43.226		
54.400	67.500	1.000	1.000	1.000	101.54	106.15	6.727	2	4								
BTBr1	L2x2x3/16	SAE			2X2X0.1875		33.0	13.72	Tens	1.30	91Y	-0.126	NESC	Hea	9.713		
27.200	25.312	1.000	1.000	1.000	152.28	144.64	5.000	5	2								
BTBr2	L3.5x3.5x1/4	SAE			3.5X3.5X0.25		33.0	47.37	Comp	47.37	95XY	-19.327	NESC	Hea	43.754		
40.800	50.625	1.000	1.000	1.000	86.46	86.46	5.000	1	3								
BTBr3	L4x4x5/16	SAE			4X4X0.3125		33.0	73.68	Comp	73.68	92XY	-34.591	NESC	Hea	46.945		
54.400	84.375	1.000	1.000	1.000	118.49	118.87	7.810	2	4								
BTBr4	L4x4x1/4	SAE			4X4X0.25		33.0	75.70	Comp	75.70	94Y	-32.722	NESC	Hea	43.226		
54.400	67.500	1.000	1.000	1.000	101.54	106.15	6.727	2	4								
BTBr5	L4x4x3/8	SAE			4X4X0.375		33.0	48.29	Comp	48.29	96P	-30.585	NESC	Ext	63.333		
68.000	126.562	1.000	1.000	1.000	102.44	106.83	6.727	2	5								
TBC1	L2x2x3/16	SAE			2X2X0.1875		33.0	55.81	Tens	37.81	97P	-1.691	NESC	Hea	4.471		
13.600	12.656	1.000	1.000	1.000	213.20	213.20	7.000	4	1								
TBC2	L2.5x2.5x1/4	SAE			2.5X2.5X0.25		33.0	46.70	Tens	0.00	111X	0.000		Hea	14.856		
27.200	33.750	1.000	1.000	1.000	171.08	151.41	7.000	6	2								
TBC3	L2x2x1/4	SAE			2X2X0.25		33.0	46.34	Tens	26.90	114Y	-3.659	NESC	Hea	16.440		
13.600	16.875	0.750	0.500	0.500	127.70	127.70	8.322	4	1								
TBC4	L2.5x2.5x3/16	SAE			2.5X2.5X0.1875		33.0	26.77	Comp	26.77	113P	-3.049	NESC	Hea	11.388		
27.200	25.312	1.000	1.000	1.000	169.70	150.56	7.000	6	2								
TTC1	L2x2x3/16	SAE			2X2X0.1875		33.0	48.67	Tens	39.31	121P	-1.757	NESC	Hea	4.471		
13.600	12.656	1.000	1.000	1.000	213.20	213.20	7.000	4	1								
TTC2	L2.5x2.5x3/16	SAE			2.5X2.5X0.1875		33.0	91.18	Comp	91.18	116P	-4.712	NESC	Hea	5.168		
13.600	12.656	1.000	1.000	1.000	223.50	223.50	9.220	4	1								
Horz3	L2.5x2.5x3/16	SAE			2.5X2.5X0.1875		33.0	36.93	Comp	36.93	142P	-3.824	NESC	Ext	10.354		
27.200	25.312	1.000	1.000	1.000	169.70	157.91	7.000	5	2								
Horz4	L2x2x3/16	SAE			2X2X0.1875		33.0	23.73	Tens	16.12	146X	-0.720	NESC	Ext	4.471		
13.600	12.656	1.000	1.000	1.000	213.20	213.20	7.000	4	1								
Horz5	L3.5x3.5x5/16	SAE			3.5X3.5X0.3125		33.0	9.62	Comp	9.62	147P	-3.820	NESC	Hea	39.688		
40.800	63.281	1.000	1.000	1.000	121.74	121.37	7.000	5	3								
Horz6	L3.5x3x1/4	SAU			3.5X3X0.25		33.0	16.31	Comp	16.31	149X	-4.436	NESC	Hea	29.777		
27.200	33.750	0.500	0.500	0.500	121.18	120.94	12.744	5	2								
BBr1	L2x2x3/16	SAE			2X2X0.1875		33.0	5.14	Comp	5.14	150Y	-0.485	NESC	Hea	9.436		
27.200	25.312	1.000	1.000	1.000	155.05	146.75	5.091	5	2								
BBr2	L4x4x3/8	SAE			4X4X0.375		33.0	44.12	Comp	44.12	151XY	-26.169	NESC	Hea	59.320		
68.000	126.562	1.000	1.000	1.000	111.37	113.52	7.313	2	5								
BBr3	L4x4x5/16	SAE			4X4X0.3125		33.0	47.14	Tens	39.50	154X	-21.487	NESC	Ext	65.583		
54.400	84.375	1.000	1.000	1.000	77.23	77.23	5.091	1	4								
BBr4	L7x4x7/16	SAU			7X4X0.4375		33.0	11.38	Tens	10.13	156XY	-13.204	NESC	Hea	130.317		
149.600	324.843	0.500	0.750	0.500	54.65	70.98	6.800	2	11								
BTC1	L3.5x3.5x1/4	SAE			3.5X3.5X0.25		33.0	10.92	Tens	0.00	157P	0.000		Hea	16.690		
27.200	33.750	1.000	1.000	1.000	185.88	170.24	10.750	5	2								
BTC2	L2x2x3/16	SAE			2X2X0.1875		33.0	46.41	Comp	46.41	158X	-2.289	NESC	Ext	4.933		
27.200	25.312	0.750	0.500	0.500	228.84	202.97	15.027	5	2								
BTC3	L3x2.5x1/4	SAU			3X2.5X0.25		33.0	17.22	Tens	0.00	161X	0.000		Hea	24.779		
40.800	50.625	1.000	1.000	1.000	122.16	121.69	5.375	5	3								
BTC4	L2.5x1.5x1/4	SAU			2.5X1.5X0.25		33.0	21.45	Comp	21.45	162Y	-2.746	NESC	Ext	12.805		
40.800	50.625	0.500	0.750	0.500	152.69	144.95	7.041	5	3								
BTC5	L2x2x1/4	SAE			2X2X0.25		33.0	15.17	Tens	0.00	164X	0.000		Hea	15.020		
27.200	33.750	1.000	1.000	1.000	138.11	133.84	4.500	5	2								
BBC1	L3x3x3/16	SAE			3X3X0.1875		33.0	4.92	Comp	4.92	165P	-0.309	NESC	Hea	6.278		
27.200	25.312	1.000	1.000	1.000	255.02	222.93	12.666	5	2								
BBC2	L2x2x3/16	SAE			2X2X0.1875		33.0	37.07	Comp	37.07	166Y	-1.200	NESC	Hea	3.237		
13.600	12.656	0.750	0.500	0.500	250.54	250.54	16.452	4	1								
BBC3	L3x3x1/4	SAE			3X3X0.25		33.0	2.81	Comp	2.81	168X	-0.493	NESC	Ext	17.576		
27.200	33.750	1.000	0.500	0.500	163.43	153.14	12.666	5	2								

Group Summary (Tension Portion):

Group	Group Angle	Angle	Steel	Max	Usage	Max	Tension	Tension	Tension	Net
Tension	Tension	Tension	No.	No.	Hole	Usage	Control	Force	Control	Section
Label	Desc.	Type	No.	Size	Strength	Usage	Control	Force	Control	Section
Connect	Connect	Connect	Of	Of	Diameter	Cont-	Use	Control	Force	Section



136.000	337.499	312.500	5.000	10 4.000	0.875											
	Leg3	L8x8x1/2	SAE	8X8X0.5	33.0	47.79	Tens	47.79	10X	94.619	NESC	Hea	198.000			
380.800	944.999	874.999	5.091	28 4.000	0.875											
	Leg4	L8x8x1/2	SAE	8X8X0.5	33.0	42.33	Tens	42.33	11X	83.819	NESC	Hea	198.000			
0.000	0.000	0.000	5.091	0 4.000	0.875											
	Leg5	L8x8x1/2	SAE	8X8X0.5	33.0	41.88	Comp	38.46	13X	76.158	NESC	Hea	198.000			
380.800	944.999	874.999	24.257	28 4.000	0.875											
	TTTC	L3x3x1/4	SAE	3X3X0.25	33.0	76.80	Tens	76.80	38Y	17.749	NESC	Ext	36.271			
27.200	33.750	23.109	4.500	2 1.000	0.875											
	TTBC	L3x3x1/4	SAE	3X3X0.25	33.0	42.71	Tens	42.71	40XY	12.716	NESC	Ext	29.774			
0.000	0.000	0.000	4.500	0 2.000	0.875											
	ARMTT	L4x4x1/4	SAE	4X4X0.25	33.0	39.58	Comp	16.14	67X	4.391	NESC	Hea	51.121			
27.200	33.750	38.750	7.000	2 1.000	0.875											
	MTTC	L4x4x1/4	SAE	4X4X0.25	33.0	80.08	Tens	80.08	43Y	35.735	NESC	Hea	44.624			
0.000	0.000	0.000	4.500	0 2.000	0.875											
	MTBC	L4x4x1/4	SAE	4X4X0.25	33.0	47.72	Comp	45.64	46XY	20.365	NESC	Ext	44.624			
0.000	0.000	0.000	4.500	0 2.000	0.875											
	ARMMT	L4x4x1/4	SAE	4X4X0.25	33.0	16.10	Comp	3.18	68P	1.297	NESC	Ext	49.952			
40.800	50.625	44.118	7.000	3 1.180	0.875											
	BTTC	L4x4x5/16	SAE	4X4X0.3125	33.0	85.02	Tens	85.02	49Y	46.794	NESC	Hea	55.038			
0.000	0.000	0.000	4.500	0 2.000	0.875											
	BTBC	L4x4x5/16	SAE	4X4X0.3125	33.0	49.98	Comp	46.18	52XY	25.418	NESC	Hea	55.038			
0.000	0.000	0.000	4.500	0 2.000	0.875											
	ARMBT	L4x4x1/4	SAE	4X4X0.25	33.0	15.68	Comp	3.56	69P	1.452	NESC	Ext	49.952			
40.800	50.625	44.118	7.000	3 1.180	0.875											
	BTC	8x8x1/2	SAE	8X8X0.5	33.0	21.93	Tens	21.93	55Y	36.232	NESC	Hea	165.206			
0.000	0.000	0.000	5.250	0 5.000	0.875											
	BBC	6x6x1/2	SAE	6X6X0.5	33.0	33.23	Tens	33.23	59XY	40.673	NESC	Hea	131.794			
122.400	303.750	330.882	4.500	9 3.000	0.875											
	Diag1	L2x2x3/16	SAE	2X2X0.1875	33.0	26.49	Comp	16.31	15XY	2.644	NESC	Hea	16.214			
27.200	25.312	18.316	8.602	2 1.000	0.875											
	Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	46.38	Comp	44.44	17XY	12.088	NESC	Hea	28.846			
27.200	33.750	29.203	8.602	2 1.000	0.875											
	Diag3	L3x3x5/16	SAE	3X3X0.3125	33.0	26.86	Tens	26.86	20XY	10.961	NESC	Hea	44.745			
40.800	63.281	56.660	8.602	3 1.000	0.875											
	Diag4	L3x3x3/16	SAE	3X3X0.1875	33.0	45.40	Comp	43.66	23XY	8.581	NESC	Hea	27.500			
27.200	25.312	19.652	6.698	2 1.000	0.875											
	Diag5	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	91.74	Comp	44.91	25XY	8.615	NESC	Hea	19.184			
27.200	25.312	24.609	18.775	2 1.000	0.875											
	Diag6	L3x2x1/4	SAU	3X2X0.25	33.0	46.99	Comp	26.99	26X	7.786	NESC	Hea	28.846			
40.800	50.625	36.328	10.415	3 1.000	0.875											
	Diag7	L4x4x1/4	SAE	4X4X0.25	33.0	72.20	Comp	61.52	30X	28.850	NESC	Ext	46.898			
54.400	67.500	58.823	6.727	4 1.650	0.875											
	Diag8	L4x4x3/8	SAE	4X4X0.375	33.0	62.19	Comp	57.34	33Y	38.993	NESC	Hea	69.934			
68.000	126.562	110.294	6.789	5 1.540	0.875											
	Diag9	L3.5x3x1/4	DAS	3.5X3X0.25	33.0	80.04	Comp	41.11	34P	19.848	NESC	Ext	72.542			
54.400	67.500	48.281	18.923	2 2.000	0.875											
	Diag10	L4x3x7/16	DAS	4X3X0.4375	33.0	80.48	Comp	36.91	35X	30.118	NESC	Ext	121.751			
81.600	177.187	164.062	30.734	3 2.000	0.875											
	Diag11	L3x3x5/16	SAE	3X3X0.3125	33.0	75.59	Comp	51.95	28XY	21.195	NESC	Hea	44.745			
40.800	63.281	46.699	6.727	3 1.000	0.875											
	Diag12	L3x3x3/16	SAE	3X3X0.1875	33.0	68.34	Comp	25.50	27XY	7.011	NESC	Hea	27.500			
40.800	37.969	35.156	22.141	3 1.000	0.875											
	Horz1	L3x3x3/16	SAE	3X3X0.1875	33.0	30.57	Comp	0.00	60Y	0.000			27.500			
40.800	37.969	26.473	16.318	3 1.000	0.875											
	Horz2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.10	Comp	0.00	61X	0.000			43.696			
40.800	50.625	36.422	17.082	3 1.000	0.875											
	Br1	L2x2x3/16	SAE	2X2X0.1875	33.0	44.78	Tens	44.78	63P	3.668	NESC	Ext	16.214			
13.600	12.656	8.191	11.812	1 1.000	0.875											
	Br2	L3x3x3/16	SAE	3X3X0.1875	33.0	46.11	Comp	0.00	66P	0.000			27.500			
13.600	12.656	9.949	17.082	1 1.000	0.875											
	ArmBr1	Bar 2x3/16	BAR	2 x 0.1875	33.0	56.78	Tens	56.78	72Y	3.557	NESC	Hea	6.265			
27.200	25.312	17.824	8.602	2 1.000	0.875											
	ArmBr2	ArmBr2	SAE	2X2X0.25	33.0	55.80	Comp	55.49	73X	7.140	NESC	Hea	21.421			
13.600	16.875	12.868	9.899	1 1.000	0.875											
	ArmBr3	ArmBr3	SAU	3.5X2.5X0.25	33.0	82.36	Tens	82.36	78X	11.202	NESC	Hea	28.846			
13.600	16.875	15.047	7.000	1 1.000	0.875											

40.800	50.625	38.603	6.727	3	1.500	0.875												
MTBr5	L4x4x1/4	SAE	4X4X0.25	33.0	63.45	Comp	58.06	90XY	27.645	NESC	Ext	47.613						
54.400	67.500	58.823	6.727	4	1.540	0.875												
BTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	13.72	Tens	13.72	93XY	2.224	NESC	Hea	16.214						
27.200	25.312	19.301	5.000	2	1.000	0.875												
BTBr2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.37	Comp	44.45	95Y	18.135	NESC	Hea	43.696						
40.800	50.625	42.516	5.000	3	1.000	0.875												
BTBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	73.68	Comp	64.82	92Y	35.263	NESC	Hea	59.748						
54.400	84.375	73.529	7.810	4	1.420	0.875												
BTBr4	L4x4x1/4	SAE	4X4X0.25	33.0	75.70	Comp	52.69	94XY	26.146	NESC	Hea	49.627						
54.400	67.500	58.823	6.727	4	1.230	0.875												
BTBr5	L4x4x3/8	SAE	4X4X0.375	33.0	48.29	Comp	47.39	96X	32.126	NESC	Hea	67.790						
68.000	126.562	110.294	6.727	5	1.760	0.875												
TBC1	L2x2x3/16	SAE	2X2X0.1875	33.0	55.81	Tens	55.81	104XY	4.572	NESC	Hea	16.214						
13.600	12.656	8.191	9.220	1	1.000	0.875												
TBC2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	46.70	Tens	46.70	111P	12.703	NESC	Hea	28.846						
27.200	33.750	28.125	7.000	2	1.000	0.875												
TBC3	L2x2x1/4	SAE	2X2X0.25	33.0	46.34	Tens	46.34	112X	5.061	NESC	Hea	21.421						
13.600	16.875	10.922	8.322	1	1.000	0.875												
TBC4	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	26.77	Comp	5.54	113X	1.168	NESC	Ext	21.917						
27.200	25.312	21.094	7.000	2	1.000	0.875												
TTC1	L2x2x3/16	SAE	2X2X0.1875	33.0	48.67	Tens	48.67	115P	3.576	NESC	Hea	16.214						
13.600	12.656	7.348	7.000	1	1.000	0.875												
TTC2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.18	Comp	3.62	122P	0.380	NESC	Hea	21.917						
13.600	12.656	10.512	8.322	1	1.000	0.875												
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	36.93	Comp	9.71	142X	1.759	NESC	Ext	21.917						
27.200	25.312	18.105	7.000	2	1.000	0.875												
Horz4	L2x2x3/16	SAE	2X2X0.1875	33.0	23.73	Tens	23.73	146P	1.944	NESC	Hea	16.214						
13.600	12.656	8.191	7.000	1	1.000	0.875												
Horz5	L3.5x3.5x5/16	SAE	3.5X3.5X0.3125	33.0	9.62	Comp	2.98	147X	1.215	NESC	Ext	53.952						
40.800	63.281	47.988	7.000	3	1.000	0.875												
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	33.0	16.31	Comp	16.22	149P	4.411	NESC	Ext	39.835						
27.200	33.750	28.125	12.744	2	1.000	0.875												
BBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	5.14	Comp	2.08	152X	0.328	NESC	Ext	16.214						
27.200	25.312	15.785	5.091	2	1.000	0.875												
BBr2	L4x4x3/8	SAE	4X4X0.375	33.0	44.12	Comp	40.41	151Y	27.482	NESC	Hea	70.324						
68.000	126.562	110.294	7.313	5	1.500	0.875												
BBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	47.14	Tens	47.14	154Y	25.643	NESC	Hea	63.159						
54.400	84.375	59.355	5.091	4	1.000	0.875												
BBr4	L7x4x7/16	SAU	7X4X0.4375	33.0	11.38	Tens	11.38	155X	11.736	NESC	Hea	103.105						
149.600	324.843	300.781	6.789	11	3.000	0.875												
BTC1	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	10.92	Tens	10.92	157P	2.964	NESC	Ext	43.696						
27.200	33.750	27.141	10.750	2	1.000	0.875												
BTC2	L2x2x3/16	SAE	2X2X0.1875	33.0	46.41	Comp	3.47	158Y	0.562	NESC	Hea	16.214						
27.200	25.312	19.301	15.027	2	1.000	0.875												
BTC3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	17.22	Tens	17.22	161X	4.941	NESC	Ext	28.698						
40.800	50.625	32.016	5.375	3	1.000	0.875												
BTC4	L2.5x1.5x1/4	SAU	2.5X1.5X0.25	33.0	21.45	Comp	0.00	163Y	0.000			21.421						
40.800	50.625	41.016	7.010	3	1.000	0.875												
BTC5	L2x2x1/4	SAE	2X2X0.25	33.0	15.17	Tens	15.17	164P	3.193	NESC	Ext	21.421						
27.200	33.750	21.047	4.500	2	1.000	0.875												
BBC1	L3x3x3/16	SAE	3X3X0.1875	33.0	4.92	Comp	0.00	165P	0.000			27.500						
27.200	25.312	19.652	12.666	2	1.000	0.875												
BBC2	L2x2x3/16	SAE	2X2X0.1875	33.0	37.07	Comp	18.24	166XY	1.494	NESC	Hea	16.214						
13.600	12.656	8.191	16.452	1	1.000	0.875												
BBC3	L3x3x1/4	SAE	3X3X0.25	33.0	2.81	Comp	0.73	168P	0.192	NESC	Hea	36.271						
27.200	33.750	26.203	12.666	2	1.000	0.875												

\*\*\* Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case Maximum Element Element  
Usage % Label Type

C2	Clamp	17.61	NESC Heavy Broken Wire	0.0
C3	Clamp	22.17	NESC Heavy	0.0
C4	Clamp	23.19	NESC Heavy	0.0
C5	Clamp	20.75	NESC Heavy	0.0
C6	Clamp	21.15	NESC Heavy	0.0
C7	Clamp	22.01	NESC Heavy	0.0
C8	Clamp	25.30	NESC Heavy	0.0
C9	Clamp	22.14	NESC Heavy	0.0
C10	Clamp	22.60	NESC Heavy	0.0
C11	Clamp	22.34	NESC Heavy	0.0
C12	Clamp	25.74	NESC Heavy	0.0
C13	Clamp	22.63	NESC Heavy	0.0
C14	Clamp	24.37	NESC Heavy	0.0
C15	Clamp	23.14	NESC Heavy	0.0
C16	Clamp	21.84	NESC Heavy	0.0
C17	Clamp	21.52	NESC Heavy	0.0
C18	Clamp	23.51	NESC Heavy	0.0
C19	Clamp	24.29	NESC Heavy	0.0
C20	Clamp	24.26	NESC Heavy	0.0
C21	Clamp	22.99	NESC Heavy	0.0
C22	Clamp	23.55	NESC Heavy	0.0
C23	Clamp	24.71	NESC Heavy	0.0
C24	Clamp	24.40	NESC Heavy	0.0
C25	Clamp	23.93	NESC Heavy	0.0
C26	Clamp	23.59	NESC Heavy	0.0
C27	Clamp	1.28	NESC Heavy	0.0
C28	Clamp	1.27	NESC Heavy	0.0
C29	Clamp	5.65	NESC Heavy	0.0
C30	Clamp	1.80	NESC Extreme	0.0
C31	Clamp	1.92	NESC Heavy	0.0
C32	Clamp	4.58	NESC Heavy	0.0
C34	Clamp	1.23	NESC Heavy	0.0
C35	Clamp	1.23	NESC Heavy	0.0
C36	Clamp	13.16	NESC Extreme	0.0
C37	Clamp	1.80	NESC Extreme	0.0
C38	Clamp	1.83	NESC Extreme	0.0
C39	Clamp	4.21	NESC Heavy	0.0
C41	Clamp	1.28	NESC Heavy	0.0
C42	Clamp	1.91	NESC Heavy	0.0
C43	Clamp	5.65	NESC Heavy	0.0
C44	Clamp	13.28	NESC Extreme	0.0
C45	Clamp	13.18	NESC Extreme	0.0
C46	Clamp	13.18	NESC Extreme	0.0
C47	Clamp	20.32	NESC Extreme	0.0
C48	Clamp	20.32	NESC Extreme	0.0
C49	Clamp	1.30	NESC Heavy	0.0
C50	Clamp	1.86	NESC Heavy	0.0
C51	Clamp	1.80	NESC Extreme	0.0
C52	Clamp	2.26	NESC Heavy	0.0
C53	Clamp	1.92	NESC Heavy	0.0
C54	Clamp	2.71	NESC Heavy	0.0
C55	Clamp	4.58	NESC Heavy	0.0
C56	Clamp	6.37	NESC Heavy	0.0

\*\*\* Weight of structure (lbs):  
 Weight of Angles\*Section DLF: 30861.1  
 Total: 30861.1

\*\*\* End of Report

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

Project Name : 19157.00 - Norwalk, CT  
Project Notes: Structure # 1102 / AT&T CT5046  
Project File : J:\Jobs\1915700.WI\04\_Structural\Backup Documentation\Pls-Tower\norwalk1102.tow  
Date run : 2:11:26 PM Tuesday, November 12, 2019  
by : Tower Version 12.50  
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "5P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "5Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "10P" will not be checked for block 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 "10X" will not be checked for block 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 "10XY" will not be checked for block 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 "10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
Member "13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26P" ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26X" ??  
KL/R value of 247.53 exceeds maximum of 200.00 for member "26XY" ??

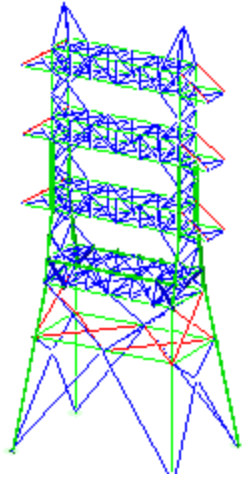












Nonlinear convergence parameters: Use Standard Parameters  
 Tension only member maximum compression load as a percent of compression capacity: 100%  
 Member check option: ASCE 10  
 Connection rupture check: ASCE 10  
 Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]  
 Included angle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

**Joints Geometry:**

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	X-Symmetry	0	14	94	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	3.5	15	85	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3.5	15	80	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3.5	15	75	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	3.5	15	70	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3.5	15	65	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3.5	15	60	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.5	15	55	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3.5	15	50	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	13.07	19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15P	XY-Symmetry	3.5	22	80	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	3.5	22	65	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	3.5	22	50	Free	Free	Free	Free	Free	Free
18P	Y-Symmetry	3.5	0	85	Free	Free	Free	Free	Free	Free
19P	XY-Symmetry	3.5	6	85	Free	Free	Free	Free	Free	Free
20P	XY-Symmetry	3.5	10.5	85	Free	Free	Free	Free	Free	Free
21P	Y-Symmetry	3.5	0	80	Free	Free	Free	Free	Free	Free
22P	XY-Symmetry	3.5	6	80	Free	Free	Free	Free	Free	Free
23P	XY-Symmetry	3.5	10.5	80	Free	Free	Free	Free	Free	Free
24P	Y-Symmetry	3.5	0	70	Free	Free	Free	Free	Free	Free
25P	XY-Symmetry	3.5	6	70	Free	Free	Free	Free	Free	Free
26P	XY-Symmetry	3.5	10.5	70	Free	Free	Free	Free	Free	Free

27P	Y-Symmetry	3.5	0	65	Free	Free	Free	Free	Free	Free
28P	XY-Symmetry	3.5	6	65	Free	Free	Free	Free	Free	Free
29P	XY-Symmetry	3.5	10.5	65	Free	Free	Free	Free	Free	Free
30P	Y-Symmetry	3.5	0	55	Free	Free	Free	Free	Free	Free
31P	XY-Symmetry	3.5	6	55	Free	Free	Free	Free	Free	Free
32P	XY-Symmetry	3.5	10.5	55	Free	Free	Free	Free	Free	Free
33P	Y-Symmetry	3.5	0	50	Free	Free	Free	Free	Free	Free
34P	XY-Symmetry	3.5	6	50	Free	Free	Free	Free	Free	Free
35P	XY-Symmetry	3.5	10.5	50	Free	Free	Free	Free	Free	Free
36P	Y-Symmetry	5.375	0	40	Free	Free	Free	Free	Free	Free
37P	XY-Symmetry	5.375	5.25	40	Free	Free	Free	Free	Free	Free
38P	XY-Symmetry	5.375	10.5	40	Free	Free	Free	Free	Free	Free
39P	Y-Symmetry	6.333	0	35	Free	Free	Free	Free	Free	Free
40P	XY-Symmetry	6.333	5.25	35	Free	Free	Free	Free	Free	Free
41P	XY-Symmetry	6.333	10.5	35	Free	Free	Free	Free	Free	Free
44P	X-Symmetry	0	17.01	17.75	Free	Free	Free	Free	Free	Free
45P	X-Symmetry	0	10.5	40	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	4.457	15	45	Free	Free	Free	Free	Free	Free
11P	XY-Symmetry	5.415	15	40	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	6.372	15	35	Free	Free	Free	Free	Free	Free
1X	X-Gen	0	-14	94	Free	Free	Free	Free	Free	Free
2X	X-GenXY	3.5	-15	85	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-3.5	-15	85	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-3.5	15	85	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3.5	-15	80	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3.5	-15	80	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3.5	15	80	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3.5	-15	75	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3.5	-15	75	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3.5	15	75	Free	Free	Free	Free	Free	Free
5X	X-GenXY	3.5	-15	70	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-3.5	-15	70	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-3.5	15	70	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3.5	-15	65	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3.5	-15	65	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3.5	15	65	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3.5	-15	60	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3.5	-15	60	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3.5	15	60	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.5	-15	55	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.5	-15	55	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.5	15	55	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3.5	-15	50	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3.5	-15	50	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3.5	15	50	Free	Free	Free	Free	Free	Free
14X	X-GenXY	13.07	-19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
14XY	XY-GenXY	-13.07	-19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
14Y	Y-GenXY	-13.07	19.07	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15X	X-GenXY	3.5	-22	80	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-3.5	-22	80	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-3.5	22	80	Free	Free	Free	Free	Free	Free
16X	X-GenXY	3.5	-22	65	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	-3.5	-22	65	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	-3.5	22	65	Free	Free	Free	Free	Free	Free
17X	X-GenXY	3.5	-22	50	Free	Free	Free	Free	Free	Free
17XY	XY-GenXY	-3.5	-22	50	Free	Free	Free	Free	Free	Free
17Y	Y-GenXY	-3.5	22	50	Free	Free	Free	Free	Free	Free
18Y	Y-Gen	-3.5	0	85	Free	Free	Free	Free	Free	Free
19X	X-GenXY	3.5	-6	85	Free	Free	Free	Free	Free	Free

19XY	XY-GenXY	-3.5	-6	85	Free	Free	Free	Free	Free	Free
19Y	Y-GenXY	-3.5	6	85	Free	Free	Free	Free	Free	Free
20X	X-GenXY	3.5	-10.5	85	Free	Free	Free	Free	Free	Free
20XY	XY-GenXY	-3.5	-10.5	85	Free	Free	Free	Free	Free	Free
20Y	Y-GenXY	-3.5	10.5	85	Free	Free	Free	Free	Free	Free
21Y	Y-Gen	-3.5	0	80	Free	Free	Free	Free	Free	Free
22X	X-GenXY	3.5	-6	80	Free	Free	Free	Free	Free	Free
22XY	XY-GenXY	-3.5	-6	80	Free	Free	Free	Free	Free	Free
22Y	Y-GenXY	-3.5	6	80	Free	Free	Free	Free	Free	Free
23X	X-GenXY	3.5	-10.5	80	Free	Free	Free	Free	Free	Free
23XY	XY-GenXY	-3.5	-10.5	80	Free	Free	Free	Free	Free	Free
23Y	Y-GenXY	-3.5	10.5	80	Free	Free	Free	Free	Free	Free
24Y	Y-Gen	-3.5	0	70	Free	Free	Free	Free	Free	Free
25X	X-GenXY	3.5	-6	70	Free	Free	Free	Free	Free	Free
25XY	XY-GenXY	-3.5	-6	70	Free	Free	Free	Free	Free	Free
25Y	Y-GenXY	-3.5	6	70	Free	Free	Free	Free	Free	Free
26X	X-GenXY	3.5	-10.5	70	Free	Free	Free	Free	Free	Free
26XY	XY-GenXY	-3.5	-10.5	70	Free	Free	Free	Free	Free	Free
26Y	Y-GenXY	-3.5	10.5	70	Free	Free	Free	Free	Free	Free
27Y	Y-Gen	-3.5	0	65	Free	Free	Free	Free	Free	Free
28X	X-GenXY	3.5	-6	65	Free	Free	Free	Free	Free	Free
28XY	XY-GenXY	-3.5	-6	65	Free	Free	Free	Free	Free	Free
28Y	Y-GenXY	-3.5	6	65	Free	Free	Free	Free	Free	Free
29X	X-GenXY	3.5	-10.5	65	Free	Free	Free	Free	Free	Free
29XY	XY-GenXY	-3.5	-10.5	65	Free	Free	Free	Free	Free	Free
29Y	Y-GenXY	-3.5	10.5	65	Free	Free	Free	Free	Free	Free
30Y	Y-Gen	-3.5	0	55	Free	Free	Free	Free	Free	Free
31X	X-GenXY	3.5	-6	55	Free	Free	Free	Free	Free	Free
31XY	XY-GenXY	-3.5	-6	55	Free	Free	Free	Free	Free	Free
31Y	Y-GenXY	-3.5	6	55	Free	Free	Free	Free	Free	Free
32X	X-GenXY	3.5	-10.5	55	Free	Free	Free	Free	Free	Free
32XY	XY-GenXY	-3.5	-10.5	55	Free	Free	Free	Free	Free	Free
32Y	Y-GenXY	-3.5	10.5	55	Free	Free	Free	Free	Free	Free
33Y	Y-Gen	-3.5	0	50	Free	Free	Free	Free	Free	Free
34X	X-GenXY	3.5	-6	50	Free	Free	Free	Free	Free	Free
34XY	XY-GenXY	-3.5	-6	50	Free	Free	Free	Free	Free	Free
34Y	Y-GenXY	-3.5	6	50	Free	Free	Free	Free	Free	Free
35X	X-GenXY	3.5	-10.5	50	Free	Free	Free	Free	Free	Free
35XY	XY-GenXY	-3.5	-10.5	50	Free	Free	Free	Free	Free	Free
35Y	Y-GenXY	-3.5	10.5	50	Free	Free	Free	Free	Free	Free
36Y	Y-Gen	-5.375	0	40	Free	Free	Free	Free	Free	Free
37X	X-GenXY	5.375	-5.25	40	Free	Free	Free	Free	Free	Free
37XY	XY-GenXY	-5.375	-5.25	40	Free	Free	Free	Free	Free	Free
37Y	Y-GenXY	-5.375	5.25	40	Free	Free	Free	Free	Free	Free
38X	X-GenXY	5.375	-10.5	40	Free	Free	Free	Free	Free	Free
38XY	XY-GenXY	-5.375	-10.5	40	Free	Free	Free	Free	Free	Free
38Y	Y-GenXY	-5.375	10.5	40	Free	Free	Free	Free	Free	Free
39Y	Y-Gen	-6.333	0	35	Free	Free	Free	Free	Free	Free
40X	X-GenXY	6.333	-5.25	35	Free	Free	Free	Free	Free	Free
40XY	XY-GenXY	-6.333	-5.25	35	Free	Free	Free	Free	Free	Free
40Y	Y-GenXY	-6.333	5.25	35	Free	Free	Free	Free	Free	Free
41X	X-GenXY	6.333	-10.5	35	Free	Free	Free	Free	Free	Free
41XY	XY-GenXY	-6.333	-10.5	35	Free	Free	Free	Free	Free	Free
41Y	Y-GenXY	-6.333	10.5	35	Free	Free	Free	Free	Free	Free
44X	X-Gen	0	-17.01	17.75	Free	Free	Free	Free	Free	Free
45X	X-Gen	0	-10.5	40	Free	Free	Free	Free	Free	Free
10X	X-GenXY	4.457	-15	45	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-4.457	-15	45	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-4.457	15	45	Free	Free	Free	Free	Free	Free

11X	X-GenXY	5.415	-15	40	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	-5.415	-15	40	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	-5.415	15	40	Free	Free	Free	Free	Free	Free
12X	X-GenXY	6.372	-15	35	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-6.372	-15	35	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-6.372	15	35	Free	Free	Free	Free	Free	Free

**Secondary Joints:**

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
13S	XY-Symmetry	12P	14P	0	23.67	Free	Free	Free	Free	Free	Free
42S	Y-Symmetry	13X	13S	0.5	0	Free	Free	Free	Free	Free	Free
43S	X-Symmetry	11P	11Y	0.5	0	Free	Free	Free	Free	Free	Free
46S	None	13X	42Y	0.5	0	Free	Free	Free	Free	Free	Free
47S	None	13S	42Y	0.5	0	Free	Free	Free	Free	Free	Free
13X	X-GenXY	12P	14P	0	23.67	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	12P	14P	0	23.67	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	12P	14P	0	23.67	Free	Free	Free	Free	Free	Free
42Y	Y-Gen	13X	13S	0.5	0	Free	Free	Free	Free	Free	Free
43X	X-Gen	11P	11Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 146 primary and 10 secondary joints for a total of 156 joints.

**Steel Material Properties:**

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

**Bolt Properties:**

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

**Number Bolts Used By Type:**

Bolt Type	Number Bolts
3/4 A394	1561

**Angle Properties:**

Angle Type	Angle Size (in)	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)
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SAE	8X8X0.5	8	8	0.5	26.4	7.75	13.75	2.5	2.5	1.59	1	8	4	0	1.0000	0
SAE	6X6X0.5	6	6	0.5	19.6	5.75	10	1.86	1.86	1.18	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	4X4X0.375	4	4	0.375	9.8	2.86	8.67	1.23	1.23	0.788	1	4	2	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	1	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.3125	3.5	3.5	0.3125	7.2	2.09	9	1.08	1.08	0.69	1	3.5	1.75	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.3125	3	3	0.3125	6.1	1.78	7.6	0.922	0.922	0.589	1	3	1.5	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAU	7X4X0.4375	7	4	0.4375	15.8	4.62	13.86	2.26	1.12	0.876	1	7	2	0	1.0000	0
SAU	4X3.5X0.25	4	3.5	0.25	6.2	1.81	13.25	1.27	1.07	0.734	1	4	1.75	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
SAU	2.5X1.5X0.25	2.5	1.5	0.25	3.19	0.94	7.75	0.794	0.415	0.324	1	2.5	0.75	0	1.0000	0
DAS	4X3X0.4375	4	3	0.4375	19.6	5.74	7.14	0.871	1.95	0.871	2	4	1.5	0	1.0000	0
DAS	3.5X3X0.25	3.5	3	0.25	10.8	3.13	11.25	0.914	1.65	0.914	2	3.5	1.5	0	1.0000	0
BAR	2 x 0.1875	2	0.1875	0.1875	1.28	0.375	0	0.577	0.054	0.054	1	2	0	0	1.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Angle	Add. Width
									For Optimize (in)
PeakPost	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None		0.000
Leg1	L5x5x3/8	SAE	5X5X0.375	A7	Beam	Leg	None		0.000
Leg2	L8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None		0.000
Leg3	L8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None		0.000
Leg4	L8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None		0.000
Leg5	L8x8x1/2	SAE	8X8X0.5	A7	Beam	Leg	None		0.000
TTTC	L3x3x1/4	SAE	3X3X0.25	A7	Beam	Other	None		0.000
TTBC	L3x3x1/4	SAE	3X3X0.25	A7	Beam	Other	None		0.000
ARMTT	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None		0.000
MTTC	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None		0.000
MTBC	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None		0.000
ARMMT	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None		0.000
BTTC	L4x4x5/16	SAE	4X4X0.3125	A7	Beam	Other	None		0.000
BTBC	L4x4x5/16	SAE	4X4X0.3125	A7	Beam	Other	None		0.000
ARMBT	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None		0.000
BTC	8x8x1/2	SAE	8X8X0.5	A7	Beam	Other	None		0.000
BBC	6x6x1/2	SAE	6X6X0.5	A7	Beam	Other	None		0.000
Diag1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss Crossing	Diagonal	None		0.000
Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss Crossing	Diagonal	None		0.000
Diag3	L3x3x5/16	SAE	3X3X0.3125	A7	Truss Crossing	Diagonal	None		0.000
Diag4	L3x3x3/16	SAE	3X3X0.1875	A7	Truss	Other	None		0.000
Diag5	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	T-Only	Other	None		0.000
Diag6	L3x2x1/4	SAU	3X2X0.25	A7	Truss	Other	None		0.000
Diag7	L4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None		0.000
Diag8	L4x4x3/8	SAE	4X4X0.375	A7	Truss	Other	None		0.000

Diag9	L3.5x3x1/4	DAS	3.5X3X0.25	A7	Truss	Other	None	0.000
Diag10	L4x3x7/16	DAS	4X3X0.4375	A7	Truss	Other	None	0.000
Diag11	L3x3x5/16	SAE	3X3X0.3125	A7	Truss	Other	None	0.000
Diag12	L3x3x3/16	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
Horz1	L3x3x3/16	SAE	3X3X0.1875	A7	Beam	Other	None	0.000
Horz2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
Br1	L2x2x3/16	SAE	2X2X0.1875	A7	T-Only	Redundant	None	0.000
Br2	L3x3x3/16	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
ArmBr1	Bar 2x3/16	BAR	2 x 0.1875	A7	T-Only	Other	None	0.000
ArmBr2	ArmBr2	SAE	2X2X0.25	A7	Truss	Other	None	0.000
ArmBr3	ArmBr3	SAU	3.5X2.5X0.25	A7	Truss	Other	None	0.000
TTBr1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
TTBr2	L3x3x3/16	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
TTBr3	L3x3x5/16	SAE	3X3X0.3125	A7	Truss	Other	None	0.000
MTBr1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
MTBr2	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
MTBr3	L4x3.5x1/4	SAU	4X3.5X0.25	A7	Truss	Other	None	0.000
MTBr4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
MTBr5	L4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None	0.000
BTBr1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
BTBr2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
BTBr3	L4x4x5/16	SAE	4X4X0.3125	A7	Truss	Other	None	0.000
BTBr4	L4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None	0.000
BTBr5	L4x4x3/8	SAE	4X4X0.375	A7	Truss	Other	None	0.000
TBC1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
TBC2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
TBC3	L2x2x1/4	SAE	2X2X0.25	A7	Truss	Other	None	0.000
TBC4	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
TTC1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
TTC2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Beam	Other	None	0.000
Horz4	L2x2x3/16	SAE	2X2X0.1875	A7	Beam	Other	None	0.000
Horz5	L3.5x3.5x5/16	SAE	3.5X3.5X0.3125	A7	Beam	Other	None	0.000
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	A7	Beam	Other	None	0.000
BBr1	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
BBr2	L4x4x3/8	SAE	4X4X0.375	A7	Truss	Other	None	0.000
BBr3	L4x4x5/16	SAE	4X4X0.3125	A7	Truss	Other	None	0.000
BBr4	L7x4x7/16	SAU	7X4X0.4375	A7	Truss	Other	None	0.000
BTC1	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Truss	Other	None	0.000
BTC2	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
BTC3	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
BTC4	L2.5x1.5x1/4	SAU	2.5X1.5X0.25	A7	Truss	Other	None	0.000
BTC5	L2x2x1/4	SAE	2X2X0.25	A7	Truss	Other	None	0.000
BBC1	L3x3x3/16	SAE	3X3X0.1875	A7	Truss	Other	None	0.000
BBC2	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Other	None	0.000
BBC3	L3x3x1/4	SAE	3X3X0.25	A7	Truss	Other	None	0.000

**Aggregate Angle Information:**

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

Angle Type	Angle Material Size	Total Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	2.5X2.5X0.1875	A7	319.10	265.91	979.62
SAE	5X5X0.375	A7	80.00	133.33	984.00
SAE	8X8X0.5	A7	324.56	865.50	8568.42

SAE	2X2X0.1875	A7	760.75	507.17	1856.23
SAE	2.5X2.5X0.25	A7	182.82	152.35	749.55
SAE	3X3X0.3125	A7	183.95	183.95	1122.09
SAE	3X3X0.1875	A7	300.93	300.93	1116.44
SAU	2.5X2X0.1875	A7	75.10	56.33	206.53
SAU	3X2X0.25	A7	41.66	34.72	170.81
SAE	4X4X0.25	A7	311.63	415.51	2056.75
SAE	4X4X0.375	A7	139.75	186.33	1369.51
DAS	3.5X3X0.25	A7	75.69	82.00	817.47
DAS	4X3X0.4375	A7	122.94	143.43	2409.55
SAE	3X3X0.25	A7	145.33	145.33	712.13
SAE	4X4X0.3125	A7	171.60	228.81	1407.16
SAE	6X6X0.5	A7	60.00	120.00	1176.01
SAE	3.5X3.5X0.25	A7	91.82	107.13	532.57
BAR	2 x 0.1875	A7	103.23	37.64	132.13
SAE	2X2X0.25	A7	327.51	218.34	1044.77
SAU	3.5X2.5X0.25	A7	42.00	42.00	205.80
SAU	4X3.5X0.25	A7	31.24	39.05	193.69
SAU	3X2.5X0.25	A7	41.50	38.04	186.75
SAE	3.5X3.5X0.3125	A7	14.00	16.33	100.80
SAU	3.5X3X0.25	A7	47.15	51.08	254.60
SAU	7X4X0.4375	A7	54.36	99.66	858.85
SAU	2.5X1.5X0.25	A7	56.20	37.47	179.29

**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 For Face	Longitudinal Drag x Area For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Factor For EIA Only	Flat Face For EIA Only	Ar Round For EIA Only	Transverse Drag x Area For All	Longitudinal Drag x Area For All	SAPS Drag x Area Factor	Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	9P	1.050	3.200	3.200	1.050	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	None
2	14P	1.050	3.200	3.200	1.050	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	None

**Angle Member Connectivity:**

Member Shear Path	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Holes	Shear Planes	Connect Leg	Short Edge	Long Edge	End Dist.	Bolt Spacing		
0	1P	PeakPost	XY-Symmetry	1P	2P	3	5	0.5	0.5	0.5	3/4	A394	2	1	1	Long	only	0.875	0	2.25	2
0	1X	PeakPost	X-GenXY	1X	2X	3	5	0.5	0.5	0.5	3/4	A394	2	1	1	Long	only	0.875	0	2.25	2
0	1XY	PeakPost	XY-GenXY	1X	2XY	3	5	0.5	0.5	0.5	3/4	A394	2	1	1	Long	only	0.875	0	2.25	2
0	1Y	PeakPost	Y-GenXY	1P	2Y	3	5	0.5	0.5	0.5	3/4	A394	2	1	1	Long	only	0.875	0	2.25	2
0	2P	Leg1	XY-Symmetry	2P	3P	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0
0	2X	Leg1	X-GenXY	2X	3X	1	4	0.5	0.5	0.5	3/4	A394	0	4	0			0	0	0	0

0	0	0																			
0	2XY	0	Leg1	XY-GenXY	2XY	3XY	1	4	0.5	0.5	0.5	3/4	A394	0	4	0	0	0	0		
0	0	0	0																		
0	2Y	0	Leg1	Y-GenXY	2Y	3Y	1	4	0.5	0.5	0.5	3/4	A394	0	4	0	0	0	0		
0	0	0	0																		
0	3P	0	Leg1	XY-Symmetry	3P	4P	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	3X	0	Leg1	X-GenXY	3X	4X	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	3XY	0	Leg1	XY-GenXY	3XY	4XY	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	3Y	0	Leg1	Y-GenXY	3Y	4Y	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	4P	0	Leg1	XY-Symmetry	4P	5P	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	4X	0	Leg1	X-GenXY	4X	5X	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	4XY	0	Leg1	XY-GenXY	4XY	5XY	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	4Y	0	Leg1	Y-GenXY	4Y	5Y	1	4	1	1	1	3/4	A394	0	3.36	0	0	0	0		
0	0	0	0																		
0	5P	0	Leg1	XY-Symmetry	5P	6P	1	4	1	1	1	3/4	A394	10	4	1	Both	1	3	1.25	5.5
0	0	0	0																		
0	5X	0	Leg1	X-GenXY	5X	6X	1	4	1	1	1	3/4	A394	10	4	1	Both	1	3	1.25	5.5
0	0	0	0																		
0	5XY	0	Leg1	XY-GenXY	5XY	6XY	1	4	1	1	1	3/4	A394	10	4	1	Both	1	3	1.25	5.5
0	0	0	0																		
0	5Y	0	Leg1	Y-GenXY	5Y	6Y	1	4	1	1	1	3/4	A394	10	4	1	Both	1	3	1.25	5.5
0	0	0	0																		
0	6P	0	Leg2	XY-Symmetry	6P	7P	1	4	1	1	1	3/4	A394	0	3.14	0	0	0	0	0	
0	0	0	0																		
0	6X	0	Leg2	X-GenXY	6X	7X	1	4	1	1	1	3/4	A394	0	3.14	0	0	0	0	0	
0	0	0	0																		
0	6XY	0	Leg2	XY-GenXY	6XY	7XY	1	4	1	1	1	3/4	A394	0	3.14	0	0	0	0	0	
0	0	0	0																		
0	6Y	0	Leg2	Y-GenXY	6Y	7Y	1	4	1	1	1	3/4	A394	0	3.14	0	0	0	0	0	
0	0	0	0																		
0	7P	0	Leg2	XY-Symmetry	7P	8P	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	7X	0	Leg2	X-GenXY	7X	8X	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	7XY	0	Leg2	XY-GenXY	7XY	8XY	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	7Y	0	Leg2	Y-GenXY	7Y	8Y	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	8P	0	Leg2	XY-Symmetry	8P	9P	1	4	1	1	1	3/4	A394	10	4	1	Both	1.25	5.25	1.25	7.5
0	0	0	0																		
0	8X	0	Leg2	X-GenXY	8X	9X	1	4	1	1	1	3/4	A394	10	4	1	Both	1.25	5.25	1.25	7.5
0	0	0	0																		
0	8XY	0	Leg2	XY-GenXY	8XY	9XY	1	4	1	1	1	3/4	A394	10	4	1	Both	1.25	5.25	1.25	7.5
0	0	0	0																		
0	8Y	0	Leg2	Y-GenXY	8Y	9Y	1	4	1	1	1	3/4	A394	10	4	1	Both	1.25	5.25	1.25	7.5
0	0	0	0																		
0	9P	0	Leg3	XY-Symmetry	9P	10P	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	9X	0	Leg3	X-GenXY	9X	10X	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		
0	9XY	0	Leg3	XY-GenXY	9XY	10XY	1	4	1	1	1	3/4	A394	0	4	0	0	0	0	0	
0	0	0	0																		



0	9Y	Leg3	Y-GenXY	9Y	10Y	1	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	10P	Leg3	XY-Symmetry	10P	11P	1	4	1	1	1 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	10X	Leg3	X-GenXY	10X	11X	1	4	1	1	1 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	10XY	Leg3	XY-GenXY	10XY	11XY	1	4	1	1	1 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	10Y	Leg3	Y-GenXY	10Y	11Y	1	4	1	1	1 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	11P	Leg4	XY-Symmetry	11P	12P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0
0	11X	Leg4	X-GenXY	11X	12X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0
0	11XY	Leg4	XY-GenXY	11XY	12XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0
0	11Y	Leg4	Y-GenXY	11Y	12Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0
0	12P	Leg4	XY-Symmetry	12P	13S	1	4	0.5	0.5	0.5 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	12X	Leg4	X-GenXY	12X	13X	1	4	0.5	0.5	0.5 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	12XY	Leg4	XY-GenXY	12XY	13XY	1	4	0.5	0.5	0.5 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	12Y	Leg4	Y-GenXY	12Y	13Y	1	4	0.5	0.5	0.5 3/4	A394	28	4	1	Both	1.25	5.25	1.25	3.75
0	13P	Leg5	XY-Symmetry	13S	14P	1	4	0.25	0.25	0.25 3/4	A394	28	4	1	Both	1.25	5.25	1.25	2.25
0	13X	Leg5	X-GenXY	13X	14X	1	4	0.25	0.25	0.25 3/4	A394	28	4	1	Both	1.25	5.25	1.25	2.25
0	13XY	Leg5	XY-GenXY	13XY	14XY	1	4	0.25	0.25	0.25 3/4	A394	28	4	1	Both	1.25	5.25	1.25	2.25
0	13Y	Leg5	Y-GenXY	13Y	14Y	1	4	0.25	0.25	0.25 3/4	A394	28	4	1	Both	1.25	5.25	1.25	2.25
0	14P	PeakPost	XY-Symmetry	1P	20P	3	5	0.5	0.5	0.5 3/4	A394	2	1	1	Long only	0.875	0	2.25	2
0	14X	PeakPost	X-GenXY	1X	20X	3	5	0.5	0.5	0.5 3/4	A394	2	1	1	Long only	0.875	0	2.25	2
0	14XY	PeakPost	XY-GenXY	1X	20XY	3	5	0.5	0.5	0.5 3/4	A394	2	1	1	Long only	0.875	0	2.25	2
0	14Y	PeakPost	Y-GenXY	1P	20Y	3	5	0.5	0.5	0.5 3/4	A394	2	1	1	Long only	0.875	0	2.25	2
0	15P	Diag1	XY-Symmetry	2P	3Y	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.375
0	15X	Diag1	X-GenXY	2X	3XY	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.375
0	15XY	Diag1	XY-GenXY	2XY	3X	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.375
0	15Y	Diag1	Y-GenXY	2Y	3P	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.375
0	16P	Diag2	XY-Symmetry	3P	4Y	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	1.25	0	1.3125	2.4375
0	16X	Diag2	X-GenXY	3X	4XY	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	1.25	0	1.3125	2.4375
0	16XY	Diag2	XY-GenXY	3XY	4X	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	1.25	0	1.3125	2.4375
0	16Y	Diag2	Y-GenXY	3Y	4P	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	1.25	0	1.3125	2.4375
0	17P	Diag2	XY-Symmetry	4P	5Y	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	1.25	0	1.3125	2.5

0	0	0																	
0	17X	Diag2	X-GenXY	4X	5XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.5
0	0	0																	
0	17XY	Diag2	XY-GenXY	4XY	5X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.5
0	0	0																	
0	17Y	Diag2	Y-GenXY	4Y	5P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.5
0	0	0																	
0	18P	Diag2	XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.375
0	0	0																	
0	18X	Diag2	X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.375
0	0	0																	
0	18XY	Diag2	XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.375
0	0	0																	
0	18Y	Diag2	Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	3/4	A394	2	1	1 Short only	1.25	0	1.3125	2.375
0	0	0																	
0	19P	Diag3	XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	19X	Diag3	X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	19XY	Diag3	XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	19Y	Diag3	Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	20P	Diag3	XY-Symmetry	7P	8Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	20X	Diag3	X-GenXY	7X	8XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	20XY	Diag3	XY-GenXY	7XY	8X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	20Y	Diag3	Y-GenXY	7Y	8P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.25	2.5
0	0	0																	
0	21P	Diag3	XY-Symmetry	8P	9Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.3125	2.375
0	0	0																	
0	21X	Diag3	X-GenXY	8X	9XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.3125	2.375
0	0	0																	
0	21XY	Diag3	XY-GenXY	8XY	9X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.3125	2.375
0	0	0																	
0	21Y	Diag3	Y-GenXY	8Y	9P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1 Short only	1.5	0	1.3125	2.375
0	0	0																	
0	22P	Diag2	XY-Symmetry	9P	10Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1 Short only	1.375	0	1.3125	2.75
0	0	0																	
0	22X	Diag2	X-GenXY	9X	10XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1 Short only	1.375	0	1.3125	2.75
0	0	0																	
0	22XY	Diag2	XY-GenXY	9XY	10X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1 Short only	1.375	0	1.3125	2.75
0	0	0																	
0	22Y	Diag2	Y-GenXY	9Y	10P	2	5	0.78	0.56	0.56	3/4	A394	2	1	1 Short only	1.375	0	1.3125	2.75
0	0	0																	
0	23P	Diag4	XY-Symmetry	10Y	43S	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.25	2
0	0	0																	
0	23X	Diag4	X-GenXY	10XY	43X	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.25	2
0	0	0																	
0	23XY	Diag4	XY-GenXY	10X	43X	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.25	2
0	0	0																	
0	23Y	Diag4	Y-GenXY	10P	43S	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.25	2
0	0	0																	
0	24P	Diag4	XY-Symmetry	12Y	43S	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.3125	3
0	0	0																	
0	24X	Diag4	X-GenXY	12XY	43X	2	5	1	1	1	3/4	A394	2	1	1 Short only	1.5	0	1.3125	3
0	0	0																	

0	24XY	Diag4	XY-GenXY	12X	43X	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.5	0	1.3125	3
0	24Y	Diag4	Y-GenXY	12P	43S	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.5	0	1.3125	3
0	25P	Diag5	XY-Symmetry	13S	12Y	2	5	0.57	0.78	0.57 3/4	A394	2	1	1 Long only	1.25	0	1.3125	2.9375
0	25X	Diag5	X-GenXY	13X	12XY	2	5	0.57	0.78	0.57 3/4	A394	2	1	1 Long only	1.25	0	1.3125	2.9375
0	25XY	Diag5	XY-GenXY	13XY	12X	2	5	0.57	0.78	0.57 3/4	A394	2	1	1 Long only	1.25	0	1.3125	2.9375
0	25Y	Diag5	Y-GenXY	13Y	12P	2	5	0.57	0.78	0.57 3/4	A394	2	1	1 Long only	1.25	0	1.3125	2.9375
0	26P	Diag6	XY-Symmetry	13S	44P	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.5	0	1.25	2
0	26X	Diag6	X-GenXY	13X	44X	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.5	0	1.25	2
0	26XY	Diag6	XY-GenXY	13XY	44X	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.5	0	1.25	2
0	26Y	Diag6	Y-GenXY	13Y	44P	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.5	0	1.25	2
0	27P	Diag12	XY-Symmetry	14P	44P	2	5	1	0.333	0.333 3/4	A394	3	1	1 Short only	1.625	0	1.25	3.8125
0	27X	Diag12	X-GenXY	14X	44X	2	5	1	0.333	0.333 3/4	A394	3	1	1 Short only	1.625	0	1.25	3.8125
0	27XY	Diag12	XY-GenXY	14XY	44X	2	5	1	0.333	0.333 3/4	A394	3	1	1 Short only	1.625	0	1.25	3.8125
0	27Y	Diag12	Y-GenXY	14Y	44P	2	5	1	0.333	0.333 3/4	A394	3	1	1 Short only	1.625	0	1.25	3.8125
0	28P	Diag11	XY-Symmetry	23P	4P	2	5	1	1	1 3/4	A394	3	1	1 Short only	1.625	0	1.25	2
0	28X	Diag11	X-GenXY	23X	4X	2	5	1	1	1 3/4	A394	3	1	1 Short only	1.625	0	1.25	2
0	28XY	Diag11	XY-GenXY	23XY	4XY	2	5	1	1	1 3/4	A394	3	1	1 Short only	1.625	0	1.25	2
0	28Y	Diag11	Y-GenXY	23Y	4Y	2	5	1	1	1 3/4	A394	3	1	1 Short only	1.625	0	1.25	2
0	29P	Diag11	XY-Symmetry	4P	26P	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.625	0	1.25	2
0	29X	Diag11	X-GenXY	4X	26X	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.625	0	1.25	2
0	29XY	Diag11	XY-GenXY	4XY	26XY	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.625	0	1.25	2
0	29Y	Diag11	Y-GenXY	4Y	26Y	2	5	1	1	1 3/4	A394	3	1	1 Long only	1.625	0	1.25	2
0	30P	Diag7	XY-Symmetry	29P	7P	2	5	1	1	1 3/4	A394	4	1.65	1 Long only	1	2.5	1.25	2.625
0	30X	Diag7	X-GenXY	29X	7X	2	5	1	1	1 3/4	A394	4	1.65	1 Long only	1	2.5	1.25	2.625
0	30XY	Diag7	XY-GenXY	29XY	7XY	2	5	1	1	1 3/4	A394	4	1.65	1 Long only	1	2.5	1.25	2.625
0	30Y	Diag7	Y-GenXY	29Y	7Y	2	5	1	1	1 3/4	A394	4	1.65	1 Long only	1	2.5	1.25	2.625
0	31P	Diag7	XY-Symmetry	7P	32P	2	5	1	1	1 3/4	A394	4	1.68	1 Long only	1	2.5	1.25	2.5
0	31X	Diag7	X-GenXY	7X	32X	2	5	1	1	1 3/4	A394	4	1.68	1 Long only	1	2.5	1.25	2.5
0	31XY	Diag7	XY-GenXY	7XY	32XY	2	5	1	1	1 3/4	A394	4	1.68	1 Long only	1	2.5	1.25	2.5
0	31Y	Diag7	Y-GenXY	7Y	32Y	2	5	1	1	1 3/4	A394	4	1.68	1 Long only	1	2.5	1.25	2.5

0	0	0																	
0	32P	Diag8	XY-Symmetry	35P	10P	2	5	1	1	1 3/4	A394	5	1.65	1	Long only	1	2.5	1.25	2.625
0	0	0																	
0	32X	Diag8	X-GenXY	35X	10X	2	5	1	1	1 3/4	A394	5	1.65	1	Long only	1	2.5	1.25	2.625
0	0	0																	
0	32XY	Diag8	XY-GenXY	35XY	10XY	2	5	1	1	1 3/4	A394	5	1.65	1	Long only	1	2.5	1.25	2.625
0	0	0																	
0	32Y	Diag8	Y-GenXY	35Y	10Y	2	5	1	1	1 3/4	A394	5	1.65	1	Long only	1	2.5	1.25	2.625
0	0	0																	
0	33P	Diag8	XY-Symmetry	10P	38P	2	5	1	1	1 3/4	A394	5	1.54	1	Long only	1	2.5	1.25	3
0	0	0																	
0	33X	Diag8	X-GenXY	10X	38X	2	5	1	1	1 3/4	A394	5	1.54	1	Long only	1	2.5	1.25	3
0	0	0																	
0	33XY	Diag8	XY-GenXY	10XY	38XY	2	5	1	1	1 3/4	A394	5	1.54	1	Long only	1	2.5	1.25	3
0	0	0																	
0	33Y	Diag8	Y-GenXY	10Y	38Y	2	5	1	1	1 3/4	A394	5	1.54	1	Long only	1	2.5	1.25	3
0	0	0																	
0	34P	Diag9	XY-Symmetry	42S	12P	2	5	0.54	1	0.54 3/4	A394	2	2	2	Short only	1.25	0	1.25	2
0	0	0																	
0	34X	Diag9	X-GenXY	42S	12X	2	5	0.54	1	0.54 3/4	A394	2	2	2	Short only	1.25	0	1.25	2
0	0	0																	
0	34XY	Diag9	XY-GenXY	42Y	12XY	2	5	0.54	1	0.54 3/4	A394	2	2	2	Short only	1.25	0	1.25	2
0	0	0																	
0	34Y	Diag9	Y-GenXY	42Y	12Y	2	5	0.54	1	0.54 3/4	A394	2	2	2	Short only	1.25	0	1.25	2
0	0	0																	
0	35P	Diag10	XY-Symmetry	14P	42S	2	5	0.25	1	0.25 3/4	A394	3	2	2	Short only	1.625	0	1.25	4.375
0	0	0																	
0	35X	Diag10	X-GenXY	14X	42S	2	5	0.25	1	0.25 3/4	A394	3	2	2	Short only	1.625	0	1.25	4.375
0	0	0																	
0	35XY	Diag10	XY-GenXY	14XY	42Y	2	5	0.25	1	0.25 3/4	A394	3	2	2	Short only	1.625	0	1.25	4.375
0	0	0																	
0	35Y	Diag10	Y-GenXY	14Y	42Y	2	5	0.25	1	0.25 3/4	A394	3	2	2	Short only	1.625	0	1.25	4.375
0	0	0																	
0	36P	TTTC	XY-Symmetry	18P	19P	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	36X	TTTC	X-GenXY	18P	19X	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	36XY	TTTC	XY-GenXY	18Y	19XY	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	36Y	TTTC	Y-GenXY	18Y	19Y	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	37P	TTTC	XY-Symmetry	19P	20P	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	37X	TTTC	X-GenXY	19X	20X	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	37XY	TTTC	XY-GenXY	19XY	20XY	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	37Y	TTTC	Y-GenXY	19Y	20Y	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	38P	TTTC	XY-Symmetry	20P	2P	3	4	1	1	1 3/4	A394	2	1	1	Short only	1.125	0	1.25	2
0	0	0																	
0	38X	TTTC	X-GenXY	20X	2X	3	4	1	1	1 3/4	A394	2	1	1	Short only	1.125	0	1.25	2
0	0	0																	
0	38XY	TTTC	XY-GenXY	20XY	2XY	3	4	1	1	1 3/4	A394	2	1	1	Short only	1.125	0	1.25	2
0	0	0																	
0	38Y	TTTC	Y-GenXY	20Y	2Y	3	4	1	1	1 3/4	A394	2	1	1	Short only	1.125	0	1.25	2
0	0	0																	
0	39P	TTBC	XY-Symmetry	21P	22P	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	

0	39X	TTBC	X-GenXY	21P	22X	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	39XY	TTBC	XY-GenXY	21Y	22XY	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	39Y	TTBC	Y-GenXY	21Y	22Y	1	5	1	1	1 3/4	A394	4	2	1	Both	1.125	0	1.25	5.5
0	0	0																	
0	40P	TTBC	XY-Symmetry	22P	23P	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	40X	TTBC	X-GenXY	22X	23X	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	40XY	TTBC	XY-GenXY	22XY	23XY	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	40Y	TTBC	Y-GenXY	22Y	23Y	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	41P	TTBC	XY-Symmetry	23P	3P	3	4	1	1	1 3/4	A394	4	1	1	Short only	1.125	0	1.25	2.5
0	0	0																	
0	41X	TTBC	X-GenXY	23X	3X	3	4	1	1	1 3/4	A394	4	1	1	Short only	1.125	0	1.25	2.5
0	0	0																	
0	41XY	TTBC	XY-GenXY	23XY	3XY	3	4	1	1	1 3/4	A394	4	1	1	Short only	1.125	0	1.25	2.5
0	0	0																	
0	41Y	TTBC	Y-GenXY	23Y	3Y	3	4	1	1	1 3/4	A394	4	1	1	Short only	1.125	0	1.25	2.5
0	0	0																	
0	42P	MTTC	XY-Symmetry	24P	25P	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	42X	MTTC	X-GenXY	24P	25X	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	42XY	MTTC	XY-GenXY	24Y	25XY	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	42Y	MTTC	Y-GenXY	24Y	25Y	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	43P	MTTC	XY-Symmetry	25P	26P	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	43X	MTTC	X-GenXY	25X	26X	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	43XY	MTTC	XY-GenXY	25XY	26XY	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	43Y	MTTC	Y-GenXY	25Y	26Y	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	44P	MTTC	XY-Symmetry	26P	5P	3	4	1	1	1 3/4	A394	3	1.81	1	Short only	2.625	1	1.125	2
0	0	0																	
0	44X	MTTC	X-GenXY	26X	5X	3	4	1	1	1 3/4	A394	3	1.81	1	Short only	2.625	1	1.125	2
0	0	0																	
0	44XY	MTTC	XY-GenXY	26XY	5XY	3	4	1	1	1 3/4	A394	3	1.81	1	Short only	2.625	1	1.125	2
0	0	0																	
0	44Y	MTTC	Y-GenXY	26Y	5Y	3	4	1	1	1 3/4	A394	3	1.81	1	Short only	2.625	1	1.125	2
0	0	0																	
0	45P	MTBC	XY-Symmetry	27P	28P	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	45X	MTBC	X-GenXY	27P	28X	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	45XY	MTBC	XY-GenXY	27Y	28XY	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	45Y	MTBC	Y-GenXY	27Y	28Y	1	4	1	1	1 3/4	A394	4	2	1	Both	2.125	0	1.5	9
0	0	0																	
0	46P	MTBC	XY-Symmetry	28P	29P	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	46X	MTBC	X-GenXY	28X	29X	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0
0	0	0																	
0	46XY	MTBC	XY-GenXY	28XY	29XY	3	4	1	1	1 3/4	A394	0	2	0		0	0	0	0

0	0	0																	
0	46Y	0	MTBC	Y-GenXY	28Y	29Y	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	47P	0	MTBC	XY-Symmetry	29P	6P	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	47X	0	MTBC	X-GenXY	29X	6X	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	47XY	0	MTBC	XY-GenXY	29XY	6XY	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	47Y	0	MTBC	Y-GenXY	29Y	6Y	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	48P	0	BTTC	XY-Symmetry	30P	31P	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	48X	0	BTTC	X-GenXY	30P	31X	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	48XY	0	BTTC	XY-GenXY	30Y	31XY	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	48Y	0	BTTC	Y-GenXY	30Y	31Y	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	49P	0	BTTC	XY-Symmetry	31P	32P	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	49X	0	BTTC	X-GenXY	31X	32X	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	49XY	0	BTTC	XY-GenXY	31XY	32XY	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	49Y	0	BTTC	Y-GenXY	31Y	32Y	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	50P	0	BTTC	XY-Symmetry	32P	8P	3	4	1	1	1 3/4	A394	3	1	1 Short only	2	0	1.5	2
0	0	0	0																
0	50X	0	BTTC	X-GenXY	32X	8X	3	4	1	1	1 3/4	A394	3	1	1 Short only	2	0	1.5	2
0	0	0	0																
0	50XY	0	BTTC	XY-GenXY	32XY	8XY	3	4	1	1	1 3/4	A394	3	1	1 Short only	2	0	1.5	2
0	0	0	0																
0	50Y	0	BTTC	Y-GenXY	32Y	8Y	3	4	1	1	1 3/4	A394	3	1	1 Short only	2	0	1.5	2
0	0	0	0																
0	51P	0	BTBC	XY-Symmetry	33P	34P	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	51X	0	BTBC	X-GenXY	33P	34X	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	51XY	0	BTBC	XY-GenXY	33Y	34XY	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	51Y	0	BTBC	Y-GenXY	33Y	34Y	1	4	1	1	1 3/4	A394	4	2	1 Both 2.125	0	1.5	9	
0	0	0	0																
0	52P	0	BTBC	XY-Symmetry	34P	35P	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	52X	0	BTBC	X-GenXY	34X	35X	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	52XY	0	BTBC	XY-GenXY	34XY	35XY	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	52Y	0	BTBC	Y-GenXY	34Y	35Y	3	4	1	1	1 3/4	A394	0	2	0	0	0	0	
0	0	0	0																
0	53P	0	BTBC	XY-Symmetry	35P	9P	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	53X	0	BTBC	X-GenXY	35X	9X	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	53XY	0	BTBC	XY-GenXY	35XY	9XY	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																
0	53Y	0	BTBC	Y-GenXY	35Y	9Y	3	4	1	1	1 3/4	A394	4	1	1 Short only	1	2.5	1.5	6
0	0	0	0																

0	54P	BTC	XY-Symmetry	36P	37P	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	54X	BTC	X-GenXY	36P	37X	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	54XY	BTC	XY-GenXY	36Y	37XY	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	54Y	BTC	Y-GenXY	36Y	37Y	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	55P	BTC	XY-Symmetry	37P	38P	3	4	1	1	1 3/4	A394	0	5	0	0	0	0		
0	0	0																	
0	55X	BTC	X-GenXY	37X	38X	3	4	1	1	1 3/4	A394	0	5	0	0	0	0		
0	0	0																	
0	55XY	BTC	XY-GenXY	37XY	38XY	3	4	1	1	1 3/4	A394	0	5	0	0	0	0		
0	0	0																	
0	55Y	BTC	Y-GenXY	37Y	38Y	3	4	1	1	1 3/4	A394	0	5	0	0	0	0		
0	0	0																	
0	56P	BTC	XY-Symmetry	38P	11P	3	4	1	1	1 3/4	A394	8	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	56X	BTC	X-GenXY	38X	11X	3	4	1	1	1 3/4	A394	8	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	56XY	BTC	XY-GenXY	38XY	11XY	3	4	1	1	1 3/4	A394	8	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	56Y	BTC	Y-GenXY	38Y	11Y	3	4	1	1	1 3/4	A394	8	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	57P	BBC	XY-Symmetry	39P	40P	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	57X	BBC	X-GenXY	39P	40X	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	57XY	BBC	XY-GenXY	39Y	40XY	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	57Y	BBC	Y-GenXY	39Y	40Y	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	58P	BBC	XY-Symmetry	40P	41P	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	58X	BBC	X-GenXY	40X	41X	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	58XY	BBC	XY-GenXY	40XY	41XY	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	58Y	BBC	Y-GenXY	40Y	41Y	3	4	1	1	1 3/4	A394	0	4	0	0	0	0		
0	0	0																	
0	59P	BBC	XY-Symmetry	41P	12P	3	4	1	1	1 3/4	A394	9	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	59X	BBC	X-GenXY	41X	12X	3	4	1	1	1 3/4	A394	9	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	59XY	BBC	XY-GenXY	41XY	12XY	3	4	1	1	1 3/4	A394	9	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	59Y	BBC	Y-GenXY	41Y	12Y	3	4	1	1	1 3/4	A394	9	3	1	Long only	1.25	5.25	1.5	2
0	0	0																	
0	60P	Horz1	XY-Symmetry	42S	13S	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2
0	0	0																	
0	60X	Horz1	X-GenXY	42S	13X	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2
0	0	0																	
0	60XY	Horz1	XY-GenXY	42Y	13XY	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2
0	0	0																	
0	60Y	Horz1	Y-GenXY	42Y	13Y	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2
0	0	0																	
0	61P	Horz2	X-Symmetry	13S	13Y	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2.0625
0	0	0																	
0	61X	Horz2	X-Gen	13X	13XY	3	5	0.5	0.5	0.5 3/4	A394	3	1	1	Short only	1.375	0	1.25	2.0625

0	0	0																
0	62P	Br1	Y-Symmetry	47S	13Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	62Y	Br1	Y-Gen	47S	13S	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	63P	Br1	Y-Symmetry	42Y	47S	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	63Y	Br1	Y-Gen	42S	47S	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	64P	Br1	Y-Symmetry	46S	13X	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	64Y	Br1	Y-Gen	46S	13XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	65P	Br1	Y-Symmetry	42Y	46S	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	65Y	Br1	Y-Gen	42S	46S	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																
0	66P	Br2	None	42S	42Y	3	4	0.75	0.5	0.5 3/4	A394	1	1	1 Long only	1.125	0	1.28125	0
0	0	0																
0	67P	ARMTT	XY-Symmetry	3P	15P	3	5	1	1	1 3/4	A394	2	1	1 Long only	2.125	0	13.5	2
0	0	0																
0	67X	ARMTT	X-GenXY	3X	15X	3	5	1	1	1 3/4	A394	2	1	1 Long only	2.125	0	13.5	2
0	0	0																
0	67XY	ARMTT	XY-GenXY	3XY	15XY	3	5	1	1	1 3/4	A394	2	1	1 Long only	2.125	0	13.5	2
0	0	0																
0	67Y	ARMTT	Y-GenXY	3Y	15Y	3	5	1	1	1 3/4	A394	2	1	1 Long only	2.125	0	13.5	2
0	0	0																
0	68P	ARMMT	XY-Symmetry	6P	16P	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	68X	ARMMT	X-GenXY	6X	16X	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	68XY	ARMMT	XY-GenXY	6XY	16XY	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	68Y	ARMMT	Y-GenXY	6Y	16Y	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	69P	ARMBT	XY-Symmetry	9P	17P	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	69X	ARMBT	X-GenXY	9X	17X	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	69XY	ARMBT	XY-GenXY	9XY	17XY	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	69Y	ARMBT	Y-GenXY	9Y	17Y	3	5	1	1	1 3/4	A394	3	1.18	1 Long only	1	2.5	13.75	4
0	0	0																
0	70P	ArmBr1	XY-Symmetry	2P	15P	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	70X	ArmBr1	X-GenXY	2X	15X	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	70XY	ArmBr1	XY-GenXY	2XY	15XY	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	70Y	ArmBr1	Y-GenXY	2Y	15Y	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	71P	ArmBr1	XY-Symmetry	5P	16P	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	71X	ArmBr1	X-GenXY	5X	16X	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	71XY	ArmBr1	XY-GenXY	5XY	16XY	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																
0	71Y	ArmBr1	Y-GenXY	5Y	16Y	3	4	1	1	1 3/4	A394	2	1	1 Long only	1	0	1.25	2.1875
0	0	0																



0	72P	ArmBr1	XY-Symmetry	8P	17P	2	4	1	1	1 3/4	A394	2	1	1	Long only	1	0	1.25	2.1875
0	72X	ArmBr1	X-GenXY	8X	17X	2	4	1	1	1 3/4	A394	2	1	1	Long only	1	0	1.25	2.1875
0	72XY	ArmBr1	XY-GenXY	8XY	17XY	2	4	1	1	1 3/4	A394	2	1	1	Long only	1	0	1.25	2.1875
0	72Y	ArmBr1	Y-GenXY	8Y	17Y	2	4	1	1	1 3/4	A394	2	1	1	Long only	1	0	1.25	2.1875
0	73P	ArmBr2	XY-Symmetry	3P	15Y	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	73X	ArmBr2	X-GenXY	3X	15XY	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	73XY	ArmBr2	XY-GenXY	3XY	15X	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	73Y	ArmBr2	Y-GenXY	3Y	15P	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	74P	ArmBr3	X-Symmetry	15P	15Y	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	74X	ArmBr3	X-Gen	15X	15XY	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	75P	ArmBr2	XY-Symmetry	6P	16Y	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	75X	ArmBr2	X-GenXY	6X	16XY	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	75XY	ArmBr2	XY-GenXY	6XY	16X	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	75Y	ArmBr2	Y-GenXY	6Y	16P	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	76P	ArmBr3	X-Symmetry	16P	16Y	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	76X	ArmBr3	X-Gen	16X	16XY	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	77P	ArmBr2	XY-Symmetry	9P	17Y	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	77X	ArmBr2	X-GenXY	9X	17XY	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	77XY	ArmBr2	XY-GenXY	9XY	17X	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	77Y	ArmBr2	Y-GenXY	9Y	17P	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.5	0
0	78P	ArmBr3	X-Symmetry	17P	17Y	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	78X	ArmBr3	X-Gen	17X	17XY	3	4	1	1	1 3/4	A394	1	1	1	Short only	1.375	0	1.25	0
0	79P	TTBr1	Y-Symmetry	18P	21P	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.5
0	79Y	TTBr1	Y-Gen	18Y	21Y	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.5
0	80P	TTBr2	XY-Symmetry	21P	19P	2	6	1	1	1 3/4	A394	2	1	1	Short only	1.375	0	1.25	3.9375
0	80X	TTBr2	X-GenXY	21P	19X	2	6	1	1	1 3/4	A394	2	1	1	Short only	1.375	0	1.25	3.9375
0	80XY	TTBr2	XY-GenXY	21Y	19XY	2	6	1	1	1 3/4	A394	2	1	1	Short only	1.375	0	1.25	3.9375
0	80Y	TTBr2	Y-GenXY	21Y	19Y	2	6	1	1	1 3/4	A394	2	1	1	Short only	1.375	0	1.25	3.9375
0	81P	TTBr1	XY-Symmetry	19P	22P	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.5
0	81X	TTBr1	X-GenXY	19X	22X	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.5

0	0	0																	
0	81XY	0	TBr1	XY-GenXY	19XY	22XY	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	81Y	0	TBr1	Y-GenXY	19Y	22Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	82P	0	TBr2	XY-Symmetry	19P	23P	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.375	0	1.25	2
0	0	0	0																
0	82X	0	TBr2	X-GenXY	19X	23X	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.375	0	1.25	2
0	0	0	0																
0	82XY	0	TBr2	XY-GenXY	19XY	23XY	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.375	0	1.25	2
0	0	0	0																
0	82Y	0	TBr2	Y-GenXY	19Y	23Y	2	5	1	1	1 3/4	A394	2	1	1 Short only	1.375	0	1.25	2
0	0	0	0																
0	83P	0	TBr1	XY-Symmetry	20P	23P	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	83X	0	TBr1	X-GenXY	20X	23X	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	83XY	0	TBr1	XY-GenXY	20XY	23XY	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	83Y	0	TBr1	Y-GenXY	20Y	23Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2.5
0	0	0	0																
0	84P	0	TBr3	XY-Symmetry	23P	2P	2	5	1	0.5	0.5 3/4	A394	3	1	1 Short only	1.5	0	1.25	2
0	0	0	0																
0	84X	0	TBr3	X-GenXY	23X	2X	2	5	1	0.5	0.5 3/4	A394	3	1	1 Short only	1.5	0	1.25	2
0	0	0	0																
0	84XY	0	TBr3	XY-GenXY	23XY	2XY	2	5	1	0.5	0.5 3/4	A394	3	1	1 Short only	1.5	0	1.25	2
0	0	0	0																
0	84Y	0	TBr3	Y-GenXY	23Y	2Y	2	5	1	0.5	0.5 3/4	A394	3	1	1 Short only	1.5	0	1.25	2
0	0	0	0																
0	85P	0	MBr1	Y-Symmetry	24P	27P	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	85Y	0	MBr1	Y-Gen	24Y	27Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	86P	0	MBr3	XY-Symmetry	27P	25P	2	5	1	1	1 3/4	A394	3	1.42	1 Long only	1	2.5	1.5	2.25
0	0	0	0																
0	86X	0	MBr3	X-GenXY	27P	25X	2	5	1	1	1 3/4	A394	3	1.42	1 Long only	1	2.5	1.5	2.25
0	0	0	0																
0	86XY	0	MBr3	XY-GenXY	27Y	25XY	2	5	1	1	1 3/4	A394	3	1.42	1 Long only	1	2.5	1.5	2.25
0	0	0	0																
0	86Y	0	MBr3	Y-GenXY	27Y	25Y	2	5	1	1	1 3/4	A394	3	1.42	1 Long only	1	2.5	1.5	2.25
0	0	0	0																
0	87P	0	MBr1	XY-Symmetry	25P	28P	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	87X	0	MBr1	X-GenXY	25X	28X	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	87XY	0	MBr1	XY-GenXY	25XY	28XY	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	87Y	0	MBr1	Y-GenXY	25Y	28Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	3.25
0	0	0	0																
0	88P	0	MBr4	XY-Symmetry	25P	29P	2	5	1	1	1 3/4	A394	3	1.5	1 Short only	0.875	2.25	1.25	3
0	0	0	0																
0	88X	0	MBr4	X-GenXY	25X	29X	2	5	1	1	1 3/4	A394	3	1.5	1 Short only	0.875	2.25	1.25	3
0	0	0	0																
0	88XY	0	MBr4	XY-GenXY	25XY	29XY	2	5	1	1	1 3/4	A394	3	1.5	1 Short only	0.875	2.25	1.25	3
0	0	0	0																
0	88Y	0	MBr4	Y-GenXY	25Y	29Y	2	5	1	1	1 3/4	A394	3	1.5	1 Short only	0.875	2.25	1.25	3
0	0	0	0																
0	89P	0	MBr2	XY-Symmetry	26P	29P	1	5	1	1	1 3/4	A394	2	1	1 Long only	1.25	0	1.25	3.25
0	0	0	0																

0	89X	MTBr2	X-GenXY	26X	29X	1	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	3.25
0	89XY	MTBr2	XY-GenXY	26XY	29XY	1	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	3.25
0	89Y	MTBr2	Y-GenXY	26Y	29Y	1	5	1	1	1 3/4	A394	2	1	1	Long only	1.25	0	1.25	3.25
0	90P	MTBr5	XY-Symmetry	29P	5P	2	5	1	1	1 3/4	A394	4	1.54	1	Short only	1	2.5	1.25	3
0	90X	MTBr5	X-GenXY	29X	5X	2	5	1	1	1 3/4	A394	4	1.54	1	Short only	1	2.5	1.25	3
0	90XY	MTBr5	XY-GenXY	29XY	5XY	2	5	1	1	1 3/4	A394	4	1.54	1	Short only	1	2.5	1.25	3
0	90Y	MTBr5	Y-GenXY	29Y	5Y	2	5	1	1	1 3/4	A394	4	1.54	1	Short only	1	2.5	1.25	3
0	91P	BTBr1	Y-Symmetry	30P	33P	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	91Y	BTBr1	Y-Gen	30Y	33Y	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	92P	BTBr3	XY-Symmetry	33P	31P	2	5	1	1	1 3/4	A394	4	1.42	1	Short only	1	2.5	1.25	2.25
0	92X	BTBr3	X-GenXY	33P	31X	2	5	1	1	1 3/4	A394	4	1.42	1	Short only	1	2.5	1.25	2.25
0	92XY	BTBr3	XY-GenXY	33Y	31XY	2	5	1	1	1 3/4	A394	4	1.42	1	Short only	1	2.5	1.25	2.25
0	92Y	BTBr3	Y-GenXY	33Y	31Y	2	5	1	1	1 3/4	A394	4	1.42	1	Short only	1	2.5	1.25	2.25
0	93P	BTBr1	XY-Symmetry	31P	34P	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	93X	BTBr1	X-GenXY	31X	34X	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	93XY	BTBr1	XY-GenXY	31XY	34XY	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	93Y	BTBr1	Y-GenXY	31Y	34Y	1	5	1	1	1 3/4	A394	2	1	1	Short only	0.875	0	1.25	3.5
0	94P	BTBr4	XY-Symmetry	31P	35P	2	5	1	1	1 3/4	A394	4	1.23	1	Short only	1	2.5	1.25	2.5
0	94X	BTBr4	X-GenXY	31X	35X	2	5	1	1	1 3/4	A394	4	1.23	1	Short only	1	2.5	1.25	2.5
0	94XY	BTBr4	XY-GenXY	31XY	35XY	2	5	1	1	1 3/4	A394	4	1.23	1	Short only	1	2.5	1.25	2.5
0	94Y	BTBr4	Y-GenXY	31Y	35Y	2	5	1	1	1 3/4	A394	4	1.23	1	Short only	1	2.5	1.25	2.5
0	95P	BTBr2	XY-Symmetry	32P	35P	1	5	1	1	1 3/4	A394	3	1	1	Short only	2.25	0	1.25	2
0	95X	BTBr2	X-GenXY	32X	35X	1	5	1	1	1 3/4	A394	3	1	1	Short only	2.25	0	1.25	2
0	95XY	BTBr2	XY-GenXY	32XY	35XY	1	5	1	1	1 3/4	A394	3	1	1	Short only	2.25	0	1.25	2
0	95Y	BTBr2	Y-GenXY	32Y	35Y	1	5	1	1	1 3/4	A394	3	1	1	Short only	2.25	0	1.25	2
0	96P	BTBr5	XY-Symmetry	35P	8P	2	5	1	1	1 3/4	A394	5	1.76	1	Short only	1	2.5	1.25	3.25
0	96X	BTBr5	X-GenXY	35X	8X	2	5	1	1	1 3/4	A394	5	1.76	1	Short only	1	2.5	1.25	3.25
0	96XY	BTBr5	XY-GenXY	35XY	8XY	2	5	1	1	1 3/4	A394	5	1.76	1	Short only	1	2.5	1.25	3.25
0	96Y	BTBr5	Y-GenXY	35Y	8Y	2	5	1	1	1 3/4	A394	5	1.76	1	Short only	1	2.5	1.25	3.25
0	97P	TBC1	None	21P	21Y	3	4	1	1	1 3/4	A394	1	1	1	Short only	0.875	0	1.125	0

0	0	0																		
0	98P	TBC1	XY-Symmetry	21P	22Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	98X	TBC1	X-GenXY	21P	22XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	98XY	TBC1	XY-GenXY	21Y	22X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	98Y	TBC1	Y-GenXY	21Y	22P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	99P	TBC2	X-Symmetry	22P	22Y	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	99X	TBC2	X-Gen	22X	22XY	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	100P	TBC3	XY-Symmetry	22P	23Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	100X	TBC3	X-GenXY	22X	23XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	100XY	TBC3	XY-GenXY	22XY	23X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	100Y	TBC3	Y-GenXY	22Y	23P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	101P	TBC4	X-Symmetry	23P	23Y	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	101X	TBC4	X-Gen	23X	23XY	3	5	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	102P	TBC3	XY-Symmetry	23P	3Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	102X	TBC3	X-GenXY	23X	3XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	102XY	TBC3	XY-GenXY	23XY	3X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	102Y	TBC3	Y-GenXY	23Y	3P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	103P	TBC1	None	27P	27Y	3	4	1	1	1	3/4	A394	1	1	1	Short only	0.875	0	1.125	0
0	0	0																		
0	104P	TBC1	XY-Symmetry	27P	28Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	104X	TBC1	X-GenXY	27P	28XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	104XY	TBC1	XY-GenXY	27Y	28X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	104Y	TBC1	Y-GenXY	27Y	28P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	105P	TBC2	X-Symmetry	28P	28Y	3	6	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	105X	TBC2	X-Gen	28X	28XY	3	6	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	106P	TBC3	XY-Symmetry	28P	29Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	106X	TBC3	X-GenXY	28X	29XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	106XY	TBC3	XY-GenXY	28XY	29X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	106Y	TBC3	Y-GenXY	28Y	29P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	0	0																		
0	107P	TBC4	X-Symmetry	29P	29Y	3	6	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		
0	107X	TBC4	X-Gen	29X	29XY	3	6	1	1	1	3/4	A394	2	1	1	Short only	1.25	0	1.125	3.625
0	0	0																		

0	108P	TBC3	XY-Symmetry	29P	6Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	108X	TBC3	X-GenXY	29X	6XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	108XY	TBC3	XY-GenXY	29XY	6X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	108Y	TBC3	Y-GenXY	29Y	6P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	109P	TBC1	None	33P	33Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																	
0	110P	TBC1	XY-Symmetry	33P	34Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	110X	TBC1	X-GenXY	33P	34XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	110XY	TBC1	XY-GenXY	33Y	34X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	110Y	TBC1	Y-GenXY	33Y	34P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	111P	TBC2	X-Symmetry	34P	34Y	3	6	1	1	1	3/4	A394	2	1	1 Short only	1.25	0	1.125	3.625
0	0	0																	
0	111X	TBC2	X-Gen	34X	34XY	3	6	1	1	1	3/4	A394	2	1	1 Short only	1.25	0	1.125	3.625
0	0	0																	
0	112P	TBC3	XY-Symmetry	34P	35Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	112X	TBC3	X-GenXY	34X	35XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	112XY	TBC3	XY-GenXY	34XY	35X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	112Y	TBC3	Y-GenXY	34Y	35P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	113P	TBC4	X-Symmetry	35P	35Y	3	6	1	1	1	3/4	A394	2	1	1 Short only	1.25	0	1.125	3.625
0	0	0																	
0	113X	TBC4	X-Gen	35X	35XY	3	6	1	1	1	3/4	A394	2	1	1 Short only	1.25	0	1.125	3.625
0	0	0																	
0	114P	TBC3	XY-Symmetry	35P	9Y	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	114X	TBC3	X-GenXY	35X	9XY	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	114XY	TBC3	XY-GenXY	35XY	9X	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	114Y	TBC3	Y-GenXY	35Y	9P	2	4	0.75	0.5	0.5	3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																	
0	115P	TTC1	None	18P	18Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																	
0	116P	TTC2	None	18P	19Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																	
0	117P	TTC2	None	19X	18Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																	
0	118P	TTC1	X-Symmetry	19P	19Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																	
0	118X	TTC1	X-Gen	19X	19XY	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																	
0	119P	TTC2	None	19P	20Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																	
0	120P	TTC2	None	20X	19XY	3	4	1	1	1	3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																	
0	121P	TTC1	X-Symmetry	20P	20Y	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																	
0	121X	TTC1	X-Gen	20X	20XY	3	4	1	1	1	3/4	A394	1	1	1 Short only	0.875	0	1.125	0

0	0	0																
0	122P	TTC2	None	20P	2Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	123P	TTC2	None	2X	20XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	124P	TTC1	None	24P	24Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	125P	TTC2	None	24P	25Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	126P	TTC2	None	25X	24Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	127P	TTC1	X-Symmetry	25P	25Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	127X	TTC1	X-Gen	25X	25XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	128P	TTC2	None	25P	26Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	129P	TTC2	None	26X	25XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	130P	TTC1	X-Symmetry	26P	26Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	130X	TTC1	X-Gen	26X	26XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	131P	TTC2	None	26P	5Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	132P	TTC2	None	5X	26XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	133P	TTC1	None	30P	30Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	134P	TTC2	None	30P	31Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	135P	TTC2	None	31X	30Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	136P	TTC1	X-Symmetry	31P	31Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	136X	TTC1	X-Gen	31X	31XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	137P	TTC2	None	31P	32Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	138P	TTC2	None	32X	31XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	139P	TTC1	X-Symmetry	32P	32Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	139X	TTC1	X-Gen	32X	32XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.125	0
0	0	0																
0	140P	TTC2	None	32P	8Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	141P	TTC2	None	8X	32XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	1.25	0	1.25	0
0	0	0																
0	142P	Horz3	X-Symmetry	2P	2Y	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	0	0																
0	142X	Horz3	X-Gen	2X	2XY	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	0	0																
0	143P	Horz3	X-Symmetry	3P	3Y	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	0	0																
0	143X	Horz3	X-Gen	3X	3XY	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	0	0																
0	144P	Horz4	X-Symmetry	5P	5Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	0	0																

0	144X	Horz4	X-Gen	5X	5XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	145P	Horz3	X-Symmetry	6P	6Y	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	145X	Horz3	X-Gen	6X	6XY	3	5	1	1	1 3/4	A394	2	1	1 Short only	1.25	0	1.25	2
0	146P	Horz4	X-Symmetry	8P	8Y	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	146X	Horz4	X-Gen	8X	8XY	3	4	1	1	1 3/4	A394	1	1	1 Short only	0.875	0	1.25	0
0	147P	Horz5	X-Symmetry	9P	9Y	3	5	1	1	1 3/4	A394	3	1	1 Short only	1.75	0	1.25	2
0	147X	Horz5	X-Gen	9X	9XY	3	5	1	1	1 3/4	A394	3	1	1 Short only	1.75	0	1.25	2
0	148P	Horz6	XY-Symmetry	43S	11P	3	5	1	1	1 3/4	A394	3	1	1 Long only	1.75	0	1.25	2.5
0	148X	Horz6	X-GenXY	43X	11X	3	5	1	1	1 3/4	A394	3	1	1 Long only	1.75	0	1.25	2.5
0	148XY	Horz6	XY-GenXY	43X	11XY	3	5	1	1	1 3/4	A394	3	1	1 Long only	1.75	0	1.25	2.5
0	148Y	Horz6	Y-GenXY	43S	11Y	3	5	1	1	1 3/4	A394	3	1	1 Long only	1.75	0	1.25	2.5
0	149P	Horz6	X-Symmetry	12P	12Y	3	5	0.5	0.5	0.5 3/4	A394	2	1	1 Long only	1.75	0	1.125	2.5
0	149X	Horz6	X-Gen	12X	12XY	3	5	0.5	0.5	0.5 3/4	A394	2	1	1 Long only	1.75	0	1.125	2.5
0	150P	BBr1	Y-Symmetry	36P	39P	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	150Y	BBr1	Y-Gen	36Y	39Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	151P	BBr2	XY-Symmetry	39P	37P	2	5	1	1	1 3/4	A394	5	1.5	1 Short only	1 2.625	1.25	3.125	
0	151X	BBr2	X-GenXY	39P	37X	2	5	1	1	1 3/4	A394	5	1.5	1 Short only	1 2.625	1.25	3.125	
0	151XY	BBr2	XY-GenXY	39Y	37XY	2	5	1	1	1 3/4	A394	5	1.5	1 Short only	1 2.625	1.25	3.125	
0	151Y	BBr2	Y-GenXY	39Y	37Y	2	5	1	1	1 3/4	A394	5	1.5	1 Short only	1 2.625	1.25	3.125	
0	152P	BBr1	XY-Symmetry	37P	40P	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	152X	BBr1	X-GenXY	37X	40X	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	152XY	BBr1	XY-GenXY	37XY	40XY	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	152Y	BBr1	Y-GenXY	37Y	40Y	1	5	1	1	1 3/4	A394	2	1	1 Short only	0.875	0	1.25	2
0	153P	BBr2	XY-Symmetry	37P	41P	2	5	1	1	1 3/4	A394	5	1.64	1 Short only	1 2.625	1.25	2.75	
0	153X	BBr2	X-GenXY	37X	41X	2	5	1	1	1 3/4	A394	5	1.64	1 Short only	1 2.625	1.25	2.75	
0	153XY	BBr2	XY-GenXY	37XY	41XY	2	5	1	1	1 3/4	A394	5	1.64	1 Short only	1 2.625	1.25	2.75	
0	153Y	BBr2	Y-GenXY	37Y	41Y	2	5	1	1	1 3/4	A394	5	1.64	1 Short only	1 2.625	1.25	2.75	
0	154P	BBr3	XY-Symmetry	38P	41P	1	5	1	1	1 3/4	A394	4	1	1 Short only	1.625	0	1.25	2
0	154X	BBr3	X-GenXY	38X	41X	1	5	1	1	1 3/4	A394	4	1	1 Short only	1.625	0	1.25	2
0	154XY	BBr3	XY-GenXY	38XY	41XY	1	5	1	1	1 3/4	A394	4	1	1 Short only	1.625	0	1.25	2

0	0	0																	
0	154Y	BBr3	Y-GenXY	38Y	41Y	1	5	1	1	1 3/4	A394	4	1	1	Short only	1.625	0	1.25	2
0	0	0																	
0	155P	BBr4	XY-Symmetry	41P	11P	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	155X	BBr4	X-GenXY	41X	11X	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	155XY	BBr4	XY-GenXY	41XY	11XY	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	155Y	BBr4	Y-GenXY	41Y	11Y	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	156P	BBr4	XY-Symmetry	38P	12P	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	156X	BBr4	X-GenXY	38X	12X	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	156XY	BBr4	XY-GenXY	38XY	12XY	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	156Y	BBr4	Y-GenXY	38Y	12Y	2	5	0.5	0.75	0.5 3/4	A394	11	3	1	Long only	1.25	3.25	1.25	2.75
0	0	0																	
0	157P	BTC1	None	36P	36Y	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.75	0	1.25	1.875
0	0	0																	
0	158P	BTC2	XY-Symmetry	36P	38Y	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.625
0	0	0																	
0	158X	BTC2	X-GenXY	36P	38XY	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.625
0	0	0																	
0	158XY	BTC2	XY-GenXY	36Y	38X	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.625
0	0	0																	
0	158Y	BTC2	Y-GenXY	36Y	38P	2	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	2.625
0	0	0																	
0	159P	BTC2	X-Symmetry	37P	37Y	3	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	1.875
0	0	0																	
0	159X	BTC2	X-Gen	37X	37XY	3	5	0.75	0.5	0.5 3/4	A394	2	1	1	Short only	0.875	0	1.25	1.875
0	0	0																	
0	160P	BTC3	X-Symmetry	38P	45P	3	5	1	1	1 3/4	A394	3	1	1	Short only	1.25	0	1.25	1.875
0	0	0																	
0	160X	BTC3	X-Gen	38X	45X	3	5	1	1	1 3/4	A394	3	1	1	Short only	1.25	0	1.25	1.875
0	0	0																	
0	161P	BTC3	X-Symmetry	45P	38Y	3	5	1	1	1 3/4	A394	3	1	1	Short only	1.25	0	1.25	1.875
0	0	0																	
0	161X	BTC3	X-Gen	45X	38XY	3	5	1	1	1 3/4	A394	3	1	1	Short only	1.25	0	1.25	1.875
0	0	0																	
0	162P	BTC4	XY-Symmetry	45P	11Y	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	162X	BTC4	X-GenXY	45X	11XY	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	162XY	BTC4	XY-GenXY	45X	11X	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	162Y	BTC4	Y-GenXY	45P	11P	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	163P	BTC4	XY-Symmetry	38P	43S	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	163X	BTC4	X-GenXY	38X	43X	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	163XY	BTC4	XY-GenXY	38XY	43X	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	163Y	BTC4	Y-GenXY	38Y	43S	2	5	0.5	0.75	0.5 3/4	A394	3	1	1	Long only	1.25	0	1.25	2.375
0	0	0																	
0	164P	BTC5	X-Symmetry	45P	43S	3	5	1	1	1 3/4	A394	2	1	1	Long only	0.875	0	1.25	2
0	0	0																	



0	164X	BTC5	X-Gen	45X	43X	3	5	1	1	1 3/4	A394	2	1	1	Long only	0.875	0	1.25	2
0	165P	BBC1	None	39P	39Y	3	5	1	1	1 3/4	A394	2	1	1	Short only	1.5	0	1.25	2
0	166P	BBC2	XY-Symmetry	39P	41Y	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	166X	BBC2	X-GenXY	39P	41XY	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	166XY	BBC2	XY-GenXY	39Y	41X	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	166Y	BBC2	Y-GenXY	39Y	41P	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	167P	BBC2	X-Symmetry	40P	40Y	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	167X	BBC2	X-Gen	40X	40XY	3	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	168P	BBC3	X-Symmetry	41P	41Y	3	5	1	0.5	0.5 3/4	A394	2	1	1	Short only	1.5	0	1.25	2
0	168X	BBC3	X-Gen	41X	41XY	3	5	1	0.5	0.5 3/4	A394	2	1	1	Short only	1.5	0	1.25	2
0	169P	BBC2	XY-Symmetry	41P	12Y	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	169X	BBC2	X-GenXY	41X	12XY	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	169XY	BBC2	XY-GenXY	41XY	12X	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0
0	169Y	BBC2	Y-GenXY	41Y	12P	2	4	0.75	0.5	0.5 3/4	A394	1	1	1	Short only	0.875	0	1.25	0

Member Capacities and Overrides:

Member Override	Group Override	Design Override	Comp. Override	Design Override	Tension	L/r	Length	L/r	Connection	Connection	Net	Rupture	RTE End	RTE Edge	Override
Warnings	Label Comp.	Comp. Tension	Control Tension	Tension Face	Control	Comp.	Shear	Bearing	Section	Tension	Dist.	Dist.	Comp.	Capacity	Criterion
or Errors	Capacity Control	Capacity	Criterion Control	Capacity Member	Criterion	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity
Unsup. (kips)	Criterion (kips)	Criterion (kips)	ship (kips)	(ft)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
0.000	1P PeakPost	17.649	L/r	19.301	Rupture	118	9.71	17.649	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000	1X PeakPost	17.649	L/r	19.301	Rupture	118	9.71	17.649	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000	1XY PeakPost	17.649	L/r	19.301	Rupture	118	9.71	17.649	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000	1Y PeakPost	17.649	L/r	19.301	Rupture	118	9.71	17.649	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000	2P Leg1	115.977	L/r	75.817	Net Sect	30	5.00	115.977	0.000	0.000	75.817	0.000	0.000	0.000	0.000
0.000	2X Leg1	115.977	L/r	75.817	Net Sect	30	5.00	115.977	0.000	0.000	75.817	0.000	0.000	0.000	0.000
0.000	2XY Leg1	115.977	L/r	75.817	Net Sect	30	5.00	115.977	0.000	0.000	75.817	0.000	0.000	0.000	0.000

0.000		0.000	Automatic											
2Y	Leg1	115.977	L/r	75.817	Net Sect	30	5.00	115.977	0.000	0.000	75.817	0.000	0.000	0.000
0.000		0.000	Automatic											
3P	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
3X	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
3XY	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
3Y	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
4P	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
4X	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
4XY	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
4Y	Leg1	106.517	L/r	82.747	Net Sect	61	5.00	106.517	0.000	0.000	82.747	0.000	0.000	0.000
0.000		0.000	Automatic											
5P	Leg1	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	253.125	75.817	220.588	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	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	253.125	75.817	220.588	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	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	253.125	75.817	220.588	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	106.517	L/r	75.817	Net Sect	61	5.00	106.517	136.000	253.125	75.817	220.588	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	245.252	L/r	210.416	Net Sect	38	5.00	245.252	0.000	0.000	210.416	0.000	0.000	0.000
0.000		0.000	Automatic											
6X	Leg2	245.252	L/r	210.416	Net Sect	38	5.00	245.252	0.000	0.000	210.416	0.000	0.000	0.000
0.000		0.000	Automatic											
6XY	Leg2	245.252	L/r	210.416	Net Sect	38	5.00	245.252	0.000	0.000	210.416	0.000	0.000	0.000
0.000		0.000	Automatic											
6Y	Leg2	245.252	L/r	210.416	Net Sect	38	5.00	245.252	0.000	0.000	210.416	0.000	0.000	0.000
0.000		0.000	Automatic											
7P	Leg2	245.252	L/r	198.000	Net Sect	38	5.00	245.252	0.000	0.000	198.000	0.000	0.000	0.000
0.000		0.000	Automatic											
7X	Leg2	245.252	L/r	198.000	Net Sect	38	5.00	245.252	0.000	0.000	198.000	0.000	0.000	0.000
0.000		0.000	Automatic											
7XY	Leg2	245.252	L/r	198.000	Net Sect	38	5.00	245.252	0.000	0.000	198.000	0.000	0.000	0.000
0.000		0.000	Automatic											
7Y	Leg2	245.252	L/r	198.000	Net Sect	38	5.00	245.252	0.000	0.000	198.000	0.000	0.000	0.000
0.000		0.000	Automatic											
8P	Leg2	136.000	Shear	136.000	Shear	38	5.00	245.252	136.000	337.499	198.000	312.500	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	136.000	Shear	136.000	Shear	38	5.00	245.252	136.000	337.499	198.000	312.500	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	136.000	Shear	136.000	Shear	38	5.00	245.252	136.000	337.499	198.000	312.500	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	136.000	Shear	136.000	Shear	38	5.00	245.252	136.000	337.499	198.000	312.500	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	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
9X	Leg3	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
9XY	Leg3	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
9Y	Leg3	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
10P	Leg3	244.867	L/r	198.000	Net Sect	38	5.09	244.867	380.800	944.999	198.000	874.999	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
10X	Leg3	244.867	L/r	198.000	Net Sect	38	5.09	244.867	380.800	944.999	198.000	874.999	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
10XY	Leg3	244.867	L/r	198.000	Net Sect	38	5.09	244.867	380.800	944.999	198.000	874.999	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
10Y	Leg3	244.867	L/r	198.000	Net Sect	38	5.09	244.867	380.800	944.999	198.000	874.999	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
11P	Leg4	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
11X	Leg4	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
11XY	Leg4	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
11Y	Leg4	244.868	L/r	198.000	Net Sect	38	5.09	244.868	0.000	0.000	198.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
12P	Leg4	241.598	L/r	198.000	Net Sect	44	11.61	241.598	380.800	944.999	198.000	874.999	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	241.598	L/r	198.000	Net Sect	44	11.61	241.598	380.800	944.999	198.000	874.999	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	241.598	L/r	198.000	Net Sect	44	11.61	241.598	380.800	944.999	198.000	874.999	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	241.598	L/r	198.000	Net Sect	44	11.61	241.598	380.800	944.999	198.000	874.999	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	Leg5	240.308	L/r	198.000	Net Sect	46	24.26	240.308	380.800	944.999	198.000	874.999	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	Leg5	240.308	L/r	198.000	Net Sect	46	24.26	240.308	380.800	944.999	198.000	874.999	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	Leg5	240.308	L/r	198.000	Net Sect	46	24.26	240.308	380.800	944.999	198.000	874.999	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	Leg5	240.308	L/r	198.000	Net Sect	46	24.26	240.308	380.800	944.999	198.000	874.999	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	PeakPost	16.686	L/r	19.301	Rupture	125	10.27	16.686	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
14X	PeakPost	16.686	L/r	19.301	Rupture	125	10.27	16.686	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
14XY	PeakPost	16.686	L/r	19.301	Rupture	125	10.27	16.686	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											

14Y PeakPost	16.686	L/r	19.301	Rupture	125	10.27	16.686	27.200	25.312	21.917	19.301	0.000	0.000	0.000
0.000	0.000		Automatic											
15P Diag1	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	25.312	16.214	18.316	0.000	0.000	0.000
0.000	0.000		Automatic											
15X Diag1	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	25.312	16.214	18.316	0.000	0.000	0.000
0.000	0.000		Automatic											
15XY Diag1	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	25.312	16.214	18.316	0.000	0.000	0.000
0.000	0.000		Automatic											
15Y Diag1	12.292	L/r	16.214	Net Sect	131	8.60	12.292	27.200	25.312	16.214	18.316	0.000	0.000	0.000
0.000	0.000		Automatic											
16P Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.641	0.000	0.000	0.000
0.000	0.000		Automatic											
16X Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.641	0.000	0.000	0.000
0.000	0.000		Automatic											
16XY Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.641	0.000	0.000	0.000
0.000	0.000		Automatic											
16Y Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.641	0.000	0.000	0.000
0.000	0.000		Automatic											
17P Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	29.203	0.000	0.000	0.000
0.000	0.000		Automatic											
17X Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	29.203	0.000	0.000	0.000
0.000	0.000		Automatic											
17XY Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	29.203	0.000	0.000	0.000
0.000	0.000		Automatic											
17Y Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	29.203	0.000	0.000	0.000
0.000	0.000		Automatic											
18P Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.078	0.000	0.000	0.000
0.000	0.000		Automatic											
18X Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.078	0.000	0.000	0.000
0.000	0.000		Automatic											
18XY Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.078	0.000	0.000	0.000
0.000	0.000		Automatic											
18Y Diag2	25.861	L/r	27.200	Shear	105	8.60	25.861	27.200	33.750	28.846	28.078	0.000	0.000	0.000
0.000	0.000		Automatic											
19P Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
19X Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
19XY Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
19Y Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
20P Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
20X Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
20XY Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
20Y Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	56.660	0.000	0.000	0.000
0.000	0.000		Automatic											
21P Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	54.551	0.000	0.000	0.000
0.000	0.000		Automatic											
21X Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	54.551	0.000	0.000	0.000
0.000	0.000		Automatic											
21XY Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	54.551	0.000	0.000	0.000
0.000	0.000		Automatic											
21Y Diag3	40.800	Shear	40.800	Shear	88	8.60	43.226	40.800	63.281	44.745	54.551	0.000	0.000	0.000
0.000	0.000		Automatic											
22P Diag2	21.126	L/r	27.200	Shear	129	9.40	21.126	27.200	33.750	28.846	32.484	0.000	0.000	0.000

0.000		0.000	Automatic												
22X	Diag2	21.126	L/r	27.200	Shear	129	9.40	21.126	27.200	33.750	28.846	32.484	0.000	0.000	0.000
0.000		0.000	Automatic												
22XY	Diag2	21.126	L/r	27.200	Shear	129	9.40	21.126	27.200	33.750	28.846	32.484	0.000	0.000	0.000
0.000		0.000	Automatic												
22Y	Diag2	21.126	L/r	27.200	Shear	129	9.40	21.126	27.200	33.750	28.846	32.484	0.000	0.000	0.000
0.000		0.000	Automatic												
23P	Diag4	18.078	L/r	19.652	Rupture	135	6.70	18.078	27.200	25.312	27.500	19.652	0.000	0.000	0.000
0.000		0.000	Automatic												
23X	Diag4	18.078	L/r	19.652	Rupture	135	6.70	18.078	27.200	25.312	27.500	19.652	0.000	0.000	0.000
0.000		0.000	Automatic												
23XY	Diag4	18.078	L/r	19.652	Rupture	135	6.70	18.078	27.200	25.312	27.500	19.652	0.000	0.000	0.000
0.000		0.000	Automatic												
23Y	Diag4	18.078	L/r	19.652	Rupture	135	6.70	18.078	27.200	25.312	27.500	19.652	0.000	0.000	0.000
0.000		0.000	Automatic												
24P	Diag4	13.351	L/r	24.609	Rupture	163	8.10	13.351	27.200	25.312	27.500	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
24X	Diag4	13.351	L/r	24.609	Rupture	163	8.10	13.351	27.200	25.312	27.500	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
24XY	Diag4	13.351	L/r	24.609	Rupture	163	8.10	13.351	27.200	25.312	27.500	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
24Y	Diag4	13.351	L/r	24.609	Rupture	163	8.10	13.351	27.200	25.312	27.500	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
25P	Diag5	3.489	L/r	19.184	Net Sect	301	18.78	3.489	27.200	25.312	19.184	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
25X	Diag5	3.489	L/r	19.184	Net Sect	301	18.78	3.489	27.200	25.312	19.184	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
25XY	Diag5	3.489	L/r	19.184	Net Sect	301	18.78	3.489	27.200	25.312	19.184	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
25Y	Diag5	3.489	L/r	19.184	Net Sect	301	18.78	3.489	27.200	25.312	19.184	24.609	0.000	0.000	0.000
0.000		0.000	Automatic												
26P	Diag6	5.559	L/r	28.846	Net Sect	287	10.42	5.559	40.800	50.625	28.846	36.328	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 247.53 exceeds maximum of 200.00 for member "26P" ??															
26X	Diag6	5.559	L/r	28.846	Net Sect	287	10.42	5.559	40.800	50.625	28.846	36.328	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 247.53 exceeds maximum of 200.00 for member "26X" ??															
26XY	Diag6	5.559	L/r	28.846	Net Sect	287	10.42	5.559	40.800	50.625	28.846	36.328	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 247.53 exceeds maximum of 200.00 for member "26XY" ??															
26Y	Diag6	5.559	L/r	28.846	Net Sect	287	10.42	5.559	40.800	50.625	28.846	36.328	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 247.53 exceeds maximum of 200.00 for member "26Y" ??															
27P	Diag12	5.231	L/r	27.500	Net Sect	283	22.14	5.231	40.800	37.969	27.500	35.156	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 244.21 exceeds maximum of 200.00 for member "27P" ??															
27X	Diag12	5.231	L/r	27.500	Net Sect	283	22.14	5.231	40.800	37.969	27.500	35.156	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 244.21 exceeds maximum of 200.00 for member "27X" ??															
27XY	Diag12	5.231	L/r	27.500	Net Sect	283	22.14	5.231	40.800	37.969	27.500	35.156	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 244.21 exceeds maximum of 200.00 for member "27XY" ??															
27Y	Diag12	5.231	L/r	27.500	Net Sect	283	22.14	5.231	40.800	37.969	27.500	35.156	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 244.21 exceeds maximum of 200.00 for member "27Y" ??															
28P	Diag11	28.788	L/r	40.800	Shear	137	6.73	28.788	40.800	63.281	44.745	46.699	0.000	0.000	0.000
0.000		0.000	Automatic												
28X	Diag11	28.788	L/r	40.800	Shear	137	6.73	28.788	40.800	63.281	44.745	46.699	0.000	0.000	0.000
0.000		0.000	Automatic												



0.000	0.000	Automatic	Member "33Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??												
34P	Diag9	50.291	L/r	48.281	Rupture	138	18.92	50.291	54.400	67.500	72.542	48.281	0.000	0.000	0.000
0.000		0.000		Automatic											
34X	Diag9	50.291	L/r	48.281	Rupture	138	18.92	50.291	54.400	67.500	72.542	48.281	0.000	0.000	0.000
0.000		0.000		Automatic											
34XY	Diag9	50.291	L/r	48.281	Rupture	138	18.92	50.291	54.400	67.500	72.542	48.281	0.000	0.000	0.000
0.000		0.000		Automatic											
34Y	Diag9	50.291	L/r	48.281	Rupture	138	18.92	50.291	54.400	67.500	72.542	48.281	0.000	0.000	0.000
0.000		0.000		Automatic											
35P	Diag10	55.072	L/r	81.600	Shear	189	30.73	55.072	81.600	177.187	121.751	164.062	0.000	0.000	0.000
0.000		0.000		Automatic											
35X	Diag10	55.072	L/r	81.600	Shear	189	30.73	55.072	81.600	177.187	121.751	164.062	0.000	0.000	0.000
0.000		0.000		Automatic											
35XY	Diag10	55.072	L/r	81.600	Shear	189	30.73	55.072	81.600	177.187	121.751	164.062	0.000	0.000	0.000
0.000		0.000		Automatic											
35Y	Diag10	55.072	L/r	81.600	Shear	189	30.73	55.072	81.600	177.187	121.751	164.062	0.000	0.000	0.000
0.000		0.000		Automatic											
36P	TTTC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
36X	TTTC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
36XY	TTTC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
36Y	TTTC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
37P	TTTC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
37X	TTTC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
37XY	TTTC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
37Y	TTTC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
38P	TTTC	27.200	Shear	23.109	Rupture	91	4.50	32.243	27.200	33.750	36.271	23.109	0.000	0.000	0.000
0.000		0.000		Automatic											
38X	TTTC	27.200	Shear	23.109	Rupture	91	4.50	32.243	27.200	33.750	36.271	23.109	0.000	0.000	0.000
0.000		0.000		Automatic											
38XY	TTTC	27.200	Shear	23.109	Rupture	91	4.50	32.243	27.200	33.750	36.271	23.109	0.000	0.000	0.000
0.000		0.000		Automatic											
38Y	TTTC	27.200	Shear	23.109	Rupture	91	4.50	32.243	27.200	33.750	36.271	23.109	0.000	0.000	0.000
0.000		0.000		Automatic											
39P	TTBC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
39X	TTBC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
39XY	TTBC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
39Y	TTBC	27.374	L/r	33.082	Net Sect	122	6.00	27.374	54.400	67.500	33.082	62.500	0.000	0.000	0.000
0.000		0.000		Automatic											
40P	TTBC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
40X	TTBC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
40XY	TTBC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
40Y	TTBC	32.243	L/r	29.774	Net Sect	91	4.50	32.243	0.000	0.000	29.774	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
41P	TTBC	32.243	L/r	36.271	Net Sect	91	4.50	32.243	54.400	67.500	36.271	56.859	0.000	0.000	0.000

0.000		0.000	Automatic												
41X	TTBC	32.243	L/r	36.271	Net Sect	91	4.50	32.243	54.400	67.500	36.271	56.859	0.000	0.000	0.000
0.000		0.000	Automatic												
41XY	TTBC	32.243	L/r	36.271	Net Sect	91	4.50	32.243	54.400	67.500	36.271	56.859	0.000	0.000	0.000
0.000		0.000	Automatic												
41Y	TTBC	32.243	L/r	36.271	Net Sect	91	4.50	32.243	54.400	67.500	36.271	56.859	0.000	0.000	0.000
0.000		0.000	Automatic												
42P	MTTC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
42X	MTTC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
42XY	MTTC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
42Y	MTTC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
43P	MTTC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
43X	MTTC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
43XY	MTTC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
43Y	MTTC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
44P	MTTC	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	50.625	45.859	42.187	0.000	0.000	0.000
0.000		0.000	Automatic	Member "44P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
44X	MTTC	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	50.625	45.859	42.187	0.000	0.000	0.000
0.000		0.000	Automatic	Member "44X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
44XY	MTTC	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	50.625	45.859	42.187	0.000	0.000	0.000
0.000		0.000	Automatic	Member "44XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
44Y	MTTC	40.800	Shear	40.800	Shear	68	4.50	47.728	40.800	50.625	45.859	42.187	0.000	0.000	0.000
0.000		0.000	Automatic	Member "44Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
45P	MTBC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
45X	MTBC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
45XY	MTBC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
45Y	MTBC	48.884	L/r	49.582	Net Sect	91	6.00	48.884	54.400	67.500	49.582	75.000	0.000	0.000	0.000
0.000		0.000	Automatic												
46P	MTBC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
46X	MTBC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
46XY	MTBC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
46Y	MTBC	47.728	L/r	44.624	Net Sect	68	4.50	47.728	0.000	0.000	44.624	0.000	0.000	0.000	0.000
0.000		0.000	Automatic												
47P	MTBC	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	67.500	51.121	58.823	0.000	0.000	0.000
0.000		0.000	Automatic	Member "47P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
47X	MTBC	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	67.500	51.121	58.823	0.000	0.000	0.000
0.000		0.000	Automatic	Member "47X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
47XY	MTBC	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	67.500	51.121	58.823	0.000	0.000	0.000
0.000		0.000	Automatic	Member "47XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											



distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
47Y	MTBC	47.728	L/r	51.121	Net Sect	68	4.50	47.728	54.400	67.500	51.121	58.823	0.000	0.000	0.000
0.000	0.000	0.000	Automatic	Member "47Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
48P	BTTC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
48X	BTTC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
48XY	BTTC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
48Y	BTTC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
49P	BTTC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
49X	BTTC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
49XY	BTTC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
49Y	BTTC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
50P	BTTC	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	63.281	63.159	53.379	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
50X	BTTC	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	63.281	63.159	53.379	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
50XY	BTTC	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	63.281	63.159	53.379	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
50Y	BTTC	40.800	Shear	40.800	Shear	68	4.50	58.971	40.800	63.281	63.159	53.379	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
51P	BTBC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
51X	BTBC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
51XY	BTBC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
51Y	BTBC	54.400	Shear	54.400	Shear	91	6.00	60.285	54.400	84.375	61.153	93.750	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
52P	BTBC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
52X	BTBC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
52XY	BTBC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
52Y	BTBC	58.971	L/r	55.038	Net Sect	68	4.50	58.971	0.000	0.000	55.038	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
53P	BTBC	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	84.375	63.159	73.529	0.000	0.000	0.000
0.000	0.000	0.000	Automatic	Member "53P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
53X	BTBC	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	84.375	63.159	73.529	0.000	0.000	0.000
0.000	0.000	0.000	Automatic	Member "53X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
53XY	BTBC	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	84.375	63.159	73.529	0.000	0.000	0.000
0.000	0.000	0.000	Automatic	Member "53XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
53Y	BTBC	54.400	Shear	54.400	Shear	68	4.50	58.971	54.400	84.375	63.159	73.529	0.000	0.000	0.000
0.000	0.000	0.000	Automatic	Member "53Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??											
54P	BTC	208.793	L/r	178.200	Net Sect	40	5.25	208.793	0.000	0.000	178.200	0.000	0.000	0.000	0.000
0.000	0.000	0.000	Automatic												
54X	BTC	208.793	L/r	178.200	Net Sect	40	5.25	208.793	0.000	0.000	178.200	0.000	0.000	0.000	0.000

0.000		0.000	Automatic											
54XY	BTC	208.793	L/r	178.200	Net Sect	40	5.25	208.793	0.000	0.000	178.200	0.000	0.000	0.000
0.000		0.000	Automatic											
54Y	BTC	208.793	L/r	178.200	Net Sect	40	5.25	208.793	0.000	0.000	178.200	0.000	0.000	0.000
0.000		0.000	Automatic											
55P	BTC	208.793	L/r	165.206	Net Sect	40	5.25	208.793	0.000	0.000	165.206	0.000	0.000	0.000
0.000		0.000	Automatic											
55X	BTC	208.793	L/r	165.206	Net Sect	40	5.25	208.793	0.000	0.000	165.206	0.000	0.000	0.000
0.000		0.000	Automatic											
55XY	BTC	208.793	L/r	165.206	Net Sect	40	5.25	208.793	0.000	0.000	165.206	0.000	0.000	0.000
0.000		0.000	Automatic											
55Y	BTC	208.793	L/r	165.206	Net Sect	40	5.25	208.793	0.000	0.000	165.206	0.000	0.000	0.000
0.000		0.000	Automatic											
56P	BTC	108.800	Shear	108.800	Shear	34	4.50	212.063	108.800	270.000	191.193	294.117	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
56X	BTC	108.800	Shear	108.800	Shear	34	4.50	212.063	108.800	270.000	191.193	294.117	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
56XY	BTC	108.800	Shear	108.800	Shear	34	4.50	212.063	108.800	270.000	191.193	294.117	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
56Y	BTC	108.800	Shear	108.800	Shear	34	4.50	212.063	108.800	270.000	191.193	294.117	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
57P	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
57X	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
57XY	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
57Y	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
58P	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
58X	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
58XY	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
58Y	BBC	148.642	L/r	118.800	Net Sect	53	5.25	148.642	0.000	0.000	118.800	0.000	0.000	0.000
0.000		0.000	Automatic											
59P	BBC	122.400	Shear	122.400	Shear	46	4.50	152.178	122.400	303.750	131.794	330.882	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
59X	BBC	122.400	Shear	122.400	Shear	46	4.50	152.178	122.400	303.750	131.794	330.882	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
59XY	BBC	122.400	Shear	122.400	Shear	46	4.50	152.178	122.400	303.750	131.794	330.882	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
59Y	BBC	122.400	Shear	122.400	Shear	46	4.50	152.178	122.400	303.750	131.794	330.882	0.000	0.000
0.000		0.000	Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
60P	Horz1	13.192	L/r	26.473	Rupture	164	16.32	13.192	40.800	37.969	27.500	26.473	0.000	0.000
0.000		0.000	Automatic											
60X	Horz1	13.192	L/r	26.473	Rupture	164	16.32	13.192	40.800	37.969	27.500	26.473	0.000	0.000
0.000		0.000	Automatic											
60XY	Horz1	13.192	L/r	26.473	Rupture	164	16.32	13.192	40.800	37.969	27.500	26.473	0.000	0.000
0.000		0.000	Automatic											

60Y	Horz1	13.192	L/r	26.473	Rupture	164	16.32	13.192	40.800	37.969	27.500	26.473	0.000	0.000	0.000
0.000		0.000		Automatic											
61P	Horz2	24.283	L/r	36.422	Rupture	148	17.08	24.283	40.800	50.625	43.696	36.422	0.000	0.000	0.000
0.000		0.000		Automatic											
61X	Horz2	24.283	L/r	36.422	Rupture	148	17.08	24.283	40.800	50.625	43.696	36.422	0.000	0.000	0.000
0.000		0.000		Automatic											
62P	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
62Y	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
63P	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
63Y	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
64P	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
64Y	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
65P	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
65Y	Br1	1.570	L/r	8.191	Rupture	360	11.81	1.570	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
66P	Br2	10.549	L/r	9.949	Rupture	172	17.08	10.549	13.600	12.656	27.500	9.949	0.000	0.000	0.000
0.000		0.000		Automatic											
67P	ARMTT	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	33.750	51.121	38.750	0.000	0.000	0.000
0.000		0.000		Automatic											
67X	ARMTT	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	33.750	51.121	38.750	0.000	0.000	0.000
0.000		0.000		Automatic											
67XY	ARMTT	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	33.750	51.121	38.750	0.000	0.000	0.000
0.000		0.000		Automatic											
67Y	ARMTT	27.200	Shear	27.200	Shear	106	7.00	40.528	27.200	33.750	51.121	38.750	0.000	0.000	0.000
0.000		0.000		Automatic											
68P	ARMMT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "68P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
68X	ARMMT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "68X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
68XY	ARMMT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "68XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
68Y	ARMMT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "68Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
69P	ARMBT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "69P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
69X	ARMBT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "69X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
69XY	ARMBT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "69XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
69Y	ARMBT	40.528	L/r	40.800	Shear	106	7.00	40.528	40.800	50.625	49.952	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
Member "69Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
70P	ArmBr1	0.029	L/r	6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000		Automatic											
70X	ArmBr1	0.029	L/r	6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000

0.000		0.000	Automatic											
70XY	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
70Y	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
71P	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
71X	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
71XY	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
71Y	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
72P	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
72X	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
72XY	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
72Y	ArmBr1	0.029	L/r 6.265	Net Sect	1912	8.60	0.029	27.200	25.312	6.265	17.824	0.000	0.000	0.000
0.000		0.000	Automatic											
73P	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
73X	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
73XY	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
73Y	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
74P	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
74X	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
75P	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
75X	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
75XY	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
75Y	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
76P	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
76X	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
77P	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
77X	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
77XY	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
77Y	ArmBr2	11.659	L/r 12.868	Rupture	152	9.90	11.659	13.600	16.875	21.421	12.868	0.000	0.000	0.000
0.000		0.000	Automatic											
78P	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
78X	ArmBr3	13.600	Shear 13.600	Shear	154	7.00	17.286	13.600	16.875	28.846	15.047	0.000	0.000	0.000
0.000		0.000	Automatic											
79P	TTBr1	9.713	L/r 16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000	Automatic											

79Y	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
80P	TTBr2	15.275	L/r	23.437	Rupture	157	7.81	15.275	27.200	25.312	27.500	23.437	0.000	0.000	0.000
0.000		0.000		Automatic											
80X	TTBr2	15.275	L/r	23.437	Rupture	157	7.81	15.275	27.200	25.312	27.500	23.437	0.000	0.000	0.000
0.000		0.000		Automatic											
80XY	TTBr2	15.275	L/r	23.437	Rupture	157	7.81	15.275	27.200	25.312	27.500	23.437	0.000	0.000	0.000
0.000		0.000		Automatic											
80Y	TTBr2	15.275	L/r	23.437	Rupture	157	7.81	15.275	27.200	25.312	27.500	23.437	0.000	0.000	0.000
0.000		0.000		Automatic											
81P	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
81X	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
81XY	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
81Y	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
82P	TTBr2	17.958	L/r	18.879	Rupture	135	6.73	17.958	27.200	25.312	27.500	18.879	0.000	0.000	0.000
0.000		0.000		Automatic											
82X	TTBr2	17.958	L/r	18.879	Rupture	135	6.73	17.958	27.200	25.312	27.500	18.879	0.000	0.000	0.000
0.000		0.000		Automatic											
82XY	TTBr2	17.958	L/r	18.879	Rupture	135	6.73	17.958	27.200	25.312	27.500	18.879	0.000	0.000	0.000
0.000		0.000		Automatic											
82Y	TTBr2	17.958	L/r	18.879	Rupture	135	6.73	17.958	27.200	25.312	27.500	18.879	0.000	0.000	0.000
0.000		0.000		Automatic											
83P	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
83X	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
83XY	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
83Y	TTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.160	0.000	0.000	0.000
0.000		0.000		Automatic											
84P	TTBr3	40.800	Shear	40.800	Shear	88	6.73	43.245	40.800	63.281	44.745	45.410	0.000	0.000	0.000
0.000		0.000		Automatic											
84X	TTBr3	40.800	Shear	40.800	Shear	88	6.73	43.245	40.800	63.281	44.745	45.410	0.000	0.000	0.000
0.000		0.000		Automatic											
84XY	TTBr3	40.800	Shear	40.800	Shear	88	6.73	43.245	40.800	63.281	44.745	45.410	0.000	0.000	0.000
0.000		0.000		Automatic											
84Y	TTBr3	40.800	Shear	40.800	Shear	88	6.73	43.245	40.800	63.281	44.745	45.410	0.000	0.000	0.000
0.000		0.000		Automatic											
85P	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
85Y	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
86P	MTBr3	32.441	L/r	40.800	Shear	128	7.81	32.441	40.800	50.625	44.531	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
86X	MTBr3	32.441	L/r	40.800	Shear	128	7.81	32.441	40.800	50.625	44.531	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
86XY	MTBr3	32.441	L/r	40.800	Shear	128	7.81	32.441	40.800	50.625	44.531	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
86Y	MTBr3	32.441	L/r	40.800	Shear	128	7.81	32.441	40.800	50.625	44.531	44.118	0.000	0.000	0.000
0.000		0.000		Automatic											
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
87P	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000	0.000

0.000		0.000		Automatic										
87X	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
87XY	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
87Y	MTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
88P	MTBr4	33.676	L/r	38.603	Rupture	116	6.73	33.676	40.800	50.625	40.448	38.603	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
88X	MTBr4	33.676	L/r	38.603	Rupture	116	6.73	33.676	40.800	50.625	40.448	38.603	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
88XY	MTBr4	33.676	L/r	38.603	Rupture	116	6.73	33.676	40.800	50.625	40.448	38.603	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
88Y	MTBr4	33.676	L/r	38.603	Rupture	116	6.73	33.676	40.800	50.625	40.448	38.603	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
89P	MTBr2	27.139	L/r	27.200	Shear	114	5.00	27.139	27.200	33.750	32.410	31.250	0.000	0.000
0.000		0.000		Automatic										
89X	MTBr2	27.139	L/r	27.200	Shear	114	5.00	27.139	27.200	33.750	32.410	31.250	0.000	0.000
0.000		0.000		Automatic										
89XY	MTBr2	27.139	L/r	27.200	Shear	114	5.00	27.139	27.200	33.750	32.410	31.250	0.000	0.000
0.000		0.000		Automatic										
89Y	MTBr2	27.139	L/r	27.200	Shear	114	5.00	27.139	27.200	33.750	32.410	31.250	0.000	0.000
0.000		0.000		Automatic										
90P	MTBr5	43.226	L/r	47.613	Net Sect	102	6.73	43.226	54.400	67.500	47.613	58.823	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
90X	MTBr5	43.226	L/r	47.613	Net Sect	102	6.73	43.226	54.400	67.500	47.613	58.823	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
90XY	MTBr5	43.226	L/r	47.613	Net Sect	102	6.73	43.226	54.400	67.500	47.613	58.823	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
90Y	MTBr5	43.226	L/r	47.613	Net Sect	102	6.73	43.226	54.400	67.500	47.613	58.823	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
91P	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
91Y	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
92P	BTBr3	46.945	L/r	54.400	Shear	118	7.81	46.945	54.400	84.375	59.748	73.529	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
92X	BTBr3	46.945	L/r	54.400	Shear	118	7.81	46.945	54.400	84.375	59.748	73.529	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
92XY	BTBr3	46.945	L/r	54.400	Shear	118	7.81	46.945	54.400	84.375	59.748	73.529	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
92Y	BTBr3	46.945	L/r	54.400	Shear	118	7.81	46.945	54.400	84.375	59.748	73.529	0.000	0.000
0.000		0.000		Automatic										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??														
93P	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000
0.000		0.000		Automatic										
93X	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000

0.000		0.000	Automatic												
93XY	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000	Automatic												
93Y	BTBr1	9.713	L/r	16.214	Net Sect	152	5.00	9.713	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000	Automatic												
94P	BTBr4	43.226	L/r	49.627	Net Sect	102	6.73	43.226	54.400	67.500	49.627	58.823	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "94P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
94X	BTBr4	43.226	L/r	49.627	Net Sect	102	6.73	43.226	54.400	67.500	49.627	58.823	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "94X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
94XY	BTBr4	43.226	L/r	49.627	Net Sect	102	6.73	43.226	54.400	67.500	49.627	58.823	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "94XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
94Y	BTBr4	43.226	L/r	49.627	Net Sect	102	6.73	43.226	54.400	67.500	49.627	58.823	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "94Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
95P	BTBr2	40.800	Shear	40.800	Shear	86	5.00	43.754	40.800	50.625	43.696	42.516	0.000	0.000	0.000
0.000		0.000	Automatic												
95X	BTBr2	40.800	Shear	40.800	Shear	86	5.00	43.754	40.800	50.625	43.696	42.516	0.000	0.000	0.000
0.000		0.000	Automatic												
95XY	BTBr2	40.800	Shear	40.800	Shear	86	5.00	43.754	40.800	50.625	43.696	42.516	0.000	0.000	0.000
0.000		0.000	Automatic												
95Y	BTBr2	40.800	Shear	40.800	Shear	86	5.00	43.754	40.800	50.625	43.696	42.516	0.000	0.000	0.000
0.000		0.000	Automatic												
96P	BTBr5	63.333	L/r	67.790	Net Sect	102	6.73	63.333	68.000	126.562	67.790	110.294	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "96P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
96X	BTBr5	63.333	L/r	67.790	Net Sect	102	6.73	63.333	68.000	126.562	67.790	110.294	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "96X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
96XY	BTBr5	63.333	L/r	67.790	Net Sect	102	6.73	63.333	68.000	126.562	67.790	110.294	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "96XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
96Y	BTBr5	63.333	L/r	67.790	Net Sect	102	6.73	63.333	68.000	126.562	67.790	110.294	0.000	0.000	0.000
0.000		0.000	Automatic												
Member "96Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
97P	TBC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 213.20 exceeds maximum of 200.00 for member "97P" ??															
98P	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
98X	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
98XY	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
98Y	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
99P	TBC2	13.479	L/r	27.200	Shear	171	7.00	13.479	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
99X	TBC2	13.479	L/r	27.200	Shear	171	7.00	13.479	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
100P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
100X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
100XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												

100Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
101P	TBC4	10.354	L/r	21.094	Rupture	170	7.00	10.354	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000	Automatic												
101X	TBC4	10.354	L/r	21.094	Rupture	170	7.00	10.354	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000	Automatic												
102P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
102X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
102XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
102Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
103P	TBC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 213.20 exceeds maximum of 200.00 for member "103P" ??															
104P	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
104X	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
104XY	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
104Y	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
105P	TBC2	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
105X	TBC2	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
106P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
106X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
106XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
106Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
107P	TBC4	11.388	L/r	21.094	Rupture	170	7.00	11.388	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000	Automatic												
107X	TBC4	11.388	L/r	21.094	Rupture	170	7.00	11.388	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000	Automatic												
108P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
108X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
108XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
108Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000	Automatic												
109P	TBC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000	Automatic												
KL/R value of 213.20 exceeds maximum of 200.00 for member "109P" ??															
110P	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
110X	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
110XY	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000	Automatic												
110Y	TBC1	10.309	L/r	8.191	Rupture	140	9.22	10.309	13.600	12.656	16.214	8.191	0.000	0.000	0.000



0.000		0.000		Automatic											
111P	TBC2	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
111X	TBC2	14.856	L/r	27.200	Shear	171	7.00	14.856	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
112P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
112X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
112XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
112Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
113P	TBC4	11.388	L/r	21.094	Rupture	170	7.00	11.388	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000		Automatic											
113X	TBC4	11.388	L/r	21.094	Rupture	170	7.00	11.388	27.200	25.312	21.917	21.094	0.000	0.000	0.000
0.000		0.000		Automatic											
114P	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
114X	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
114XY	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
114Y	TBC3	13.600	Shear	10.922	Rupture	128	8.32	16.440	13.600	16.875	21.421	10.922	0.000	0.000	0.000
0.000		0.000		Automatic											
115P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "115P" ??															
116P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "116P" ??															
117P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "117P" ??															
118P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "118P" ??															
118X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "118X" ??															
119P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "119P" ??															
120P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "120P" ??															
121P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "121P" ??															
121X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "121X" ??															
122P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "122P" ??															
123P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "123P" ??															

124P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "124P" ??															
125P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "125P" ??															
126P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "126P" ??															
127P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "127P" ??															
127X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "127X" ??															
128P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "128P" ??															
129P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "129P" ??															
130P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "130P" ??															
130X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "130X" ??															
131P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "131P" ??															
132P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "132P" ??															
133P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "133P" ??															
134P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "134P" ??															
135P	TTC2	5.168	L/r	10.512	Rupture	224	9.22	5.168	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 223.50 exceeds maximum of 200.00 for member "135P" ??															
136P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "136P" ??															
136X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "136X" ??															
137P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "137P" ??															
138P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 201.74 exceeds maximum of 200.00 for member "138P" ??															
139P	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 213.20 exceeds maximum of 200.00 for member "139P" ??															
139X	TTC1	4.471	L/r	7.348	Rupture	213	7.00	4.471	13.600	12.656	16.214	7.348	0.000	0.000	0.000

0.000	0.000	Automatic													
KL/R value of 213.20 exceeds maximum of 200.00 for member "139X" ??															
140P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 201.74 exceeds maximum of 200.00 for member "140P" ??															
141P	TTC2	6.344	L/r	10.512	Rupture	202	8.32	6.344	13.600	12.656	21.917	10.512	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 201.74 exceeds maximum of 200.00 for member "141P" ??															
142P	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
142X	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
143P	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
143X	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
144P	Horz4	4.471	L/r	8.191	Rupture	213	7.00	4.471	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 213.20 exceeds maximum of 200.00 for member "144P" ??															
144X	Horz4	4.471	L/r	8.191	Rupture	213	7.00	4.471	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 213.20 exceeds maximum of 200.00 for member "144X" ??															
145P	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
145X	Horz3	10.354	L/r	18.105	Rupture	170	7.00	10.354	27.200	25.312	21.917	18.105	0.000	0.000	0.000
0.000	0.000	Automatic													
146P	Horz4	4.471	L/r	8.191	Rupture	213	7.00	4.471	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 213.20 exceeds maximum of 200.00 for member "146P" ??															
146X	Horz4	4.471	L/r	8.191	Rupture	213	7.00	4.471	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 213.20 exceeds maximum of 200.00 for member "146X" ??															
147P	Horz5	39.688	L/r	40.800	Shear	122	7.00	39.688	40.800	63.281	53.952	47.988	0.000	0.000	0.000
0.000	0.000	Automatic													
147X	Horz5	39.688	L/r	40.800	Shear	122	7.00	39.688	40.800	63.281	53.952	47.988	0.000	0.000	0.000
0.000	0.000	Automatic													
148P	Horz6	33.036	L/r	39.835	Net Sect	103	5.42	33.036	40.800	50.625	39.835	46.875	0.000	0.000	0.000
0.000	0.000	Automatic													
148X	Horz6	33.036	L/r	39.835	Net Sect	103	5.42	33.036	40.800	50.625	39.835	46.875	0.000	0.000	0.000
0.000	0.000	Automatic													
148XY	Horz6	33.036	L/r	39.835	Net Sect	103	5.42	33.036	40.800	50.625	39.835	46.875	0.000	0.000	0.000
0.000	0.000	Automatic													
148Y	Horz6	33.036	L/r	39.835	Net Sect	103	5.42	33.036	40.800	50.625	39.835	46.875	0.000	0.000	0.000
0.000	0.000	Automatic													
149P	Horz6	27.200	Shear	27.200	Shear	121	12.74	29.777	27.200	33.750	39.835	28.125	0.000	0.000	0.000
0.000	0.000	Automatic													
149X	Horz6	27.200	Shear	27.200	Shear	121	12.74	29.777	27.200	33.750	39.835	28.125	0.000	0.000	0.000
0.000	0.000	Automatic													
150P	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
150Y	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
151P	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	70.324	110.294	0.000	0.000	0.000
0.000	0.000	Automatic	Member "151P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??												
151X	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	70.324	110.294	0.000	0.000	0.000
0.000	0.000	Automatic	Member "151X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??												

151XY	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	70.324	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "151XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
151Y	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	70.324	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "151Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
152P	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
152X	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
152XY	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
152Y	BBr1	9.436	L/r	15.785	Rupture	155	5.09	9.436	27.200	25.312	16.214	15.785	0.000	0.000	0.000
0.000	0.000	Automatic													
153P	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	68.960	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "153P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
153X	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	68.960	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "153X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
153XY	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	68.960	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "153XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
153Y	BBr2	59.320	L/r	68.000	Shear	111	7.31	59.320	68.000	126.562	68.960	110.294	0.000	0.000	0.000
0.000	0.000	Automatic Member "153Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
154P	BBr3	54.400	Shear	54.400	Shear	77	5.09	65.583	54.400	84.375	63.159	59.355	0.000	0.000	0.000
0.000	0.000	Automatic													
154X	BBr3	54.400	Shear	54.400	Shear	77	5.09	65.583	54.400	84.375	63.159	59.355	0.000	0.000	0.000
0.000	0.000	Automatic													
154XY	BBr3	54.400	Shear	54.400	Shear	77	5.09	65.583	54.400	84.375	63.159	59.355	0.000	0.000	0.000
0.000	0.000	Automatic													
154Y	BBr3	54.400	Shear	54.400	Shear	77	5.09	65.583	54.400	84.375	63.159	59.355	0.000	0.000	0.000
0.000	0.000	Automatic													
155P	BBr4	130.359	L/r	103.105	Net Sect	55	6.79	130.359	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "155P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
155X	BBr4	130.359	L/r	103.105	Net Sect	55	6.79	130.359	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "155X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
155XY	BBr4	130.359	L/r	103.105	Net Sect	55	6.79	130.359	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "155XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
155Y	BBr4	130.359	L/r	103.105	Net Sect	55	6.79	130.359	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "155Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
156P	BBr4	130.317	L/r	103.105	Net Sect	55	6.80	130.317	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "156P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
156X	BBr4	130.317	L/r	103.105	Net Sect	55	6.80	130.317	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "156X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
156XY	BBr4	130.317	L/r	103.105	Net Sect	55	6.80	130.317	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "156XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
156Y	BBr4	130.317	L/r	103.105	Net Sect	55	6.80	130.317	149.600	324.843	103.105	300.781	0.000	0.000	0.000
0.000	0.000	Automatic Member "156Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													

157P	BTC1	16.690	L/r	27.141	Rupture	186	10.75	16.690	27.200	33.750	43.696	27.141	0.000	0.000	0.000
0.000		0.000		Automatic											
158P	BTC2	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 202.97 exceeds maximum of 200.00 for member "158P" ??															
158X	BTC2	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 202.97 exceeds maximum of 200.00 for member "158X" ??															
158XY	BTC2	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 202.97 exceeds maximum of 200.00 for member "158XY" ??															
158Y	BTC2	4.933	L/r	16.214	Net Sect	229	15.03	4.933	27.200	25.312	16.214	19.301	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 202.97 exceeds maximum of 200.00 for member "158Y" ??															
159P	BTC2	8.642	L/r	14.941	Rupture	164	10.75	8.642	27.200	25.312	16.214	14.941	0.000	0.000	0.000
0.000		0.000		Automatic											
159X	BTC2	8.642	L/r	14.941	Rupture	164	10.75	8.642	27.200	25.312	16.214	14.941	0.000	0.000	0.000
0.000		0.000		Automatic											
160P	BTC3	24.779	L/r	28.698	Net Sect	122	5.38	24.779	40.800	50.625	28.698	32.016	0.000	0.000	0.000
0.000		0.000		Automatic											
160X	BTC3	24.779	L/r	28.698	Net Sect	122	5.38	24.779	40.800	50.625	28.698	32.016	0.000	0.000	0.000
0.000		0.000		Automatic											
161P	BTC3	24.779	L/r	28.698	Net Sect	122	5.38	24.779	40.800	50.625	28.698	32.016	0.000	0.000	0.000
0.000		0.000		Automatic											
161X	BTC3	24.779	L/r	28.698	Net Sect	122	5.38	24.779	40.800	50.625	28.698	32.016	0.000	0.000	0.000
0.000		0.000		Automatic											
162P	BTC4	12.805	L/r	21.421	Net Sect	153	7.04	12.805	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
162X	BTC4	12.805	L/r	21.421	Net Sect	153	7.04	12.805	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
162XY	BTC4	12.805	L/r	21.421	Net Sect	153	7.04	12.805	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
162Y	BTC4	12.805	L/r	21.421	Net Sect	153	7.04	12.805	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
163P	BTC4	12.895	L/r	21.421	Net Sect	152	7.01	12.895	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
163X	BTC4	12.895	L/r	21.421	Net Sect	152	7.01	12.895	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
163XY	BTC4	12.895	L/r	21.421	Net Sect	152	7.01	12.895	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
163Y	BTC4	12.895	L/r	21.421	Net Sect	152	7.01	12.895	40.800	50.625	21.421	41.016	0.000	0.000	0.000
0.000		0.000		Automatic											
164P	BTC5	15.020	L/r	21.047	Rupture	138	4.50	15.020	27.200	33.750	21.421	21.047	0.000	0.000	0.000
0.000		0.000		Automatic											
164X	BTC5	15.020	L/r	21.047	Rupture	138	4.50	15.020	27.200	33.750	21.421	21.047	0.000	0.000	0.000
0.000		0.000		Automatic											
165P	BBC1	6.278	L/r	19.652	Rupture	255	12.67	6.278	27.200	25.312	27.500	19.652	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 222.93 exceeds maximum of 200.00 for member "165P" ??															
166P	BBC2	3.237	L/r	8.191	Rupture	251	16.45	3.237	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 250.54 exceeds maximum of 200.00 for member "166P" ??															
166X	BBC2	3.237	L/r	8.191	Rupture	251	16.45	3.237	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 250.54 exceeds maximum of 200.00 for member "166X" ??															
166XY	BBC2	3.237	L/r	8.191	Rupture	251	16.45	3.237	13.600	12.656	16.214	8.191	0.000	0.000	0.000
0.000		0.000		Automatic											
KL/R value of 250.54 exceeds maximum of 200.00 for member "166XY" ??															
166Y	BBC2	3.237	L/r	8.191	Rupture	251	16.45	3.237	13.600	12.656	16.214	8.191	0.000	0.000	0.000

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0.000      0.000      Automatic
KL/R value of 250.54 exceeds maximum of 200.00 for member "166Y" ??
 167P  BBC2  5.462      L/r  8.191  Rupture 193 12.67  5.462  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
 167X  BBC2  5.462      L/r  8.191  Rupture 193 12.67  5.462  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
 168P  BBC3  17.576     L/r  26.203  Rupture 163 12.67  17.576  27.200  33.750  36.271  26.203  0.000  0.000  0.000
0.000      0.000      Automatic
 168X  BBC3  17.576     L/r  26.203  Rupture 163 12.67  17.576  27.200  33.750  36.271  26.203  0.000  0.000  0.000
0.000      0.000      Automatic
 169P  BBC2  4.824      L/r  8.191  Rupture 205 13.48  4.824  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
KL/R value of 205.25 exceeds maximum of 200.00 for member "169P" ??
 169X  BBC2  4.824      L/r  8.191  Rupture 205 13.48  4.824  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
KL/R value of 205.25 exceeds maximum of 200.00 for member "169X" ??
 169XY BBC2  4.824      L/r  8.191  Rupture 205 13.48  4.824  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
KL/R value of 205.25 exceeds maximum of 200.00 for member "169XY" ??
 169Y  BBC2  4.824      L/r  8.191  Rupture 205 13.48  4.824  13.600  12.656  16.214  8.191  0.000  0.000  0.000
0.000      0.000      Automatic
KL/R value of 205.25 exceeds maximum of 200.00 for member "169Y" ??

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The model contains 521 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	0.0613	3.898	4.024
2P	0.104	4.522	4.535
3P	0.164	5.708	5.592
4P	0.138	4.807	5.125
5P	0.148	5.713	5.709
6P	0.218	6.729	6.576
7P	0.229	6.826	7.151
8P	0.25	7.171	7.317
9P	0.275	7.354	7.605
14P	0.662	15.243	14.806
15P	0.0615	2.467	2.021
16P	0.0615	2.467	2.021
17P	0.0615	2.467	2.021
18P	0.0582	2.542	1.729
19P	0.0801	4.015	2.979
20P	0.0652	3.016	2.735
21P	0.0955	4.869	3.417
22P	0.0707	2.604	2.313
23P	0.119	4.814	4.188
24P	0.0684	3.042	1.729
25P	0.106	4.918	3.292
26P	0.0828	3.435	2.562
27P	0.125	6.020	3.833
28P	0.0796	3.042	2.312
29P	0.142	6.098	4.917
30P	0.078	3.042	1.729
31P	0.125	5.058	3.396
32P	0.0949	3.819	2.875

33P	0.15	6.020	3.833
34P	0.088	3.042	2.312
35P	0.177	6.343	5.140
36P	0.213	5.667	3.784
37P	0.23	6.333	3.017
38P	0.278	8.510	5.324
39P	0.244	7.208	5.815
40P	0.125	3.042	1.480
41P	0.273	7.691	6.887
44P	0.125	5.957	8.109
45P	0.0538	1.313	2.472
10P	0.233	6.721	6.906
11P	0.273	7.264	6.244
12P	0.512	13.485	14.602
1X	0.0613	3.898	4.024
2X	0.117	4.991	5.264
2XY	0.104	4.522	4.535
2Y	0.117	4.991	5.264
3X	0.164	5.708	5.592
3XY	0.164	5.708	5.592
3Y	0.164	5.708	5.592
4X	0.138	4.807	5.125
4XY	0.138	4.807	5.125
4Y	0.138	4.807	5.125
5X	0.161	6.182	6.438
5XY	0.148	5.713	5.709
5Y	0.161	6.182	6.438
6X	0.218	6.729	6.576
6XY	0.218	6.729	6.576
6Y	0.218	6.729	6.576
7X	0.229	6.826	7.151
7XY	0.229	6.826	7.151
7Y	0.229	6.826	7.151
8X	0.263	7.640	8.046
8XY	0.25	7.171	7.317
8Y	0.263	7.640	8.046
9X	0.275	7.354	7.605
9XY	0.275	7.354	7.605
9Y	0.275	7.354	7.605
14X	0.662	15.243	14.806
14XY	0.662	15.243	14.806
14Y	0.662	15.243	14.806
15X	0.0615	2.467	2.021
15XY	0.0615	2.467	2.021
15Y	0.0615	2.467	2.021
16X	0.0615	2.467	2.021
16XY	0.0615	2.467	2.021
16Y	0.0615	2.467	2.021
17X	0.0615	2.467	2.021
17XY	0.0615	2.467	2.021
17Y	0.0615	2.467	2.021
18Y	0.0582	2.542	1.729
19X	0.0815	4.171	2.979
19XY	0.0801	4.015	2.979
19Y	0.0815	4.171	2.979
20X	0.0652	3.016	2.735
20XY	0.0652	3.016	2.735
20Y	0.0652	3.016	2.735
21Y	0.0955	4.869	3.417

22X	0.0707	2.604	2.313
22XY	0.0707	2.604	2.313
22Y	0.0707	2.604	2.313
23X	0.119	4.814	4.188
23XY	0.119	4.814	4.188
23Y	0.119	4.814	4.188
24Y	0.0684	3.042	1.729
25X	0.107	5.074	3.292
25XY	0.106	4.918	3.292
25Y	0.107	5.074	3.292
26X	0.0828	3.435	2.562
26XY	0.0828	3.435	2.562
26Y	0.0828	3.435	2.562
27Y	0.125	6.020	3.833
28X	0.0796	3.042	2.312
28XY	0.0796	3.042	2.312
28Y	0.0796	3.042	2.312
29X	0.142	6.098	4.917
29XY	0.142	6.098	4.917
29Y	0.142	6.098	4.917
30Y	0.078	3.042	1.729
31X	0.126	5.215	3.396
31XY	0.125	5.058	3.396
31Y	0.126	5.215	3.396
32X	0.0949	3.819	2.875
32XY	0.0949	3.819	2.875
32Y	0.0949	3.819	2.875
33Y	0.15	6.020	3.833
34X	0.088	3.042	2.312
34XY	0.088	3.042	2.312
34Y	0.088	3.042	2.312
35X	0.177	6.343	5.140
35XY	0.177	6.343	5.140
35Y	0.177	6.343	5.140
36Y	0.213	5.667	3.784
37X	0.23	6.333	3.017
37XY	0.23	6.333	3.017
37Y	0.23	6.333	3.017
38X	0.278	8.510	5.324
38XY	0.278	8.510	5.324
38Y	0.278	8.510	5.324
39Y	0.244	7.208	5.815
40X	0.125	3.042	1.480
40XY	0.125	3.042	1.480
40Y	0.125	3.042	1.480
41X	0.273	7.691	6.887
41XY	0.273	7.691	6.887
41Y	0.273	7.691	6.887
44X	0.125	5.957	8.109
45X	0.0538	1.313	2.472
10X	0.233	6.721	6.906
10XY	0.233	6.721	6.906
10Y	0.233	6.721	6.906
11X	0.273	7.264	6.244
11XY	0.273	7.264	6.244
11Y	0.273	7.264	6.244
12X	0.512	13.485	14.602
12XY	0.512	13.485	14.602
12Y	0.512	13.485	14.602



13S	0.615	16.398	18.331
42S	0.928	21.055	14.957
43S	0.114	3.812	6.399
46S	0.0576	2.720	2.847
47S	0.0576	2.720	2.847
13X	0.615	16.398	18.331
13XY	0.615	16.398	18.331
13Y	0.615	16.398	18.331
42Y	0.928	21.055	14.957
43X	0.114	3.812	6.399
Total	29.4	922.574	822.888

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	12.638	475.119	409.642	190.768	67.131
2	16.753	447.454	413.246	181.537	133.734
Total	29.392	922.574	822.888	372.305	200.865

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	12.638	13.270	2388.520	2507.946
2	16.753	17.591	2119.786	2225.775
Total	29.392	30.861	4508.306	4733.721

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	94.000
1	2P	85.000
1	1X	94.000
1	2X	85.000
1	2XY	85.000
1	2Y	85.000
1	3P	80.000
1	3X	80.000
1	3XY	80.000
1	3Y	80.000
1	4P	75.000
1	4X	75.000
1	4XY	75.000
1	4Y	75.000
1	5P	70.000
1	5X	70.000
1	5XY	70.000
1	5Y	70.000
1	6P	65.000
1	6X	65.000
1	6XY	65.000

1	6Y	65.000
1	7P	60.000
1	7X	60.000
1	7XY	60.000
1	7Y	60.000
1	8P	55.000
1	8X	55.000
1	8XY	55.000
1	8Y	55.000
1	9P	50.000
1	9X	50.000
1	9XY	50.000
1	9Y	50.000
1	20P	85.000
1	20X	85.000
1	20XY	85.000
1	20Y	85.000
1	23P	80.000
1	23X	80.000
1	23XY	80.000
1	23Y	80.000
1	26P	70.000
1	26X	70.000
1	26XY	70.000
1	26Y	70.000
1	29P	65.000
1	29X	65.000
1	29XY	65.000
1	29Y	65.000
1	32P	55.000
1	32X	55.000
1	32XY	55.000
1	32Y	55.000
1	18P	85.000
1	19P	85.000
1	19X	85.000
1	18Y	85.000
1	19XY	85.000
1	19Y	85.000
1	21P	80.000
1	22P	80.000
1	22X	80.000
1	21Y	80.000
1	22XY	80.000
1	22Y	80.000
1	24P	70.000
1	25P	70.000
1	25X	70.000
1	24Y	70.000
1	25XY	70.000
1	25Y	70.000
1	27P	65.000
1	28P	65.000
1	28X	65.000
1	27Y	65.000
1	28XY	65.000
1	28Y	65.000
1	30P	55.000
1	31P	55.000

1	31X	55.000
1	30Y	55.000
1	31XY	55.000
1	31Y	55.000
1	33P	50.000
1	34P	50.000
1	34X	50.000
1	33Y	50.000
1	34XY	50.000
1	34Y	50.000
1	35P	50.000
1	35X	50.000
1	35XY	50.000
1	35Y	50.000
1	15P	80.000
1	15X	80.000
1	15XY	80.000
1	15Y	80.000
1	16P	65.000
1	16X	65.000
1	16XY	65.000
1	16Y	65.000
1	17P	50.000
1	17X	50.000
1	17XY	50.000
1	17Y	50.000
2	9P	50.000
2	10P	45.000
2	9X	50.000
2	10X	45.000
2	9XY	50.000
2	10XY	45.000
2	9Y	50.000
2	10Y	45.000
2	11P	40.000
2	11X	40.000
2	11XY	40.000
2	11Y	40.000
2	12P	35.000
2	12X	35.000
2	12XY	35.000
2	12Y	35.000
2	13S	23.670
2	13X	23.670
2	13XY	23.670
2	13Y	23.670
2	14P	0.000
2	14X	0.000
2	14XY	0.000
2	14Y	0.000
2	43S	40.000
2	43X	40.000
2	44P	17.750
2	44X	17.750
2	35P	50.000
2	35X	50.000
2	35XY	50.000
2	35Y	50.000
2	38P	40.000

2	38X	40.000
2	38XY	40.000
2	38Y	40.000
2	42S	23.670
2	42Y	23.670
2	36P	40.000
2	37P	40.000
2	37X	40.000
2	36Y	40.000
2	37XY	40.000
2	37Y	40.000
2	39P	35.000
2	40P	35.000
2	40X	35.000
2	39Y	35.000
2	40XY	35.000
2	40Y	35.000
2	41P	35.000
2	41X	35.000
2	41XY	35.000
2	41Y	35.000
2	47S	23.670
2	46S	23.670
2	45P	40.000
2	45X	40.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Z 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	94.000	50.000	106	356	0.00	7.00	276.500	28.00	44.00	1416.000
2	50.000	0.000	58	165	7.00	26.15	828.655	30.00	38.15	1642.555

\*\*\* Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
C1	1P	C-EX1	No Limit
C2	1X	C-EX1	No Limit
C3	15P	C-EX1	No Limit
C4	15X	C-EX1	No Limit
C5	15XY	C-EX1	No Limit
C6	15Y	C-EX1	No Limit
C7	16P	C-EX1	No Limit

C8	16X	C-EX1	No Limit
C9	16XY	C-EX1	No Limit
C10	16Y	C-EX1	No Limit
C11	17P	C-EX1	No Limit
C12	17X	C-EX1	No Limit
C13	17XY	C-EX1	No Limit
C14	17Y	C-EX1	No Limit
C15	22P	C-EX1	No Limit
C16	22X	C-EX1	No Limit
C17	22XY	C-EX1	No Limit
C18	22Y	C-EX1	No Limit
C19	28P	C-EX1	No Limit
C20	28X	C-EX1	No Limit
C21	28XY	C-EX1	No Limit
C22	28Y	C-EX1	No Limit
C23	34P	C-EX1	No Limit
C24	34X	C-EX1	No Limit
C25	34XY	C-EX1	No Limit
C26	34Y	C-EX1	No Limit
C27	3XY	C-EX1	No Limit
C28	5XY	C-EX1	No Limit
C29	7XY	C-EX1	No Limit
C30	9XY	C-EX1	No Limit
C31	11XY	C-EX1	No Limit
C32	13XY	C-EX1	No Limit
C34	3Y	C-EX1	No Limit
C35	5Y	C-EX1	No Limit
C36	7Y	C-EX1	No Limit
C37	9Y	C-EX1	No Limit
C38	11Y	C-EX1	No Limit
C39	13Y	C-EX1	No Limit
C41	3X	C-EX1	No Limit
C42	3P	C-EX1	No Limit
C43	7X	C-EX1	No Limit
C44	7P	C-EX1	No Limit
C45	2X	C-EX1	No Limit
C46	2XY	C-EX1	No Limit
C47	2Y	C-EX1	No Limit
C48	2P	C-EX1	No Limit
C49	5X	C-EX1	No Limit
C50	5P	C-EX1	No Limit
C51	9X	C-EX1	No Limit
C52	9P	C-EX1	No Limit
C53	11X	C-EX1	No Limit
C54	11P	C-EX1	No Limit
C55	13X	C-EX1	No Limit
C56	13S	C-EX1	No Limit

\*\*\* Loads Data

Loads from file: j:\jobs\1915700.wi\04\_structural\backup documentation\pls-tower\norwalk1102.lca

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

Loading Method Parameters:

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

Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.  
 Ground elevation shift 0.00 (ft)  
 Z of ground with shift 0.00 (ft)  
 Z of structure top (highest joint) 94.00 (ft)  
 Structure height 94.00 (ft)  
 Structure height above ground 94.00 (ft)  
 Tower Shape Rectangular

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Tubular and Towers	SF for Poles Arms and Cables	SF for Guys and	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	1.0000	58 loads	Wind on Face	4	0	0.000	0.000	0.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	1.0000	58 loads	NESC 2012	31	0	0.000	0.000	0.0	
NESC Heavy Broken Wire	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	1.0000	58 loads	Wind on Face	4	0	0.000	0.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	1756.8	5097.8	7.7	OPGW-120 Shield Wire
1P	1331.2	4056.2	7.2	0.438 Comp Shield Wire
15P	1145.4	3221.8	10534.3	TERN 795 Conductor Wire (Ahead)
15X	1099.7	3315.4	11032	TERN 795 Conductor Wire (Ahead)
15XY	1944.2	3043.1	-9691.1	TERN 795 Conductor Wire (Back)
15Y	1941.3	3106.4	-9901.4	TERN 795 Conductor Wire (Back)
22P	1138.8	3319.1	11011.9	TERN 795 Conductor Wire (Ahead)
22X	1116.1	3173.8	10377.7	TERN 795 Conductor Wire (Ahead)
22XY	1957.2	3140.1	-10080	TERN 795 Conductor Wire (Back)
22Y	1994.1	3368.5	-11065.8	TERN 795 Conductor Wire (Back)
16P	1155.4	3199.6	10453	TERN 795 Conductor Wire (Ahead)
16X	1063.5	3558.5	12071.7	TERN 795 Conductor Wire (Ahead)
16XY	1968.5	3206.3	-10377.9	TERN 795 Conductor Wire (Back)
16Y	1955.5	3264.4	-10621.4	TERN 795 Conductor Wire (Back)
28P	1131.6	3457.1	11574.2	TERN 795 Conductor Wire (Ahead)
28X	1073.1	3451.9	11568.3	TERN 795 Conductor Wire (Ahead)
28XY	1985.9	3312.7	-10800.6	TERN 795 Conductor Wire (Back)
28Y	1984.9	3375.7	-11080	TERN 795 Conductor Wire (Back)
17P	1141.4	3245.6	10617.2	TERN 795 Conductor Wire (Ahead)

17X	1056.3	3606.6	12288.9	TERN 795 Conductor Wire (Ahead)
17XY	1976.9	3261.3	-10618	TERN 795 Conductor Wire (Back)
17Y	2000.7	3474.2	-11491.3	TERN 795 Conductor Wire (Back)
34P	1108.3	3503.6	11780.8	TERN 795 Conductor Wire (Ahead)
34X	1072.5	3470.6	11631.3	TERN 795 Conductor Wire (Ahead)
34XY	2005.2	3421.6	-11265.1	TERN 795 Conductor Wire (Back)
34Y	1993.3	3384.9	-11094.3	TERN 795 Conductor Wire (Back)
2P	2237	2698	-1679	South Mast Top Connection
2Y	2237	2698	1679	South Mast Top Connection
7P	3869	-1535	967	South Mast Bottom Connection
7Y	3869	-1535	-967	South Mast Bottom Connection
2X	2936	816	501	North Mast Top Connection
2XY	2936	816	-501	North Mast Top Connection
7X	2095	64	33	North Mast Bottom Connection
7XY	2095	64	-33	North Mast Bottom Connection
3X	344	137	0	Coax Cable - NW Leg - AT&T Existing
5X	344	137	0	Coax Cable - NW Leg - AT&T Existing
7X	344	137	0	Coax Cable - NW Leg - AT&T Existing
9X	344	137	0	Coax Cable - NW Leg - AT&T Existing
11X	456	182	0	Coax Cable - NW Leg - AT&T Existing
13X	1093	436	0	Coax Cable - NW Leg - AT&T Existing
3XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
5XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
7XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
9XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
11XY	456	182	0	Coax Cable - NE Leg - T-Mobile Existing
13XY	1093	436	0	Coax Cable - NE Leg - T-Mobile Existing
3Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
5Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
7Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
9Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
11Y	456	182	0	Coax Cable - SE Leg - AT&T Proposed
13Y	1093	436	0	Coax Cable - SE Leg - AT&T Proposed
3P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
5P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
7P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
9P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
11P	912	182	0	Coax Cable - SW Leg - T-Mobile Existing
13S	2186	436	0	Coax Cable - SW Leg - T-Mobile Existing

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 (psf)	Tran. Adj. Wind Pres. (psf)	Tran. Drag Coef	Tran. Wind Load (lbs)	Long. Wind Adj. (psf)	Long. Drag Coef	Long. Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	94.00	50.00	72.00	10.00	10.00	3.200	2148.2	0.00	3.200	0.0	0	19905
2	50.00	0.00	25.00	10.00	10.00	3.200	4279.5	0.00	3.200	0.0	0	26387

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	511.8	3531.4	10.1	OPGW-120 Shield Wire
1P	395.7	2145.9	6.5	0.438 Comp Shield Wire

15P	327.5	2504.1	6115.7	TERN 795 Conductor Wire (Ahead)
15X	292.6	2560.4	6389	TERN 795 Conductor Wire (Ahead)
15XY	906.1	2456.5	-5733.9	TERN 795 Conductor Wire (Back)
15Y	909.7	2484.7	-5841.5	TERN 795 Conductor Wire (Back)
22P	324.5	2549.5	6351.9	TERN 795 Conductor Wire (Ahead)
22X	302.9	2490.2	6059.7	TERN 795 Conductor Wire (Ahead)
22XY	916.6	2505.5	-5936.2	TERN 795 Conductor Wire (Back)
22Y	943.3	2620.1	-6442.6	TERN 795 Conductor Wire (Back)
16P	341.5	2414.4	5907.2	TERN 795 Conductor Wire (Ahead)
16X	277.5	2601.2	6725.9	TERN 795 Conductor Wire (Ahead)
16XY	915.5	2464.9	-5935	TERN 795 Conductor Wire (Back)
16Y	911.1	2485.2	-6049.3	TERN 795 Conductor Wire (Back)
28P	323.8	2545.3	6464.3	TERN 795 Conductor Wire (Ahead)
28X	284	2549.2	6481	TERN 795 Conductor Wire (Ahead)
28XY	927.2	2517.6	-6145.3	TERN 795 Conductor Wire (Back)
28Y	927.3	2545.7	-6282	TERN 795 Conductor Wire (Back)
17P	339.2	2342.2	5782.2	TERN 795 Conductor Wire (Ahead)
17X	286	2520	6600.7	TERN 795 Conductor Wire (Ahead)
17XY	909.5	2401.4	-5862.5	TERN 795 Conductor Wire (Back)
17Y	930.1	2494.5	-6275.2	TERN 795 Conductor Wire (Back)
34P	317	2469.4	6347.7	TERN 795 Conductor Wire (Ahead)
34X	294.5	2460.7	6297.6	TERN 795 Conductor Wire (Ahead)
34XY	929.9	2475.8	-6173.12	TERN 795 Conductor Wire (Back)
34Y	920.7	2462.3	-6096.4	TERN 795 Conductor Wire (Back)
2P	-1833	8458	-5258	South Mast Top Connection
2Y	-1833	8458	5258	South Mast Top Connection
7P	4778	-3985	2516	South Mast Bottom Connection
7Y	4778	-3985	-2516	South Mast Bottom Connection
2X	2939	4913	3039	North Mast Top Connection
2XY	2939	4913	-3039	North Mast Top Connection
7X	-381	-1643	-1043	North Mast Bottom Connection
7XY	-381	-1643	1043	North Mast Bottom Connection
3X	79	434	0	Coax Cable - NW Leg - AT&T Existing
5X	79	434	0	Coax Cable - NW Leg - AT&T Existing
7X	79	434	0	Coax Cable - NW Leg - AT&T Existing
9X	79	434	0	Coax Cable - NW Leg - AT&T Existing
11X	105	575	0	Coax Cable - NW Leg - AT&T Existing
13X	251	1378	0	Coax Cable - NW Leg - AT&T Existing
3XY	79	434	0	Coax Cable - NE Leg - T-Mobile Existing
5XY	79	434	0	Coax Cable - NE Leg - T-Mobile Existing
7XY	79	434	0	Coax Cable - NE Leg - T-Mobile Existing
9XY	79	434	0	Coax Cable - NE Leg - T-Mobile Existing
11XY	105	575	0	Coax Cable - NE Leg - T-Mobile Existing
13XY	251	1378	0	Coax Cable - NE Leg - T-Mobile Existing
3Y	79	434	0	Coax Cable - SE Leg - AT&T Proposed
5Y	79	434	0	Coax Cable - SE Leg - AT&T Proposed
7Y	79	434	0	Coax Cable - SE Leg - AT&T Proposed
9Y	79	434	0	Coax Cable - SE Leg - AT&T Proposed
11Y	105	575	0	Coax Cable - SE Leg - AT&T Proposed
13Y	251	1378	0	Coax Cable - SE Leg - AT&T Proposed
3P	158	434	0	Coax Cable - SW Leg - T-Mobile Existing
5P	158	434	0	Coax Cable - SW Leg - T-Mobile Existing
7P	158	434	0	Coax Cable - SW Leg - T-Mobile Existing
9P	158	434	0	Coax Cable - SW Leg - T-Mobile Existing
11P	210	575	0	Coax Cable - SW Leg - T-Mobile Existing
13S	503	1378	0	Coax Cable - SW Leg - T-Mobile Existing

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



Section Label	Z of Top	Z of Bottom	Ave. Elev. Above Ground	Res. Adj. Wind Pres.	Tran. Adj. Wind Pres.	Tran. Angle Face Area	Tran. Gross Area	Tran. Soli-dity Ratio	Tran. Angle Drag Coef	Tran. Wind Load	Long. Adj. Pres.	Long. Angle Face Area	Long. Gross Area	Long. Soli-dity Ratio	Long. Angle Drag Coef	Ice Weight	Total Weight	
	(ft)	(ft)	(ft)	(psf)	(psf)	(ft^2)	(ft^2)			(lbs)	(psf)	(ft^2)	(ft^2)			(lbs)	(lbs)	
1	94.00	50.00	72.00	31.14	31.14	70.49	276.50	0.255	3.200	7024.8	0.00	190.77	1416.00	0.135	3.200	0.0	0	13270
2	50.00	0.00	25.00	31.14	31.14	140.42	828.65	0.169	3.200	13994.3	0.00	181.54	1642.56	0.111	3.200	0.0	0	17591

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

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
1X	1183	2563.2	-8304.8	OPGW-120 Shield Wire
1P	1331.2	4056.2	7.2	0.438 Comp Shield Wire
15P	1145.4	3221.8	10534.3	TERN 795 Conductor Wire (Ahead)
15X	0	0	0	TERN 795 Conductor Wire (Ahead)
15XY	1944.2	3043.1	-9691.1	TERN 795 Conductor Wire (Back)
15Y	1941.3	3106.4	-9901.4	TERN 795 Conductor Wire (Back)
22P	1138.8	3319.1	11011.9	TERN 795 Conductor Wire (Ahead)
22X	1116.1	3173.8	10377.7	TERN 795 Conductor Wire (Ahead)
22XY	1957.2	3140.1	-10080	TERN 795 Conductor Wire (Back)
22Y	1994.1	3368.5	-11065.8	TERN 795 Conductor Wire (Back)
16P	1155.4	3199.6	10453	TERN 795 Conductor Wire (Ahead)
16X	1063.5	3558.5	12071.7	TERN 795 Conductor Wire (Ahead)
16XY	1968.5	3206.3	-10377.9	TERN 795 Conductor Wire (Back)
16Y	1955.5	3264.4	-10621.4	TERN 795 Conductor Wire (Back)
28P	1131.6	3457.1	11574.2	TERN 795 Conductor Wire (Ahead)
28X	1073.1	3451.9	11568.3	TERN 795 Conductor Wire (Ahead)
28XY	1985.9	3312.7	-10800.6	TERN 795 Conductor Wire (Back)
28Y	1984.9	3375.7	-11080	TERN 795 Conductor Wire (Back)
17P	1141.4	3245.6	10617.2	TERN 795 Conductor Wire (Ahead)
17X	1056.3	3606.6	12288.9	TERN 795 Conductor Wire (Ahead)
17XY	1976.9	3261.3	-10618	TERN 795 Conductor Wire (Back)
17Y	2000.7	3474.2	-11491.3	TERN 795 Conductor Wire (Back)
34P	1108.3	3503.6	11780.8	TERN 795 Conductor Wire (Ahead)
34X	1072.5	3470.6	11631.3	TERN 795 Conductor Wire (Ahead)
34XY	2005.2	3421.6	-11265.1	TERN 795 Conductor Wire (Back)
34Y	1993.3	3384.9	-11094.3	TERN 795 Conductor Wire (Back)
2P	2237	2698	-1679	South Mast Top Connection
2Y	2237	2698	1679	South Mast Top Connection
7P	3869	-1535	967	South Mast Bottom Connection
7Y	3869	-1535	-967	South Mast Bottom Connection
2X	2936	816	501	North Mast Top Connection
2XY	2936	816	-501	North Mast Top Connection
7X	2095	64	33	North Mast Bottom Connection
7XY	2095	64	-33	North Mast Bottom Connection
3X	344	137	0	Coax Cable - NW Leg - AT&T Existing
5X	344	137	0	Coax Cable - NW Leg - AT&T Existing
7X	344	137	0	Coax Cable - NW Leg - AT&T Existing
9X	344	137	0	Coax Cable - NW Leg - AT&T Existing
11X	456	182	0	Coax Cable - NW Leg - AT&T Existing
13X	1093	436	0	Coax Cable - NW Leg - AT&T Existing
3XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
5XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
7XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing
9XY	344	137	0	Coax Cable - NE Leg - T-Mobile Existing

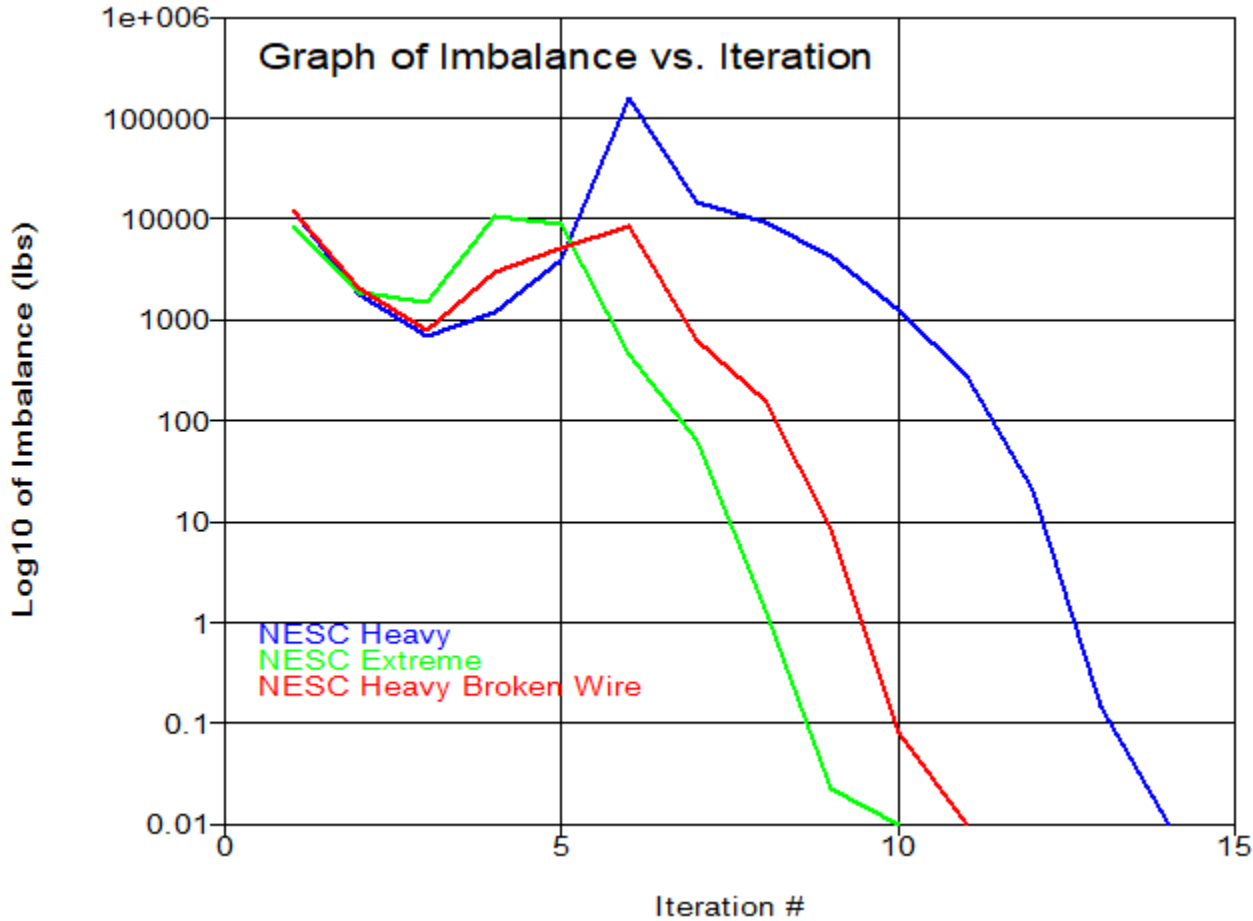
11XY	456	182	0	Coax Cable - NE Leg - T-Mobile Existing
13XY	1093	436	0	Coax Cable - NE Leg - T-Mobile Existing
3Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
5Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
7Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
9Y	344	137	0	Coax Cable - SE Leg - AT&T Proposed
11Y	456	182	0	Coax Cable - SE Leg - AT&T Proposed
13Y	1093	436	0	Coax Cable - SE Leg - AT&T Proposed
3P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
5P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
7P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
9P	688	137	0	Coax Cable - SW Leg - T-Mobile Existing
11P	912	182	0	Coax Cable - SW Leg - T-Mobile Existing
13S	2186	436	0	Coax Cable - SW Leg - T-Mobile Existing

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind (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	94.00	50.00	72.00	10.00	10.00	3.200	2148.2	0.00	3.200	0.0	0	19905
2	50.00	0.00	25.00	10.00	10.00	3.200	4279.5	0.00	3.200	0.0	0	26387

\*\*\* Analysis Results:

Maximum element usage is 98.88% for Angle "80XY" in load case "NESC Heavy Broken Wire"  
 Maximum insulator usage is 25.74% for Clamp "C12" in load case "NESC Heavy"



Angle Forces For All Load Cases:

Positive for tension - negative for compression

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)	LC 3 (kips)
PeakPost	1P	27.08	0.000	-4.779	-4.779	-2.445	-4.472
PeakPost	1X	52.41	10.117	0.000	4.983	3.800	10.117
PeakPost	1XY	31.37	4.629	-5.536	4.629	3.445	-5.536
PeakPost	1Y	31.02	0.000	-5.474	-5.167	-2.761	-5.474

Leg1	2P	10.48	7.948	-0.169	0.072	7.948	-0.169
Leg1	2X	9.93	3.583	-11.518	-11.488	-11.518	3.583
Leg1	2XY	22.67	0.000	-26.297	-12.697	-12.545	-26.297
Leg1	2Y	9.26	7.019	-3.651	-1.187	7.019	-3.651
Leg1	3P	7.86	6.505	-1.687	-1.687	6.505	-0.260
Leg1	3X	13.89	11.490	-12.599	-12.599	-11.397	11.490
Leg1	3XY	32.66	0.000	-34.790	-12.751	-11.968	-34.790
Leg1	3Y	7.15	5.918	-5.394	-2.034	5.918	-5.394
Leg1	4P	24.80	0.000	-26.412	-26.412	-24.252	-11.863
Leg1	4X	37.69	31.185	0.000	8.278	17.470	31.185
Leg1	4XY	20.44	16.917	-17.076	8.551	16.917	-17.076
Leg1	4Y	32.40	0.000	-34.507	-25.528	-24.205	-34.507
Leg1	5P	10.95	0.000	-11.668	-11.668	-4.871	-1.098
Leg1	5X	35.66	27.034	-12.230	-12.230	-3.555	27.034
Leg1	5XY	47.31	0.000	-50.398	-10.617	-3.812	-50.398
Leg1	5Y	19.13	0.000	-20.372	-11.075	-5.451	-20.372
Leg2	6P	5.53	0.000	-13.566	-13.566	-6.489	-2.122
Leg2	6X	18.03	37.947	-14.947	-14.947	-4.225	37.947
Leg2	6XY	25.23	0.000	-61.878	-9.099	-2.586	-61.878
Leg2	6Y	8.75	0.000	-21.472	-12.009	-6.730	-21.472
Leg2	7P	22.97	0.000	-56.327	-56.327	-51.610	-34.505
Leg2	7X	37.06	73.374	0.000	15.339	34.005	73.374
Leg2	7XY	18.86	37.346	-38.593	25.824	37.346	-38.593
Leg2	7Y	27.24	0.000	-66.814	-52.575	-50.963	-66.814
Leg2	8P	25.26	0.000	-34.359	-34.359	-27.703	-17.221
Leg2	8X	44.90	61.064	-12.735	-12.735	7.745	61.064
Leg2	8XY	54.51	13.417	-74.132	3.223	13.417	-74.132
Leg2	8Y	33.42	0.000	-45.448	-32.370	-28.487	-45.448
Leg3	9P	15.33	0.000	-37.541	-37.541	-29.956	-21.918
Leg3	9X	31.45	62.270	-16.429	-16.429	6.672	62.270
Leg3	9XY	31.56	14.956	-77.290	5.053	14.956	-77.290
Leg3	9Y	18.91	0.000	-46.309	-35.222	-30.751	-46.309
Leg3	10P	37.54	0.000	-91.926	-91.926	-83.912	-70.265
Leg3	10X	47.79	94.619	0.000	31.920	55.339	94.619
Leg3	10XY	32.36	64.070	-16.575	54.833	64.070	-16.575
Leg3	10Y	40.02	0.000	-97.990	-87.621	-83.343	-97.990
Leg4	11P	34.71	0.000	-84.999	-84.999	-76.757	-64.779
Leg4	11X	42.33	83.819	0.000	25.180	47.625	83.819
Leg4	11XY	28.18	55.798	-19.884	46.602	55.798	-19.884
Leg4	11Y	36.96	0.000	-90.509	-80.373	-76.080	-90.509
Leg4	12P	40.32	0.000	-97.413	-97.413	-88.393	-79.488
Leg4	12X	41.85	82.858	0.000	37.900	61.074	82.858
Leg4	12XY	34.99	69.281	-1.569	57.680	69.281	-1.569
Leg4	12Y	41.64	0.000	-100.596	-91.392	-87.282	-100.596
Leg5	13P	41.88	0.000	-100.647	-100.647	-92.552	-83.909
Leg5	13X	38.46	76.158	0.000	31.923	56.688	76.158
Leg5	13XY	33.29	65.921	-0.158	53.218	65.921	-0.158
Leg5	13Y	41.16	0.000	-98.914	-93.513	-91.315	-98.914
PeakPost	14P	21.94	4.235	0.000	4.235	2.283	3.939
PeakPost	14X	37.98	0.807	-6.337	-6.337	-4.394	0.807
PeakPost	14XY	42.27	0.000	-7.053	-5.928	-3.984	-7.053
PeakPost	14Y	25.74	4.967	0.000	4.673	2.637	4.967
Diag1	15P	17.30	0.000	-2.127	-0.144	-0.667	-2.127
Diag1	15X	26.49	0.000	-3.257	-0.689	-0.074	-3.257
Diag1	15XY	16.31	2.644	-0.519	-0.519	0.047	2.644
Diag1	15Y	13.76	2.232	-0.832	-0.373	-0.832	2.232
Diag2	16P	4.82	1.312	0.000	1.126	1.312	0.833
Diag2	16X	46.38	0.185	-11.994	0.185	-0.687	-11.994
Diag2	16XY	37.05	10.076	-1.805	-1.805	-1.597	10.076

Diag2	16Y	3.74	1.016	-0.072	0.367	1.016	-0.072
Diag2	17P	4.92	0.063	-1.008	-0.424	-1.008	0.063
Diag2	17X	39.01	1.835	-10.089	1.835	1.602	-10.089
Diag2	17XY	44.44	12.088	-0.177	-0.177	0.676	12.088
Diag2	17Y	6.33	0.000	-1.299	-1.187	-1.299	-0.881
Diag2	18P	6.06	0.000	-1.567	-0.428	-0.284	-1.567
Diag2	18X	37.75	0.147	-9.763	0.147	0.123	-9.763
Diag2	18XY	33.11	9.005	-1.694	-1.694	-0.672	9.005
Diag2	18Y	6.74	0.566	-1.382	-1.382	-0.712	0.566
Diag3	19P	5.36	2.188	0.000	1.556	2.188	1.904
Diag3	19X	25.76	2.071	-10.511	2.071	-0.088	-10.511
Diag3	19XY	21.93	8.949	-3.363	-3.363	-2.550	8.949
Diag3	19Y	4.95	2.021	0.000	0.838	2.021	0.014
Diag3	20P	2.41	0.982	0.000	0.168	0.563	0.982
Diag3	20X	21.78	3.585	-8.885	3.585	1.577	-8.885
Diag3	20XY	26.86	10.961	-1.908	-1.908	-0.908	10.961
Diag3	20Y	1.82	0.405	-0.744	-0.559	0.405	-0.744
Diag3	21P	5.45	0.000	-1.959	-1.959	-1.948	-1.903
Diag3	21X	20.01	2.042	-8.164	2.042	1.780	-8.164
Diag3	21XY	17.83	7.274	-3.317	-3.317	-0.649	7.274
Diag3	21Y	7.51	0.000	-2.700	-2.700	-2.143	-1.888
Diag2	22P	16.47	4.479	0.000	0.442	0.508	4.479
Diag2	22X	20.49	5.574	-0.107	0.696	-0.107	5.574
Diag2	22XY	34.80	0.000	-7.351	-3.048	-2.044	-7.351
Diag2	22Y	12.32	1.296	-2.602	1.296	0.830	-2.602
Diag4	23P	35.90	0.000	-6.490	-2.472	-2.177	-6.490
Diag4	23X	35.24	1.233	-6.371	-0.043	1.233	-6.371
Diag4	23XY	43.66	8.581	0.000	3.237	2.976	8.581
Diag4	23Y	18.27	0.695	-3.302	-3.302	-2.489	0.695
Diag4	24P	29.13	0.000	-3.889	-3.889	-3.154	-1.284
Diag4	24X	31.43	7.734	0.000	2.873	2.833	7.734
Diag4	24XY	40.49	1.587	-5.405	0.642	1.587	-5.405
Diag4	24Y	45.40	0.000	-6.061	-3.428	-3.165	-6.061
Diag5	25P	90.81	0.000	-3.168	-0.461	-3.168	0.000
Diag5	25X	2.36	0.452	-0.052	-0.052	0.452	0.000
Diag5	25XY	44.91	8.615	0.000	1.144	1.367	8.615
Diag5	25Y	91.74	3.755	-3.201	0.000	-3.201	3.755
Diag6	26P	9.46	2.286	-0.526	-0.526	2.286	2.102
Diag6	26X	26.99	7.786	0.000	6.544	6.902	7.786
Diag6	26XY	21.16	6.105	0.000	5.192	6.105	3.094
Diag6	26Y	46.99	2.485	-2.612	0.035	2.485	-2.612
Diagl2	27P	68.34	1.623	-3.575	0.095	1.623	-3.575
Diagl2	27X	14.14	3.890	0.000	3.120	3.890	0.503
Diagl2	27XY	25.50	7.011	0.000	4.997	4.997	7.011
Diagl2	27Y	13.08	2.973	-0.684	-0.684	1.347	2.973
Diagl1	28P	75.38	0.000	-21.700	-17.166	-21.700	-7.789
Diagl1	28X	51.20	20.891	0.000	15.585	20.891	5.905
Diagl1	28XY	51.95	21.195	0.000	14.293	20.171	21.195
Diagl1	28Y	74.70	0.000	-21.504	-16.930	-21.504	-20.544
Diagl1	29P	51.76	21.119	0.000	16.445	21.119	7.429
Diagl1	29X	71.56	0.000	-20.600	-15.632	-20.600	-5.113
Diagl1	29XY	75.59	0.000	-21.759	-14.369	-19.909	-21.759
Diagl1	29Y	51.28	20.921	0.000	16.215	20.921	19.699
Diag7	30P	71.14	0.000	-30.752	-28.123	-30.752	-19.996
Diag7	30X	61.52	28.850	0.000	25.535	28.850	20.518
Diag7	30XY	59.84	28.064	0.000	24.493	28.064	25.316
Diag7	30Y	72.20	0.000	-31.210	-27.314	-30.300	-31.210
Diag7	31P	51.97	24.271	0.000	23.328	24.271	16.201
Diag7	31X	59.16	0.000	-25.572	-24.399	-25.572	-16.941

Diag7	31XY	61.50	0.000	-26.586	-23.132	-24.779	-26.586
Diag7	31Y	55.10	25.732	0.000	22.773	23.887	25.732
Diag8	32P	60.00	0.000	-37.732	-37.732	-36.534	-30.205
Diag8	32X	48.96	33.292	0.000	33.121	33.292	28.728
Diag8	32XY	47.40	32.232	0.000	31.628	32.232	32.230
Diag8	32Y	61.80	0.000	-38.860	-35.719	-35.442	-38.860
Diag8	33P	56.25	38.248	0.000	38.248	37.869	30.924
Diag8	33X	59.36	0.000	-37.349	-37.349	-36.384	-28.592
Diag8	33XY	62.19	0.000	-39.127	-34.671	-34.857	-39.127
Diag8	33Y	57.34	38.993	0.000	36.156	36.594	38.993
Diag9	34P	41.11	19.848	0.000	15.880	19.848	13.762
Diag9	34X	65.08	0.000	-32.731	-32.731	-28.236	-13.486
Diag9	34XY	80.04	0.000	-40.252	-23.199	-24.570	-40.252
Diag9	34Y	39.21	18.931	0.000	13.885	18.931	13.827
Diag10	35P	71.01	0.000	-39.108	-39.108	-37.260	-22.238
Diag10	35X	36.91	30.118	0.000	24.023	30.118	20.481
Diag10	35XY	35.09	28.635	0.000	21.042	28.635	21.799
Diag10	35Y	80.48	0.000	-44.321	-30.262	-33.638	-44.321
TTTC	36P	12.48	4.127	-1.251	-1.251	-0.289	4.127
TTTC	36X	4.07	1.060	-1.113	-1.113	-0.130	1.060
TTTC	36XY	5.93	1.962	-0.966	-0.966	-0.048	1.962
TTTC	36Y	4.02	0.000	-1.099	-0.818	-0.002	-1.099
TTTC	37P	61.18	18.216	0.000	13.869	18.216	10.012
TTTC	37X	52.99	0.000	-17.087	-13.246	-17.087	-2.607
TTTC	37XY	49.68	0.000	-16.017	-11.697	-16.017	-14.023
TTTC	37Y	62.55	18.623	0.000	14.427	18.623	18.544
TTTC	38P	74.50	17.215	0.000	12.214	17.215	10.684
TTTC	38X	56.82	0.000	-15.456	-10.992	-15.456	-5.172
TTTC	38XY	53.64	0.000	-14.591	-9.707	-14.591	-11.039
TTTC	38Y	76.80	17.749	0.000	12.943	17.749	14.560
TTBC	39P	32.67	1.967	-8.942	-7.489	-8.942	1.967
TTBC	39X	29.23	9.669	0.000	6.800	9.669	6.519
TTBC	39XY	30.15	9.975	0.000	7.532	9.975	7.496
TTBC	39Y	42.24	0.000	-11.564	-5.976	-8.058	-11.564
TTBC	40P	36.96	0.000	-11.917	-11.125	-11.917	-4.622
TTBC	40X	41.17	12.258	0.000	9.508	12.191	12.258
TTBC	40XY	42.71	12.716	0.000	10.631	12.716	7.550
TTBC	40Y	38.52	0.000	-12.421	-9.925	-11.284	-12.421
TTBC	41P	6.45	2.338	0.000	1.009	1.874	2.338
TTBC	41X	22.41	8.127	-5.458	-5.458	-3.524	8.127
TTBC	41XY	41.35	0.000	-13.333	-3.997	-3.090	-13.333
TTBC	41Y	4.78	1.732	-0.054	1.215	1.732	-0.054
MTTC	42P	3.85	1.907	-0.349	-0.349	-0.045	1.907
MTTC	42X	0.76	0.072	-0.374	-0.245	0.072	-0.374
MTTC	42XY	1.42	0.703	-0.044	-0.044	0.099	0.703
MTTC	42Y	3.12	0.157	-1.527	0.117	0.157	-1.527
MTTC	43P	79.11	35.304	0.000	29.612	35.304	17.202
MTTC	43X	70.83	0.000	-33.804	-27.071	-33.804	-13.080
MTTC	43XY	68.02	0.000	-32.462	-24.610	-32.281	-32.462
MTTC	43Y	80.08	35.735	0.000	29.409	35.128	35.735
MTTC	44P	51.44	20.986	0.000	18.470	20.986	13.843
MTTC	44X	48.88	0.000	-19.943	-16.551	-19.943	-11.380
MTTC	44XY	46.60	0.000	-19.013	-15.128	-19.013	-16.246
MTTC	44Y	51.83	21.145	0.000	18.675	21.145	20.881
MTBC	45P	39.89	0.000	-19.500	-16.159	-19.500	-7.357
MTBC	45X	35.28	17.492	0.000	13.921	17.492	7.053
MTBC	45XY	36.02	17.861	0.000	13.404	17.122	17.861
MTBC	45Y	41.66	0.000	-20.364	-15.654	-19.079	-20.364
MTBC	46P	47.72	0.000	-22.774	-20.136	-22.774	-13.936

MTBC	46X	45.14	20.142	0.000	16.699	20.142	12.435
MTBC	46XY	45.64	20.365	0.000	17.351	20.365	19.075
MTBC	46Y	47.44	0.000	-22.644	-20.042	-22.644	-22.019
MTBC	47P	4.49	2.294	0.000	0.930	0.533	2.294
MTBC	47X	15.32	0.000	-7.310	-4.743	-2.053	-7.310
MTBC	47XY	6.86	0.000	-3.275	-3.275	-1.639	-0.889
MTBC	47Y	2.76	0.000	-1.319	-0.353	-0.326	-1.319
BTTC	48P	2.47	0.000	-1.344	-1.237	-1.344	-0.751
BTTC	48X	4.68	0.000	-2.545	-1.210	-1.288	-2.545
BTTC	48XY	2.80	1.349	-1.524	-1.524	-1.423	1.349
BTTC	48Y	2.60	0.000	-1.416	-1.416	-1.416	-0.370
BTTC	49P	76.24	41.963	0.000	41.963	41.480	30.783
BTTC	49X	72.33	0.000	-42.652	-41.142	-42.652	-31.234
BTTC	49XY	70.19	0.000	-41.393	-38.637	-40.987	-41.393
BTTC	49Y	85.02	46.794	0.000	40.590	40.712	46.794
BTTC	50P	64.29	26.231	0.000	26.231	25.081	21.146
BTTC	50X	62.53	0.000	-25.512	-24.821	-25.512	-21.267
BTTC	50XY	59.84	0.000	-24.416	-23.256	-24.416	-22.334
BTTC	50Y	69.33	28.285	0.000	25.424	24.708	28.285
BTBC	51P	42.87	0.000	-23.319	-23.319	-23.299	-15.311
BTBC	51X	41.29	22.460	0.000	21.523	22.460	16.226
BTBC	51XY	42.68	23.217	0.000	20.851	21.933	23.217
BTBC	51Y	49.40	0.000	-26.872	-22.491	-22.706	-26.872
BTBC	52P	45.78	0.000	-26.995	-26.995	-25.993	-20.308
BTBC	52X	44.76	24.634	0.000	24.052	24.634	20.054
BTBC	52XY	46.18	25.418	0.000	24.410	24.550	25.418
BTBC	52Y	49.98	0.000	-29.473	-26.452	-25.579	-29.473
BTBC	53P	2.63	1.429	-0.254	-0.254	-0.096	1.429
BTBC	53X	8.56	0.017	-4.655	-1.489	0.017	-4.655
BTBC	53XY	3.91	2.127	-0.505	-0.505	0.134	2.127
BTBC	53Y	6.88	0.000	-3.744	-2.509	-1.393	-3.744
BTC	54P	0.84	0.000	-1.751	-1.751	-0.628	-1.009
BTC	54X	0.82	0.370	-1.709	-0.535	0.370	-1.709
BTC	54XY	0.51	0.210	-1.057	-1.057	0.210	-0.111
BTC	54Y	0.96	0.000	-1.994	-1.102	-0.319	-1.994
BTC	55P	21.74	35.913	0.000	34.986	35.913	27.019
BTC	55X	16.60	0.000	-34.653	-34.653	-33.524	-27.070
BTC	55XY	17.13	0.000	-35.757	-31.965	-32.003	-35.757
BTC	55Y	21.93	36.232	0.000	32.443	34.546	36.232
BTC	56P	8.94	9.725	0.000	8.924	9.725	6.966
BTC	56X	8.39	0.000	-9.132	-4.286	-5.624	-9.132
BTC	56XY	5.71	0.000	-6.210	-5.864	-6.210	-0.272
BTC	56Y	8.89	9.671	0.000	8.450	9.671	9.312
BBC	57P	9.94	0.000	-14.775	-13.270	-14.775	-11.881
BBC	57X	19.32	22.954	0.000	22.954	21.364	15.845
BBC	57XY	20.72	24.610	0.000	19.426	19.900	24.610
BBC	57Y	9.80	0.000	-14.567	-12.989	-14.567	-12.186
BBC	58P	10.10	0.000	-15.016	-13.270	-15.016	-11.881
BBC	58X	19.32	22.954	0.000	22.954	21.605	15.846
BBC	58XY	20.72	24.610	0.000	19.426	20.142	24.610
BBC	58Y	9.96	0.000	-14.809	-12.989	-14.809	-12.186
BBC	59P	23.03	0.000	-28.183	-25.588	-28.183	-21.345
BBC	59X	29.23	35.773	0.000	35.773	33.136	21.140
BBC	59XY	33.23	40.673	0.000	28.936	30.371	40.673
BBC	59Y	22.20	0.000	-27.169	-23.516	-27.169	-24.300
Horz1	60P	8.51	0.000	-1.122	-1.122	-0.756	-0.020
Horz1	60X	29.74	0.000	-3.923	-2.033	-3.923	-3.127
Horz1	60XY	30.57	0.000	-4.033	-2.447	-4.033	-1.276
Horz1	60Y	12.33	0.000	-1.627	-0.575	-0.616	-1.627

Horz2	61P	10.61	0.000	-2.576	-1.157	-2.576	-2.563
Horz2	61X	38.10	0.000	-9.251	-7.114	-9.031	-9.251
Br1	62P	40.70	3.334	0.000	1.209	3.334	2.678
Br1	62Y	42.65	3.494	0.000	1.825	3.494	0.288
Br1	63P	44.78	3.668	0.000	1.825	3.668	0.288
Br1	63Y	42.83	3.509	0.000	1.209	3.509	2.678
Br1	64P	37.98	3.111	0.000	0.996	3.111	2.438
Br1	64Y	39.84	3.263	0.000	1.591	3.263	0.066
Br1	65P	35.85	2.937	0.000	0.996	2.937	2.438
Br1	65Y	37.71	3.089	0.000	1.591	3.089	0.067
Br2	66P	46.11	0.000	-4.864	-2.326	-4.864	-2.270
ARMTT	67P	4.34	1.180	0.000	0.278	1.180	0.310
ARMTT	67X	22.25	4.391	-6.052	-6.052	-3.735	4.391
ARMTT	67XY	39.58	0.000	-10.765	-5.628	-3.829	-10.765
ARMTT	67Y	2.36	0.642	-0.325	-0.286	0.642	-0.325
ARMMT	68P	3.18	1.297	0.000	0.543	1.297	0.584
ARMMT	68X	16.10	0.000	-6.526	-6.397	-3.798	-6.526
ARMMT	68XY	13.89	0.000	-5.631	-5.631	-3.759	-5.476
ARMMT	68Y	1.58	0.459	-0.638	-0.633	0.459	-0.638
ARMBT	69P	3.56	1.452	0.000	1.061	1.452	1.051
ARMBT	69X	15.68	0.000	-6.354	-6.283	-3.653	-6.354
ARMBT	69XY	13.74	0.000	-5.570	-5.570	-3.666	-5.448
ARMBT	69Y	1.82	0.313	-0.739	-0.739	0.313	-0.727
ArmBr1	70P	34.35	2.152	0.000	2.125	0.801	2.152
ArmBr1	70X	31.43	1.969	0.000	1.969	0.649	0.200
ArmBr1	70XY	54.53	3.416	0.000	3.416	1.692	3.282
ArmBr1	70Y	55.47	3.475	0.000	3.475	1.785	3.441
ArmBr1	71P	35.23	2.207	0.000	2.183	0.878	2.207
ArmBr1	71X	32.01	2.005	0.000	1.850	0.571	2.005
ArmBr1	71XY	54.34	3.404	0.000	3.404	1.657	3.275
ArmBr1	71Y	56.39	3.533	0.000	3.533	1.836	3.496
ArmBr1	72P	34.13	2.138	0.000	2.108	0.801	2.138
ArmBr1	72X	31.98	2.003	0.000	1.894	0.653	2.003
ArmBr1	72XY	55.50	3.477	0.000	3.477	1.717	3.380
ArmBr1	72Y	56.78	3.557	0.000	3.557	1.796	3.527
ArmBr2	73P	6.62	0.852	0.000	0.811	0.651	0.852
ArmBr2	73X	55.49	7.140	-0.352	-0.352	-0.105	7.140
ArmBr2	73XY	55.80	1.546	-6.505	1.546	0.823	-6.505
ArmBr2	73Y	13.32	1.713	0.000	1.713	1.044	1.695
ArmBr3	74P	68.56	9.324	0.000	9.324	5.377	9.316
ArmBr3	74X	73.08	9.938	0.000	9.938	5.808	4.634
ArmBr2	75P	11.48	1.477	0.000	1.461	0.853	1.477
ArmBr2	75X	5.16	0.000	-0.601	-0.564	-0.175	-0.601
ArmBr2	75XY	14.19	1.826	0.000	1.826	0.943	1.793
ArmBr2	75Y	9.65	1.241	0.000	1.241	0.664	1.189
ArmBr3	76P	70.57	9.598	0.000	9.585	5.447	9.598
ArmBr3	76X	79.40	10.798	0.000	10.772	6.055	10.798
ArmBr2	77P	14.63	1.882	0.000	1.879	1.116	1.882
ArmBr2	77X	7.35	0.000	-0.857	-0.811	-0.284	-0.857
ArmBr2	77XY	12.00	1.544	0.000	1.544	0.757	1.502
ArmBr2	77Y	5.14	0.661	0.000	0.661	0.430	0.654
ArmBr3	78P	74.81	10.174	0.000	10.174	5.507	10.174
ArmBr3	78X	82.36	11.202	0.000	11.169	6.046	11.202
TTBr1	79P	1.30	0.000	-0.127	-0.087	-0.121	-0.127
TTBr1	79Y	1.31	0.000	-0.127	-0.096	-0.127	-0.092
TTBr2	80P	57.94	13.580	0.000	10.492	13.580	1.828
TTBr2	80X	86.27	0.000	-13.178	-10.100	-13.178	-1.350
TTBr2	80XY	98.88	0.000	-15.105	-9.410	-12.701	-15.105
TTBr2	80Y	66.20	15.515	0.000	9.837	13.127	15.515



TTBr1	81P	7.47	1.211	0.000	1.199	0.396	1.211
TTBr1	81X	7.66	1.242	0.000	1.242	0.456	1.231
TTBr1	81XY	12.76	2.068	0.000	2.068	1.056	2.045
TTBr1	81Y	12.61	2.044	0.000	2.044	1.006	2.019
TTBr2	82P	68.58	0.000	-12.317	-10.732	-12.317	-3.283
TTBr2	82X	55.47	10.473	-0.645	6.754	10.473	-0.645
TTBr2	82XY	52.79	9.966	0.000	5.069	9.266	9.966
TTBr2	82Y	89.89	0.000	-16.143	-11.291	-12.734	-16.143
TTBr1	83P	21.09	3.420	0.000	3.420	1.674	3.205
TTBr1	83X	56.46	0.594	-5.484	-5.484	-3.817	0.594
TTBr1	83XY	62.41	0.000	-6.062	-5.142	-3.468	-6.062
TTBr1	83Y	24.80	4.020	0.000	3.788	1.974	4.020
TTBr3	84P	27.87	0.000	-11.373	-10.688	-11.373	-8.470
TTBr3	84X	39.96	16.305	0.000	16.305	15.514	5.985
TTBr3	84XY	47.66	19.444	0.000	16.262	15.549	19.444
TTBr3	84Y	27.33	0.000	-11.152	-10.374	-11.152	-9.454
MTBr1	85P	1.27	0.000	-0.123	-0.107	-0.121	-0.123
MTBr1	85Y	1.31	0.000	-0.127	-0.117	-0.127	-0.107
MTBr3	86P	64.54	26.331	0.000	21.682	26.331	9.354
MTBr3	86X	79.88	0.000	-25.913	-21.158	-25.913	-8.799
MTBr3	86XY	85.21	0.000	-27.644	-19.870	-25.080	-27.644
MTBr3	86Y	69.11	28.195	0.000	20.445	25.531	28.195
MTBr1	87P	7.21	1.169	0.000	1.123	0.310	1.169
MTBr1	87X	7.75	1.256	0.000	1.256	0.501	1.238
MTBr1	87XY	13.20	2.141	0.000	2.141	1.122	2.139
MTBr1	87Y	12.09	1.960	0.000	1.960	0.900	1.930
MTBr4	88P	68.00	0.000	-22.901	-20.109	-22.901	-9.672
MTBr4	88X	54.77	21.144	0.000	16.030	21.144	5.553
MTBr4	88XY	52.77	20.372	0.000	13.764	19.607	20.372
MTBr4	88Y	79.45	0.000	-26.756	-20.168	-23.002	-26.756
MTBr2	89P	54.56	14.841	0.000	11.509	14.841	5.046
MTBr2	89X	55.14	0.000	-14.964	-11.319	-14.964	-3.707
MTBr2	89XY	58.14	0.000	-15.779	-10.410	-14.463	-15.779
MTBr2	89Y	54.04	14.700	0.000	11.347	14.700	13.836
MTBr5	90P	63.45	0.000	-27.427	-22.967	-27.427	-16.639
MTBr5	90X	57.83	27.534	0.000	24.676	27.534	20.103
MTBr5	90XY	58.06	27.645	0.000	24.725	27.645	26.022
MTBr5	90Y	61.70	0.000	-26.671	-21.862	-26.671	-22.502
BTBr1	91P	1.28	0.000	-0.124	-0.117	-0.115	-0.124
BTBr1	91Y	1.30	0.000	-0.126	-0.125	-0.120	-0.126
BTBr3	92P	58.68	31.923	0.000	31.597	31.923	21.823
BTBr3	92X	67.13	0.000	-31.514	-30.981	-31.514	-21.194
BTBr3	92XY	73.68	0.000	-34.591	-29.356	-30.510	-34.591
BTBr3	92Y	64.82	35.263	0.000	30.025	30.954	35.263
BTBr1	93P	6.71	1.088	0.000	1.041	0.258	1.088
BTBr1	93X	8.19	1.328	0.000	1.328	0.561	1.297
BTBr1	93XY	13.72	2.224	0.000	2.219	1.168	2.224
BTBr1	93Y	11.79	1.912	0.000	1.912	0.849	1.884
BTBr4	94P	65.86	0.000	-28.470	-28.470	-27.601	-20.219
BTBr4	94X	52.05	25.828	0.000	24.252	25.828	15.965
BTBr4	94XY	52.69	26.146	0.000	21.689	24.167	26.146
BTBr4	94Y	75.70	0.000	-32.722	-28.296	-27.564	-32.722
BTBr2	95P	41.97	17.124	0.000	16.409	17.124	11.324
BTBr2	95X	45.62	0.000	-18.612	-17.761	-18.612	-12.375
BTBr2	95XY	47.37	0.000	-19.327	-16.860	-18.043	-19.327
BTBr2	95Y	44.45	18.135	0.000	16.028	16.857	18.135
BTBr5	96P	48.29	0.000	-30.585	-30.121	-30.585	-24.145
BTBr5	96X	47.39	32.126	0.000	32.126	32.035	29.054
BTBr5	96XY	47.32	32.081	0.000	32.081	31.933	31.412

BTBr5	96Y	46.23	0.000	-29.281	-27.783	-29.176	-29.281
TBC1	97P	37.81	0.000	-1.691	-1.522	-0.988	-1.691
TBC1	98P	33.67	2.758	-0.883	-0.152	-0.883	2.758
TBC1	98X	26.95	2.207	-0.487	2.197	2.207	-0.487
TBC1	98XY	55.61	4.556	0.000	2.006	2.103	4.556
TBC1	98Y	22.33	0.042	-2.302	0.042	-0.777	-2.302
TBC2	99P	38.26	10.408	0.000	10.408	7.151	10.014
TBC2	99X	22.72	6.180	0.000	6.071	2.262	6.180
TBC3	100P	29.34	3.205	-0.269	0.645	-0.269	3.205
TBC3	100X	29.91	3.267	0.000	3.267	2.592	0.814
TBC3	100XY	46.26	5.052	0.000	2.735	2.349	5.052
TBC3	100Y	9.24	0.877	-1.257	0.877	-0.069	-1.257
TBC4	101P	5.15	0.125	-0.533	-0.375	0.125	-0.533
TBC4	101X	17.85	0.000	-1.848	-1.674	-1.461	-1.848
TBC3	102P	17.57	1.919	-0.409	-0.409	-0.064	1.919
TBC3	102X	20.70	0.000	-2.816	-0.706	-0.591	-2.816
TBC3	102XY	13.13	1.434	-1.230	-1.230	-0.823	1.434
TBC3	102Y	18.87	0.136	-2.566	-0.173	0.136	-2.566
TBC1	103P	31.91	0.000	-1.427	-1.370	-0.724	-1.427
TBC1	104P	19.02	1.355	-1.960	-1.219	-1.960	1.355
TBC1	104X	38.22	3.131	0.000	3.131	2.971	0.640
TBC1	104XY	55.81	4.572	0.000	2.424	2.614	4.572
TBC1	104Y	25.27	0.000	-2.605	-0.514	-1.603	-2.605
TBC2	105P	42.62	11.594	0.000	11.594	8.237	11.269
TBC2	105X	23.30	6.338	0.000	6.133	1.850	6.338
TBC3	106P	23.77	2.597	-0.702	0.352	-0.702	2.597
TBC3	106X	38.04	4.155	0.000	4.155	3.081	1.976
TBC3	106XY	42.25	4.615	0.000	2.608	2.361	4.615
TBC3	106Y	11.15	0.394	-1.516	0.394	-0.602	-1.516
TBC4	107P	3.39	0.714	-0.164	-0.057	0.714	-0.164
TBC4	107X	17.74	0.000	-2.021	-2.021	-1.807	-1.917
TBC3	108P	16.46	1.797	-0.297	-0.297	-0.264	1.797
TBC3	108X	16.65	0.000	-2.265	-0.082	-0.141	-2.265
TBC3	108XY	11.84	0.498	-1.610	-1.610	-0.833	0.498
TBC3	108Y	17.77	0.000	-2.417	-0.233	-0.151	-2.417
TBC1	109P	32.65	0.000	-1.460	-1.442	-0.799	-1.460
TBC1	110P	17.23	0.000	-1.776	-1.468	-1.776	-0.129
TBC1	110X	42.68	3.496	0.000	3.496	2.894	2.189
TBC1	110XY	45.97	3.766	0.000	2.762	2.592	3.766
TBC1	110Y	16.74	0.000	-1.725	-0.734	-1.471	-1.725
TBC2	111P	46.70	12.703	0.000	12.703	8.655	12.425
TBC2	111X	19.85	5.399	0.000	5.175	1.116	5.399
TBC3	112P	10.87	0.671	-1.478	-0.559	-1.478	0.671
TBC3	112X	46.34	5.061	0.000	5.061	3.771	3.889
TBC3	112XY	44.68	4.879	0.000	3.964	3.348	4.879
TBC3	112Y	11.73	0.000	-1.595	-0.710	-1.504	-1.595
TBC4	113P	26.77	0.000	-3.049	-3.049	-2.595	-2.938
TBC4	113X	5.54	1.168	0.000	0.790	1.168	0.738
TBC3	114P	14.58	0.011	-1.983	-1.983	-1.601	0.011
TBC3	114X	8.40	0.917	-0.825	0.811	0.917	-0.825
TBC3	114XY	7.95	0.868	-0.515	-0.515	0.347	0.868
TBC3	114Y	26.90	0.000	-3.659	-1.795	-1.442	-3.659
TTC1	115P	48.67	3.576	-0.168	-0.168	-0.121	3.576
TTC2	116P	91.18	0.211	-4.712	0.211	0.143	-4.712
TTC2	117P	90.99	0.228	-4.702	0.228	0.172	-4.702
TTC1	118P	48.38	3.555	-0.176	-0.176	-0.127	3.555
TTC1	118X	48.58	3.570	-0.161	-0.161	-0.119	3.570
TTC2	119P	66.56	0.214	-4.223	0.214	0.174	-4.223
TTC2	120P	66.83	0.198	-4.239	0.198	0.137	-4.239

TTC1	121P	39.31	1.831	-1.757	-1.757	-1.037	1.831
TTC1	121X	44.86	3.296	0.000	1.977	1.372	3.296
TTC2	122P	58.88	0.380	-3.735	0.380	0.284	-3.735
TTC2	123P	17.19	0.035	-1.090	0.035	-0.016	-1.090
TTC1	124P	35.79	2.630	-0.154	-0.154	-0.102	2.630
TTC2	125P	67.80	0.158	-3.504	0.158	0.079	-3.504
TTC2	126P	66.29	0.248	-3.426	0.248	0.190	-3.426
TTC1	127P	35.42	2.603	-0.169	-0.169	-0.123	2.603
TTC1	127X	35.92	2.639	-0.161	-0.161	-0.110	2.639
TTC2	128P	47.85	0.254	-3.035	0.254	0.215	-3.035
TTC2	129P	50.01	0.157	-3.172	0.157	0.092	-3.172
TTC1	130P	34.21	2.513	-0.197	-0.197	-0.156	2.513
TTC1	130X	35.85	2.634	-0.150	-0.150	-0.103	2.634
TTC2	131P	47.12	0.213	-2.989	0.213	0.156	-2.989
TTC2	132P	49.29	0.206	-3.127	0.206	0.151	-3.127
TTC1	133P	27.87	2.048	-0.078	-0.078	-0.039	2.048
TTC2	134P	53.34	0.042	-2.756	0.042	-0.015	-2.756
TTC2	135P	51.12	0.166	-2.642	0.166	0.114	-2.642
TTC1	136P	27.61	2.029	-0.086	-0.086	-0.042	2.029
TTC1	136X	27.83	2.045	-0.102	-0.102	-0.056	2.045
TTC2	137P	36.43	0.190	-2.311	0.190	0.148	-2.311
TTC2	138P	39.14	0.066	-2.483	0.066	0.016	-2.483
TTC1	139P	25.15	1.848	-0.203	-0.203	-0.177	1.848
TTC1	139X	28.61	2.102	-0.016	-0.016	0.008	2.102
TTC2	140P	35.58	0.163	-2.257	0.163	0.105	-2.257
TTC2	141P	38.19	0.109	-2.423	0.109	0.058	-2.423
Horz3	142P	36.93	1.626	-3.824	0.141	-3.824	1.626
Horz3	142X	9.71	1.759	-0.732	-0.732	1.759	0.399
Horz3	143P	9.57	0.000	-0.991	-0.991	-0.961	-0.936
Horz3	143X	8.27	1.497	0.000	1.497	1.256	1.325
Horz4	144P	23.59	1.932	0.000	1.261	1.175	1.932
Horz4	144X	15.58	0.796	-0.696	-0.100	-0.696	0.796
Horz3	145P	12.73	0.000	-1.318	-0.774	-1.318	-0.863
Horz3	145X	7.00	1.268	0.000	1.268	1.195	1.105
Horz4	146P	23.73	1.944	0.000	1.607	1.186	1.944
Horz4	146X	16.12	0.300	-0.720	-0.262	-0.720	0.300
Horz5	147P	9.62	0.000	-3.820	-3.813	-3.015	-3.820
Horz5	147X	2.98	1.215	-0.659	-0.180	1.215	-0.659
Horz6	148P	5.29	2.109	0.000	1.301	2.109	1.204
Horz6	148X	1.47	0.000	-0.485	-0.316	-0.093	-0.485
Horz6	148XY	0.75	0.000	-0.247	-0.247	-0.064	-0.154
Horz6	148Y	5.13	2.044	0.000	1.451	2.044	1.334
Horz6	149P	16.22	4.411	0.000	2.250	4.411	0.659
Horz6	149X	16.31	0.000	-4.436	-1.943	-2.241	-4.436
BBr1	150P	4.30	0.000	-0.406	-0.406	-0.299	-0.270
BBr1	150Y	5.14	0.000	-0.485	-0.353	-0.281	-0.485
BBr2	151P	38.80	26.381	0.000	26.381	26.285	20.019
BBr2	151X	42.67	0.000	-25.312	-25.175	-25.312	-19.002
BBr2	151XY	44.12	0.000	-26.169	-22.933	-24.125	-26.169
BBr2	151Y	40.41	27.482	0.000	24.059	25.069	27.482
BBr1	152P	1.21	0.192	0.000	0.110	0.192	0.118
BBr1	152X	2.08	0.328	0.000	0.271	0.328	0.165
BBr1	152XY	2.07	0.327	0.000	0.243	0.314	0.327
BBr1	152Y	1.25	0.198	0.000	0.116	0.198	0.105
BBr2	153P	42.07	0.000	-24.955	-24.796	-24.955	-19.026
BBr2	153X	32.86	22.343	0.000	22.343	22.231	16.321
BBr2	153XY	34.52	23.476	0.000	20.116	21.078	23.476
BBr2	153Y	43.44	0.000	-25.769	-22.671	-23.837	-25.769
BBr3	154P	45.76	24.893	0.000	24.893	24.344	19.659

BBr3	154X	39.50	0.000	-21.487	-20.192	-21.487	-19.872
BBr3	154XY	39.01	0.000	-21.223	-20.075	-21.223	-17.734
BBr3	154Y	47.14	25.643	0.000	23.308	23.609	25.643
BBr4	155P	7.13	0.000	-9.298	-9.298	-8.522	-7.667
BBr4	155X	11.38	11.736	0.000	6.173	7.972	11.736
BBr4	155XY	8.49	8.753	0.000	8.213	8.753	1.666
BBr4	155Y	7.22	0.000	-9.406	-9.154	-8.591	-9.406
BBr4	156P	1.67	1.720	0.000	1.040	1.720	1.506
BBr4	156X	6.19	0.000	-8.065	-8.065	-5.047	-0.094
BBr4	156XY	10.13	0.000	-13.204	-5.634	-3.936	-13.204
BBr4	156Y	1.52	1.564	0.000	1.338	1.564	0.669
BTC1	157P	10.92	2.964	0.000	1.296	2.964	1.284
BTC2	158P	26.47	0.071	-1.305	0.071	-1.206	-1.305
BTC2	158X	46.41	0.000	-2.289	-1.668	-2.289	-0.303
BTC2	158XY	43.21	0.000	-2.132	-0.836	-1.955	-2.132
BTC2	158Y	31.29	0.562	-1.543	-0.772	-1.543	0.562
BTC2	159P	13.38	0.000	-1.156	-0.466	-1.156	-0.467
BTC2	159X	13.76	0.000	-1.189	-0.605	-1.189	-0.597
BTC3	160P	16.06	4.609	0.000	1.940	4.609	1.531
BTC3	160X	16.79	4.817	0.000	2.091	4.817	2.650
BTC3	161P	15.71	4.508	0.000	1.659	4.508	2.100
BTC3	161X	17.22	4.941	0.000	2.394	4.941	1.830
BTC4	162P	20.43	0.000	-2.616	-0.920	-2.616	-1.466
BTC4	162X	16.33	0.000	-2.091	-1.047	-2.091	-0.324
BTC4	162XY	15.07	0.000	-1.930	-0.653	-1.930	-1.389
BTC4	162Y	21.45	0.000	-2.746	-1.286	-2.746	-0.727
BTC4	163P	17.01	0.000	-2.194	-0.872	-2.194	-1.673
BTC4	163X	19.31	0.000	-2.490	-1.221	-2.490	-0.527
BTC4	163XY	17.79	0.000	-2.294	-0.754	-2.294	-1.465
BTC4	163Y	18.54	0.000	-2.390	-1.316	-2.390	-0.506
BTC5	164P	15.17	3.193	0.000	1.411	3.193	1.403
BTC5	164X	13.39	2.818	0.000	1.087	2.818	1.096
BBC1	165P	4.92	0.000	-0.309	-0.253	-0.162	-0.309
BBC2	166P	25.69	0.000	-0.832	-0.496	-0.832	-0.074
BBC2	166X	11.73	0.961	0.000	0.738	0.961	0.374
BBC2	166XY	18.24	1.494	0.000	1.156	0.919	1.494
BBC2	166Y	37.07	0.000	-1.200	-0.913	-0.789	-1.200
BBC2	167P	1.37	0.000	-0.075	-0.047	-0.075	-0.019
BBC2	167X	0.59	0.015	-0.032	-0.032	-0.017	0.015
BBC3	168P	1.36	0.192	-0.239	0.034	-0.239	0.192
BBC3	168X	2.81	0.000	-0.493	-0.478	-0.493	-0.160
BBC2	169P	5.33	0.437	0.000	0.262	0.437	0.344
BBC2	169X	20.50	0.000	-0.989	-0.192	-0.099	-0.989
BBC2	169XY	3.09	0.088	-0.149	0.088	-0.149	-0.025
BBC2	169Y	12.89	0.481	-0.622	-0.014	0.481	-0.622

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	0.009211	0.1893	-0.02138	0.0000	0.0000	0.0000	0.009211	14.19	93.98
2P	0.007171	0.1629	-0.02316	-0.0967	0.0161	0.0196	3.507	15.16	84.98
3P	0.005956	0.1543	-0.02316	-0.1197	0.0093	0.0192	3.506	15.15	79.98
4P	0.005368	0.1402	-0.02306	-0.2137	0.0094	0.0149	3.505	15.14	74.98
5P	0.004023	0.1212	-0.02176	-0.1623	0.0206	0.0105	3.504	15.12	69.98
6P	0.002563	0.1112	-0.02119	-0.1778	0.0049	0.0067	3.503	15.11	64.98
7P	0.002175	0.09285	-0.02086	-0.2426	0.0080	-0.0014	3.502	15.09	59.98
8P	0.0008948	0.07263	-0.01957	-0.1734	0.0215	-0.0096	3.501	15.07	54.98
9P	-0.000559	0.06177	-0.01879	-0.1433	-0.0001	-0.0220	3.499	15.06	49.98
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	0.003651	0.1543	-0.03799	-0.1223	0.0093	0.0187	3.504	22.15	79.96
16P	0.000127	0.1112	-0.03864	-0.1253	0.0050	0.0265	3.5	22.11	64.96
17P	-0.002282	0.06188	-0.03745	-0.1574	0.0000	0.0320	3.498	22.06	49.96
18P	0.01406	0.1602	-0.01104	-0.0126	0.0157	0.0313	3.514	0.1602	84.99
19P	0.01066	0.1601	-0.01127	0.0124	0.0159	0.0300	3.511	6.16	84.99
20P	0.00866	0.1616	-0.01265	-0.0923	0.0160	0.0209	3.509	10.66	84.99
21P	0.01329	0.1565	-0.01101	-0.0044	0.0163	0.0274	3.513	0.1565	79.99
22P	0.01151	0.1554	-0.01156	-0.0004	0.0136	0.0295	3.512	6.155	79.99
23P	0.008198	0.1542	-0.01348	-0.0807	0.0115	0.0408	3.508	10.65	79.99
24P	0.007963	0.1174	-0.008666	0.0045	0.0211	0.0265	3.508	0.1174	69.99
25P	0.005232	0.1174	-0.007086	0.0349	0.0209	0.0160	3.505	6.117	69.99
26P	0.004655	0.1197	-0.007478	-0.1081	0.0208	0.0049	3.505	10.62	69.99
27P	0.00893	0.1145	-0.008639	0.0160	0.0177	0.0205	3.509	0.1145	64.99
28P	0.007855	0.1127	-0.007356	0.0123	0.0127	0.0247	3.508	6.113	64.99
29P	0.00468	0.1111	-0.008985	-0.0908	0.0088	0.0426	3.505	10.61	64.99
30P	0.002746	0.06835	-0.007634	0.0085	0.0224	0.0202	3.503	0.06835	54.99
31P	0.0007104	0.06824	-0.00529	0.0469	0.0220	0.0072	3.501	6.068	54.99
32P	0.0008344	0.07096	-0.00484	-0.1045	0.0218	-0.0012	3.501	10.57	55
33P	0.004076	0.06556	-0.007605	0.0202	0.0121	0.0099	3.504	0.06556	49.99
34P	0.003861	0.06355	-0.005539	0.0252	0.0074	0.0217	3.504	6.064	49.99
35P	0.0006968	0.0618	-0.006505	-0.0968	0.0037	0.0421	3.501	10.56	49.99
36P	0.001837	0.02818	-0.006538	-0.0199	0.0150	0.0120	5.377	0.02818	39.99
37P	0.0003351	0.02814	-0.007624	0.0039	0.0148	0.0255	5.375	5.278	39.99
38P	-0.001985	0.02896	-0.008199	-0.0522	0.0146	0.0105	5.373	10.53	39.99
39P	0.0008339	0.02404	-0.006626	-0.0112	0.0057	0.0117	6.334	0.02404	34.99
40P	-0.0002234	0.02363	-0.007757	-0.0144	0.0014	0.0121	6.333	5.274	34.99
41P	-0.00134	0.02321	-0.009926	-0.0396	-0.0030	0.0112	6.332	10.52	34.99
44P	-0.0004619	0.3117	0.03325	0.0000	0.0000	0.0000	-0.0004619	17.32	17.78
45P	-0.0007857	0.03029	-0.1341	0.0000	0.0000	0.0000	-0.0007857	10.53	39.87
10P	0.0001675	0.0447	-0.01775	-0.2059	0.0004	-0.0315	4.457	15.04	44.98
11P	-0.001541	0.02913	-0.01594	-0.1206	0.0134	-0.0128	5.413	15.03	39.98
12P	-0.001974	0.02252	-0.01406	-0.0591	-0.0070	0.0032	6.37	15.02	34.99
1X	0.02619	0.1935	0.003353	0.0000	0.0000	0.0000	0.02619	-13.81	94
2X	0.0235	0.163	0.003754	-0.0861	0.0151	0.0343	3.523	-14.84	85
2XY	0.0237	0.159	0.00637	-0.0888	0.0252	0.0370	-3.476	-14.84	85.01
2Y	0.007134	0.1594	-0.02178	-0.0960	0.0078	0.0309	-3.493	15.16	84.98
3X	0.02196	0.1551	0.004309	-0.1288	0.0231	0.0386	3.522	-14.84	80
3XY	0.02156	0.1509	0.006983	-0.1270	0.0235	0.0317	-3.478	-14.85	80.01
3Y	0.006222	0.1509	-0.02172	-0.1201	0.0163	0.0311	-3.494	15.15	79.98
4X	0.01953	0.1384	0.004939	-0.2265	0.0289	0.0354	3.52	-14.86	75

4XY	0.01957	0.1346	0.007619	-0.2207	0.0235	0.0325	-3.48	-14.87	75.01
4Y	0.004519	0.137	-0.0216	-0.2099	0.0172	0.0280	-3.495	15.14	74.98
5X	0.01732	0.1209	0.004575	-0.1368	0.0215	0.0321	3.517	-14.88	70
5XY	0.01736	0.1176	0.00724	-0.1347	0.0273	0.0332	-3.483	-14.88	70.01
5Y	0.003595	0.1182	-0.02035	-0.1629	0.0060	0.0249	-3.496	15.12	69.98
6X	0.01536	0.112	0.005167	-0.1903	0.0301	0.0218	3.515	-14.89	65.01
6XY	0.01502	0.1087	0.007755	-0.1818	0.0236	0.0292	-3.485	-14.89	65.01
6Y	0.002771	0.108	-0.01981	-0.1778	0.0198	0.0339	-3.497	15.11	64.98
7X	0.01273	0.09238	0.005539	-0.2489	0.0282	0.0129	3.513	-14.91	60.01
7XY	0.01295	0.08983	0.007994	-0.2433	0.0251	0.0346	-3.487	-14.91	60.01
7Y	0.001072	0.0899	-0.01951	-0.2361	0.0155	0.0364	-3.499	15.09	59.98
8X	0.01057	0.07275	0.005237	-0.1603	0.0229	0.0039	3.511	-14.93	55.01
8XY	0.01066	0.07031	0.007458	-0.1622	0.0261	0.0398	-3.489	-14.93	55.01
8Y	0.0003489	0.07028	-0.0183	-0.1702	0.0018	0.0390	-3.5	15.07	54.98
9X	0.008596	0.06227	0.005531	-0.1591	0.0237	-0.0148	3.509	-14.94	50.01
9XY	0.008617	0.05991	0.007398	-0.1488	0.0191	0.0487	-3.491	-14.94	50.01
9Y	-0.0001181	0.0594	-0.01757	-0.1418	0.0192	0.0522	-3.5	15.06	49.98
14X	0	0	0	0.0000	0.0000	0.0000	13.07	-19.07	0
14XY	0	0	0	0.0000	0.0000	0.0000	-13.07	-19.07	0
14Y	0	0	0	0.0000	0.0000	0.0000	-13.07	19.07	0
15X	0.02727	0.1558	0.01116	-0.0200	0.0232	0.0459	3.527	-21.84	80.01
15XY	0.0256	0.1516	0.01213	0.0001	0.0235	0.0338	-3.474	-21.85	80.01
15Y	0.002089	0.1508	-0.03847	-0.1456	0.0163	0.0351	-3.498	22.15	79.96
16X	0.02004	0.1128	0.01341	-0.0064	0.0302	0.0465	3.52	-21.89	65.01
16XY	0.01823	0.1095	0.01396	0.0144	0.0237	0.0248	-3.482	-21.89	65.01
16Y	-0.001479	0.1079	-0.03956	-0.1537	0.0198	0.0352	-3.501	22.11	64.96
17X	0.01255	0.06306	0.01625	-0.0523	0.0239	0.0558	3.513	-21.94	50.02
17XY	0.01068	0.06061	0.01634	-0.0355	0.0191	0.0011	-3.489	-21.94	50.02
17Y	-0.003987	0.05928	-0.03849	-0.1859	0.0191	0.0214	-3.504	22.06	49.96
18Y	0.01411	0.1566	-0.009581	-0.0166	0.0165	0.0354	-3.486	0.1566	84.99
19X	0.0175	0.1604	-0.0102	0.0071	0.0155	0.0407	3.517	-5.84	84.99
19XY	0.01755	0.1567	-0.008359	-0.0024	0.0200	0.0310	-3.482	-5.843	84.99
19Y	0.01072	0.1565	-0.01028	0.0139	0.0130	0.0233	-3.489	6.156	84.99
20X	0.02092	0.1618	-0.008126	-0.1134	0.0152	0.0385	3.521	-10.34	84.99
20XY	0.02024	0.158	-0.005434	-0.1177	0.0226	0.0416	-3.48	-10.34	84.99
20Y	0.009259	0.158	-0.01126	-0.0891	0.0104	0.0207	-3.491	10.66	84.99
21Y	0.01381	0.1527	-0.009557	-0.0086	0.0199	0.0333	-3.486	0.1527	79.99
22X	0.01739	0.1555	-0.0105	-0.0125	0.0190	0.0292	3.517	-5.845	79.99
22XY	0.01616	0.1516	-0.008859	-0.0210	0.0214	0.0330	-3.484	-5.848	79.99
22Y	0.009401	0.1518	-0.01078	0.0002	0.0185	0.0275	-3.491	6.152	79.99
23X	0.019	0.1545	-0.006789	-0.1060	0.0210	0.0266	3.519	-10.35	79.99
23XY	0.01945	0.1505	-0.004179	-0.1142	0.0224	0.0352	-3.481	-10.35	80
23Y	0.0083	0.1508	-0.01218	-0.0745	0.0174	0.0157	-3.492	10.65	79.99
24Y	0.008016	0.1143	-0.006747	0.0009	0.0167	0.0266	-3.492	0.1143	69.99
25X	0.01076	0.1174	-0.009993	0.0306	0.0214	0.0365	3.511	-5.883	69.99
25XY	0.01082	0.1144	-0.007652	0.0224	0.0210	0.0366	-3.489	-5.886	69.99
25Y	0.005291	0.1144	-0.005659	0.0312	0.0124	0.0155	-3.495	6.114	69.99
26X	0.01424	0.1196	-0.009237	-0.1124	0.0214	0.0454	3.514	-10.38	69.99
26XY	0.01429	0.1163	-0.006268	-0.1140	0.0241	0.0449	-3.486	-10.38	69.99
26Y	0.004722	0.1167	-0.006162	-0.1071	0.0091	0.0061	-3.495	10.62	69.99
27Y	0.009397	0.1113	-0.006717	0.0120	0.0217	0.0272	-3.491	0.1113	64.99
28X	0.01227	0.113	-0.0103	0.0078	0.0226	0.0200	3.512	-5.887	64.99
28XY	0.01103	0.1099	-0.008169	0.0009	0.0225	0.0259	-3.489	-5.89	64.99
28Y	0.005504	0.1096	-0.006133	0.0095	0.0209	0.0236	-3.494	6.11	64.99
29X	0.01312	0.1116	-0.007741	-0.1020	0.0264	0.0190	3.513	-10.39	64.99
29XY	0.01366	0.1085	-0.004892	-0.1068	0.0230	0.0243	-3.486	-10.39	65
29Y	0.004696	0.108	-0.007647	-0.0885	0.0204	0.0118	-3.495	10.61	64.99
30Y	0.002773	0.06616	-0.006287	0.0051	0.0139	0.0192	-3.497	0.06616	54.99
31X	0.004822	0.06846	-0.009558	0.0418	0.0227	0.0297	3.505	-5.932	54.99

31XY	0.004857	0.06629	-0.007732	0.0332	0.0188	0.0322	-3.495	-5.934	54.99
31Y	0.0007401	0.06603	-0.004358	0.0433	0.0089	0.0089	-3.499	6.066	55
32X	0.007985	0.07112	-0.009599	-0.1115	0.0229	0.0463	3.508	-10.43	54.99
32XY	0.007991	0.06879	-0.007156	-0.1127	0.0224	0.0373	-3.492	-10.43	54.99
32Y	0.0009037	0.06866	-0.003985	-0.1012	0.0053	-0.0081	-3.499	10.57	55
33Y	0.004567	0.06323	-0.006256	0.0165	0.0190	0.0233	-3.495	0.06323	49.99
34X	0.006602	0.0637	-0.009878	0.0184	0.0168	0.0175	3.507	-5.936	49.99
34XY	0.005553	0.06143	-0.008268	0.0104	0.0190	0.0157	-3.494	-5.939	49.99
34Y	0.001284	0.06129	-0.00482	0.0226	0.0190	0.0136	-3.499	6.061	50
35X	0.007452	0.06215	-0.007779	-0.1118	0.0204	0.0182	3.507	-10.44	49.99
35XY	0.007242	0.05986	-0.005428	-0.1148	0.0189	0.0132	-3.493	-10.44	49.99
35Y	0.001513	0.05958	-0.005612	-0.0918	0.0190	-0.0029	-3.498	10.56	49.99
36Y	0.001553	0.02614	-0.00454	-0.0225	0.0098	0.0153	-5.373	0.02614	40
37X	0.002789	0.0282	-0.00514	-0.0047	0.0152	0.0069	5.378	-5.222	39.99
37XY	0.003105	0.02617	-0.002915	-0.0064	0.0121	0.0200	-5.372	-5.224	40
37Y	0.0005786	0.02612	-0.005898	-0.0003	0.0076	0.0014	-5.374	5.276	39.99
38X	0.003494	0.02901	-0.003515	-0.0623	0.0154	0.0148	5.378	-10.47	40
38XY	0.004778	0.02692	-0.001253	-0.0612	0.0144	0.0099	-5.37	-10.47	40
38Y	0.0004872	0.02688	-0.006818	-0.0528	0.0053	0.0147	-5.375	10.53	39.99
39Y	0.0009356	0.02161	-0.00433	-0.0147	0.0065	0.0120	-6.332	0.02161	35
40X	0.001956	0.02332	-0.005366	-0.0193	0.0101	0.0125	6.335	-5.227	34.99
40XY	0.001976	0.021	-0.002758	-0.0224	0.0060	0.0111	-6.331	-5.229	35
40Y	-0.0001942	0.0212	-0.005776	-0.0177	0.0070	0.0122	-6.333	5.271	34.99
41X	0.002958	0.0226	-0.00211	-0.0601	0.0144	0.0077	6.336	-10.48	35
41XY	0.003103	0.02039	0.0005681	-0.0563	0.0054	0.0148	-6.33	-10.48	35
41Y	-0.00135	0.02079	-0.008198	-0.0414	0.0075	0.0142	-6.334	10.52	34.99
44X	0.001114	0.1935	-0.02004	0.0000	0.0000	0.0000	0.001114	-16.81	17.73
45X	0.004137	0.02644	-0.1039	0.0000	0.0000	0.0000	0.004137	-10.47	39.9
10X	0.006449	0.0431	0.005537	-0.2124	0.0208	-0.0123	4.463	-14.96	45.01
10XY	0.007095	0.04155	0.007606	-0.2041	0.0195	0.0410	-4.45	-14.96	45.01
10Y	-0.002227	0.04242	-0.01632	-0.1975	0.0139	0.0575	-4.459	15.04	44.98
11X	0.005053	0.02911	0.004553	-0.1185	0.0165	0.0183	5.42	-14.97	40
11XY	0.005121	0.02704	0.006741	-0.1185	0.0154	0.0064	-5.41	-14.97	40.01
11Y	-0.00187	0.02702	-0.01435	-0.1170	0.0043	0.0367	-5.417	15.03	39.99
12X	0.003609	0.02164	0.003701	-0.0735	0.0187	0.0133	6.376	-14.98	35
12XY	0.004157	0.0196	0.005857	-0.0665	0.0046	0.0075	-6.368	-14.98	35.01
12Y	-0.002608	0.02014	-0.01235	-0.0575	0.0082	0.0175	-6.375	15.02	34.99
13S	-0.0004375	0.008809	-0.01019	-0.0560	-0.0127	-0.0017	8.541	16.33	23.66
42S	0.0001894	0.009391	-0.001773	-0.0079	0.0004	0.0012	8.541	0.009391	23.67
43S	-0.001697	0.02895	-0.01513	-0.1188	0.0082	0.0108	-0.001697	15.03	39.98
46S	0.001417	0.009347	-0.2063	0.0000	0.0000	0.0000	0.001417	-8.15	23.46
47S	0.000218	0.008425	-0.1824	0.0000	0.0000	0.0000	0.000218	8.168	23.49
13X	0.000701	0.01044	0.002448	-0.0456	0.0135	0.0087	8.542	-16.31	23.67
13XY	0.003181	0.008896	0.00424	-0.0390	0.0038	0.0041	-8.538	-16.31	23.67
13Y	-3.402e-005	0.007333	-0.009484	-0.0474	-0.0107	0.0109	-8.541	16.33	23.66
42Y	0.001447	0.007632	-0.001383	-0.0145	-0.0035	0.0047	-8.54	0.007632	23.67
43X	0.005091	0.0276	0.005852	-0.1185	0.0094	0.0103	0.005091	-14.97	40.01

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Comp. Force (kips)	Z Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X X-M. Moment (ft-k)	X Usage %	Y Y-M. Moment (ft-k)	Y Usage %	H-Bend-M Usage (ft-k)	Z Z-M. Moment (ft-k)	Z Usage %	Max. Usage %
14P	-24.53	0.0	-35.62	0.0	0.0	-129.31	0.0	0.0	136.35	0.0	-0.01	0.0	0.1	0.0	0.0	-0.05	0.0	0.0
14X	11.36	0.0	-19.22	0.0	0.0	51.10	0.0	0.0	55.76	0.0	0.41	0.0	0.0	0.0	0.0	-0.03	0.0	0.0
14XY	-16.01	0.0	-19.98	0.0	0.0	71.09	0.0	0.0	75.56	0.0	0.28	0.0	-0.2	0.0	0.0	-0.02	0.0	0.0
14Y	22.31	0.0	-29.39	0.0	0.0	-116.16	0.0	0.0	121.88	0.0	-0.07	0.0	-0.3	0.0	0.0	-0.04	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0072	4.0562	-1.4278	-0.0072	-4.0562	1.4278	0.0092	0.1893	-0.0214
2P	-1.6790	2.6980	-2.4007	1.6790	-2.6980	2.4007	0.0072	0.1629	-0.0232
3P	0.0000	0.1370	-0.9456	-0.0000	-0.1370	0.9456	0.0060	0.1543	-0.0232
4P	0.0000	0.0000	-0.2170	0.0000	-0.0000	0.2170	0.0054	0.1402	-0.0231
5P	0.0000	0.1370	-0.9209	-0.0000	-0.1370	0.9209	0.0040	0.1212	-0.0218
6P	0.0000	0.0000	-0.3439	-0.0000	-0.0000	0.3439	0.0026	0.1112	-0.0212
7P	0.9670	-1.3980	-4.9175	-0.9670	1.3980	4.9175	0.0022	0.0928	-0.0209
8P	0.0000	0.0000	-0.3936	-0.0000	-0.0000	0.3936	0.0009	0.0726	-0.0196
9P	0.0000	0.1370	-1.1204	0.0000	-0.1370	1.1204	-0.0006	0.0618	-0.0188
14P	0.0000	0.0000	-1.0434	24.5271	35.6206	-128.2656	0.0000	0.0000	0.0000
15P	10.5343	3.2218	-1.2423	-10.5343	-3.2218	1.2423	0.0037	0.1543	-0.0380
16P	10.4530	3.1996	-1.2523	-10.4530	-3.1996	1.2523	0.0001	0.1112	-0.0386
17P	10.6172	3.2456	-1.2383	-10.6172	-3.2456	1.2383	-0.0023	0.0619	-0.0374
18P	0.0000	0.0000	-0.0917	-0.0000	-0.0000	0.0917	0.0141	0.1602	-0.0110
19P	0.0000	0.0000	-0.1262	-0.0000	-0.0000	0.1262	0.0107	0.1601	-0.0113
20P	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	0.0087	0.1616	-0.0127
21P	0.0000	0.0000	-0.1504	-0.0000	-0.0000	0.1504	0.0133	0.1565	-0.0110
22P	11.0119	3.3191	-1.2501	-11.0119	-3.3191	1.2501	0.0115	0.1554	-0.0116
23P	0.0000	0.0000	-0.1874	0.0000	-0.0000	0.1874	0.0082	0.1542	-0.0135
24P	0.0000	0.0000	-0.1077	-0.0000	-0.0000	0.1077	0.0080	0.1174	-0.0087
25P	0.0000	0.0000	-0.1666	-0.0000	-0.0000	0.1666	0.0052	0.1174	-0.0071
26P	0.0000	0.0000	-0.1304	0.0000	-0.0000	0.1304	0.0047	0.1197	-0.0075
27P	0.0000	0.0000	-0.1971	0.0000	-0.0000	0.1971	0.0089	0.1145	-0.0086
28P	11.5742	3.4571	-1.2570	-11.5742	-3.4571	1.2570	0.0079	0.1127	-0.0074
29P	0.0000	0.0000	-0.2239	0.0000	-0.0000	0.2239	0.0047	0.1111	-0.0090
30P	0.0000	0.0000	-0.1228	0.0000	-0.0000	0.1228	0.0027	0.0684	-0.0076
31P	0.0000	0.0000	-0.1964	0.0000	-0.0000	0.1964	0.0007	0.0682	-0.0053
32P	0.0000	0.0000	-0.1495	0.0000	-0.0000	0.1495	0.0008	0.0710	-0.0048
33P	0.0000	0.0000	-0.2368	0.0000	-0.0000	0.2368	0.0041	0.0656	-0.0076
34P	11.7808	3.5036	-1.2469	-11.7808	-3.5036	1.2469	0.0039	0.0635	-0.0055
35P	0.0000	0.0000	-0.2790	0.0000	-0.0000	0.2790	0.0007	0.0618	-0.0065
36P	0.0000	0.0000	-0.3349	0.0000	-0.0000	0.3349	0.0018	0.0282	-0.0065
37P	0.0000	0.0000	-0.3616	0.0000	-0.0000	0.3616	0.0003	0.0281	-0.0076
38P	0.0000	0.0000	-0.4381	0.0000	0.0000	0.4381	-0.0020	0.0290	-0.0082
39P	0.0000	0.0000	-0.3850	0.0000	-0.0000	0.3850	0.0008	0.0240	-0.0066
40P	0.0000	0.0000	-0.1962	0.0000	-0.0000	0.1962	-0.0002	0.0236	-0.0078
41P	0.0000	0.0000	-0.4307	0.0000	-0.0000	0.4307	-0.0013	0.0232	-0.0099
44P	0.0000	0.0000	-0.1966	-0.0000	-0.0000	0.1966	-0.0005	0.3117	0.0333
45P	0.0000	0.0000	-0.0848	0.0000	-0.0000	0.0848	-0.0008	0.0303	-0.1341
10P	0.0000	0.0000	-0.3664	0.0000	0.0000	0.3664	0.0002	0.0447	-0.0178
11P	0.0000	0.1820	-1.3424	-0.0000	-0.1820	1.3424	-0.0015	0.0291	-0.0159
12P	0.0000	0.0000	-0.8067	0.0000	0.0000	0.8067	-0.0020	0.0225	-0.0141
1X	0.0077	5.1622	-1.8534	-0.0077	-5.1622	1.8534	0.0262	0.1935	0.0034
2X	0.5010	0.9078	-3.1198	-0.5010	-0.9078	3.1198	0.0235	0.1630	0.0038
2XY	-0.5010	0.9078	-3.0997	0.5010	-0.9078	3.0997	0.0237	0.1590	0.0064
2Y	1.6790	2.6980	-2.4208	-1.6790	-2.6980	2.4208	0.0071	0.1594	-0.0218
3X	0.0000	0.2219	-0.6016	-0.0000	-0.2219	0.6016	0.0220	0.1551	0.0043
3XY	0.0000	0.2219	-0.6016	-0.0000	-0.2219	0.6016	0.0216	0.1509	0.0070
3Y	0.0000	0.1370	-0.6016	-0.0000	-0.1370	0.6016	0.0062	0.1509	-0.0217
4X	0.0000	0.1240	-0.2170	0.0000	-0.1240	0.2170	0.0195	0.1384	0.0049
4XY	0.0000	0.1240	-0.2170	0.0000	-0.1240	0.2170	0.0196	0.1346	0.0076
4Y	0.0000	0.0000	-0.2170	0.0000	-0.0000	0.2170	0.0045	0.1370	-0.0216



5X	0.0000	0.2597	-0.5970	-0.0000	-0.2597	0.5970	0.0173	0.1209	0.0046
5XY	0.0000	0.2597	-0.5769	-0.0000	-0.2597	0.5769	0.0174	0.1176	0.0072
5Y	0.0000	0.1370	-0.5970	-0.0000	-0.1370	0.5970	0.0036	0.1182	-0.0203
6X	0.0000	0.1164	-0.3439	-0.0000	-0.1164	0.3439	0.0154	0.1120	0.0052
6XY	0.0000	0.1164	-0.3439	-0.0000	-0.1164	0.3439	0.0150	0.1087	0.0078
6Y	0.0000	0.0000	-0.3439	-0.0000	-0.0000	0.3439	0.0028	0.1080	-0.0198
7X	0.0330	0.3765	-2.7995	-0.0330	-0.3765	2.7995	0.0127	0.0924	0.0055
7XY	-0.0330	0.3765	-2.7995	0.0330	-0.3765	2.7995	0.0129	0.0898	0.0080
7Y	-0.9670	-1.3980	-4.5735	0.9670	1.3980	4.5735	0.0011	0.0899	-0.0195
8X	0.0000	0.1542	-0.4138	-0.0000	-0.1542	0.4138	0.0106	0.0727	0.0052
8XY	0.0000	0.1542	-0.3936	-0.0000	-0.1542	0.3936	0.0107	0.0703	0.0075
8Y	0.0000	0.0000	-0.4138	-0.0000	-0.0000	0.4138	0.0003	0.0703	-0.0183
9X	0.0000	0.2570	-0.7764	0.0000	-0.2570	0.7764	0.0086	0.0623	0.0055
9XY	0.0000	0.2570	-0.7764	0.0000	-0.2570	0.7764	0.0086	0.0599	0.0074
9Y	0.0000	0.1370	-0.7764	-0.0000	-0.1370	0.7764	-0.0001	0.0594	-0.0176
14X	0.0000	0.3452	-1.0434	-11.3554	18.8778	52.1414	0.0000	0.0000	0.0000
14XY	0.0000	0.3452	-1.0434	16.0126	19.6336	72.1298	0.0000	0.0000	0.0000
14Y	0.0000	0.0000	-1.0434	-22.3149	29.3920	-115.1205	0.0000	0.0000	0.0000
15X	11.0320	3.3614	-1.1966	-11.0320	-3.3614	1.1966	0.0273	0.1558	0.0112
15XY	-9.6911	3.0891	-2.0411	9.6911	-3.0891	2.0411	0.0256	0.1516	0.0121
15Y	-9.9014	3.1064	-2.0382	9.9014	-3.1064	2.0382	0.0021	0.1508	-0.0385
16X	12.0717	3.6045	-1.1604	-12.0717	-3.6045	1.1604	0.0200	0.1128	0.0134
16XY	-10.3779	3.2523	-2.0654	10.3779	-3.2523	2.0654	0.0182	0.1095	0.0140
16Y	-10.6214	3.2644	-2.0524	10.6214	-3.2644	2.0524	-0.0015	0.1079	-0.0396
17X	12.2889	3.6526	-1.1532	-12.2889	-3.6526	1.1532	0.0126	0.0631	0.0162
17XY	-10.6180	3.3073	-2.0738	10.6180	-3.3073	2.0738	0.0107	0.0606	0.0163
17Y	-11.4913	3.4742	-2.0976	11.4913	-3.4742	2.0976	-0.0040	0.0593	-0.0385
18Y	0.0000	0.0000	-0.0917	-0.0000	-0.0000	0.0917	0.0141	0.1566	-0.0096
19X	0.0000	0.0000	-0.1283	-0.0000	-0.0000	0.1283	0.0175	0.1604	-0.0102
19XY	0.0000	0.0000	-0.1262	-0.0000	-0.0000	0.1262	0.0176	0.1567	-0.0084
19Y	0.0000	0.0000	-0.1283	-0.0000	-0.0000	0.1283	0.0107	0.1565	-0.0103
20X	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	0.0209	0.1618	-0.0081
20XY	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	0.0202	0.1580	-0.0054
20Y	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	0.0093	0.1580	-0.0113
21Y	0.0000	0.0000	-0.1504	-0.0000	-0.0000	0.1504	0.0138	0.1527	-0.0096
22X	10.3777	3.1738	-1.2274	-10.3777	-3.1738	1.2274	0.0174	0.1555	-0.0105
22XY	-10.0800	3.1401	-2.0685	10.0800	-3.1401	2.0685	0.0162	0.1516	-0.0089
22Y	-11.0658	3.3685	-2.1054	11.0658	-3.3685	2.1054	0.0094	0.1518	-0.0108
23X	0.0000	0.0000	-0.1874	-0.0000	-0.0000	0.1874	0.0190	0.1545	-0.0068
23XY	0.0000	0.0000	-0.1874	-0.0000	-0.0000	0.1874	0.0194	0.1505	-0.0042
23Y	0.0000	0.0000	-0.1874	0.0000	-0.0000	0.1874	0.0083	0.1508	-0.0122
24Y	0.0000	0.0000	-0.1077	-0.0000	-0.0000	0.1077	0.0080	0.1143	-0.0067
25X	0.0000	0.0000	-0.1688	0.0000	-0.0000	0.1688	0.0108	0.1174	-0.0100
25XY	0.0000	0.0000	-0.1666	0.0000	-0.0000	0.1666	0.0108	0.1144	-0.0077
25Y	0.0000	0.0000	-0.1688	-0.0000	-0.0000	0.1688	0.0053	0.1144	-0.0057
26X	0.0000	0.0000	-0.1304	-0.0000	-0.0000	0.1304	0.0142	0.1196	-0.0092
26XY	0.0000	0.0000	-0.1304	-0.0000	-0.0000	0.1304	0.0143	0.1163	-0.0063
26Y	0.0000	0.0000	-0.1304	0.0000	-0.0000	0.1304	0.0047	0.1167	-0.0062
27Y	0.0000	0.0000	-0.1971	0.0000	-0.0000	0.1971	0.0094	0.1113	-0.0067
28X	11.5683	3.4519	-1.1985	-11.5683	-3.4519	1.1985	0.0123	0.1130	-0.0103
28XY	-10.8006	3.3127	-2.1113	10.8006	-3.3127	2.1113	0.0110	0.1099	-0.0082
28Y	-11.0800	3.3757	-2.1103	11.0800	-3.3757	2.1103	0.0055	0.1096	-0.0061
29X	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	0.0131	0.1116	-0.0077
29XY	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	0.0137	0.1085	-0.0049
29Y	0.0000	0.0000	-0.2239	0.0000	-0.0000	0.2239	0.0047	0.1080	-0.0076
30Y	0.0000	0.0000	-0.1228	0.0000	-0.0000	0.1228	0.0028	0.0662	-0.0063
31X	0.0000	0.0000	-0.1985	0.0000	-0.0000	0.1985	0.0048	0.0685	-0.0096
31XY	0.0000	0.0000	-0.1964	0.0000	-0.0000	0.1964	0.0049	0.0663	-0.0077
31Y	0.0000	0.0000	-0.1985	0.0000	-0.0000	0.1985	0.0007	0.0660	-0.0044

32X	0.0000	0.0000	-0.1495	-0.0000	-0.0000	0.1495	0.0080	0.0711	-0.0096
32XY	0.0000	0.0000	-0.1495	0.0000	-0.0000	0.1495	0.0080	0.0688	-0.0072
32Y	0.0000	0.0000	-0.1495	0.0000	-0.0000	0.1495	0.0009	0.0687	-0.0040
33Y	0.0000	0.0000	-0.2368	0.0000	-0.0000	0.2368	0.0046	0.0632	-0.0063
34X	11.6313	3.4706	-1.2111	-11.6313	-3.4706	1.2111	0.0066	0.0637	-0.0099
34XY	-11.2651	3.4216	-2.1438	11.2651	-3.4216	2.1438	0.0056	0.0614	-0.0083
34Y	-11.0943	3.3849	-2.1319	11.0943	-3.3849	2.1319	0.0013	0.0613	-0.0048
35X	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	0.0075	0.0621	-0.0078
35XY	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	0.0072	0.0599	-0.0054
35Y	0.0000	0.0000	-0.2790	0.0000	-0.0000	0.2790	0.0015	0.0596	-0.0056
36Y	0.0000	0.0000	-0.3349	0.0000	-0.0000	0.3349	0.0016	0.0261	-0.0045
37X	0.0000	0.0000	-0.3616	0.0000	0.0000	0.3616	0.0028	0.0282	-0.0051
37XY	0.0000	0.0000	-0.3616	0.0000	0.0000	0.3616	0.0031	0.0262	-0.0029
37Y	0.0000	0.0000	-0.3616	0.0000	-0.0000	0.3616	0.0006	0.0261	-0.0059
38X	0.0000	0.1018	-0.4381	0.0000	-0.1018	0.4381	0.0035	0.0290	-0.0035
38XY	0.0000	0.1018	-0.4381	-0.0000	-0.1018	0.4381	0.0048	0.0269	-0.0013
38Y	0.0000	0.0000	-0.4381	-0.0000	0.0000	0.4381	0.0005	0.0269	-0.0068
39Y	0.0000	0.0000	-0.3850	0.0000	-0.0000	0.3850	0.0009	0.0216	-0.0043
40X	0.0000	0.0000	-0.1962	0.0000	-0.0000	0.1962	0.0020	0.0233	-0.0054
40XY	0.0000	0.0000	-0.1962	0.0000	-0.0000	0.1962	0.0020	0.0210	-0.0028
40Y	0.0000	0.0000	-0.1962	0.0000	-0.0000	0.1962	-0.0002	0.0212	-0.0058
41X	0.0000	0.0746	-0.4307	0.0000	-0.0746	0.4307	0.0030	0.0226	-0.0021
41XY	0.0000	0.0746	-0.4307	0.0000	-0.0746	0.4307	0.0031	0.0204	0.0006
41Y	0.0000	0.0000	-0.4307	0.0000	-0.0000	0.4307	-0.0013	0.0208	-0.0082
44X	0.0000	0.2595	-0.1966	0.0000	-0.2595	0.1966	0.0011	0.1935	-0.0200
45X	0.0000	0.0000	-0.0848	0.0000	-0.0000	0.0848	0.0041	0.0264	-0.1039
10X	0.0000	0.1938	-0.3664	0.0000	-0.1938	0.3664	0.0064	0.0431	0.0055
10XY	0.0000	0.1938	-0.3664	0.0000	-0.1938	0.3664	0.0071	0.0415	0.0076
10Y	0.0000	0.0000	-0.3664	0.0000	0.0000	0.3664	-0.0022	0.0424	-0.0163
11X	0.0000	0.3633	-0.8864	-0.0000	-0.3633	0.8864	0.0051	0.0291	0.0046
11XY	0.0000	0.3633	-0.8864	-0.0000	-0.3633	0.8864	0.0051	0.0270	0.0067
11Y	0.0000	0.1820	-0.8864	0.0000	-0.1820	0.8864	-0.0019	0.0270	-0.0143
12X	0.0000	0.3792	-0.8067	-0.0000	-0.3792	0.8067	0.0036	0.0216	0.0037
12XY	0.0000	0.3792	-0.8067	0.0000	-0.3792	0.8067	0.0042	0.0196	0.0059
12Y	0.0000	0.0000	-0.8067	-0.0000	0.0000	0.8067	-0.0026	0.0201	-0.0123
13S	0.0000	0.4360	-3.1544	-0.0000	-0.4360	3.1544	-0.0004	0.0088	-0.0102
42S	0.0000	0.0000	-1.4613	-0.0000	0.0000	1.4613	0.0002	0.0094	-0.0018
43S	0.0000	0.0000	-0.1790	0.0000	-0.0000	0.1790	-0.0017	0.0289	-0.0151
46S	0.0000	0.0000	-0.0908	0.0000	0.0000	0.0908	0.0014	0.0093	-0.2063
47S	0.0000	0.0000	-0.0908	0.0000	0.0000	0.0908	0.0002	0.0084	-0.1824
13X	0.0000	0.9998	-2.0614	-0.0000	-0.9998	2.0614	0.0007	0.0104	0.0024
13XY	0.0000	0.9998	-2.0614	-0.0000	-0.9998	2.0614	0.0032	0.0089	0.0042
13Y	0.0000	0.4360	-2.0614	0.0000	-0.4360	2.0614	-0.0000	0.0073	-0.0095
42Y	0.0000	0.0000	-1.4613	0.0000	0.0000	1.4613	0.0014	0.0076	-0.0014
43X	0.0000	0.1689	-0.1790	0.0000	-0.1689	0.1790	0.0051	0.0276	0.0059

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-----						-----Alternate-----							
					-----Supported-----						-----Unsupported-----							
					L/R	RLX	RLY	RLZ	L/R	KL/R	Curve	No.	L/R	RLOUT	L/R	KL/R	Curve	No.
15P	15Y	Short only	-0.14	-0.37	12.29	0.750	0.500	0.500	131.00	128.42		5	9.14	1.000	167.31	149.09		6
15X	15XY	Short only	-0.69	-0.52	12.29	0.750	0.500	0.500	131.00	128.42		5	9.14	1.000	167.31	149.09		6
15XY	15X	Short only	-0.52	-0.69	12.29	0.750	0.500	0.500	131.00	128.42		5	9.14	1.000	167.31	149.09		6
15Y	15P	Short only	-0.37	-0.14	12.29	0.750	0.500	0.500	131.00	128.42		5	9.14	1.000	167.31	149.09		6
16XY	16X	Short only	-1.80	0.18	25.86	0.750	0.500	0.500	105.12	108.84		2	20.50	1.000	134.24	128.76		6

17P	17Y Short only	-0.42	-1.19	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
17Y	17P Short only	-1.19	-0.42	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18P	18Y Short only	-0.43	-1.38	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18XY	18X Short only	-1.69	0.15	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18Y	18P Short only	-1.38	-0.43	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
21P	21Y Short only	-1.96	-2.70	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3
21Y	21P Short only	-2.70	-1.96	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	4.300	50.00	50.00	8.60
C2	5.485	50.00	50.00	10.97
C3	11.086	50.00	50.00	22.17
C4	11.595	50.00	50.00	23.19
C5	10.374	50.00	50.00	20.75
C6	10.576	50.00	50.00	21.15
C7	11.003	50.00	50.00	22.01
C8	12.652	50.00	50.00	25.30
C9	11.070	50.00	50.00	22.14
C10	11.300	50.00	50.00	22.60
C11	11.171	50.00	50.00	22.34
C12	12.872	50.00	50.00	25.74
C13	11.313	50.00	50.00	22.63
C14	12.187	50.00	50.00	24.37
C15	11.569	50.00	50.00	23.14
C16	10.921	50.00	50.00	21.84
C17	10.759	50.00	50.00	21.52
C18	11.757	50.00	50.00	23.51
C19	12.145	50.00	50.00	24.29
C20	12.132	50.00	50.00	24.26
C21	11.493	50.00	50.00	22.99
C22	11.773	50.00	50.00	23.55
C23	12.354	50.00	50.00	24.71
C24	12.198	50.00	50.00	24.40
C25	11.967	50.00	50.00	23.93
C26	11.793	50.00	50.00	23.59
C27	0.641	50.00	50.00	1.28
C28	0.633	50.00	50.00	1.27
C29	2.825	50.00	50.00	5.65
C30	0.818	50.00	50.00	1.64
C31	0.958	50.00	50.00	1.92
C32	2.291	50.00	50.00	4.58
C34	0.617	50.00	50.00	1.23
C35	0.613	50.00	50.00	1.23
C36	4.879	50.00	50.00	9.76
C37	0.788	50.00	50.00	1.58
C38	0.905	50.00	50.00	1.81
C39	2.107	50.00	50.00	4.21
C41	0.641	50.00	50.00	1.28
C42	0.955	50.00	50.00	1.91
C43	2.825	50.00	50.00	5.65
C44	5.203	50.00	50.00	10.41

C45	3.288	50.00	50.00	6.58
C46	3.269	50.00	50.00	6.54
C47	3.995	50.00	50.00	7.99
C48	3.983	50.00	50.00	7.97
C49	0.651	50.00	50.00	1.30
C50	0.931	50.00	50.00	1.86
C51	0.818	50.00	50.00	1.64
C52	1.129	50.00	50.00	2.26
C53	0.958	50.00	50.00	1.92
C54	1.355	50.00	50.00	2.71
C55	2.291	50.00	50.00	4.58
C56	3.184	50.00	50.00	6.37

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	0.0006161	0.2065	-0.0174	0.0000	0.0000	0.0000	0.0006161	14.21	93.98
2P	4.882e-005	0.1808	-0.01946	-0.1141	-0.0036	0.0130	3.5	15.18	84.98
3P	0.0003896	0.1703	-0.01983	-0.1504	-0.0040	0.0098	3.5	15.17	79.98
4P	0.0007221	0.1523	-0.02011	-0.2635	-0.0024	0.0041	3.501	15.15	74.98
5P	0.0005719	0.1298	-0.0189	-0.1869	0.0086	-0.0017	3.501	15.13	69.98
6P	8.655e-005	0.1182	-0.01865	-0.2176	-0.0099	-0.0049	3.5	15.12	64.98
7P	0.0009049	0.09646	-0.01846	-0.2662	-0.0022	-0.0140	3.501	15.1	59.98
8P	0.000328	0.07571	-0.01727	-0.1735	0.0113	-0.0231	3.5	15.08	54.98
9P	-0.0001203	0.06458	-0.01664	-0.1485	-0.0079	-0.0384	3.5	15.06	49.98
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	-0.0007317	0.1705	-0.03495	-0.1106	-0.0040	0.0089	3.499	22.17	79.97
16P	-0.0009505	0.1183	-0.03615	-0.1062	-0.0098	0.0152	3.499	22.12	64.96
17P	-0.0007653	0.06474	-0.03368	-0.1349	-0.0078	0.0270	3.499	22.06	49.97
18P	0.003139	0.177	-0.005425	-0.0041	0.0010	0.0164	3.503	0.177	84.99
19P	0.001416	0.177	-0.005263	0.0087	-0.0008	0.0083	3.501	6.177	84.99
20P	0.001105	0.1789	-0.007478	-0.1091	-0.0022	0.0078	3.501	10.68	84.99
21P	0.004141	0.1727	-0.005394	0.0014	0.0028	0.0122	3.504	0.1727	79.99
22P	0.003451	0.1714	-0.005355	0.0011	0.0001	0.0149	3.503	6.171	79.99
23P	0.00163	0.1701	-0.007876	-0.1008	-0.0019	0.0231	3.502	10.67	79.99
24P	0.0006645	0.1253	-0.003937	0.0085	0.0062	0.0128	3.501	0.1253	70
25P	-0.0006584	0.1253	-0.001728	0.0447	0.0071	0.0006	3.499	6.125	70
26P	8.322e-005	0.1282	-0.002018	-0.1281	0.0078	-0.0115	3.5	10.63	70
27P	0.003264	0.122	-0.003906	0.0232	0.0033	0.0077	3.503	0.122	65
28P	0.003014	0.12	-0.001799	0.0156	-0.0019	0.0108	3.503	6.12	65
29P	0.001325	0.1181	-0.003961	-0.1104	-0.0058	0.0264	3.501	10.62	65
30P	-0.000526	0.07154	-0.004074	0.0035	0.0075	0.0093	3.499	0.07154	55
31P	-0.001423	0.07143	-0.002211	0.0423	0.0090	-0.0044	3.499	6.071	55
32P	-0.0004388	0.07411	-0.002172	-0.1108	0.0102	-0.0099	3.5	10.57	55
33P	0.00192	0.06829	-0.004044	0.0158	0.0032	0.0007	3.502	0.06829	50
34P	0.002164	0.06628	-0.00227	0.0192	-0.0011	0.0103	3.502	6.066	50
35P	0.0003154	0.0646	-0.00391	-0.1048	-0.0044	0.0287	3.5	10.56	50
36P	0.001593	0.03003	-0.003383	-0.0231	0.0024	0.0031	5.377	0.03003	40
37P	0.0005177	0.03001	-0.004886	-0.0030	0.0021	0.0295	5.376	5.28	40
38P	-0.002136	0.03085	-0.006112	-0.0562	0.0017	-0.0006	5.373	10.53	39.99
39P	0.0009995	0.02548	-0.00342	-0.0143	0.0045	0.0037	6.334	0.02548	35
40P	0.000644	0.02501	-0.004907	-0.0183	0.0007	0.0047	6.334	5.275	35
41P	0.0002667	0.02454	-0.00746	-0.0451	-0.0031	0.0015	6.333	10.52	34.99
44P	-0.000164	0.3501	0.03855	0.0000	0.0000	0.0000	-0.000164	17.36	17.79
45P	0.0003758	0.03549	-0.1905	0.0000	0.0000	0.0000	0.0003758	10.54	39.81
10P	0.001015	0.04678	-0.0157	-0.2064	-0.0059	-0.0537	4.458	15.05	44.98
11P	0.0002931	0.03101	-0.01388	-0.1196	0.0005	-0.0412	5.415	15.03	39.99
12P	0.0006248	0.02377	-0.01204	-0.0633	-0.0067	-0.0132	6.373	15.02	34.99
1X	0.009514	0.211	0.008391	0.0000	0.0000	0.0000	0.009514	-13.79	94.01
2X	0.009271	0.1806	0.01021	-0.1097	0.0055	0.0206	3.509	-14.82	85.01
2XY	0.008801	0.1785	0.01097	-0.1098	0.0056	0.0186	-3.491	-14.82	85.01
2Y	0.001072	0.179	-0.01948	-0.1145	0.0044	0.0120	-3.499	15.18	84.98
3X	0.008682	0.1704	0.01077	-0.1555	0.0094	0.0213	3.509	-14.83	80.01
3XY	0.008346	0.1683	0.01158	-0.1538	0.0049	0.0161	-3.492	-14.83	80.01
3Y	0.0006469	0.1686	-0.0198	-0.1510	0.0055	0.0147	-3.499	15.17	79.98
4X	0.007677	0.1512	0.01135	-0.2674	0.0119	0.0200	3.508	-14.85	75.01

4XY	0.007916	0.1492	0.01219	-0.2647	0.0056	0.0190	-3.492	-14.85	75.01
4Y	0.0001757	0.1507	-0.02005	-0.2605	0.0044	0.0128	-3.5	15.15	74.98
5X	0.006939	0.1297	0.01057	-0.1734	0.0036	0.0188	3.507	-14.87	70.01
5XY	0.007176	0.128	0.01142	-0.1714	0.0128	0.0218	-3.493	-14.87	70.01
5Y	0.0001724	0.1284	-0.01885	-0.1873	-0.0062	0.0110	-3.5	15.13	69.98
6X	0.006483	0.1188	0.01075	-0.2135	0.0161	0.0100	3.506	-14.88	65.01
6XY	0.006163	0.1172	0.01162	-0.2099	0.0033	0.0171	-3.494	-14.88	65.01
6Y	0.0004393	0.1166	-0.01857	-0.2163	0.0118	0.0211	-3.5	15.12	64.98
7X	0.005093	0.09716	0.01089	-0.2687	0.0121	0.0039	3.505	-14.9	60.01
7XY	0.005845	0.09591	0.01172	-0.2656	0.0075	0.0217	-3.494	-14.9	60.01
7Y	-0.0005196	0.09516	-0.01838	-0.2619	0.0038	0.0263	-3.501	15.1	59.98
8X	0.004529	0.07609	0.01018	-0.1744	0.0034	-0.0021	3.505	-14.92	55.01
8XY	0.004774	0.07501	0.01093	-0.1739	0.0145	0.0262	-3.495	-14.92	55.01
8Y	-7.523e-005	0.07471	-0.0172	-0.1724	-0.0095	0.0315	-3.5	15.07	54.98
9X	0.003981	0.06478	0.01002	-0.1600	0.0138	-0.0161	3.504	-14.94	50.01
9XY	0.00384	0.0638	0.01065	-0.1550	0.0026	0.0324	-3.496	-14.94	50.01
9Y	0.0002281	0.06355	-0.01656	-0.1472	0.0090	0.0487	-3.5	15.06	49.98
14X	0	0	0	0.0000	0.0000	0.0000	13.07	-19.07	0
14XY	0	0	0	0.0000	0.0000	0.0000	-13.07	-19.07	0
14Y	0	0	0	0.0000	0.0000	0.0000	-13.07	19.07	0
15X	0.01133	0.1709	0.0229	-0.0713	0.0094	0.0218	3.511	-21.83	80.02
15XY	0.01036	0.1688	0.02221	-0.0538	0.0049	0.0166	-3.49	-21.83	80.02
15Y	-0.001633	0.1686	-0.03645	-0.1289	0.0055	0.0206	-3.502	22.17	79.96
16X	0.008689	0.1192	0.0244	-0.0611	0.0162	0.0220	3.509	-21.88	65.02
16XY	0.007674	0.1177	0.02364	-0.0430	0.0033	0.0100	-3.492	-21.88	65.02
16Y	-0.001863	0.1166	-0.03772	-0.1270	0.0118	0.0177	-3.502	22.12	64.96
17X	0.00567	0.06525	0.02449	-0.0978	0.0139	0.0287	3.506	-21.93	50.02
17XY	0.004657	0.06427	0.02366	-0.0824	0.0026	-0.0061	-3.495	-21.94	50.02
17Y	-0.001688	0.06356	-0.03522	-0.1555	0.0088	-0.0008	-3.502	22.06	49.96
18Y	0.00318	0.1751	-0.005365	-0.0068	0.0050	0.0179	-3.497	0.1751	84.99
19X	0.004889	0.177	-0.005299	0.0089	0.0029	0.0258	3.505	-5.823	84.99
19XY	0.00493	0.1751	-0.004987	0.0025	0.0053	0.0208	-3.495	-5.825	85
19Y	0.00146	0.1751	-0.005505	0.0098	0.0047	0.0071	-3.499	6.175	84.99
20X	0.007381	0.1789	-0.002908	-0.1228	0.0041	0.0302	3.507	-10.32	85
20XY	0.006915	0.1769	-0.002027	-0.1254	0.0054	0.0271	-3.493	-10.32	85
20Y	0.001458	0.1771	-0.00745	-0.1071	0.0045	-0.0011	-3.499	10.68	84.99
21Y	0.004478	0.1708	-0.005332	-0.0014	0.0052	0.0190	-3.496	0.1708	79.99
22X	0.006197	0.1713	-0.005406	-0.0052	0.0054	0.0149	3.506	-5.829	79.99
22XY	0.005739	0.1693	-0.005241	-0.0106	0.0051	0.0173	-3.494	-5.831	79.99
22Y	0.002001	0.1696	-0.005747	0.0015	0.0053	0.0139	-3.498	6.17	79.99
23X	0.007027	0.17	-0.001974	-0.1143	0.0074	0.0147	3.507	-10.33	80
23XY	0.007419	0.168	-0.001177	-0.1194	0.0050	0.0165	-3.493	-10.33	80
23Y	0.001597	0.1684	-0.007921	-0.0968	0.0054	0.0058	-3.498	10.67	79.99
24Y	0.0006994	0.1239	-0.003616	0.0060	0.0033	0.0130	-3.499	0.1239	70
25X	0.00204	0.1253	-0.005991	0.0439	0.0053	0.0256	3.502	-5.875	69.99
25XY	0.002077	0.1239	-0.005374	0.0387	0.0072	0.0252	-3.498	-5.876	69.99
25Y	-0.0006165	0.1239	-0.001722	0.0425	-0.0006	0.0000	-3.501	6.124	70
26X	0.004795	0.128	-0.005787	-0.1256	0.0044	0.0356	3.505	-10.37	69.99
26XY	0.00483	0.1264	-0.004763	-0.1270	0.0100	0.0369	-3.495	-10.37	70
26Y	0.0001363	0.1267	-0.002061	-0.1270	-0.0034	-0.0102	-3.5	10.63	70
27Y	0.00351	0.1205	-0.003583	0.0204	0.0075	0.0155	-3.496	0.1205	65
28X	0.004787	0.1202	-0.006109	0.0150	0.0084	0.0091	3.505	-5.88	64.99
28XY	0.004411	0.1187	-0.005643	0.0104	0.0058	0.0135	-3.496	-5.881	64.99
28Y	0.001343	0.1185	-0.001937	0.0140	0.0092	0.0122	-3.499	6.118	65
29X	0.005208	0.1186	-0.003809	-0.1113	0.0123	0.0114	3.505	-10.38	65
29XY	0.005692	0.117	-0.002851	-0.1148	0.0045	0.0091	-3.494	-10.38	65
29Y	0.001134	0.1166	-0.003985	-0.1083	0.0105	0.0003	-3.499	10.62	65
30Y	-0.0005127	0.07063	-0.003873	0.0010	0.0024	0.0084	-3.501	0.07063	55
31X	0.0004196	0.07166	-0.005533	0.0394	0.0061	0.0198	3.5	-5.928	54.99

31XY	0.0004387	0.07075	-0.005006	0.0339	0.0073	0.0213	-3.5	-5.929	54.99
31Y	-0.001408	0.07051	-0.002308	0.0399	-0.0025	-0.0018	-3.501	6.071	55
32X	0.002798	0.07441	-0.005389	-0.1161	0.0048	0.0347	3.503	-10.43	54.99
32XY	0.002795	0.0734	-0.00447	-0.1171	0.0109	0.0295	-3.497	-10.43	55
32Y	-0.0003785	0.07314	-0.002327	-0.1089	-0.0061	-0.0200	-3.5	10.57	55
33Y	0.002191	0.06727	-0.003842	0.0131	0.0056	0.0140	-3.498	0.06727	50
34X	0.002941	0.06636	-0.005666	0.0148	0.0075	0.0094	3.503	-5.934	49.99
34XY	0.002715	0.06537	-0.005286	0.0097	0.0044	0.0054	-3.497	-5.935	49.99
34Y	0.0004085	0.06531	-0.002511	0.0174	0.0068	0.0047	-3.5	6.065	50
35X	0.003538	0.06477	-0.003481	-0.1133	0.0107	0.0115	3.504	-10.44	50
35XY	0.003226	0.06379	-0.00262	-0.1156	0.0034	0.0014	-3.497	-10.44	50
35Y	0.00101	0.06365	-0.004037	-0.1015	0.0078	-0.0115	-3.499	10.56	50
36Y	0.0009429	0.02931	-0.002894	-0.0251	0.0044	0.0067	-5.374	0.02931	40
37X	0.001411	0.03002	-0.001839	-0.0036	0.0028	-0.0126	5.376	-5.22	40
37XY	0.002032	0.0293	-0.001164	-0.0055	0.0062	0.0224	-5.373	-5.221	40
37Y	0.001121	0.0293	-0.0046	-0.0058	0.0026	-0.0198	-5.374	5.279	40
38X	0.0004045	0.0308	-0.0003114	-0.0650	0.0032	0.0093	5.375	-10.47	40
38XY	0.003903	0.03005	0.0004791	-0.0652	0.0079	-0.0004	-5.371	-10.47	40
38Y	0.002904	0.03011	-0.006059	-0.0572	0.0009	0.0096	-5.372	10.53	39.99
39Y	0.001065	0.02456	-0.002845	-0.0168	0.0012	0.0042	-6.332	0.02456	35
40X	0.001385	0.0248	-0.001923	-0.0223	0.0083	0.0049	6.334	-5.225	35
40XY	0.001396	0.02394	-0.001119	-0.0248	-0.0009	0.0028	-6.332	-5.226	35
40Y	0.0006903	0.0241	-0.004565	-0.0209	0.0034	0.0033	-6.332	5.274	35
41X	0.001654	0.02412	0.001533	-0.0589	0.0120	-0.0019	6.335	-10.48	35
41XY	0.001804	0.0233	0.002467	-0.0583	-0.0031	0.0088	-6.331	-10.48	35
41Y	0.0003392	0.02364	-0.007321	-0.0466	0.0055	0.0063	-6.333	10.52	34.99
44X	0.0006567	0.1736	-0.01719	0.0000	0.0000	0.0000	0.0006567	-16.83	17.73
45X	0.002151	0.02653	-0.1618	0.0000	0.0000	0.0000	0.002151	-10.47	39.84
10X	0.002518	0.04593	0.009619	-0.2165	0.0103	-0.0082	4.46	-14.95	45.01
10XY	0.003839	0.04533	0.01034	-0.2121	0.0061	0.0206	-4.453	-14.95	45.01
10Y	-0.0009177	0.04597	-0.0156	-0.2020	0.0057	0.0624	-4.458	15.05	44.98
11X	0.002489	0.03094	0.00836	-0.1293	0.0045	0.0271	5.417	-14.97	40.01
11XY	0.002508	0.0302	0.009136	-0.1292	0.0084	-0.0180	-5.412	-14.97	40.01
11Y	-0.0002033	0.03027	-0.01379	-0.1187	0.0003	0.0497	-5.415	15.03	39.99
12X	0.001675	0.02323	0.007112	-0.0719	0.0157	0.0114	6.374	-14.98	35.01
12XY	0.002306	0.02248	0.007894	-0.0699	-0.0053	-0.0045	-6.37	-14.98	35.01
12Y	-0.0006178	0.02289	-0.01195	-0.0631	0.0077	0.0207	-6.373	15.02	34.99
13S	-0.0005723	0.00963	-0.009227	-0.0555	0.0028	-0.0097	8.541	16.33	23.66
42S	-0.0008741	0.01002	-0.001025	-0.0113	0.0069	0.0007	8.54	0.01002	23.67
43S	4.088e-005	0.03256	-0.01411	-0.1192	0.0005	0.0038	4.088e-005	15.03	39.99
46S	0.0007412	0.01077	-0.2868	0.0000	0.0000	0.0000	0.0007412	-8.148	23.38
47S	0.0001397	0.009862	-0.2608	0.0000	0.0000	0.0000	0.0001397	8.169	23.41
13X	-0.0005453	0.01205	0.004761	-0.0465	0.0110	0.0073	8.541	-16.31	23.67
13XY	0.002602	0.01135	0.00547	-0.0445	-0.0022	-0.0030	-8.539	-16.31	23.68
13Y	0.0003254	0.008943	-0.009123	-0.0525	-0.0029	0.0141	-8.541	16.33	23.66
42Y	0.001755	0.009264	-0.0009368	-0.0142	-0.0026	0.0032	-8.539	0.009264	23.67
43X	0.0025	0.0293	0.008818	-0.1292	0.0029	0.0036	0.0025	-14.97	40.01

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage % (kips)	Y Force (kips)	Y Usage % (kips)	Y H-Shear Usage %	Z Comp. Force (kips)	Z Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage % (ft-k)	X Usage Moment % (ft-k)	X-M. Usage Moment % (ft-k)	Y Usage %	Y-M. Usage %	H-Bend-M Usage % (ft-k)	Z Usage Moment % (ft-k)	Z-M. Usage %	Max. Usage %
14P	-21.82	0.0	-33.68	0.0	0.0	-118.02	0.0	0.0	124.66	0.0	0.05	0.0	0.3	0.0	0.0	0.04	0.0	0.0
14X	17.34	0.0	-25.81	0.0	0.0	81.31	0.0	0.0	87.05	0.0	0.52	0.0	0.1	0.0	0.0	-0.00	0.0	0.0
14XY	-19.51	0.0	-26.05	0.0	0.0	90.06	0.0	0.0	95.76	0.0	0.46	0.0	-0.2	0.0	0.0	-0.01	0.0	0.0
14Y	21.22	0.0	-31.32	0.0	0.0	-114.25	0.0	0.0	120.35	0.0	0.01	0.0	-0.2	0.0	0.0	-0.05	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0065	2.2122	-0.5209	-0.0065	-2.2122	0.5209	0.0006	0.2065	-0.0174
2P	-5.2580	8.5243	1.7078	5.2580	-8.5243	-1.7078	0.0000	0.1808	-0.0195
3P	0.0000	0.5003	-0.2832	0.0000	-0.5003	0.2832	0.0004	0.1703	-0.0198
4P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0007	0.1523	-0.0201
5P	0.0000	0.5003	-0.2832	0.0000	-0.5003	0.2832	0.0006	0.1298	-0.0189
6P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0001	0.1182	-0.0187
7P	2.5160	-3.4847	-5.0612	-2.5160	3.4847	5.0612	0.0009	0.0965	-0.0185
8P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0003	0.0757	-0.0173
9P	0.0000	0.7416	-0.5865	-0.0000	-0.7416	0.5865	-0.0001	0.0646	-0.0166
14P	0.0000	0.2413	-0.3033	21.8155	33.4398	-117.7194	0.0000	0.0000	0.0000
15P	6.1157	2.5704	-0.4527	-6.1157	-2.5704	0.4527	-0.0007	0.1705	-0.0350
16P	5.9072	2.4807	-0.4667	-5.9072	-2.4807	0.4667	-0.0010	0.1183	-0.0361
17P	5.7822	2.4085	-0.4644	-5.7822	-2.4085	0.4644	-0.0008	0.0647	-0.0337
18P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0031	0.1770	-0.0054
19P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0014	0.1770	-0.0053
20P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0011	0.1789	-0.0075
21P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0041	0.1727	-0.0054
22P	6.3519	2.6158	-0.4497	-6.3519	-2.6158	0.4497	0.0035	0.1714	-0.0054
23P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0016	0.1701	-0.0079
24P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0007	0.1253	-0.0039
25P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0007	0.1253	-0.0017
26P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0001	0.1282	-0.0020
27P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0033	0.1220	-0.0039
28P	6.4643	2.6116	-0.4490	-6.4643	-2.6116	0.4490	0.0030	0.1200	-0.0018
29P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0013	0.1181	-0.0040
30P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0005	0.0715	-0.0041
31P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0014	0.0714	-0.0022
32P	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	-0.0004	0.0741	-0.0022
33P	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0019	0.0683	-0.0040
34P	6.3477	2.5357	-0.4422	-6.3477	-2.5357	0.4422	0.0022	0.0663	-0.0023
35P	0.0000	0.3076	-0.4285	-0.0000	-0.3076	0.4285	0.0003	0.0646	-0.0039
36P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0016	0.0300	-0.0034
37P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0005	0.0300	-0.0049
38P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	-0.0021	0.0308	-0.0061
39P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0010	0.0255	-0.0034
40P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0006	0.0250	-0.0049
41P	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0003	0.0245	-0.0075
44P	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	-0.0002	0.3501	0.0386
45P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0004	0.0355	-0.1905
10P	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0010	0.0468	-0.0157
11P	0.0000	0.8163	-0.5133	0.0000	-0.8163	0.5133	0.0003	0.0310	-0.0139
12P	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0006	0.0238	-0.0120
1X	0.0101	3.5977	-0.6370	-0.0101	-3.5977	0.6370	0.0095	0.2110	0.0084
2X	3.0390	4.9793	-3.0642	-3.0390	-4.9793	3.0642	0.0093	0.1806	0.0102
2XY	-3.0390	4.9793	-3.0642	3.0390	-4.9793	3.0642	0.0088	0.1785	0.0110
2Y	5.2580	8.5243	1.7078	-5.2580	-8.5243	-1.7078	0.0011	0.1790	-0.0195
3X	0.0000	0.5003	-0.2042	-0.0000	-0.5003	0.2042	0.0087	0.1704	0.0108
3XY	0.0000	0.5003	-0.2042	-0.0000	-0.5003	0.2042	0.0083	0.1683	0.0116
3Y	0.0000	0.5003	-0.2042	0.0000	-0.5003	0.2042	0.0006	0.1686	-0.0198
4X	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0077	0.1512	0.0114
4XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0079	0.1492	0.0122
4Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0002	0.1507	-0.0201



5X	0.0000	0.5003	-0.2042	0.0000	-0.5003	0.2042	0.0069	0.1297	0.0106
5XY	0.0000	0.5003	-0.2042	-0.0000	-0.5003	0.2042	0.0072	0.1280	0.0114
5Y	0.0000	0.5003	-0.2042	0.0000	-0.5003	0.2042	0.0002	0.1284	-0.0188
6X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0065	0.1188	0.0107
6XY	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0062	0.1172	0.0116
6Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0004	0.1166	-0.0186
7X	-1.0430	-1.1427	0.1768	1.0430	-1.1427	-0.1768	0.0051	0.0972	0.0109
7XY	1.0430	-1.1427	0.1768	-1.0430	1.1427	-0.1768	0.0058	0.0959	0.0117
7Y	-2.5160	-3.4847	-4.9822	2.5160	3.4847	4.9822	-0.0005	0.0952	-0.0184
8X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0045	0.0761	0.0102
8XY	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0048	0.0750	0.0109
8Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	-0.0001	0.0747	-0.0172
9X	0.0000	0.7416	-0.5075	0.0000	-0.7416	0.5075	0.0040	0.0648	0.0100
9XY	0.0000	0.7416	-0.5075	-0.0000	-0.7416	0.5075	0.0038	0.0638	0.0106
9Y	0.0000	0.7416	-0.5075	0.0000	-0.7416	0.5075	0.0002	0.0635	-0.0166
14X	0.0000	0.2413	-0.3033	-17.3389	25.5710	81.6148	0.0000	0.0000	0.0000
14XY	0.0000	0.2413	-0.3033	19.5059	25.8077	90.3683	0.0000	0.0000	0.0000
14Y	0.0000	0.2413	-0.3033	-21.2159	31.0756	-113.9440	0.0000	0.0000	0.0000
15X	6.3890	2.6267	-0.4178	-6.3890	-2.6267	0.4178	0.0113	0.1709	0.0229
15XY	-5.7339	2.5228	-1.0313	5.7339	-2.5228	1.0313	0.0104	0.1688	0.0222
15Y	-5.8415	2.5510	-1.0349	5.8415	-2.5510	1.0349	-0.0016	0.1686	-0.0364
16X	6.7259	2.6675	-0.4027	-6.7259	-2.6675	0.4027	0.0087	0.1192	0.0244
16XY	-5.9350	2.5312	-1.0407	5.9350	-2.5312	1.0407	0.0077	0.1177	0.0236
16Y	-6.0493	2.5515	-1.0363	6.0493	-2.5515	1.0363	-0.0019	0.1166	-0.0377
17X	6.6007	2.5863	-0.4112	-6.6007	-2.5863	0.4112	0.0057	0.0653	0.0245
17XY	-5.8625	2.4677	-1.0347	5.8625	-2.4677	1.0347	0.0047	0.0643	0.0237
17Y	-6.2752	2.5608	-1.0553	6.2752	-2.5608	1.0553	-0.0017	0.0636	-0.0352
18Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0032	0.1751	-0.0054
19X	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0049	0.1770	-0.0053
19XY	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0049	0.1751	-0.0050
19Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0015	0.1751	-0.0055
20X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0074	0.1789	-0.0029
20XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0069	0.1769	-0.0020
20Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0015	0.1771	-0.0074
21Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0045	0.1708	-0.0053
22X	6.0597	2.5565	-0.4281	-6.0597	-2.5565	0.4281	0.0062	0.1713	-0.0054
22XY	-5.9362	2.5718	-1.0418	5.9362	-2.5718	1.0418	0.0057	0.1693	-0.0052
22Y	-6.4426	2.6864	-1.0685	6.4426	-2.6864	1.0685	0.0020	0.1696	-0.0057
23X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0070	0.1700	-0.0020
23XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0074	0.1680	-0.0012
23Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0016	0.1684	-0.0079
24Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0007	0.1239	-0.0036
25X	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0020	0.1253	-0.0060
25XY	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0021	0.1239	-0.0054
25Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0006	0.1239	-0.0017
26X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0048	0.1280	-0.0058
26XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0048	0.1264	-0.0048
26Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0001	0.1267	-0.0021
27Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0035	0.1205	-0.0036
28X	6.4810	2.6155	-0.4092	-6.4810	-2.6155	0.4092	0.0048	0.1202	-0.0061
28XY	-6.1453	2.5839	-1.0524	6.1453	-2.5839	1.0524	0.0044	0.1187	-0.0056
28Y	-6.2820	2.6120	-1.0525	6.2820	-2.6120	1.0525	0.0013	0.1185	-0.0019
29X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0052	0.1186	-0.0038
29XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0057	0.1170	-0.0029
29Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0011	0.1166	-0.0040
30Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0005	0.0706	-0.0039
31X	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0004	0.0717	-0.0055
31XY	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0004	0.0708	-0.0050
31Y	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	-0.0014	0.0705	-0.0023

32X	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0028	0.0744	-0.0054
32XY	0.0000	0.0663	-0.1252	0.0000	-0.0663	0.1252	0.0028	0.0734	-0.0045
32Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	-0.0004	0.0731	-0.0023
33Y	0.0000	0.0663	-0.1252	-0.0000	-0.0663	0.1252	0.0022	0.0673	-0.0038
34X	6.2976	2.5270	-0.4197	-6.2976	-2.5270	0.4197	0.0029	0.0664	-0.0057
34XY	-6.1731	2.5421	-1.0551	6.1731	-2.5421	1.0551	0.0027	0.0654	-0.0053
34Y	-6.0964	2.5286	-1.0459	6.0964	-2.5286	1.0459	0.0004	0.0653	-0.0025
35X	0.0000	0.3076	-0.4285	0.0000	-0.3076	0.4285	0.0035	0.0648	-0.0035
35XY	0.0000	0.3076	-0.4285	0.0000	-0.3076	0.4285	0.0032	0.0638	-0.0026
35Y	0.0000	0.3076	-0.4285	-0.0000	-0.3076	0.4285	0.0010	0.0637	-0.0040
36Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0009	0.0293	-0.0029
37X	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0014	0.0300	-0.0018
37XY	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0020	0.0293	-0.0012
37Y	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0011	0.0293	-0.0046
38X	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0004	0.0308	-0.0003
38XY	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0039	0.0301	0.0005
38Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0029	0.0301	-0.0061
39Y	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0011	0.0246	-0.0028
40X	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0014	0.0248	-0.0019
40XY	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0014	0.0239	-0.0011
40Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0007	0.0241	-0.0046
41X	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0017	0.0241	0.0015
41XY	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0018	0.0233	0.0025
41Y	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0003	0.0236	-0.0073
44X	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0007	0.1736	-0.0172
45X	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0022	0.0265	-0.1618
10X	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0025	0.0459	0.0096
10XY	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0038	0.0453	0.0103
10Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	-0.0009	0.0460	-0.0156
11X	0.0000	0.8163	-0.4083	-0.0000	-0.8163	0.4083	0.0025	0.0309	0.0084
11XY	0.0000	0.8163	-0.4083	0.0000	-0.8163	0.4083	0.0025	0.0302	0.0091
11Y	0.0000	0.8163	-0.4083	-0.0000	-0.8163	0.4083	-0.0002	0.0303	-0.0138
12X	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0017	0.0232	0.0071
12XY	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0023	0.0225	0.0079
12Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	-0.0006	0.0229	-0.0119
13S	0.0000	1.6193	-0.8063	-0.0000	-1.6193	0.8063	-0.0006	0.0096	-0.0092
42S	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	-0.0009	0.0100	-0.0010
43S	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0000	0.0326	-0.0141
46S	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0007	0.0108	-0.2868
47S	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0001	0.0099	-0.2608
13X	0.0000	1.6193	-0.5543	-0.0000	-1.6193	0.5543	-0.0005	0.0120	0.0048
13XY	0.0000	1.6193	-0.5543	0.0000	-1.6193	0.5543	0.0026	0.0113	0.0055
13Y	0.0000	1.6193	-0.5543	0.0000	-1.6193	0.5543	0.0003	0.0089	-0.0091
42Y	0.0000	0.2413	-0.3033	-0.0000	-0.2413	0.3033	0.0018	0.0093	-0.0009
43X	0.0000	0.2413	-0.3033	0.0000	-0.2413	0.3033	0.0025	0.0293	0.0088

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	-----Original-----						-----Alternate-----								
					-----Supported-----						-----Unsupported-----								
					L/R	RLX	RLY	RLZ	L/R	KL/R	Curve	Cap.	L/R	RLOUT	L/R	KL/R	Curve	Cap.	No.
15P	15Y	Short only	-0.67	-0.83	12.29	0.750	0.500	0.500	131.00	128.42	5	9.14	1.000	167.31	149.09	6			
15Y	15P	Short only	-0.83	-0.67	12.29	0.750	0.500	0.500	131.00	128.42	5	9.14	1.000	167.31	149.09	6			
16X	16XY	Short only	-0.69	-1.60	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6			
16XY	16X	Short only	-1.60	-0.69	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6			
17P	17Y	Short only	-1.01	-1.30	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6			

17Y	17P Short only	-1.30	-1.01	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18P	18Y Short only	-0.28	-0.71	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18XY	18X Short only	-0.67	0.12	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
18Y	18P Short only	-0.71	-0.28	25.86	0.750	0.500	0.500	105.12	108.84	2	20.50	1.000	134.24	128.76	6
19X	19XY Short only	-0.09	-2.55	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3
19XY	19X Short only	-2.55	-0.09	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3
21P	21Y Short only	-1.95	-2.14	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3
21Y	21P Short only	-2.14	-1.95	43.23	0.750	0.500	0.500	87.63	95.72	2	35.96	1.000	111.96	115.98	3
22X	22XY Short only	-0.11	-2.04	21.13	0.780	0.560	0.560	128.62	126.61	5	18.31	1.000	146.65	136.39	6
22XY	22X Short only	-2.04	-0.11	21.13	0.780	0.560	0.560	128.62	126.61	5	18.31	1.000	146.65	136.39	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	2.273	50.00	50.00	4.55
C2	3.654	50.00	50.00	7.31
C3	6.649	50.00	50.00	13.30
C4	6.920	50.00	50.00	13.84
C5	6.349	50.00	50.00	12.70
C6	6.458	50.00	50.00	12.92
C7	6.424	50.00	50.00	12.85
C8	7.247	50.00	50.00	14.49
C9	6.536	50.00	50.00	13.07
C10	6.647	50.00	50.00	13.29
C11	6.281	50.00	50.00	12.56
C12	7.101	50.00	50.00	14.20
C13	6.444	50.00	50.00	12.89
C14	6.859	50.00	50.00	13.72
C15	6.884	50.00	50.00	13.77
C16	6.591	50.00	50.00	13.18
C17	6.553	50.00	50.00	13.11
C18	7.062	50.00	50.00	14.12
C19	6.986	50.00	50.00	13.97
C20	7.001	50.00	50.00	14.00
C21	6.749	50.00	50.00	13.50
C22	6.884	50.00	50.00	13.77
C23	6.850	50.00	50.00	13.70
C24	6.799	50.00	50.00	13.60
C25	6.759	50.00	50.00	13.52
C26	6.682	50.00	50.00	13.36
C27	0.540	50.00	50.00	1.08
C28	0.540	50.00	50.00	1.08
C29	1.557	50.00	50.00	3.11
C30	0.899	50.00	50.00	1.80
C31	0.913	50.00	50.00	1.83
C32	1.712	50.00	50.00	3.42
C34	0.540	50.00	50.00	1.08
C35	0.540	50.00	50.00	1.08
C36	6.580	50.00	50.00	13.16
C37	0.899	50.00	50.00	1.80
C38	0.913	50.00	50.00	1.83
C39	1.712	50.00	50.00	3.42
C41	0.540	50.00	50.00	1.08

C42	0.575	50.00	50.00	1.15
C43	1.557	50.00	50.00	3.11
C44	6.640	50.00	50.00	13.28
C45	6.589	50.00	50.00	13.18
C46	6.589	50.00	50.00	13.18
C47	10.160	50.00	50.00	20.32
C48	10.160	50.00	50.00	20.32
C49	0.540	50.00	50.00	1.08
C50	0.575	50.00	50.00	1.15
C51	0.899	50.00	50.00	1.80
C52	0.945	50.00	50.00	1.89
C53	0.913	50.00	50.00	1.83
C54	0.964	50.00	50.00	1.93
C55	1.712	50.00	50.00	3.42
C56	1.809	50.00	50.00	3.62

Equilibrium Joint Positions and Rotations for Load Case "NESC 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	-0.05174	0.1746	-0.02042	0.0000	0.0000	0.0000	-0.05174	14.17	93.98
2P	-0.03548	0.1356	-0.01654	-0.0841	-0.0866	-0.2087	3.465	15.14	84.98
3P	-0.02807	0.1282	-0.01652	-0.1015	-0.0836	-0.1906	3.472	15.13	79.98
4P	-0.02127	0.1171	-0.01649	-0.1536	-0.0734	-0.1631	3.479	15.12	74.98
5P	-0.01544	0.1038	-0.01591	-0.1182	-0.0631	-0.1355	3.485	15.1	69.98
6P	-0.01027	0.0954	-0.01584	-0.1512	-0.0625	-0.0968	3.49	15.1	64.98
7P	-0.005061	0.08019	-0.01577	-0.1949	-0.0545	-0.0869	3.495	15.08	59.98
8P	-0.001032	0.06417	-0.01498	-0.1397	-0.0395	-0.0769	3.499	15.06	54.99
9P	0.002318	0.05484	-0.01458	-0.1269	-0.0442	-0.0695	3.502	15.05	49.99
14P	0	0	0	0.0000	0.0000	0.0000	13.07	19.07	0
15P	-0.003464	0.1281	-0.02978	-0.1124	-0.0836	-0.2066	3.497	22.13	79.97
16P	0.002955	0.09544	-0.03056	-0.1053	-0.0626	-0.1138	3.503	22.1	64.97
17P	0.00665	0.05495	-0.03076	-0.1352	-0.0440	-0.0184	3.507	22.05	49.97
18P	-0.09685	0.1329	0.001283	-0.0522	-0.1840	-0.2307	3.403	0.1329	85
19P	-0.07274	0.1334	-0.004228	-0.0333	-0.1452	-0.2319	3.427	6.133	85
20P	-0.05409	0.1345	-0.007391	-0.0894	-0.1158	-0.2454	3.446	10.63	84.99
21P	-0.07781	0.1282	0.001352	-0.0498	-0.1843	-0.2017	3.422	0.1282	80
22P	-0.05607	0.1285	-0.004492	-0.0438	-0.1441	-0.1900	3.444	6.128	80
23P	-0.04241	0.1279	-0.008152	-0.0795	-0.1138	-0.1721	3.458	10.63	79.99
24P	-0.05121	0.1012	0.001026	-0.0319	-0.1619	-0.1212	3.449	0.1012	70
25P	-0.03835	0.1014	-0.001808	-0.0157	-0.1226	-0.1348	3.462	6.101	70
26P	-0.02688	0.1027	-0.004846	-0.1016	-0.0928	-0.1510	3.473	10.6	70
27P	-0.03629	0.09715	0.00108	-0.0261	-0.1357	-0.1091	3.464	0.09715	65
28P	-0.024	0.09635	-0.002069	-0.0268	-0.1065	-0.0994	3.476	6.096	65
29P	-0.01752	0.09523	-0.005495	-0.0874	-0.0845	-0.0820	3.482	10.6	64.99
30P	-0.01791	0.06091	-0.001378	-0.0136	-0.1098	-0.0468	3.482	0.06091	55
31P	-0.01274	0.06084	-0.001647	0.0168	-0.0818	-0.0642	3.487	6.061	55
32P	-0.006841	0.06283	-0.002704	-0.0965	-0.0606	-0.0764	3.493	10.56	55
33P	-0.005781	0.05739	-0.001331	-0.0050	-0.0810	-0.0452	3.494	0.05739	50
34P	-0.0003708	0.05607	-0.001894	0.0016	-0.0662	-0.0310	3.5	6.056	50
35P	0.0003342	0.05476	-0.003847	-0.0898	-0.0550	-0.0007	3.5	10.55	50
36P	0.002754	0.02453	-0.0004233	-0.0302	-0.0334	-0.0180	5.378	0.02453	40
37P	0.003971	0.0245	-0.002563	-0.0113	-0.0269	-0.0043	5.379	5.275	40
38P	0.00432	0.02513	-0.004389	-0.0558	-0.0205	-0.0165	5.379	10.53	40
39P	0.004696	0.01972	1.948e-005	-0.0234	-0.0084	-0.0127	6.338	0.01972	35
40P	0.005913	0.01935	-0.002218	-0.0260	-0.0080	-0.0135	6.339	5.269	35
41P	0.007097	0.01897	-0.005316	-0.0476	-0.0075	-0.0117	6.34	10.52	34.99
44P	0.003884	0.308	0.03288	0.0000	0.0000	0.0000	0.003884	17.31	17.78
45P	0.005635	0.02851	-0.1326	0.0000	0.0000	0.0000	0.005635	10.53	39.87
10P	0.005901	0.03922	-0.01337	-0.1771	-0.0269	-0.0649	4.463	15.04	44.99
11P	0.006749	0.02525	-0.01156	-0.1088	-0.0157	-0.0377	5.422	15.03	39.99
12P	0.008048	0.01838	-0.009816	-0.0600	-0.0074	-0.0147	6.38	15.02	34.99
1X	-0.2037	0.1699	0.001882	0.0000	0.0000	0.0000	-0.2037	-13.83	94
2X	-0.157	0.1337	0.02022	-0.1014	-0.2811	-0.2205	3.343	-14.87	85.02
2XY	-0.157	0.1598	-0.01281	-0.0467	-0.2750	-0.2161	-3.657	-14.84	84.99
2Y	-0.03586	0.1605	-0.02595	-0.1001	-0.0994	-0.2040	-3.536	15.16	84.97
3X	-0.1323	0.1252	0.02012	-0.0863	-0.2848	-0.2222	3.368	-14.87	80.02
3XY	-0.1325	0.1544	-0.01149	-0.1262	-0.2880	-0.2260	-3.633	-14.85	79.99
3Y	-0.02778	0.1517	-0.02576	-0.1214	-0.0812	-0.1817	-3.528	15.15	79.97
4X	-0.1074	0.1169	0.01964	-0.1340	-0.2835	-0.1771	3.393	-14.88	75.02

4XY	-0.1072	0.135	-0.009723	-0.2529	-0.2853	-0.1757	-3.607	-14.86	74.99
4Y	-0.02192	0.1375	-0.02548	-0.2185	-0.0630	-0.1552	-3.522	15.14	74.97
5X	-0.08369	0.1032	0.01823	-0.1210	-0.2602	-0.1318	3.416	-14.9	70.02
5XY	-0.08389	0.1173	-0.008822	-0.1246	-0.2546	-0.1242	-3.584	-14.88	69.99
5Y	-0.01608	0.1177	-0.02379	-0.1688	-0.0767	-0.1285	-3.516	15.12	69.98
6X	-0.06281	0.09603	0.01698	-0.1169	-0.2086	-0.0839	3.437	-14.9	65.02
6XY	-0.06306	0.1086	-0.006364	-0.2226	-0.2166	-0.0751	-3.563	-14.89	64.99
6Y	-0.01003	0.1078	-0.0228	-0.1682	-0.0502	-0.0732	-3.51	15.11	64.98
7X	-0.04523	0.08277	0.01619	-0.1997	-0.1953	-0.0720	3.455	-14.92	60.02
7XY	-0.04496	0.08641	-0.004905	-0.2525	-0.1957	-0.0491	-3.545	-14.91	60
7Y	-0.00605	0.09021	-0.02229	-0.2419	-0.0455	-0.0539	-3.506	15.09	59.98
8X	-0.02886	0.06454	0.01461	-0.1607	-0.1799	-0.0598	3.471	-14.94	55.01
8XY	-0.02893	0.06871	-0.00399	-0.1329	-0.1780	-0.0227	-3.529	-14.93	55
8Y	-0.001688	0.06947	-0.02076	-0.1795	-0.0583	-0.0344	-3.502	15.07	54.98
9X	-0.01515	0.05502	0.01328	-0.1165	-0.1181	-0.0530	3.485	-14.94	50.01
9XY	-0.01506	0.05924	-0.002312	-0.1673	-0.1215	0.0086	-3.515	-14.94	50
9Y	0.002762	0.05851	-0.01974	-0.1398	-0.0265	-0.0012	-3.497	15.06	49.98
14X	0	0	0	0.0000	0.0000	0.0000	13.07	-19.07	0
14XY	0	0	0	0.0000	0.0000	0.0000	-13.07	-19.07	0
14Y	0	0	0	0.0000	0.0000	0.0000	-13.07	19.07	0
15X	-0.1658	0.1247	0.03256	-0.1116	-0.2848	-0.2996	3.334	-21.88	80.03
15XY	-0.1664	0.1558	-0.01177	0.0642	-0.2889	-0.3028	-3.666	-21.84	79.99
15Y	-0.004974	0.1516	-0.04299	-0.1512	-0.0811	-0.1888	-3.505	22.15	79.96
16X	-0.07399	0.09685	0.02444	-0.0338	-0.2088	-0.0949	3.426	-21.9	65.02
16XY	-0.07573	0.1093	-0.002086	0.0577	-0.2171	-0.1178	-3.576	-21.89	65
16Y	0.001367	0.1077	-0.04244	-0.1572	-0.0503	-0.1030	-3.499	22.11	64.96
17X	-0.01776	0.05582	0.02414	-0.0752	-0.1180	-0.0053	3.482	-21.94	50.02
17XY	-0.01961	0.05992	0.003746	0.0089	-0.1217	-0.0599	-3.52	-21.94	50
17Y	0.004953	0.05839	-0.04102	-0.1914	-0.0265	-0.0261	-3.495	22.06	49.96
18Y	-0.098	0.1572	-0.01967	0.0215	-0.1877	-0.2291	-3.598	0.1572	84.98
19X	-0.1212	0.1328	0.006144	-0.0633	-0.2229	-0.2335	3.379	-5.867	85.01
19XY	-0.1223	0.157	-0.02296	0.0497	-0.2229	-0.2358	-3.622	-5.843	84.98
19Y	-0.0739	0.157	-0.01631	0.0468	-0.1528	-0.2367	-3.574	6.157	84.98
20X	-0.1394	0.1331	0.01252	-0.0961	-0.2519	-0.2272	3.361	-10.37	85.01
20XY	-0.1404	0.1585	-0.02371	-0.1002	-0.2486	-0.2174	-3.64	-10.34	84.98
20Y	-0.05466	0.159	-0.01541	-0.0798	-0.1260	-0.2528	-3.555	10.66	84.98
21Y	-0.07716	0.1548	-0.0196	0.0309	-0.1851	-0.1968	-3.577	0.1548	79.98
22X	-0.09813	0.1273	0.005901	-0.0619	-0.2245	-0.2072	3.402	-5.873	80.01
22XY	-0.09927	0.1537	-0.02341	0.0270	-0.2264	-0.2030	-3.599	-5.846	79.98
22Y	-0.05804	0.1531	-0.01678	0.0321	-0.1438	-0.1922	-3.558	6.153	79.98
23X	-0.1154	0.126	0.01243	-0.1012	-0.2545	-0.2181	3.385	-10.37	80.01
23XY	-0.1148	0.1529	-0.02217	-0.0916	-0.2571	-0.2099	-3.615	-10.35	79.98
23Y	-0.04222	0.1517	-0.01637	-0.0644	-0.1124	-0.1956	-3.542	10.65	79.98
24Y	-0.05207	0.1134	-0.01667	0.0346	-0.1662	-0.1213	-3.552	0.1134	69.98
25X	-0.06415	0.1012	0.003853	-0.0229	-0.2013	-0.1187	3.436	-5.899	70
25XY	-0.06499	0.1133	-0.02141	0.0671	-0.2017	-0.1200	-3.565	-5.887	69.98
25Y	-0.03922	0.1132	-0.01164	0.0709	-0.1307	-0.1342	-3.539	6.113	69.99
26X	-0.07337	0.1023	0.007542	-0.1026	-0.2307	-0.1234	3.427	-10.4	70.01
26XY	-0.07419	0.116	-0.02292	-0.1069	-0.2280	-0.1192	-3.574	-10.38	69.98
26Y	-0.02773	0.1161	-0.009577	-0.0920	-0.1036	-0.1551	-3.528	10.62	69.99
27Y	-0.03576	0.1119	-0.01661	0.0488	-0.1340	-0.1031	-3.536	0.1119	64.98
28X	-0.04642	0.09641	0.003586	-0.0336	-0.1650	-0.1060	3.454	-5.904	65
28XY	-0.04764	0.11	-0.0219	0.0384	-0.1672	-0.1004	-3.548	-5.89	64.98
28Y	-0.02627	0.1097	-0.01209	0.0448	-0.1007	-0.1007	-3.526	6.11	64.99
29X	-0.05544	0.09543	0.008067	-0.0912	-0.1868	-0.1086	3.445	-10.4	65.01
29XY	-0.05485	0.1085	-0.0208	-0.1032	-0.1920	-0.1029	-3.555	-10.39	64.98
29Y	-0.01746	0.108	-0.01138	-0.0718	-0.0754	-0.1116	-3.517	10.61	64.99
30Y	-0.0186	0.06468	-0.01214	0.0274	-0.1186	-0.0479	-3.519	0.06468	54.99
31X	-0.02289	0.06113	-0.000595	0.0068	-0.1378	-0.0392	3.477	-5.939	55

31XY	-0.02356	0.06457	-0.0163	0.0639	-0.1424	-0.0382	-3.524	-5.935	54.98
31Y	-0.01342	0.06465	-0.007901	0.0664	-0.0948	-0.0615	-3.513	6.065	54.99
32X	-0.02544	0.06315	0.00135	-0.1070	-0.1588	-0.0319	3.475	-10.44	55
32XY	-0.02613	0.06725	-0.01779	-0.1003	-0.1602	-0.0358	-3.526	-10.43	54.98
32Y	-0.007467	0.06767	-0.006071	-0.0945	-0.0766	-0.0878	-3.507	10.57	54.99
33Y	-0.005274	0.06299	-0.01209	0.0400	-0.0743	-0.0326	-3.505	0.06299	49.99
34X	-0.009065	0.056	-0.0008883	-0.0109	-0.0958	-0.0371	3.491	-5.944	50
34XY	-0.01014	0.061	-0.01682	0.0392	-0.0933	-0.0389	-3.51	-5.939	49.98
34Y	-0.002887	0.06068	-0.008346	0.0430	-0.0553	-0.0389	-3.503	6.061	49.99
35X	-0.01245	0.0547	0.002636	-0.1035	-0.1069	-0.0354	3.488	-10.45	50
35XY	-0.01262	0.05935	-0.01579	-0.1064	-0.1076	-0.0391	-3.513	-10.44	49.98
35Y	0.001123	0.05877	-0.007906	-0.0845	-0.0409	-0.0438	-3.499	10.56	49.99
36Y	0.002477	0.02644	-0.0107	-0.0081	-0.0440	-0.0150	-5.373	0.02644	39.99
37X	0.0009333	0.02457	0.001935	-0.0141	-0.0398	-0.0227	5.376	-5.225	40
37XY	0.001252	0.02644	-0.01034	0.0046	-0.0491	-0.0095	-5.374	-5.224	39.99
37Y	0.004218	0.02639	-0.0107	0.0167	-0.0389	-0.0279	-5.371	5.276	39.99
38X	-0.0009132	0.0252	0.004133	-0.0641	-0.0463	-0.0107	5.374	-10.47	40
38XY	0.0003857	0.02727	-0.009509	-0.0513	-0.0543	-0.0158	-5.375	-10.47	39.99
38Y	0.006735	0.02723	-0.01009	-0.0405	-0.0337	-0.0121	-5.368	10.53	39.99
39Y	0.004825	0.02322	-0.01103	0.0006	-0.0126	-0.0123	-6.328	0.02322	34.99
40X	0.003643	0.01922	0.002416	-0.0321	-0.0089	-0.0100	6.337	-5.231	35
40XY	0.003641	0.02244	-0.01087	-0.0064	-0.0181	-0.0139	-6.329	-5.228	34.99
40Y	0.005928	0.02283	-0.01105	-0.0019	-0.0072	-0.0119	-6.327	5.273	34.99
41X	0.002639	0.01872	0.006299	-0.0539	-0.0093	-0.0148	6.336	-10.48	35.01
41XY	0.002697	0.02167	-0.008628	-0.0542	-0.0235	-0.0018	-6.33	-10.48	34.99
41Y	0.007041	0.02245	-0.01205	-0.0268	-0.0017	-0.0126	-6.326	10.52	34.99
44X	0.003861	0.2072	-0.02206	0.0000	0.0000	0.0000	0.003861	-16.8	17.73
45X	-0.000193	0.02472	-0.1044	0.0000	0.0000	0.0000	-0.000193	-10.48	39.9
10X	-0.007646	0.04034	0.01331	-0.1821	-0.0710	-0.0433	4.449	-14.96	45.01
10XY	-0.007331	0.03894	-0.001962	-0.2065	-0.0700	0.0080	-4.464	-14.96	45
10Y	0.003531	0.04234	-0.01879	-0.1995	-0.0130	0.0180	-4.453	15.04	44.98
11X	-0.001361	0.02539	0.01236	-0.1245	-0.0510	-0.0098	5.414	-14.97	40.01
11XY	-0.001274	0.0273	-0.002723	-0.0969	-0.0596	-0.0205	-5.416	-14.97	40
11Y	0.006447	0.02741	-0.01706	-0.1121	-0.0283	0.0093	-5.409	15.03	39.98
12X	0.001417	0.01815	0.01096	-0.0589	-0.0095	-0.0114	6.373	-14.98	35.01
12XY	0.002675	0.02057	-0.003014	-0.0707	-0.0288	-0.0088	-6.369	-14.98	35
12Y	0.007864	0.0218	-0.01524	-0.0486	0.0032	-0.0055	-6.364	15.02	34.98
13S	0.003204	0.006343	-0.00793	-0.0430	0.0254	-0.0070	8.544	16.32	23.66
42S	0.001996	0.006355	0.0001709	-0.0210	0.0196	-0.0044	8.543	0.006355	23.67
43S	0.006606	0.02718	-0.01418	-0.1105	-0.0326	-0.0102	0.006606	15.03	39.99
46S	0.001932	0.009129	-0.2121	0.0000	0.0000	0.0000	0.001932	-8.15	23.46
47S	0.003362	0.007883	-0.1861	0.0000	0.0000	0.0000	0.003362	8.167	23.48
13X	-6.372e-005	0.007971	0.007483	-0.0354	0.0137	-0.0098	8.541	-16.31	23.68
13XY	0.003163	0.01049	-0.001847	-0.0424	0.0083	-0.0099	-8.538	-16.31	23.67
13Y	0.004098	0.008993	-0.01068	-0.0549	0.0291	0.0028	-8.537	16.33	23.66
42Y	0.003224	0.009835	-0.003319	0.0010	0.0187	-0.0007	-8.538	0.009835	23.67
43X	-0.001299	0.02587	0.00525	-0.1107	-0.0920	-0.0078	-0.001299	-14.97	40.01

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

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	Y H-Shear Usage %	Z Comp. Force (kips)	Z Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X X-M. Moment (ft-k)	X Usage %	Y Y-M. Moment (ft-k)	Y Usage %	H-Bend-M Usage %	Z Z-M. Moment (ft-k)	Z Usage %	Max. Usage %
14P	-21.03	0.0	-23.56	0.0	0.0	-102.94	0.0	0.0	107.67	0.0	-0.08	0.0	0.2	0.0	0.0	0.02	0.0	0.0
14X	17.55	0.0	-21.77	0.0	0.0	89.44	0.0	0.0	93.71	0.0	0.19	0.0	0.1	0.0	0.0	0.04	0.0	0.0
14XY	-7.34	0.0	-14.60	0.0	0.0	21.19	0.0	0.0	26.76	0.0	0.50	0.0	-0.2	0.0	0.0	0.02	0.0	0.0
14Y	23.29	0.0	-38.43	0.0	0.0	-129.32	0.0	0.0	136.90	0.0	0.02	0.0	-0.2	0.0	0.0	0.03	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0072	4.0562	-1.4278	-0.0072	-4.0562	1.4278	-0.0517	0.1746	-0.0204
2P	-1.6790	2.6980	-2.4007	1.6790	-2.6980	2.4007	-0.0355	0.1356	-0.0165
3P	0.0000	0.1370	-0.9456	-0.0000	-0.1370	0.9456	-0.0281	0.1282	-0.0165
4P	0.0000	0.0000	-0.2170	-0.0000	-0.0000	0.2170	-0.0213	0.1171	-0.0165
5P	0.0000	0.1370	-0.9209	0.0000	-0.1370	0.9209	-0.0154	0.1038	-0.0159
6P	0.0000	0.0000	-0.3439	-0.0000	-0.0000	0.3439	-0.0103	0.0954	-0.0158
7P	0.9670	-1.3980	-4.9175	-0.9670	1.3980	4.9175	-0.0051	0.0802	-0.0158
8P	0.0000	0.0000	-0.3936	0.0000	-0.0000	0.3936	-0.0010	0.0642	-0.0150
9P	0.0000	0.1370	-1.1204	0.0000	-0.1370	1.1204	0.0023	0.0548	-0.0146
14P	0.0000	0.0000	-1.0434	21.0302	23.5604	-101.8921	0.0000	0.0000	0.0000
15P	10.5343	3.2218	-1.2423	-10.5343	-3.2218	1.2423	-0.0035	0.1281	-0.0298
16P	10.4530	3.1996	-1.2523	-10.4530	-3.1996	1.2523	0.0030	0.0954	-0.0306
17P	10.6172	3.2456	-1.2383	-10.6172	-3.2456	1.2383	0.0066	0.0549	-0.0308
18P	0.0000	0.0000	-0.0917	0.0000	-0.0000	0.0917	-0.0969	0.1329	0.0013
19P	0.0000	0.0000	-0.1262	0.0000	-0.0000	0.1262	-0.0727	0.1334	-0.0042
20P	0.0000	0.0000	-0.1027	0.0000	-0.0000	0.1027	-0.0541	0.1345	-0.0074
21P	0.0000	0.0000	-0.1504	0.0000	-0.0000	0.1504	-0.0778	0.1282	0.0014
22P	11.0119	3.3191	-1.2501	-11.0119	-3.3191	1.2501	-0.0561	0.1285	-0.0045
23P	0.0000	0.0000	-0.1874	0.0000	-0.0000	0.1874	-0.0424	0.1279	-0.0082
24P	0.0000	0.0000	-0.1077	0.0000	-0.0000	0.1077	-0.0512	0.1012	0.0010
25P	0.0000	0.0000	-0.1666	0.0000	-0.0000	0.1666	-0.0384	0.1014	-0.0018
26P	0.0000	0.0000	-0.1304	0.0000	-0.0000	0.1304	-0.0269	0.1027	-0.0048
27P	0.0000	0.0000	-0.1971	-0.0000	-0.0000	0.1971	-0.0363	0.0972	0.0011
28P	11.5742	3.4571	-1.2570	-11.5742	-3.4571	1.2570	-0.0240	0.0964	-0.0021
29P	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	-0.0175	0.0952	-0.0055
30P	0.0000	0.0000	-0.1228	-0.0000	-0.0000	0.1228	-0.0179	0.0609	-0.0014
31P	0.0000	0.0000	-0.1964	-0.0000	-0.0000	0.1964	-0.0127	0.0608	-0.0016
32P	0.0000	0.0000	-0.1495	-0.0000	-0.0000	0.1495	-0.0068	0.0628	-0.0027
33P	0.0000	0.0000	-0.2368	-0.0000	-0.0000	0.2368	-0.0058	0.0574	-0.0013
34P	11.7808	3.5036	-1.2469	-11.7808	-3.5036	1.2469	-0.0004	0.0561	-0.0019
35P	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	0.0003	0.0548	-0.0038
36P	0.0000	0.0000	-0.3349	-0.0000	-0.0000	0.3349	0.0028	0.0245	-0.0004
37P	0.0000	0.0000	-0.3616	-0.0000	-0.0000	0.3616	0.0040	0.0245	-0.0026
38P	0.0000	0.0000	-0.4381	-0.0000	0.0000	0.4381	0.0043	0.0251	-0.0044
39P	0.0000	0.0000	-0.3850	-0.0000	-0.0000	0.3850	0.0047	0.0197	0.0000
40P	0.0000	0.0000	-0.1962	-0.0000	-0.0000	0.1962	0.0059	0.0193	-0.0022
41P	0.0000	0.0000	-0.4307	-0.0000	-0.0000	0.4307	0.0071	0.0190	-0.0053
44P	0.0000	0.0000	-0.1966	-0.0000	-0.0000	0.1966	0.0039	0.3080	0.0329
45P	0.0000	0.0000	-0.0848	-0.0000	-0.0000	0.0848	0.0056	0.0285	-0.1326
10P	0.0000	0.0000	-0.3664	-0.0000	0.0000	0.3664	0.0059	0.0392	-0.0134
11P	0.0000	0.1820	-1.3424	-0.0000	-0.1820	1.3424	0.0067	0.0252	-0.0116
12P	0.0000	0.0000	-0.8067	0.0000	-0.0000	0.8067	0.0080	0.0184	-0.0098
1X	-8.3048	2.6276	-1.2796	8.3048	-2.6276	1.2796	-0.2037	0.1699	0.0019
2X	0.5010	0.9078	-3.1198	-0.5010	-0.9078	3.1198	-0.1570	0.1337	0.0202
2XY	-0.5010	0.9078	-3.0997	0.5010	-0.9078	3.0997	-0.1570	0.1598	-0.0128
2Y	1.6790	2.6980	-2.4208	-1.6790	-2.6980	2.4208	-0.0359	0.1605	-0.0259
3X	0.0000	0.2219	-0.6016	0.0000	-0.2219	0.6016	-0.1323	0.1252	0.0201
3XY	0.0000	0.2219	-0.6016	-0.0000	-0.2219	0.6016	-0.1325	0.1544	-0.0115
3Y	0.0000	0.1370	-0.6016	-0.0000	-0.1370	0.6016	-0.0278	0.1517	-0.0258
4X	0.0000	0.1240	-0.2170	0.0000	-0.1240	0.2170	-0.1074	0.1169	0.0196
4XY	0.0000	0.1240	-0.2170	0.0000	-0.1240	0.2170	-0.1072	0.1350	-0.0097
4Y	0.0000	0.0000	-0.2170	-0.0000	-0.0000	0.2170	-0.0219	0.1375	-0.0255



5X	0.0000	0.2597	-0.5970	0.0000	-0.2597	0.5970	-0.0837	0.1032	0.0182
5XY	0.0000	0.2597	-0.5769	0.0000	-0.2597	0.5769	-0.0839	0.1173	-0.0088
5Y	0.0000	0.1370	-0.5970	-0.0000	-0.1370	0.5970	-0.0161	0.1177	-0.0238
6X	0.0000	0.1164	-0.3439	0.0000	-0.1164	0.3439	-0.0628	0.0960	0.0170
6XY	0.0000	0.1164	-0.3439	0.0000	-0.1164	0.3439	-0.0631	0.1086	-0.0064
6Y	0.0000	0.0000	-0.3439	0.0000	-0.0000	0.3439	-0.0100	0.1078	-0.0228
7X	0.0330	0.3765	-2.7995	-0.0330	-0.3765	2.7995	-0.0452	0.0828	0.0162
7XY	-0.0330	0.3765	-2.7995	0.0330	-0.3765	2.7995	-0.0450	0.0864	-0.0049
7Y	-0.9670	-1.3980	-4.5735	0.9670	1.3980	4.5735	-0.0061	0.0902	-0.0223
8X	0.0000	0.1542	-0.4138	0.0000	-0.1542	0.4138	-0.0289	0.0645	0.0146
8XY	0.0000	0.1542	-0.3936	0.0000	-0.1542	0.3936	-0.0289	0.0687	-0.0040
8Y	0.0000	0.0000	-0.4138	0.0000	-0.0000	0.4138	-0.0017	0.0695	-0.0208
9X	0.0000	0.2570	-0.7764	0.0000	-0.2570	0.7764	-0.0152	0.0550	0.0133
9XY	0.0000	0.2570	-0.7764	-0.0000	-0.2570	0.7764	-0.0151	0.0592	-0.0023
9Y	0.0000	0.1370	-0.7764	0.0000	-0.1370	0.7764	0.0028	0.0585	-0.0197
14X	0.0000	0.3452	-1.0434	-17.5518	21.4293	90.4865	0.0000	0.0000	0.0000
14XY	0.0000	0.3452	-1.0434	7.3366	14.2521	22.2382	0.0000	0.0000	0.0000
14Y	0.0000	0.0000	-1.0434	-23.2902	38.4322	-128.2741	0.0000	0.0000	0.0000
15X	0.0000	0.0460	-0.0969	0.0000	-0.0460	0.0969	-0.1658	0.1247	0.0326
15XY	-9.6911	3.0891	-2.0411	9.6911	-3.0891	2.0411	-0.1664	0.1558	-0.0118
15Y	-9.9014	3.1064	-2.0382	9.9014	-3.1064	2.0382	-0.0050	0.1516	-0.0430
16X	12.0717	3.6045	-1.1604	-12.0717	-3.6045	1.1604	-0.0740	0.0969	0.0244
16XY	-10.3779	3.2523	-2.0654	10.3779	-3.2523	2.0654	-0.0757	0.1093	-0.0021
16Y	-10.6214	3.2644	-2.0524	10.6214	-3.2644	2.0524	0.0014	0.1077	-0.0424
17X	12.2889	3.6526	-1.1532	-12.2889	-3.6526	1.1532	-0.0178	0.0558	0.0241
17XY	-10.6180	3.3073	-2.0738	10.6180	-3.3073	2.0738	-0.0196	0.0599	0.0037
17Y	-11.4913	3.4742	-2.0976	11.4913	-3.4742	2.0976	0.0050	0.0584	-0.0410
18Y	0.0000	0.0000	-0.0917	0.0000	-0.0000	0.0917	-0.0980	0.1572	-0.0197
19X	0.0000	0.0000	-0.1283	-0.0000	-0.0000	0.1283	-0.1212	0.1328	0.0061
19XY	0.0000	0.0000	-0.1262	0.0000	-0.0000	0.1262	-0.1223	0.1570	-0.0230
19Y	0.0000	0.0000	-0.1283	0.0000	-0.0000	0.1283	-0.0739	0.1570	-0.0163
20X	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	-0.1394	0.1331	0.0125
20XY	0.0000	0.0000	-0.1027	-0.0000	-0.0000	0.1027	-0.1404	0.1585	-0.0237
20Y	0.0000	0.0000	-0.1027	0.0000	-0.0000	0.1027	-0.0547	0.1590	-0.0154
21Y	0.0000	0.0000	-0.1504	0.0000	-0.0000	0.1504	-0.0772	0.1548	-0.0196
22X	10.3777	3.1738	-1.2274	-10.3777	-3.1738	1.2274	-0.0981	0.1273	0.0059
22XY	-10.0800	3.1401	-2.0685	10.0800	-3.1401	2.0685	-0.0993	0.1537	-0.0234
22Y	-11.0658	3.3685	-2.1054	11.0658	-3.3685	2.1054	-0.0580	0.1531	-0.0168
23X	0.0000	0.0000	-0.1874	-0.0000	-0.0000	0.1874	-0.1154	0.1260	0.0124
23XY	0.0000	0.0000	-0.1874	-0.0000	-0.0000	0.1874	-0.1148	0.1529	-0.0222
23Y	0.0000	0.0000	-0.1874	0.0000	-0.0000	0.1874	-0.0422	0.1517	-0.0164
24Y	0.0000	0.0000	-0.1077	-0.0000	-0.0000	0.1077	-0.0521	0.1134	-0.0167
25X	0.0000	0.0000	-0.1688	-0.0000	-0.0000	0.1688	-0.0641	0.1012	0.0039
25XY	0.0000	0.0000	-0.1666	-0.0000	-0.0000	0.1666	-0.0650	0.1133	-0.0214
25Y	0.0000	0.0000	-0.1688	0.0000	-0.0000	0.1688	-0.0392	0.1132	-0.0116
26X	0.0000	0.0000	-0.1304	-0.0000	-0.0000	0.1304	-0.0734	0.1023	0.0075
26XY	0.0000	0.0000	-0.1304	-0.0000	-0.0000	0.1304	-0.0742	0.1160	-0.0229
26Y	0.0000	0.0000	-0.1304	-0.0000	-0.0000	0.1304	-0.0277	0.1161	-0.0096
27Y	0.0000	0.0000	-0.1971	-0.0000	-0.0000	0.1971	-0.0358	0.1119	-0.0166
28X	11.5683	3.4519	-1.1985	-11.5683	-3.4519	1.1985	-0.0464	0.0964	0.0036
28XY	-10.8006	3.3127	-2.1113	10.8006	-3.3127	2.1113	-0.0476	0.1100	-0.0219
28Y	-11.0800	3.3757	-2.1103	11.0800	-3.3757	2.1103	-0.0263	0.1097	-0.0121
29X	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	-0.0554	0.0954	0.0081
29XY	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	-0.0549	0.1085	-0.0208
29Y	0.0000	0.0000	-0.2239	-0.0000	-0.0000	0.2239	-0.0175	0.1080	-0.0114
30Y	0.0000	0.0000	-0.1228	-0.0000	-0.0000	0.1228	-0.0186	0.0647	-0.0121
31X	0.0000	0.0000	-0.1985	-0.0000	-0.0000	0.1985	-0.0229	0.0611	-0.0006
31XY	0.0000	0.0000	-0.1964	-0.0000	-0.0000	0.1964	-0.0236	0.0646	-0.0163
31Y	0.0000	0.0000	-0.1985	-0.0000	-0.0000	0.1985	-0.0134	0.0646	-0.0079

32X	0.0000	0.0000	-0.1495	-0.0000	-0.0000	0.1495	-0.0254	0.0631	0.0013
32XY	0.0000	0.0000	-0.1495	-0.0000	-0.0000	0.1495	-0.0261	0.0672	-0.0178
32Y	0.0000	0.0000	-0.1495	-0.0000	-0.0000	0.1495	-0.0075	0.0677	-0.0061
33Y	0.0000	0.0000	-0.2368	-0.0000	-0.0000	0.2368	-0.0053	0.0630	-0.0121
34X	11.6313	3.4706	-1.2111	-11.6313	-3.4706	1.2111	-0.0091	0.0560	-0.0009
34XY	-11.2651	3.4216	-2.1438	11.2651	-3.4216	2.1438	-0.0101	0.0610	-0.0168
34Y	-11.0943	3.3849	-2.1319	11.0943	-3.3849	2.1319	-0.0029	0.0607	-0.0083
35X	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	-0.0124	0.0547	0.0026
35XY	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	-0.0126	0.0594	-0.0158
35Y	0.0000	0.0000	-0.2790	-0.0000	-0.0000	0.2790	0.0011	0.0588	-0.0079
36Y	0.0000	0.0000	-0.3349	-0.0000	-0.0000	0.3349	0.0025	0.0264	-0.0107
37X	0.0000	0.0000	-0.3616	-0.0000	-0.0000	0.3616	0.0009	0.0246	0.0019
37XY	0.0000	0.0000	-0.3616	-0.0000	0.0000	0.3616	0.0013	0.0264	-0.0103
37Y	0.0000	0.0000	-0.3616	-0.0000	-0.0000	0.3616	0.0042	0.0264	-0.0107
38X	0.0000	0.1018	-0.4381	-0.0000	-0.1018	0.4381	-0.0009	0.0252	0.0041
38XY	0.0000	0.1018	-0.4381	-0.0000	-0.1018	0.4381	0.0004	0.0273	-0.0095
38Y	0.0000	0.0000	-0.4381	-0.0000	-0.0000	0.4381	0.0067	0.0272	-0.0101
39Y	0.0000	0.0000	-0.3850	-0.0000	-0.0000	0.3850	0.0048	0.0232	-0.0110
40X	0.0000	0.0000	-0.1962	-0.0000	-0.0000	0.1962	0.0036	0.0192	0.0024
40XY	0.0000	0.0000	-0.1962	-0.0000	-0.0000	0.1962	0.0036	0.0224	-0.0109
40Y	0.0000	0.0000	-0.1962	-0.0000	-0.0000	0.1962	0.0059	0.0228	-0.0111
41X	0.0000	0.0746	-0.4307	-0.0000	-0.0746	0.4307	0.0026	0.0187	0.0063
41XY	0.0000	0.0746	-0.4307	-0.0000	-0.0746	0.4307	0.0027	0.0217	-0.0086
41Y	0.0000	0.0000	-0.4307	-0.0000	-0.0000	0.4307	0.0070	0.0224	-0.0121
44X	0.0000	0.2595	-0.1966	-0.0000	-0.2595	0.1966	0.0039	0.2072	-0.0221
45X	0.0000	0.0000	-0.0848	-0.0000	-0.0000	0.0848	-0.0002	0.0247	-0.1044
10X	0.0000	0.1938	-0.3664	-0.0000	-0.1938	0.3664	-0.0076	0.0403	0.0133
10XY	0.0000	0.1938	-0.3664	-0.0000	-0.1938	0.3664	-0.0073	0.0389	-0.0020
10Y	0.0000	0.0000	-0.3664	-0.0000	0.0000	0.3664	0.0035	0.0423	-0.0188
11X	0.0000	0.3633	-0.8864	-0.0000	-0.3633	0.8864	-0.0014	0.0254	0.0124
11XY	0.0000	0.3633	-0.8864	0.0000	-0.3633	0.8864	-0.0013	0.0273	-0.0027
11Y	0.0000	0.1820	-0.8864	-0.0000	-0.1820	0.8864	0.0064	0.0274	-0.0171
12X	0.0000	0.3792	-0.8067	0.0000	-0.3792	0.8067	0.0014	0.0181	0.0110
12XY	0.0000	0.3792	-0.8067	-0.0000	-0.3792	0.8067	0.0027	0.0206	-0.0030
12Y	0.0000	0.0000	-0.8067	-0.0000	0.0000	0.8067	0.0079	0.0218	-0.0152
13S	0.0000	0.4360	-3.1544	-0.0000	-0.4360	3.1544	0.0032	0.0063	-0.0079
42S	0.0000	0.0000	-1.4613	-0.0000	0.0000	1.4613	0.0020	0.0064	0.0002
43S	0.0000	0.0000	-0.1790	-0.0000	-0.0000	0.1790	0.0066	0.0272	-0.0142
46S	0.0000	0.0000	-0.0908	-0.0000	0.0000	0.0908	0.0019	0.0091	-0.2121
47S	0.0000	0.0000	-0.0908	-0.0000	0.0000	0.0908	0.0034	0.0079	-0.1861
13X	0.0000	0.9998	-2.0614	0.0000	-0.9998	2.0614	-0.0001	0.0080	0.0075
13XY	0.0000	0.9998	-2.0614	0.0000	-0.9998	2.0614	0.0032	0.0105	-0.0018
13Y	0.0000	0.4360	-2.0614	0.0000	-0.4360	2.0614	0.0041	0.0090	-0.0107
42Y	0.0000	0.0000	-1.4613	0.0000	0.0000	1.4613	0.0032	0.0098	-0.0033
43X	0.0000	0.1689	-0.1790	-0.0000	-0.1689	0.1790	-0.0013	0.0259	0.0052

Crossing Diagonal Check for Load Case "NESC 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-----							-----Alternate-----						
					-----Supported-----				-----Unsupported-----									
					L/R	RLX	RLY	RLZ	L/R	KL/R	Curve	No.	L/R	RLOUT	L/R	KL/R	Curve	No.
17Y	17P	Short only	-0.88	0.06	25.86	0.750	0.500	0.500	105.12	108.84		2	20.50	1.000	134.24	128.76		6
21P	21Y	Short only	-1.90	-1.89	43.23	0.750	0.500	0.500	87.63	95.72		2	35.96	1.000	111.96	115.98		3
21Y	21P	Short only	-1.89	-1.90	43.23	0.750	0.500	0.500	87.63	95.72		2	35.96	1.000	111.96	115.98		3

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	4.300	50.00	50.00	8.60
C2	8.804	50.00	50.00	17.61
C3	11.086	50.00	50.00	22.17
C4	0.107	50.00	50.00	0.21
C5	10.374	50.00	50.00	20.75
C6	10.576	50.00	50.00	21.15
C7	11.003	50.00	50.00	22.01
C8	12.652	50.00	50.00	25.30
C9	11.070	50.00	50.00	22.14
C10	11.300	50.00	50.00	22.60
C11	11.171	50.00	50.00	22.34
C12	12.872	50.00	50.00	25.74
C13	11.313	50.00	50.00	22.63
C14	12.187	50.00	50.00	24.37
C15	11.569	50.00	50.00	23.14
C16	10.921	50.00	50.00	21.84
C17	10.759	50.00	50.00	21.52
C18	11.757	50.00	50.00	23.51
C19	12.145	50.00	50.00	24.29
C20	12.132	50.00	50.00	24.26
C21	11.493	50.00	50.00	22.99
C22	11.773	50.00	50.00	23.55
C23	12.354	50.00	50.00	24.71
C24	12.198	50.00	50.00	24.40
C25	11.967	50.00	50.00	23.93
C26	11.793	50.00	50.00	23.59
C27	0.641	50.00	50.00	1.28
C28	0.633	50.00	50.00	1.27
C29	2.825	50.00	50.00	5.65
C30	0.818	50.00	50.00	1.64
C31	0.958	50.00	50.00	1.92
C32	2.291	50.00	50.00	4.58
C34	0.617	50.00	50.00	1.23
C35	0.613	50.00	50.00	1.23
C36	4.879	50.00	50.00	9.76
C37	0.788	50.00	50.00	1.58
C38	0.905	50.00	50.00	1.81
C39	2.107	50.00	50.00	4.21
C41	0.641	50.00	50.00	1.28
C42	0.955	50.00	50.00	1.91
C43	2.825	50.00	50.00	5.65
C44	5.203	50.00	50.00	10.41
C45	3.288	50.00	50.00	6.58
C46	3.269	50.00	50.00	6.54
C47	3.995	50.00	50.00	7.99
C48	3.983	50.00	50.00	7.97
C49	0.651	50.00	50.00	1.30
C50	0.931	50.00	50.00	1.86
C51	0.818	50.00	50.00	1.64
C52	1.129	50.00	50.00	2.26
C53	0.958	50.00	50.00	1.92

C54	1.355	50.00	50.00	2.71
C55	2.291	50.00	50.00	4.58
C56	3.184	50.00	50.00	6.37

\*\*\* 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 KL/R Length Label Comp. No.	Group Angle Curve No. Desc. Type Of Bolts	Angle Size	Steel Strength (ksi)	Max Usage Usage Cont- %	Max Use %	Comp. Control Member Comp.	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
PeakPost 123.47	L2.5x2.5x3/16 5 2	SAE 2.5X2.5X0.1875	33.0	52.41	Tens	42.27	14XY	-7.053	16.686	27.200	25.312	0.500	0.500	0.500	124.50
Leg1 60.61	L5x5x3/8 1 10	SAE 5X5X0.375	33.0	47.31	Comp	47.31	5XY	-50.398	106.517	136.000	253.125	1.000	1.000	1.000	60.61
Leg2 37.74	L8x8x1/2 1 10	SAE 8X8X0.5	33.0	54.51	Comp	54.51	8XY	-74.132	245.252	136.000	337.499	1.000	1.000	1.000	37.74
Leg3 38.42	L8x8x1/2 1 28	SAE 8X8X0.5	33.0	47.79	Tens	40.02	10Y	-97.990	244.867	380.800	944.999	1.000	1.000	1.000	38.42
Leg4 43.81	L8x8x1/2 1 28	SAE 8X8X0.5	33.0	42.33	Tens	41.64	12Y	-100.596	241.598	380.800	944.999	0.500	0.500	0.500	43.81
Leg5 45.77	L8x8x1/2 1 28	SAE 8X8X0.5	33.0	41.88	Comp	41.88	13P	-100.647	240.308	380.800	944.999	0.250	0.250	0.250	45.77
TTTC 105.61	L3x3x1/4 3 2	SAE 3X3X0.25	33.0	76.80	Tens	56.82	38X	-15.456	32.243	27.200	33.750	1.000	1.000	1.000	91.22
TTBC 121.28	L3x3x1/4 5 4	SAE 3X3X0.25	33.0	42.71	Tens	42.24	39Y	-11.564	27.374	54.400	67.500	1.000	1.000	1.000	121.62
ARMTT 112.83	L4x4x1/4 3 2	SAE 4X4X0.25	33.0	39.58	Comp	39.58	67XY	-10.765	40.528	27.200	33.750	1.000	1.000	1.000	105.66
MTTC 93.96	L4x4x1/4 3 0	SAE 4X4X0.25	33.0	80.08	Tens	70.83	43X	-33.804	47.728	0.000	0.000	1.000	1.000	1.000	67.92
MTBC 93.96	L4x4x1/4 3 0	SAE 4X4X0.25	33.0	47.72	Comp	47.72	46P	-22.774	47.728	0.000	0.000	1.000	1.000	1.000	67.92
ARMMT 112.83	L4x4x1/4 3 3	SAE 4X4X0.25	33.0	16.10	Comp	16.10	68X	-6.526	40.528	40.800	50.625	1.000	1.000	1.000	105.66
BTTC 94.13	L4x4x5/16 3 0	SAE 4X4X0.3125	33.0	85.02	Tens	72.33	49X	-42.652	58.971	0.000	0.000	1.000	1.000	1.000	68.27
BTBC 94.13	L4x4x5/16 3 0	SAE 4X4X0.3125	33.0	49.98	Comp	49.98	52Y	-29.473	58.971	0.000	0.000	1.000	1.000	1.000	68.27
ARMBT 112.83	L4x4x1/4 3 3	SAE 4X4X0.25	33.0	15.68	Comp	15.68	69X	-6.354	40.528	40.800	50.625	1.000	1.000	1.000	105.66
BTC 79.81	8x8x1/2 3 0	SAE 8X8X0.5	33.0	21.93	Tens	17.13	55XY	-35.757	208.793	0.000	0.000	1.000	1.000	1.000	39.62
BBC 82.88	6x6x1/2 3 9	SAE 6X6X0.5	33.0	33.23	Tens	23.03	59P	-28.183	152.178	122.400	303.750	1.000	1.000	1.000	45.76
Diag1 128.42	L2x2x3/16 5 2	SAE 2X2X0.1875	33.0	26.49	Comp	26.49	15X	-3.257	12.292	27.200	25.312	0.750	0.500	0.500	131.00
Diag2	L2.5x2.5x1/4	SAE 2.5X2.5X0.25	33.0	46.38	Comp	46.38	16X	-11.994	25.861	27.200	33.750	0.750	0.500	0.500	105.12

108.84	8.602	2	2																	
Diag3	L3x3x5/16	SAE	3X3X0.3125	33.0	26.86	Tens	25.76	19X	-10.511	NESC	Hea	43.226	40.800	63.281	0.750	0.500	0.500			87.63
95.72	8.602	2	3																	
Diag4	L3x3x3/16	SAE	3X3X0.1875	33.0	45.40	Comp	45.40	24Y	-6.061	NESC	Hea	13.351	27.200	25.312	1.000	1.000	1.000			163.08
152.87	8.100	5	2																	
Diag5	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	91.74	Comp	91.74	25Y	-3.201	NESC	Ext	3.489	27.200	25.312	0.570	0.780	0.570			300.76
257.78	18.775	5	2																	
Diag6	L3x2x1/4	SAU	3X2X0.25	33.0	46.99	Comp	46.99	26Y	-2.612	NESC	Hea	5.559	40.800	50.625	1.000	1.000	1.000			287.31
247.53	10.415	5	3																	
Diag7	L4x4x1/4	SAE	4X4X0.25	33.0	72.20	Comp	72.20	30Y	-31.210	NESC	Hea	43.226	54.400	67.500	1.000	1.000	1.000			101.54
106.15	6.727	2	4																	
Diag8	L4x4x3/8	SAE	4X4X0.375	33.0	62.19	Comp	62.19	33XY	-39.127	NESC	Hea	62.918	68.000	126.562	1.000	1.000	1.000			103.39
107.54	6.789	2	5																	
Diag9	L3.5x3x1/4	DAS	3.5X3X0.25	33.0	80.04	Comp	80.04	34XY	-40.252	NESC	Hea	50.291	54.400	67.500	0.540	1.000	0.540			137.62
133.47	18.923	5	2																	
Diag10	L4x3x7/16	DAS	4X3X0.4375	33.0	80.48	Comp	80.48	35Y	-44.321	NESC	Hea	55.072	81.600	177.187	0.250	1.000	0.250			189.13
172.72	30.734	5	3																	
Diag11	L3x3x5/16	SAE	3X3X0.3125	33.0	75.59	Comp	75.59	29XY	-21.759	NESC	Hea	28.788	40.800	63.281	1.000	1.000	1.000			137.05
133.03	6.727	5	3																	
Diag12	L3x3x3/16	SAE	3X3X0.1875	33.0	68.34	Comp	68.34	27P	-3.575	NESC	Hea	5.231	40.800	37.969	1.000	0.333	0.333			282.96
244.21	22.141	5	3																	
Horz1	L3x3x3/16	SAE	3X3X0.1875	33.0	30.57	Comp	30.57	60XY	-4.033	NESC	Ext	13.192	40.800	37.969	0.500	0.500	0.500			164.28
153.78	16.318	5	3																	
Horz2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.10	Comp	38.10	61X	-9.251	NESC	Hea	24.283	40.800	50.625	0.500	0.500	0.500			147.69
141.14	17.082	5	3																	
Br1	L2x2x3/16	SAE	2X2X0.1875	33.0	44.78	Tens	0.00	65Y	0.000			1.570	13.600	12.656	1.000	1.000	1.000			359.76
359.76	11.812	4	1																	
Br2	L3x3x3/16	SAE	3X3X0.1875	33.0	46.11	Comp	46.11	66P	-4.864	NESC	Ext	10.549	13.600	12.656	0.750	0.500	0.500			171.97
171.97	17.082	4	1																	
ArmBr1	Bar 2x3/16	BAR	2 x 0.1875	33.0	56.78	Tens	0.00	72Y	0.000			0.029	27.200	25.312	1.000	1.000	1.000			1911.63
1911.63	8.602	4	2																	
ArmBr2	ArmBr2	SAE	2X2X0.25	33.0	55.80	Comp	55.80	73XY	-6.505	NESC	Hea	11.659	13.600	16.875	0.750	0.500	0.500			151.91
151.91	9.899	4	1																	
ArmBr3	ArmBr3	SAU	3.5X2.5X0.25	33.0	82.36	Tens	0.00	78X	0.000			17.286	13.600	16.875	1.000	1.000	1.000			154.41
154.41	7.000	4	1																	
TTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	62.41	Comp	62.41	83XY	-6.062	NESC	Hea	9.713	27.200	25.312	1.000	1.000	1.000			152.28
144.64	5.000	5	2																	
TTBr2	L3x3x3/16	SAE	3X3X0.1875	33.0	98.88	Comp	98.88	80XY	-15.105	NESC	Hea	15.275	27.200	25.312	1.000	1.000	1.000			157.25
142.91	7.810	6	2																	
TTBr3	L3x3x5/16	SAE	3X3X0.3125	33.0	47.66	Tens	27.87	84P	-11.373	NESC	Ext	43.245	40.800	63.281	1.000	0.500	0.500			87.55
95.66	6.727	2	3																	
MTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	13.20	Tens	1.31	85Y	-0.127	NESC	Ext	9.713	27.200	25.312	1.000	1.000	1.000			152.28
144.64	5.000	5	2																	
MTBr2	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	58.14	Comp	58.14	89XY	-15.779	NESC	Hea	27.139	27.200	33.750	1.000	1.000	1.000			113.64
113.64	5.000	1	2																	
MTBr3	L4x3.5x1/4	SAU	4X3.5X0.25	33.0	85.21	Comp	85.21	86XY	-27.644	NESC	Hea	32.441	40.800	50.625	1.000	1.000	1.000			127.69
125.90	7.810	5	3																	
MTBr4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	79.45	Comp	79.45	88Y	-26.756	NESC	Hea	33.676	40.800	50.625	1.000	1.000	1.000			116.31
117.24	6.727	2	3																	
MTBr5	L4x4x1/4	SAE	4X4X0.25	33.0	63.45	Comp	63.45	90P	-27.427	NESC	Ext	43.226	54.400	67.500	1.000	1.000	1.000			101.54
106.15	6.727	2	4																	
BTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	13.72	Tens	1.30	91Y	-0.126	NESC	Hea	9.713	27.200	25.312	1.000	1.000	1.000			152.28
144.64	5.000	5	2																	
BTBr2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.37	Comp	47.37	95XY	-19.327	NESC	Hea	43.754	40.800	50.625	1.000	1.000	1.000			86.46
86.46	5.000	1	3																	
BTBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	73.68	Comp	73.68	92XY	-34.591	NESC	Hea	46.945	54.400	84.375	1.000	1.000	1.000			118.49
118.87	7.810	2	4																	
BTBr4	L4x4x1/4	SAE	4X4X0.25	33.0	75.70	Comp	75.70	94Y	-32.722	NESC	Hea	43.226	54.400	67.500	1.000	1.000	1.000			101.54
106.15	6.727	2	4																	

BTBr5	L4x4x3/8	SAE	4X4X0.375	33.0	48.29	Comp	48.29	96P	-30.585	NESC	Ext	63.333	68.000	126.562	1.000	1.000	1.000	102.44
106.83	6.727	2	5															
TBC1	L2x2x3/16	SAE	2X2X0.1875	33.0	55.81	Tens	37.81	97P	-1.691	NESC	Hea	4.471	13.600	12.656	1.000	1.000	1.000	213.20
213.20	7.000	4	1															
TBC2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	46.70	Tens	0.00	111X	0.000			14.856	27.200	33.750	1.000	1.000	1.000	171.08
151.41	7.000	6	2															
TBC3	L2x2x1/4	SAE	2X2X0.25	33.0	46.34	Tens	26.90	114Y	-3.659	NESC	Hea	16.440	13.600	16.875	0.750	0.500	0.500	127.70
127.70	8.322	4	1															
TBC4	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	26.77	Comp	26.77	113P	-3.049	NESC	Hea	11.388	27.200	25.312	1.000	1.000	1.000	169.70
150.56	7.000	6	2															
TTC1	L2x2x3/16	SAE	2X2X0.1875	33.0	48.67	Tens	39.31	121P	-1.757	NESC	Hea	4.471	13.600	12.656	1.000	1.000	1.000	213.20
213.20	7.000	4	1															
TTC2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.18	Comp	91.18	116P	-4.712	NESC	Hea	5.168	13.600	12.656	1.000	1.000	1.000	223.50
223.50	9.220	4	1															
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	36.93	Comp	36.93	142P	-3.824	NESC	Ext	10.354	27.200	25.312	1.000	1.000	1.000	169.70
157.91	7.000	5	2															
Horz4	L2x2x3/16	SAE	2X2X0.1875	33.0	23.73	Tens	16.12	146X	-0.720	NESC	Ext	4.471	13.600	12.656	1.000	1.000	1.000	213.20
213.20	7.000	4	1															
Horz5	L3.5x3.5x5/16	SAE	3.5X3.5X0.3125	33.0	9.62	Comp	9.62	147P	-3.820	NESC	Hea	39.688	40.800	63.281	1.000	1.000	1.000	121.74
121.37	7.000	5	3															
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	33.0	16.31	Comp	16.31	149X	-4.436	NESC	Hea	29.777	27.200	33.750	0.500	0.500	0.500	121.18
120.94	12.744	5	2															
BBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	5.14	Comp	5.14	150Y	-0.485	NESC	Hea	9.436	27.200	25.312	1.000	1.000	1.000	155.05
146.75	5.091	5	2															
BBr2	L4x4x3/8	SAE	4X4X0.375	33.0	44.12	Comp	44.12	151XY	-26.169	NESC	Hea	59.320	68.000	126.562	1.000	1.000	1.000	111.37
113.52	7.313	2	5															
BBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	47.14	Tens	39.50	154X	-21.487	NESC	Ext	65.583	54.400	84.375	1.000	1.000	1.000	77.23
77.23	5.091	1	4															
BBr4	L7x4x7/16	SAU	7X4X0.4375	33.0	11.38	Tens	10.13	156XY	-13.204	NESC	Hea	130.317	149.600	324.843	0.500	0.750	0.500	54.65
70.98	6.800	2	11															
BTC1	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	10.92	Tens	0.00	157P	0.000			16.690	27.200	33.750	1.000	1.000	1.000	185.88
170.24	10.750	5	2															
BTC2	L2x2x3/16	SAE	2X2X0.1875	33.0	46.41	Comp	46.41	158X	-2.289	NESC	Ext	4.933	27.200	25.312	0.750	0.500	0.500	228.84
202.97	15.027	5	2															
BTC3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	17.22	Tens	0.00	161X	0.000			24.779	40.800	50.625	1.000	1.000	1.000	122.16
121.69	5.375	5	3															
BTC4	L2.5x1.5x1/4	SAU	2.5X1.5X0.25	33.0	21.45	Comp	21.45	162Y	-2.746	NESC	Ext	12.805	40.800	50.625	0.500	0.750	0.500	152.69
144.95	7.041	5	3															
BTC5	L2x2x1/4	SAE	2X2X0.25	33.0	15.17	Tens	0.00	164X	0.000			15.020	27.200	33.750	1.000	1.000	1.000	138.11
133.84	4.500	5	2															
BBC1	L3x3x3/16	SAE	3X3X0.1875	33.0	4.92	Comp	4.92	165P	-0.309	NESC	Hea	6.278	27.200	25.312	1.000	1.000	1.000	255.02
222.93	12.666	5	2															
BBC2	L2x2x3/16	SAE	2X2X0.1875	33.0	37.07	Comp	37.07	166Y	-1.200	NESC	Hea	3.237	13.600	12.656	0.750	0.500	0.500	250.54
250.54	16.452	4	1															
BBC3	L3x3x1/4	SAE	3X3X0.25	33.0	2.81	Comp	2.81	168X	-0.493	NESC	Ext	17.576	27.200	33.750	1.000	0.500	0.500	163.43
153.14	12.666	5	2															

Group Summary (Tension Portion):

Group Hole	Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Usage Cont-rol	Max Tension Use	Tension Control	Tension Force (kips)	Tension Control	Net Section Capacity (kips)	Tension Connect.	Tension Connect.	Tension Connect.	Tension Connect.	Tension Length (ft)	No. Of Bolts	No. Of Holes	
(in)																				

----- PeakPost 0.875	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	52.41	Tens	52.41	1X	10.117	NESC	Hea	21.917	27.200	25.312	19.301	9.708	2	1.000
Leg1 0.875	L5x5x3/8	SAE	5X5X0.375	33.0	47.31	Comp	37.69	4X	31.185	NESC	Hea	82.747	0.000	0.000	0.000	5.000	0	3.360
Leg2 0.875	L8x8x1/2	SAE	8X8X0.5	33.0	54.51	Comp	44.90	8X	61.064	NESC	Hea	198.000	136.000	337.499	312.500	5.000	10	4.000
Leg3 0.875	L8x8x1/2	SAE	8X8X0.5	33.0	47.79	Tens	47.79	10X	94.619	NESC	Hea	198.000	380.800	944.999	874.999	5.091	28	4.000
Leg4 0.875	L8x8x1/2	SAE	8X8X0.5	33.0	42.33	Tens	42.33	11X	83.819	NESC	Hea	198.000	0.000	0.000	0.000	5.091	0	4.000
Leg5 0.875	L8x8x1/2	SAE	8X8X0.5	33.0	41.88	Comp	38.46	13X	76.158	NESC	Hea	198.000	380.800	944.999	874.999	24.257	28	4.000
TTTC 0.875	L3x3x1/4	SAE	3X3X0.25	33.0	76.80	Tens	76.80	38Y	17.749	NESC	Ext	36.271	27.200	33.750	23.109	4.500	2	1.000
TTBC 0.875	L3x3x1/4	SAE	3X3X0.25	33.0	42.71	Tens	42.71	40XY	12.716	NESC	Ext	29.774	0.000	0.000	0.000	4.500	0	2.000
ARMTT 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	39.58	Comp	16.14	67X	4.391	NESC	Hea	51.121	27.200	33.750	38.750	7.000	2	1.000
MTTC 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	80.08	Tens	80.08	43Y	35.735	NESC	Hea	44.624	0.000	0.000	0.000	4.500	0	2.000
MTBC 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	47.72	Comp	45.64	46XY	20.365	NESC	Ext	44.624	0.000	0.000	0.000	4.500	0	2.000
ARMMT 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	16.10	Comp	3.18	68P	1.297	NESC	Ext	49.952	40.800	50.625	44.118	7.000	3	1.180
BTTC 0.875	L4x4x5/16	SAE	4X4X0.3125	33.0	85.02	Tens	85.02	49Y	46.794	NESC	Hea	55.038	0.000	0.000	0.000	4.500	0	2.000
BTBC 0.875	L4x4x5/16	SAE	4X4X0.3125	33.0	49.98	Comp	46.18	52XY	25.418	NESC	Hea	55.038	0.000	0.000	0.000	4.500	0	2.000
ARMBT 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	15.68	Comp	3.56	69P	1.452	NESC	Ext	49.952	40.800	50.625	44.118	7.000	3	1.180
BTC 0.875	8x8x1/2	SAE	8X8X0.5	33.0	21.93	Tens	21.93	55Y	36.232	NESC	Hea	165.206	0.000	0.000	0.000	5.250	0	5.000
BBC 0.875	6x6x1/2	SAE	6X6X0.5	33.0	33.23	Tens	33.23	59XY	40.673	NESC	Hea	131.794	122.400	303.750	330.882	4.500	9	3.000
Diag1 0.875	L2x2x3/16	SAE	2X2X0.1875	33.0	26.49	Comp	16.31	15XY	2.644	NESC	Hea	16.214	27.200	25.312	18.316	8.602	2	1.000
Diag2 0.875	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	46.38	Comp	44.44	17XY	12.088	NESC	Hea	28.846	27.200	33.750	29.203	8.602	2	1.000
Diag3 0.875	L3x3x5/16	SAE	3X3X0.3125	33.0	26.86	Tens	26.86	20XY	10.961	NESC	Hea	44.745	40.800	63.281	56.660	8.602	3	1.000
Diag4 0.875	L3x3x3/16	SAE	3X3X0.1875	33.0	45.40	Comp	43.66	23XY	8.581	NESC	Hea	27.500	27.200	25.312	19.652	6.698	2	1.000
Diag5 0.875	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	91.74	Comp	44.91	25XY	8.615	NESC	Hea	19.184	27.200	25.312	24.609	18.775	2	1.000
Diag6 0.875	L3x2x1/4	SAU	3X2X0.25	33.0	46.99	Comp	26.99	26X	7.786	NESC	Hea	28.846	40.800	50.625	36.328	10.415	3	1.000
Diag7 0.875	L4x4x1/4	SAE	4X4X0.25	33.0	72.20	Comp	61.52	30X	28.850	NESC	Ext	46.898	54.400	67.500	58.823	6.727	4	1.650
Diag8 0.875	L4x4x3/8	SAE	4X4X0.375	33.0	62.19	Comp	57.34	33Y	38.993	NESC	Hea	69.934	68.000	126.562	110.294	6.789	5	1.540
Diag9 0.875	L3.5x3x1/4	DAS	3.5X3X0.25	33.0	80.04	Comp	41.11	34P	19.848	NESC	Ext	72.542	54.400	67.500	48.281	18.923	2	2.000
Diag10 0.875	L4x3x7/16	DAS	4X3X0.4375	33.0	80.48	Comp	36.91	35X	30.118	NESC	Ext	121.751	81.600	177.187	164.062	30.734	3	2.000
Diag11 0.875	L3x3x5/16	SAE	3X3X0.3125	33.0	75.59	Comp	51.95	28XY	21.195	NESC	Hea	44.745	40.800	63.281	46.699	6.727	3	1.000
Diag12 0.875	L3x3x3/16	SAE	3X3X0.1875	33.0	68.34	Comp	25.50	27XY	7.011	NESC	Hea	27.500	40.800	37.969	35.156	22.141	3	1.000



0.875	Horz1	L3x3x3/16	SAE	3X3X0.1875	33.0	30.57	Comp	0.00	60Y	0.000	27.500	40.800	37.969	26.473	16.318	3	1.000	
0.875	Horz2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	38.10	Comp	0.00	61X	0.000	43.696	40.800	50.625	36.422	17.082	3	1.000	
0.875	Br1	L2x2x3/16	SAE	2X2X0.1875	33.0	44.78	Tens	44.78	63P	3.668	NESC Ext	16.214	13.600	12.656	8.191	11.812	1	1.000
0.875	Br2	L3x3x3/16	SAE	3X3X0.1875	33.0	46.11	Comp	0.00	66P	0.000	27.500	13.600	12.656	9.949	17.082	1	1.000	
0.875	ArmBr1	Bar 2x3/16	BAR	2 x 0.1875	33.0	56.78	Tens	56.78	72Y	3.557	NESC Hea	6.265	27.200	25.312	17.824	8.602	2	1.000
0.875	ArmBr2	ArmBr2	SAE	2X2X0.25	33.0	55.80	Comp	55.49	73X	7.140	NESC Hea	21.421	13.600	16.875	12.868	9.899	1	1.000
0.875	ArmBr3	ArmBr3	SAU	3.5X2.5X0.25	33.0	82.36	Tens	82.36	78X	11.202	NESC Hea	28.846	13.600	16.875	15.047	7.000	1	1.000
0.875	TTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	62.41	Comp	24.80	83Y	4.020	NESC Hea	16.214	27.200	25.312	19.160	5.000	2	1.000
0.875	TTBr2	L3x3x3/16	SAE	3X3X0.1875	33.0	98.88	Comp	66.20	80Y	15.515	NESC Hea	27.500	27.200	25.312	23.437	7.810	2	1.000
0.875	TTBr3	L3x3x5/16	SAE	3X3X0.3125	33.0	47.66	Tens	47.66	84XY	19.444	NESC Hea	44.745	40.800	63.281	45.410	6.727	3	1.000
0.875	MTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	13.20	Tens	13.20	87XY	2.141	NESC Hea	16.214	27.200	25.312	19.301	5.000	2	1.000
0.875	MTBr2	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	58.14	Comp	54.56	89P	14.841	NESC Ext	32.410	27.200	33.750	31.250	5.000	2	1.000
0.875	MTBr3	L4x3.5x1/4	SAU	4X3.5X0.25	33.0	85.21	Comp	69.11	86Y	28.195	NESC Hea	44.531	40.800	50.625	44.118	7.810	3	1.420
0.875	MTBr4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	79.45	Comp	54.77	88X	21.144	NESC Ext	40.448	40.800	50.625	38.603	6.727	3	1.500
0.875	MTBr5	L4x4x1/4	SAE	4X4X0.25	33.0	63.45	Comp	58.06	90XY	27.645	NESC Ext	47.613	54.400	67.500	58.823	6.727	4	1.540
0.875	BTBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	13.72	Tens	13.72	93XY	2.224	NESC Hea	16.214	27.200	25.312	19.301	5.000	2	1.000
0.875	BTBr2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	47.37	Comp	44.45	95Y	18.135	NESC Hea	43.696	40.800	50.625	42.516	5.000	3	1.000
0.875	BTBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	73.68	Comp	64.82	92Y	35.263	NESC Hea	59.748	54.400	84.375	73.529	7.810	4	1.420
0.875	BTBr4	L4x4x1/4	SAE	4X4X0.25	33.0	75.70	Comp	52.69	94XY	26.146	NESC Hea	49.627	54.400	67.500	58.823	6.727	4	1.230
0.875	BTBr5	L4x4x3/8	SAE	4X4X0.375	33.0	48.29	Comp	47.39	96X	32.126	NESC Hea	67.790	68.000	126.562	110.294	6.727	5	1.760
0.875	TBC1	L2x2x3/16	SAE	2X2X0.1875	33.0	55.81	Tens	55.81	104XY	4.572	NESC Hea	16.214	13.600	12.656	8.191	9.220	1	1.000
0.875	TBC2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	46.70	Tens	46.70	111P	12.703	NESC Hea	28.846	27.200	33.750	28.125	7.000	2	1.000
0.875	TBC3	L2x2x1/4	SAE	2X2X0.25	33.0	46.34	Tens	46.34	112X	5.061	NESC Hea	21.421	13.600	16.875	10.922	8.322	1	1.000
0.875	TBC4	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	26.77	Comp	5.54	113X	1.168	NESC Ext	21.917	27.200	25.312	21.094	7.000	2	1.000
0.875	TTC1	L2x2x3/16	SAE	2X2X0.1875	33.0	48.67	Tens	48.67	115P	3.576	NESC Hea	16.214	13.600	12.656	7.348	7.000	1	1.000
0.875	TTC2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	91.18	Comp	3.62	122P	0.380	NESC Hea	21.917	13.600	12.656	10.512	8.322	1	1.000
0.875	Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	36.93	Comp	9.71	142X	1.759	NESC Ext	21.917	27.200	25.312	18.105	7.000	2	1.000
0.875	Horz4	L2x2x3/16	SAE	2X2X0.1875	33.0	23.73	Tens	23.73	146P	1.944	NESC Hea	16.214	13.600	12.656	8.191	7.000	1	1.000
0.875	Horz5	L3.5x3.5x5/16	SAE	3.5X3.5X0.3125	33.0	9.62	Comp	2.98	147X	1.215	NESC Ext	53.952	40.800	63.281	47.988	7.000	3	1.000
0.875	Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	33.0	16.31	Comp	16.22	149P	4.411	NESC Ext	39.835	27.200	33.750	28.125	12.744	2	1.000

0.875	BBr1	L2x2x3/16	SAE	2X2X0.1875	33.0	5.14	Comp	2.08	152X	0.328	NESC Ext	16.214	27.200	25.312	15.785	5.091	2	1.000
0.875	BBr2	L4x4x3/8	SAE	4X4X0.375	33.0	44.12	Comp	40.41	151Y	27.482	NESC Hea	70.324	68.000	126.562	110.294	7.313	5	1.500
0.875	BBr3	L4x4x5/16	SAE	4X4X0.3125	33.0	47.14	Tens	47.14	154Y	25.643	NESC Hea	63.159	54.400	84.375	59.355	5.091	4	1.000
0.875	BBr4	L7x4x7/16	SAU	7X4X0.4375	33.0	11.38	Tens	11.38	155X	11.736	NESC Hea	103.105	149.600	324.843	300.781	6.789	11	3.000
0.875	BTC1	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	10.92	Tens	10.92	157P	2.964	NESC Ext	43.696	27.200	33.750	27.141	10.750	2	1.000
0.875	BTC2	L2x2x3/16	SAE	2X2X0.1875	33.0	46.41	Comp	3.47	158Y	0.562	NESC Hea	16.214	27.200	25.312	19.301	15.027	2	1.000
0.875	BTC3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	17.22	Tens	17.22	161X	4.941	NESC Ext	28.698	40.800	50.625	32.016	5.375	3	1.000
0.875	BTC4	L2.5x1.5x1/4	SAU	2.5X1.5X0.25	33.0	21.45	Comp	0.00	163Y	0.000		21.421	40.800	50.625	41.016	7.010	3	1.000
0.875	BTC5	L2x2x1/4	SAE	2X2X0.25	33.0	15.17	Tens	15.17	164P	3.193	NESC Ext	21.421	27.200	33.750	21.047	4.500	2	1.000
0.875	BBC1	L3x3x3/16	SAE	3X3X0.1875	33.0	4.92	Comp	0.00	165P	0.000		27.500	27.200	25.312	19.652	12.666	2	1.000
0.875	BBC2	L2x2x3/16	SAE	2X2X0.1875	33.0	37.07	Comp	18.24	166XY	1.494	NESC Hea	16.214	13.600	12.656	8.191	16.452	1	1.000
0.875	BBC3	L3x3x1/4	SAE	3X3X0.25	33.0	2.81	Comp	0.73	168P	0.192	NESC Hea	36.271	27.200	33.750	26.203	12.666	2	1.000

\*\*\* Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	82.13	78X	Angle
NESC Extreme	91.74	25Y	Angle
NESC Heavy Broken Wire	98.88	80XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	8.60	NESC Heavy	0.0
C2	Clamp	17.61	NESC Heavy Broken Wire	0.0
C3	Clamp	22.17	NESC Heavy	0.0
C4	Clamp	23.19	NESC Heavy	0.0
C5	Clamp	20.75	NESC Heavy	0.0
C6	Clamp	21.15	NESC Heavy	0.0
C7	Clamp	22.01	NESC Heavy	0.0
C8	Clamp	25.30	NESC Heavy	0.0
C9	Clamp	22.14	NESC Heavy	0.0
C10	Clamp	22.60	NESC Heavy	0.0
C11	Clamp	22.34	NESC Heavy	0.0
C12	Clamp	25.74	NESC Heavy	0.0

C13	Clamp	22.63	NESC Heavy	0.0
C14	Clamp	24.37	NESC Heavy	0.0
C15	Clamp	23.14	NESC Heavy	0.0
C16	Clamp	21.84	NESC Heavy	0.0
C17	Clamp	21.52	NESC Heavy	0.0
C18	Clamp	23.51	NESC Heavy	0.0
C19	Clamp	24.29	NESC Heavy	0.0
C20	Clamp	24.26	NESC Heavy	0.0
C21	Clamp	22.99	NESC Heavy	0.0
C22	Clamp	23.55	NESC Heavy	0.0
C23	Clamp	24.71	NESC Heavy	0.0
C24	Clamp	24.40	NESC Heavy	0.0
C25	Clamp	23.93	NESC Heavy	0.0
C26	Clamp	23.59	NESC Heavy	0.0
C27	Clamp	1.28	NESC Heavy	0.0
C28	Clamp	1.27	NESC Heavy	0.0
C29	Clamp	5.65	NESC Heavy	0.0
C30	Clamp	1.80	NESC Extreme	0.0
C31	Clamp	1.92	NESC Heavy	0.0
C32	Clamp	4.58	NESC Heavy	0.0
C34	Clamp	1.23	NESC Heavy	0.0
C35	Clamp	1.23	NESC Heavy	0.0
C36	Clamp	13.16	NESC Extreme	0.0
C37	Clamp	1.80	NESC Extreme	0.0
C38	Clamp	1.83	NESC Extreme	0.0
C39	Clamp	4.21	NESC Heavy	0.0
C41	Clamp	1.28	NESC Heavy	0.0
C42	Clamp	1.91	NESC Heavy	0.0
C43	Clamp	5.65	NESC Heavy	0.0
C44	Clamp	13.28	NESC Extreme	0.0
C45	Clamp	13.18	NESC Extreme	0.0
C46	Clamp	13.18	NESC Extreme	0.0
C47	Clamp	20.32	NESC Extreme	0.0
C48	Clamp	20.32	NESC Extreme	0.0
C49	Clamp	1.30	NESC Heavy	0.0
C50	Clamp	1.86	NESC Heavy	0.0
C51	Clamp	1.80	NESC Extreme	0.0
C52	Clamp	2.26	NESC Heavy	0.0
C53	Clamp	1.92	NESC Heavy	0.0
C54	Clamp	2.71	NESC Heavy	0.0
C55	Clamp	4.58	NESC Heavy	0.0
C56	Clamp	6.37	NESC Heavy	0.0

**Loads At Insulator Attachments For All Load Cases:**

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	C1	Clamp	1P	0.007	4.056	1.428	4.300
NESC Heavy	C2	Clamp	1X	0.008	5.162	1.853	5.485
NESC Heavy	C3	Clamp	15P	10.534	3.222	1.242	11.086
NESC Heavy	C4	Clamp	15X	11.032	3.361	1.197	11.595
NESC Heavy	C5	Clamp	15XY	-9.691	3.089	2.041	10.374
NESC Heavy	C6	Clamp	15Y	-9.901	3.106	2.038	10.576
NESC Heavy	C7	Clamp	16P	10.453	3.200	1.252	11.003
NESC Heavy	C8	Clamp	16X	12.072	3.604	1.160	12.652
NESC Heavy	C9	Clamp	16XY	-10.378	3.252	2.065	11.070

NESC Heavy	C10	Clamp	16Y	-10.621	3.264	2.052	11.300
NESC Heavy	C11	Clamp	17P	10.617	3.246	1.238	11.171
NESC Heavy	C12	Clamp	17X	12.289	3.653	1.153	12.872
NESC Heavy	C13	Clamp	17XY	-10.618	3.307	2.074	11.313
NESC Heavy	C14	Clamp	17Y	-11.491	3.474	2.098	12.187
NESC Heavy	C15	Clamp	22P	11.012	3.319	1.250	11.569
NESC Heavy	C16	Clamp	22X	10.378	3.174	1.227	10.921
NESC Heavy	C17	Clamp	22XY	-10.080	3.140	2.069	10.759
NESC Heavy	C18	Clamp	22Y	-11.066	3.369	2.105	11.757
NESC Heavy	C19	Clamp	28P	11.574	3.457	1.257	12.145
NESC Heavy	C20	Clamp	28X	11.568	3.452	1.199	12.132
NESC Heavy	C21	Clamp	28XY	-10.801	3.313	2.111	11.493
NESC Heavy	C22	Clamp	28Y	-11.080	3.376	2.110	11.773
NESC Heavy	C23	Clamp	34P	11.781	3.504	1.247	12.354
NESC Heavy	C24	Clamp	34X	11.631	3.471	1.211	12.198
NESC Heavy	C25	Clamp	34XY	-11.265	3.422	2.144	11.967
NESC Heavy	C26	Clamp	34Y	-11.094	3.385	2.132	11.793
NESC Heavy	C27	Clamp	3XY	0.000	0.222	0.602	0.641
NESC Heavy	C28	Clamp	5XY	0.000	0.260	0.577	0.633
NESC Heavy	C29	Clamp	7XY	-0.033	0.376	2.799	2.825
NESC Heavy	C30	Clamp	9XY	0.000	0.257	0.776	0.818
NESC Heavy	C31	Clamp	11XY	0.000	0.363	0.886	0.958
NESC Heavy	C32	Clamp	13XY	0.000	1.000	2.061	2.291
NESC Heavy	C34	Clamp	3Y	0.000	0.137	0.602	0.617
NESC Heavy	C35	Clamp	5Y	0.000	0.137	0.597	0.613
NESC Heavy	C36	Clamp	7Y	-0.967	-1.398	4.573	4.879
NESC Heavy	C37	Clamp	9Y	0.000	0.137	0.776	0.788
NESC Heavy	C38	Clamp	11Y	0.000	0.182	0.886	0.905
NESC Heavy	C39	Clamp	13Y	0.000	0.436	2.061	2.107
NESC Heavy	C41	Clamp	3X	0.000	0.222	0.602	0.641
NESC Heavy	C42	Clamp	3P	0.000	0.137	0.946	0.955
NESC Heavy	C43	Clamp	7X	0.033	0.376	2.799	2.825
NESC Heavy	C44	Clamp	7P	0.967	-1.398	4.917	5.203
NESC Heavy	C45	Clamp	2X	0.501	0.908	3.120	3.288
NESC Heavy	C46	Clamp	2XY	-0.501	0.908	3.100	3.269
NESC Heavy	C47	Clamp	2Y	1.679	2.698	2.421	3.995
NESC Heavy	C48	Clamp	2P	-1.679	2.698	2.401	3.983
NESC Heavy	C49	Clamp	5X	0.000	0.260	0.597	0.651
NESC Heavy	C50	Clamp	5P	0.000	0.137	0.921	0.931
NESC Heavy	C51	Clamp	9X	0.000	0.257	0.776	0.818
NESC Heavy	C52	Clamp	9P	0.000	0.137	1.120	1.129
NESC Heavy	C53	Clamp	11X	0.000	0.363	0.886	0.958
NESC Heavy	C54	Clamp	11P	0.000	0.182	1.342	1.355
NESC Heavy	C55	Clamp	13X	0.000	1.000	2.061	2.291
NESC Heavy	C56	Clamp	13S	0.000	0.436	3.154	3.184
NESC Extreme	C1	Clamp	1P	0.007	2.212	0.521	2.273
NESC Extreme	C2	Clamp	1X	0.010	3.598	0.637	3.654
NESC Extreme	C3	Clamp	15P	6.116	2.570	0.453	6.649
NESC Extreme	C4	Clamp	15X	6.389	2.627	0.418	6.920
NESC Extreme	C5	Clamp	15XY	-5.734	2.523	1.031	6.349
NESC Extreme	C6	Clamp	15Y	-5.842	2.551	1.035	6.458
NESC Extreme	C7	Clamp	16P	5.907	2.481	0.467	6.424
NESC Extreme	C8	Clamp	16X	6.726	2.667	0.403	7.247
NESC Extreme	C9	Clamp	16XY	-5.935	2.531	1.041	6.536
NESC Extreme	C10	Clamp	16Y	-6.049	2.551	1.036	6.647
NESC Extreme	C11	Clamp	17P	5.782	2.408	0.464	6.281
NESC Extreme	C12	Clamp	17X	6.601	2.586	0.411	7.101
NESC Extreme	C13	Clamp	17XY	-5.862	2.468	1.035	6.444
NESC Extreme	C14	Clamp	17Y	-6.275	2.561	1.055	6.859

NESC Extreme	C15	Clamp	22P	6.352	2.616	0.450	6.884
NESC Extreme	C16	Clamp	22X	6.060	2.556	0.428	6.591
NESC Extreme	C17	Clamp	22XY	-5.936	2.572	1.042	6.553
NESC Extreme	C18	Clamp	22Y	-6.443	2.686	1.068	7.062
NESC Extreme	C19	Clamp	28P	6.464	2.612	0.449	6.986
NESC Extreme	C20	Clamp	28X	6.481	2.615	0.409	7.001
NESC Extreme	C21	Clamp	28XY	-6.145	2.584	1.052	6.749
NESC Extreme	C22	Clamp	28Y	-6.282	2.612	1.052	6.884
NESC Extreme	C23	Clamp	34P	6.348	2.536	0.442	6.850
NESC Extreme	C24	Clamp	34X	6.298	2.527	0.420	6.799
NESC Extreme	C25	Clamp	34XY	-6.173	2.542	1.055	6.759
NESC Extreme	C26	Clamp	34Y	-6.096	2.529	1.046	6.682
NESC Extreme	C27	Clamp	3XY	0.000	0.500	0.204	0.540
NESC Extreme	C28	Clamp	5XY	0.000	0.500	0.204	0.540
NESC Extreme	C29	Clamp	7XY	1.043	-1.143	-0.177	1.557
NESC Extreme	C30	Clamp	9XY	0.000	0.742	0.507	0.899
NESC Extreme	C31	Clamp	11XY	0.000	0.816	0.408	0.913
NESC Extreme	C32	Clamp	13XY	0.000	1.619	0.554	1.712
NESC Extreme	C34	Clamp	3Y	0.000	0.500	0.204	0.540
NESC Extreme	C35	Clamp	5Y	0.000	0.500	0.204	0.540
NESC Extreme	C36	Clamp	7Y	-2.516	-3.485	4.982	6.580
NESC Extreme	C37	Clamp	9Y	0.000	0.742	0.507	0.899
NESC Extreme	C38	Clamp	11Y	0.000	0.816	0.408	0.913
NESC Extreme	C39	Clamp	13Y	0.000	1.619	0.554	1.712
NESC Extreme	C41	Clamp	3X	0.000	0.500	0.204	0.540
NESC Extreme	C42	Clamp	3P	0.000	0.500	0.283	0.575
NESC Extreme	C43	Clamp	7X	-1.043	-1.143	-0.177	1.557
NESC Extreme	C44	Clamp	7P	2.516	-3.485	5.061	6.640
NESC Extreme	C45	Clamp	2X	3.039	4.979	3.064	6.589
NESC Extreme	C46	Clamp	2XY	-3.039	4.979	3.064	6.589
NESC Extreme	C47	Clamp	2Y	5.258	8.524	-1.708	10.160
NESC Extreme	C48	Clamp	2P	-5.258	8.524	-1.708	10.160
NESC Extreme	C49	Clamp	5X	0.000	0.500	0.204	0.540
NESC Extreme	C50	Clamp	5P	0.000	0.500	0.283	0.575
NESC Extreme	C51	Clamp	9X	0.000	0.742	0.507	0.899
NESC Extreme	C52	Clamp	9P	0.000	0.742	0.586	0.945
NESC Extreme	C53	Clamp	11X	0.000	0.816	0.408	0.913
NESC Extreme	C54	Clamp	11P	0.000	0.816	0.513	0.964
NESC Extreme	C55	Clamp	13X	0.000	1.619	0.554	1.712
NESC Extreme	C56	Clamp	13S	0.000	1.619	0.806	1.809
NESC Heavy Broken Wire	C1	Clamp	1P	0.007	4.056	1.428	4.300
NESC Heavy Broken Wire	C2	Clamp	1X	-8.305	2.628	1.280	8.804
NESC Heavy Broken Wire	C3	Clamp	15P	10.534	3.222	1.242	11.086
NESC Heavy Broken Wire	C4	Clamp	15X	0.000	0.046	0.097	0.107
NESC Heavy Broken Wire	C5	Clamp	15XY	-9.691	3.089	2.041	10.374
NESC Heavy Broken Wire	C6	Clamp	15Y	-9.901	3.106	2.038	10.576
NESC Heavy Broken Wire	C7	Clamp	16P	10.453	3.200	1.252	11.003
NESC Heavy Broken Wire	C8	Clamp	16X	12.072	3.604	1.160	12.652
NESC Heavy Broken Wire	C9	Clamp	16XY	-10.378	3.252	2.065	11.070
NESC Heavy Broken Wire	C10	Clamp	16Y	-10.621	3.264	2.052	11.300
NESC Heavy Broken Wire	C11	Clamp	17P	10.617	3.246	1.238	11.171
NESC Heavy Broken Wire	C12	Clamp	17X	12.289	3.653	1.153	12.872
NESC Heavy Broken Wire	C13	Clamp	17XY	-10.618	3.307	2.074	11.313
NESC Heavy Broken Wire	C14	Clamp	17Y	-11.491	3.474	2.098	12.187
NESC Heavy Broken Wire	C15	Clamp	22P	11.012	3.319	1.250	11.569
NESC Heavy Broken Wire	C16	Clamp	22X	10.378	3.174	1.227	10.921
NESC Heavy Broken Wire	C17	Clamp	22XY	-10.080	3.140	2.069	10.759
NESC Heavy Broken Wire	C18	Clamp	22Y	-11.066	3.369	2.105	11.757
NESC Heavy Broken Wire	C19	Clamp	28P	11.574	3.457	1.257	12.145

NESC Heavy Broken Wire	C20	Clamp	28X	11.568	3.452	1.199	12.132
NESC Heavy Broken Wire	C21	Clamp	28XY	-10.801	3.313	2.111	11.493
NESC Heavy Broken Wire	C22	Clamp	28Y	-11.080	3.376	2.110	11.773
NESC Heavy Broken Wire	C23	Clamp	34P	11.781	3.504	1.247	12.354
NESC Heavy Broken Wire	C24	Clamp	34X	11.631	3.471	1.211	12.198
NESC Heavy Broken Wire	C25	Clamp	34XY	-11.265	3.422	2.144	11.967
NESC Heavy Broken Wire	C26	Clamp	34Y	-11.094	3.385	2.132	11.793
NESC Heavy Broken Wire	C27	Clamp	3XY	0.000	0.222	0.602	0.641
NESC Heavy Broken Wire	C28	Clamp	5XY	0.000	0.260	0.577	0.633
NESC Heavy Broken Wire	C29	Clamp	7XY	-0.033	0.376	2.799	2.825
NESC Heavy Broken Wire	C30	Clamp	9XY	0.000	0.257	0.776	0.818
NESC Heavy Broken Wire	C31	Clamp	11XY	0.000	0.363	0.886	0.958
NESC Heavy Broken Wire	C32	Clamp	13XY	0.000	1.000	2.061	2.291
NESC Heavy Broken Wire	C34	Clamp	3Y	0.000	0.137	0.602	0.617
NESC Heavy Broken Wire	C35	Clamp	5Y	0.000	0.137	0.597	0.613
NESC Heavy Broken Wire	C36	Clamp	7Y	-0.967	-1.398	4.573	4.879
NESC Heavy Broken Wire	C37	Clamp	9Y	0.000	0.137	0.776	0.788
NESC Heavy Broken Wire	C38	Clamp	11Y	0.000	0.182	0.886	0.905
NESC Heavy Broken Wire	C39	Clamp	13Y	0.000	0.436	2.061	2.107
NESC Heavy Broken Wire	C41	Clamp	3X	0.000	0.222	0.602	0.641
NESC Heavy Broken Wire	C42	Clamp	3P	0.000	0.137	0.946	0.955
NESC Heavy Broken Wire	C43	Clamp	7X	0.033	0.376	2.799	2.825
NESC Heavy Broken Wire	C44	Clamp	7P	0.967	-1.398	4.917	5.203
NESC Heavy Broken Wire	C45	Clamp	2X	0.501	0.908	3.120	3.288
NESC Heavy Broken Wire	C46	Clamp	2XY	-0.501	0.908	3.100	3.269
NESC Heavy Broken Wire	C47	Clamp	2Y	1.679	2.698	2.421	3.995
NESC Heavy Broken Wire	C48	Clamp	2P	-1.679	2.698	2.401	3.983
NESC Heavy Broken Wire	C49	Clamp	5X	0.000	0.260	0.597	0.651
NESC Heavy Broken Wire	C50	Clamp	5P	0.000	0.137	0.921	0.931
NESC Heavy Broken Wire	C51	Clamp	9X	0.000	0.257	0.776	0.818
NESC Heavy Broken Wire	C52	Clamp	9P	0.000	0.137	1.120	1.129
NESC Heavy Broken Wire	C53	Clamp	11X	0.000	0.363	0.886	0.958
NESC Heavy Broken Wire	C54	Clamp	11P	0.000	0.182	1.342	1.355
NESC Heavy Broken Wire	C55	Clamp	13X	0.000	1.000	2.061	2.291
NESC Heavy Broken Wire	C56	Clamp	13S	0.000	0.436	3.154	3.184

**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	97.787	6.869	76.997	6738.922	432.659	118.446
NESC Extreme	95.840	2.766	30.032	6733.030	163.570	57.811
NESC Heavy Broken Wire	91.937	-12.475	75.323	6267.665	-1235.125	-252.237

\*\*\* Weight of structure (lbs):  
 Weight of Angles\*Section DLF: 30861.1  
 Total: 30861.1

\*\*\* End of Report

**Foundation Analysis****Input Data:**Max. Reactions at Tower Leg:

Shear = Shear := 44.94 • 1.1 • kip (User Input)

Compression = Comp := 129.32 • 1.1 • kip (User Input)

Uplift = Uplift := 90.06 • 1.1 • kip (User Input)

Tower Properties:Tower Height =  $H_t := 94 \cdot \text{ft}$  (User Input)Foundation Properties:Pier Height =  $P_H := 9.5 \cdot \text{ft}$  (User Input)Pier Width Top =  $P_{w1} := 3 \cdot \text{ft}$  (User Input)Pier Width Bottom =  $P_{w2} := 6 \cdot \text{ft}$  (User Input)Pier Projection Above Grade =  $P_p := 0.5 \cdot \text{ft}$  (User Input)Pad Width =  $Pd_w := 11 \cdot \text{ft}$  (User Input)Pad Thickness =  $Pd_t := 3 \cdot \text{ft}$  (User Input)Subgrade Properties:Concrete Unit Weight =  $\gamma_c := 150 \cdot \text{pcf}$  (User Input)Water Unit Weight =  $\gamma_w := 62.4 \cdot \text{pcf}$  (User Input)Soil Unit Weight =  $\gamma_s := 100 \cdot \text{pcf}$  (User Input)Uplift Angle =  $\psi := 30.0 \cdot \text{deg}$  (User Input)Soil Bearing Capacity =  $BC_{\text{soil}} := 3500 \cdot \text{psf}$  (User Input)

**Calculated Data:**

Volume of the Concrete Pad =  $V_{pad} := Pd_w^2 \cdot Pd_t = 363 \text{ ft}^3$

Volume of the Concrete Pier =  $V_{pier} := \frac{(P_H)}{3} \cdot (P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}) = 199.5 \text{ ft}^3$

Resisting Pyramid Base 1 =  $B_1 := P_{w2}^2 = 36 \text{ ft}^2$

Resisting Pyramid Base 2 =  $B_2 := (2 \cdot \tan(\psi) \cdot (P_H - P_P) + Pd_w)^2 = 458 \text{ ft}^2$

Volume of Soil =  $V_{soil} := \left( \frac{(P_H - P_P)}{3} \cdot (B_1 + B_2 + \sqrt{B_1 \cdot B_2}) \right) - V_{pier} = (1.67 \cdot 10^3) \text{ ft}^3$

Total Volume of Concrete =  $V_{Conc} := V_{pad} + V_{pier} = 563 \text{ ft}^3$

Mass of Concrete =  $Mass_{Conc} := V_{Conc} \cdot \gamma_C = 84.4 \text{ kip}$

Mass of Soil =  $Mass_{Soil} := V_{soil} \cdot \gamma_S = 167 \text{ kip}$

Total Mass =  $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 251 \text{ kip}$

Check Uplift:

Required Factor of Safety =  $F_S := 1.0$

ActualFS :=  $\frac{Mass_{tot}}{Uplift} = 2.53$

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

Uplift\_Check = "OK"

Cross Sectional Area of Pad =  $A_{pad} := Pd_w^2 = 121 \text{ ft}^2$

Section Modulus of Pad =  $S_{pad} := \frac{(Pd_w)^3}{6} = 222 \text{ ft}^3$

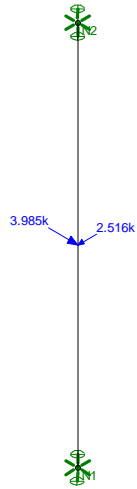
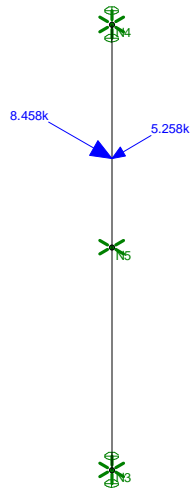
Check Bearing:

Bearing :=  $\frac{Comp + Mass_{Conc}}{A_{pad}} = 1.87 \text{ ksf}$

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

Bearing\_Check = "OK"





Loads: BLC 5, x-dir NESC Extreme Wind on Anten  
Envelope Only Solution

CENTEK Engineering, Inc.
TJL
18000.55 / AT&T CT5046

Structure #1102 - Mast

SK - 1
Mar 30, 2020 at 3:29 PM
Moment Diagram.r3d

# TOP CONNECTION

Column: **M2**

Shape: **L4X4X5**

Material: **A36 Gr.36**

Length: **5 ft**

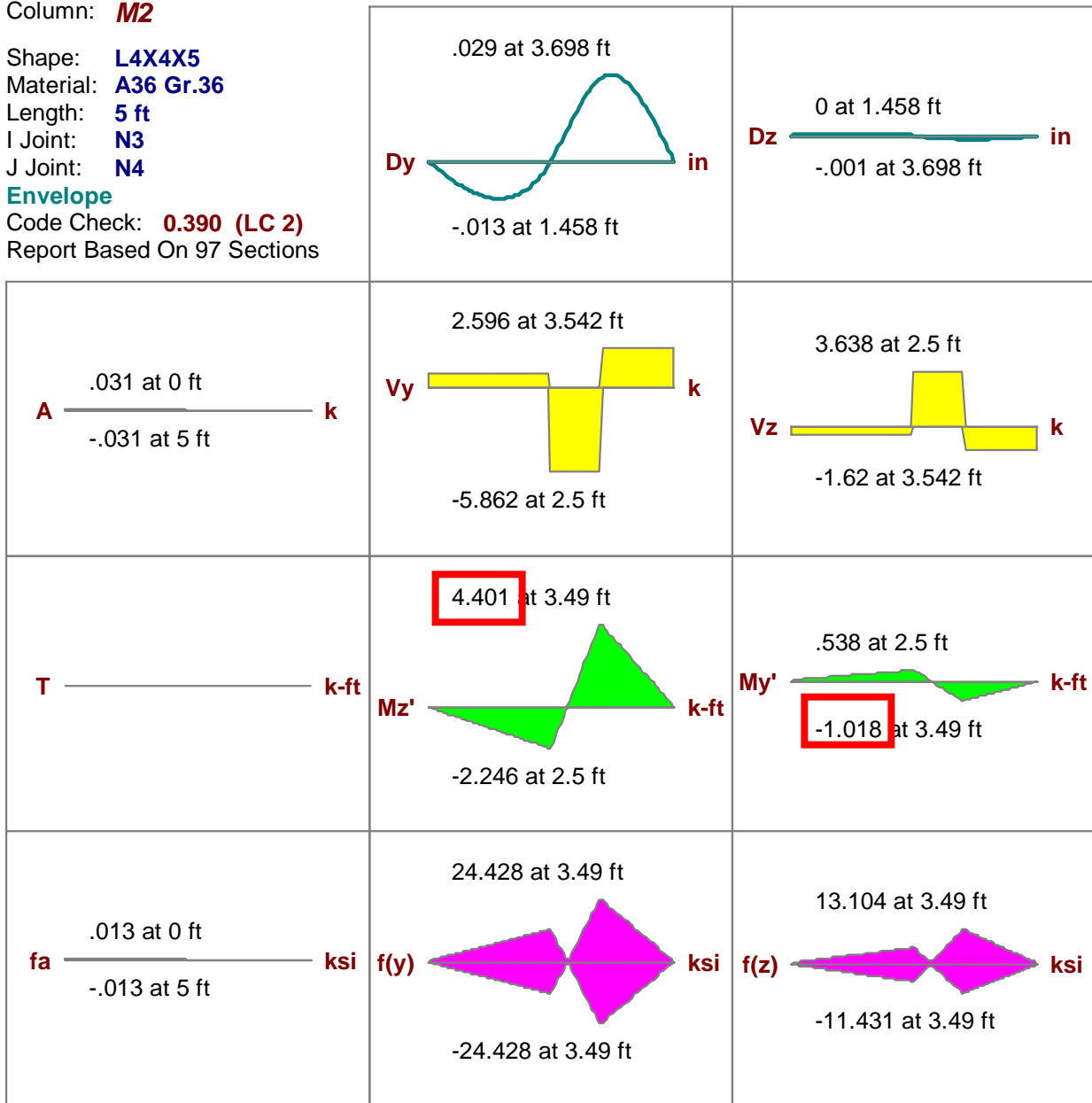
I Joint: **N3**

J Joint: **N4**

**Envelope**

Code Check: **0.390 (LC 2)**

Report Based On 97 Sections



**AISC 9th: ASD Code Check**

-- Code Check based on Axial Only --

Max Bending Check **0.001 (LC 1)**  
 Location **0 ft**  
 Equation **H1-1**

Max Shear Check **0.390 (y) (LC 2)**  
 Location **2.5 ft**  
 Max Defl Ratio **L/2064**

**Slender (Qs= 0.997252 , Qa= 1)**

Fy	<b>36 ksi</b>	Cm	<b>.6</b>	z-z'	<b>.6</b>
Fa	<b>15.673 ksi</b>	Lb	<b>5 ft</b>		<b>5 ft</b>
Ft	<b>21.6 ksi</b>	KL/r	<b>76.825</b>		<b>38.345</b>
Fby	<b>NA</b>	Sway	<b>No</b>		<b>No</b>
Fbz	<b>NA</b>	L Comp Flange	<b>5 ft</b>		
Fvy	<b>14.4 ksi</b>				
Fvz	<b>14.4 ksi</b>				
Cb	<b>1.75</b>				

# BOTTOM CONNECTION

Column: **M1**

Shape: **L4X4X5**

Material: **A36 Gr.36**

Length: **5 ft**

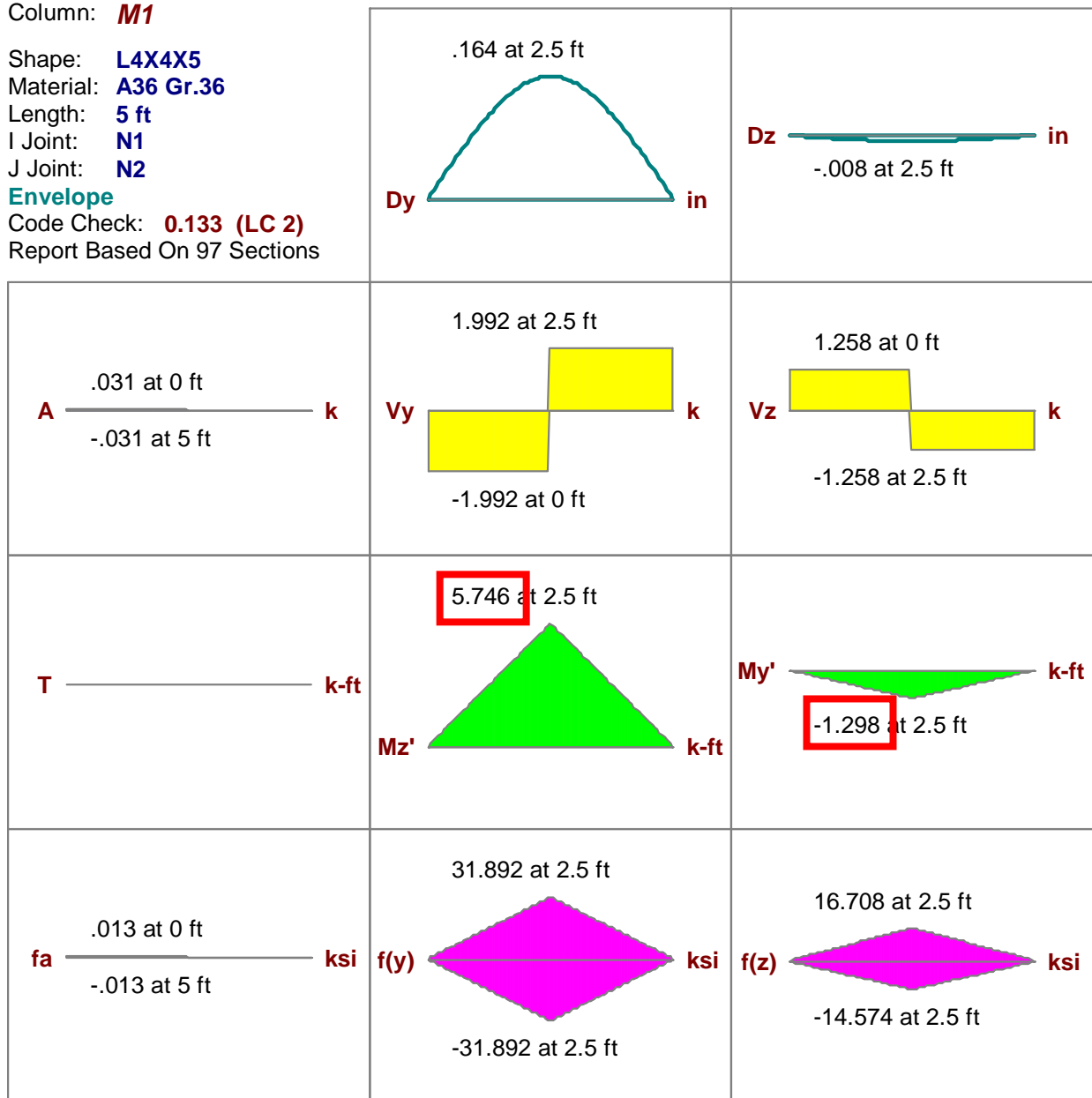
I Joint: **N1**

J Joint: **N2**

**Envelope**

Code Check: **0.133 (LC 2)**

Report Based On 97 Sections



### AISC 9th: ASD Code Check

-- Code Check based on Axial Only --

Max Bending Check **0.001 (LC 1)**  
 Location **0 ft**  
 Equation **H1-1**

Max Shear Check **0.133 (y) (LC 2)**  
 Location **0 ft**  
 Max Defl Ratio **L/366**

### Slender (Qs= 0.997252 , Qa= 1)

Fy	<b>36 ksi</b>	Cm	<b>.6</b>	z-z'	<b>.6</b>
Fa	<b>15.673 ksi</b>	Lb	<b>5 ft</b>		<b>5 ft</b>
Ft	<b>21.6 ksi</b>	KL/r	<b>76.825</b>		<b>38.345</b>
Fby	<b>NA</b>	Sway	<b>No</b>		<b>No</b>
Fbz	<b>NA</b>	L Comp Flange	<b>5 ft</b>		
Fvy	<b>14.4 ksi</b>				
Fvz	<b>14.4 ksi</b>				
Cb	<b>1.75</b>				

**Antenna Mast Top Connection:**

**Maximum Design Reactions at Brace:**

Compression Force =	Compression := 12.5-kips	(User Input from PLS-Tower)
Tension Force =	Tension := 8-kips	(User Input from PLS-Tower)
Moment =	$M_x := 4.4\text{-ft-kips}$	(User Input)
Moment =	$M_y := 1.02\text{-ft-kips}$	(User Input)

**Member Properties:**

Member Type =	L5x5x3/8	
Member Width =	$w := 5\text{-in}$	(User Input)
Member Thickness =	$t := 0.375\text{-in}$	(User Input)
Member Area =	$A := 3.65\text{-in}^2$	(User Input)
Moment of Inertia =	$I_x := 8.76\text{-in}^4$	(User Input)
Moment of Inertia =	$I_y := 8.76\text{-in}^4$	(User Input)
Section Modulus x-dir =	$S_x := 2.41\text{-in}^3$	(User Input)
Section Modulus y-dir =	$S_y := 2.41\text{-in}^3$	(User Input)
Unbraced Length =	$L := 2.5\text{-ft}$	(User Input)
Effective Length Coefficient =	$K := 1$	(User Input)
Radius of Gyration =	$r_x := 1.55\text{-in}$	(User Input)
Radius of Gyration =	$r_y := 1.55\text{-in}$	(User Input)
Yield Stress =	$F_y := 33\text{-ksi}$	(User Input)
Modulus of Elasticity =	$E := 29000\text{-ksi}$	(User Input)
	$k_{des} := 0.875\text{-in}$	

Calculate Design Compression Stress:

(Per ASCE 10-97 Section 3.6 and 3.7)

Width Thickness Ratio =

$$w_t := \frac{w - k_{des}}{t} = 11$$

Yield Stress =

$$F_y := \left[ \begin{array}{l} F_y \text{ if } w_t < \frac{80}{\sqrt{f_y}} \\ \left[ 1.677 - 0.677 \cdot \left( \frac{w_t}{\frac{80}{\sqrt{f_y}}} \right) \right] \cdot F_y \text{ if } \frac{80}{\sqrt{f_y}} \leq w_t \leq \frac{144}{\sqrt{f_y}} \\ \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] = 33\text{-ksi} \quad (3.7-1)$$

$$\left[ \begin{array}{l} \left[ 1.677 - 0.677 \cdot \left( \frac{w_t}{\frac{80}{\sqrt{f_y}}} \right) \right] \cdot F_y \text{ if } \frac{80}{\sqrt{f_y}} \leq w_t \leq \frac{144}{\sqrt{f_y}} \\ \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] \quad (3.7-2)$$

$$\left[ \begin{array}{l} \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] \quad (3.7-3)$$

Column Slenderness Ratio =

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

Design Axial Compressive Stress =

$$F_a := \left[ \begin{array}{l} \left[ 1 - 0.5 \cdot \left( \frac{\frac{K \cdot L}{r_x}}{C_c} \right)^2 \right] \cdot F_y \text{ if } \frac{K \cdot L}{r_x} \leq C_c \\ \frac{\pi^2 \cdot E}{\left( \frac{K \cdot L}{r_x} \right)^2} \text{ if } \frac{K \cdot L}{r_x} > C_c \end{array} \right] = 32.6\text{-ksi} \quad (3.6-1)$$

$$\left[ \begin{array}{l} \frac{\pi^2 \cdot E}{\left( \frac{K \cdot L}{r_x} \right)^2} \text{ if } \frac{K \cdot L}{r_x} > C_c \end{array} \right] \quad (3.6-2)$$

Calculate Allowable Bending Moment:

(Per ASCE 10-97 Section 3.14.8)

$$b := w - \frac{t}{2} = 4.813\text{-in}$$

Elastic Critical Moment =

$$M_e := \frac{(0.66 \cdot E \cdot b^4 \cdot t)}{(K \cdot L)^2} \cdot \left[ \sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} + 1 \right] = 8946.4\text{-kips-in} \quad (3.14-7)$$

Moment Causing Compressive Yield =

$$M_{xc} := F_y \cdot S_x = 79.53\text{-in-kips} \quad (3.14-9)$$

Moment Causing Compressive Yield =

$$M_{yc} := F_y \cdot S_y = 79.53\text{-kips-in} \quad (3.14-9)$$

Lateral Bukiing Moment =

$$M_b := \left[ \begin{array}{l} M_e \text{ if } M_e \leq 0.5 \cdot M_{yc} \\ M_{yc} \cdot \left( 1 - \frac{M_{yc}}{4 \cdot M_e} \right) \text{ if } M_e > 0.5 \cdot M_{yc} \end{array} \right] = 79.4\text{-kips-in} \quad (3.14-5)$$

Allowable Moment =

$$M_a := \left( \begin{array}{l} M_{yc} \text{ if } M_{yc} \leq M_b \\ M_b \end{array} \right) = 79.4\text{-kips-in} \quad (3.14-6)$$

Check Combined Axial Compression and Bending:

(Per ASCE 10-97 Section 3.12)

Bending Coefficient =  $C_m := 1$  (for restrained ends)

Applied Axial Compression =  $P := \text{Compression} = 12.5\text{-kips}$

Design Axial Compression =  $P_a := F_a \cdot A = 119.1\text{-kips}$

Axial Compression at Yield =  $P_y := F_y \cdot A = 120.45\text{-kips}$

Euler Bukiing Load =  $P_{ex} := \frac{\pi^2 \cdot E \cdot I_x}{(K \cdot L)^2} = 2785.9\text{-kips}$

Euler Bukiing Load =  $P_{ey} := \frac{\pi^2 \cdot E \cdot I_y}{(K \cdot L)^2} = 2785.9\text{-kips}$

$$\text{Condition1} := \text{if} \left[ \frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{xc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ex}}\right)} \right] + \frac{C_m \cdot M_y}{M_{yc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ey}}\right)} \right] \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right] \quad (3.12-1)$$

$$\frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{xc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ex}}\right)} \right] + \frac{C_m \cdot M_y}{M_{yc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ey}}\right)} \right] = 0.926 \quad \text{Condition1} = \text{"OK"} \quad (3.12-2)$$

$$\text{Condition2} := \text{if} \left( \frac{P}{P_y} + \frac{M_x}{M_{xc}} + \frac{M_y}{M_{yc}} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

$$\frac{P}{P_y} + \frac{M_x}{M_{xc}} + \frac{M_y}{M_{yc}} = 0.922 \quad \text{Condition2} = \text{"OK"}$$

**Antenna Mast Bottom Connection:**

**Maximum Design Reactions at Brace:**

Compression Force =	Compression := 66.8-kips	(User Input from PLS-Tower)
Tension Force =	Tension := 73.4-kips	(User Input from PLS-Tower)
Moment =	$M_x := 5.75\text{-ft-kips}$	(User Input - Max Mbmnt)
Moment =	$M_y := 1.3\text{-ft-kips}$	(User Input - Max Mbmnt)

**Member Properties:**

Member Type =	L8x8x1/2	
Member Width =	w := 8-in	(User Input)
Member Thickness =	t := 0.5-in	(User Input)
Member Area =	$A := 7.84\text{-in}^2$	(User Input)
Moment of Inertia =	$I_x := 48.8\text{-in}^4$	(User Input)
Moment of Inertia =	$I_y := 48.8\text{-in}^4$	(User Input)
Section Modulus x-dir =	$S_x := 8.36\text{-in}^3$	(User Input)
Section Modulus y-dir =	$S_y := 8.36\text{-in}^3$	(User Input)
Unbraced Length =	L := 5-ft	(User Input)
Effective Length Coefficient =	K := 1	(User Input)
Radius of Gyration =	$r_x := 2.49\text{-in}$	(User Input)
Radius of Gyration =	$r_y := 2.49\text{-in}$	(User Input)
Yield Stress =	$F_y := 33\text{-ksi}$	(User Input)
Modulus of Elasticity =	E := 29000-ksi	(User Input)
	$k_{des} := 1.125\text{-in}$	

Calculate Design Compression Stress:

(Per ASCE 10-97 Section 3.6 and 3.7)

Width Thickness Ratio =

$$w_t := \frac{w - k_{des}}{t} = 13.75$$

Yield Stress =

$$F_y := \left[ \begin{array}{l} F_y \text{ if } w_t < \frac{80}{\sqrt{f_y}} \\ \left[ 1.677 - 0.677 \cdot \left( \frac{w_t}{\frac{80}{\sqrt{f_y}}} \right) \right] \cdot F_y \text{ if } \frac{80}{\sqrt{f_y}} \leq w_t \leq \frac{144}{\sqrt{f_y}} \\ \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] = 33 \text{ ksi} \quad (3.7-1)$$

$$\left[ \begin{array}{l} \left[ 1.677 - 0.677 \cdot \left( \frac{w_t}{\frac{80}{\sqrt{f_y}}} \right) \right] \cdot F_y \text{ if } \frac{80}{\sqrt{f_y}} \leq w_t \leq \frac{144}{\sqrt{f_y}} \\ \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] \quad (3.7-2)$$

$$\left[ \begin{array}{l} \frac{0.0332 \cdot \pi^2 \cdot E}{(w_t)^2} \text{ if } w_t > \frac{144}{\sqrt{f_y}} \end{array} \right] \quad (3.7-3)$$

Column Slenderness Ratio =

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

Design Axial Compressive Stress =

$$F_a := \left[ \begin{array}{l} \left[ 1 - 0.5 \cdot \left( \frac{K \cdot L}{r_x} \right)^2 \right] \cdot F_y \text{ if } \frac{K \cdot L}{r_x} \leq C_c \\ \frac{\pi^2 \cdot E}{\left( \frac{K \cdot L}{r_x} \right)^2} \text{ if } \frac{K \cdot L}{r_x} > C_c \end{array} \right] = 32.4 \text{ ksi} \quad (3.6-1)$$

$$\left[ \begin{array}{l} \frac{\pi^2 \cdot E}{\left( \frac{K \cdot L}{r_x} \right)^2} \text{ if } \frac{K \cdot L}{r_x} > C_c \end{array} \right] \quad (3.6-2)$$

Calculate Allowable Bending Moment:

(Per ASCE 10-97 Section 3.14.8)

$$b := w - \frac{t}{2} = 7.75 \text{ in}$$

Elastic Critical Moment =

$$M_e := \frac{(0.66 \cdot E \cdot b^4 \cdot t)}{(K \cdot L)^2} \cdot \left[ \sqrt{1 + \frac{0.81 \cdot (K \cdot L)^2 \cdot t^2}{b^4}} + 1 \right] = 20104.3 \text{ kips-in} \quad (3.14-7)$$

Moment Causing Compressive Yield =

$$M_{xc} := F_y \cdot S_x = 275.88 \text{ in-kips} \quad (3.14-9)$$

Moment Causing Compressive Yield =

$$M_{yc} := F_y \cdot S_y = 275.88 \text{ kips-in} \quad (3.14-9)$$

Lateral Bukiing Moment =

$$M_b := \left[ \begin{array}{l} M_e \text{ if } M_e \leq 0.5 \cdot M_{yc} \\ M_{yc} \cdot \left( 1 - \frac{M_{yc}}{4 \cdot M_e} \right) \text{ if } M_e > 0.5 \cdot M_{yc} \end{array} \right] = 274.9 \text{ kips-in} \quad (3.14-5)$$

Allowable Moment =

$$M_a := \left( \begin{array}{l} M_{yc} \text{ if } M_{yc} \leq M_b \\ M_b \end{array} \right) = 274.9 \text{ kips-in} \quad (3.14-6)$$



Check Combined Axial Compression and Bending:

(Per ASCE 10-97 Section 3.12)

- Bending Coefficient =  $C_m := 1$  (for restrained ends)
- Applied Axial Compression =  $P :=$  Compression = 66.8-kips
- Design Axial Compression =  $P_a := F_a \cdot A = 254.4$ -kips
- Axial Compression at Yield =  $P_y := F_y \cdot A = 258.72$ -kips
- Euler Buckling Load =  $P_{ex} := \frac{\pi^2 \cdot E \cdot I_x}{(K \cdot L)^2} = 3879.9$ -kips
- Euler Buckling Load =  $P_{ey} := \frac{\pi^2 \cdot E \cdot I_y}{(K \cdot L)^2} = 3879.9$ -kips

$$\text{Condition 1} := \text{if} \left[ \frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{xc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ex}}\right)} \right] + \frac{C_m \cdot M_y}{M_{yc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ey}}\right)} \right] \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right] \quad (3.12-1)$$

$$\frac{P}{P_a} + \frac{C_m \cdot M_x}{M_{xc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ex}}\right)} \right] + \frac{C_m \cdot M_y}{M_{yc}} \cdot \left[ \frac{1}{\left(1 - \frac{P}{P_{ey}}\right)} \right] = 0.575 \quad \text{Condition 1} = \text{"OK"} \quad (3.12-2)$$

$$\text{Condition 2} := \text{if} \left( \frac{P}{P_y} + \frac{M_x}{M_{xc}} + \frac{M_y}{M_{yc}} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

$$\frac{P}{P_y} + \frac{M_x}{M_{xc}} + \frac{M_y}{M_{yc}} = 0.565 \quad \text{Condition 2} = \text{"OK"}$$

Section 1 - RFDS GENERAL INFORMATION									
RFDS NAME:	CTL05046	DATE:	5/15/2019	RF DESIGN ENG:	Mohammad Minhaj Hussain	RF PERF ENG:	Fotarin Ayo	RFDS PROGRAM TYPE:	2020 LTE Multi Carrier
ISSUE:	Bronze Standard	Approved (Y/N):	Yes	RF DESIGN PHONE:	510-493-3024	RF PERF PHONE:		RFDS TECHNOLOGY:	LTE
REVISION:	Final	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	mh7056@ATT.COM	RF PERF EMAIL:		STATE/STATUS:	Final/Approved
INITIATIVE / PROJECT:	4TRXX Antenna Retrofit(1900 A3-A4 & E), LTE 6C(700 D-E)				RFDS VERSION:	6.00	RFDS ID:	3117622	
					Created By:	mh705r	Updated By:	mh705r	
					Created:	5/14/2019	Updated:	10/28/2019	
					UMTS FREQUENCY:	850			
					LTE FREQUENCY:	700,850,1900,AWS,WCS	ESTIMATED SQIN:	11,190	
					5G FREQUENCY:	850			
					IPLAN JOB # 1:	NER-RCTB-19-02917	PRD   SUB GRP #1:	Antenna Modifications   4TRXX Antenna Retrofit	
					IPLAN JOB # 2:	NER-RCTB-19-02879	PRD   SUB GRP #2:	LTE Next Carrier   LTE 6C	
IPLAN JOB # 3:		PRD   SUB GRP #3:							
IPLAN JOB # 4:		PRD   SUB GRP #4:							
IPLAN JOB # 5:		PRD   SUB GRP #5:							
IPLAN JOB # 6:		PRD   SUB GRP #6:							
IPLAN JOB # 7:		PRD   SUB GRP #7:							
IPLAN JOB # 8:		PRD   SUB GRP #8:							

Section 2 - LOCATION INFORMATION									
USID:	4535	FA LOCATION CODE:	10071181	LOCATION NAME:	NORWALK CENTER	ORACLE PRJT # 1:	2051A0Q667	PACE JOB #1:	MRCTB041320
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:	2051A0Q6AT	PACE JOB #2:	MRCTB041343
ADDRESS:	1 WILL RUSS COURT	CITY:	NORWALK	STATE:	CT	ORACLE PRJT # 3:		PACE JOB #3:	
ZIP CODE:	06850	COUNTY:	FARFIELD	LONG (DEC. DEG.):	-73.4327989	ORACLE PRJT # 4:		PACE JOB #4:	
LATITUDE (D-M-S):	41d 7m 36.09054s	LONGITUDE (D-M-S):	73d -25m -58.07604s	LAT (DEC. DEG.):	41.1266919	ORACLE PRJT # 5:		PACE JOB #5:	
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	CT-046 NORWALK NORTH NORWALK TAKE ROUTE 80 EAST ACROSS G.W. BRIDGE. FOLLOW CROSS BRONX EXPRESSWAY TO I-95 NORTH INTO CT. YOU WILL GET OFF AT EXIT 15 FOR RT 7 NORTH. TAKE 7 NORTH TO EXIT 2(RT. 123). AT THE END OF EXIT MAKE RIGHT ONTO NEW CANAAN AVE. GO STR				ORACLE PRJT # 6:		PACE JOB #6:		
					ORACLE PRJT # 7:		PACE JOB #7:		
					ORACLE PRJT # 8:		PACE JOB #8:		
					BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:		
					AM STUDY REQ'D (Y/N):	No	SEARCH RING ID:		
					FREQ COORD:		BTA:		MSA / RSA:
							LAC(UMTS):	05989	
					RF DISTRICT:	TBD	RNC(UMTS):	BRIDGEPORT RNC06 ERICSSON 3520	
					RF ZONE:	TBD	MME POOL ID(LTE):	FF01	
					PARENT NAME(UMTS):	BRPTCT04CRBR06			

Section 3 - LICENSE COVERAGE/FILING INFORMATION				
CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:		CGSA CALL SIGNS:

Section 4 - TOWER/REGULATORY INFORMATION							
STRUCTURE AT& OWNED?:	No	GROUND ELEVATION (ft):	0	STRUCTURE TYPE:	UTILITY	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	No	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:		MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	199.00			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									
SECTOR A	E-911	PSAP NAME:		PSAP ID:		E911 PHASE:		MPC SVC PROVIDER:	INTRADO_MAMI
SECTOR B									INTRADO_MAMI
SECTOR C									INTRADO_MAMI
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 5 - E-911 INFORMATION - final									
SECTOR A	E-911	PSAP NAME:		PSAP ID:		E911 PHASE:		MPC SVC PROVIDER:	INTRADO_MAMI
SECTOR B									INTRADO_MAMI
SECTOR C									INTRADO_MAMI
SECTOR D									
SECTOR E									



Section 8 - RBS/SECTOR ASSOCIATION - existing

	BBU 1	BBU 2	BBU 3																
<b>CTS Common ID</b>	CTUS046	CTV5046	CTL05046																
<b>Soft Sector IDs</b>	CTUS0464	CTV50461	CTL05046_2A_2																
	CTUS0465	CTV50462	CTL05046_2B_2																
	CTUS0466	CTV50463	CTL05046_2C_2																
	CTUS0467	CTV5046A	CTL05046_3A_1																
	CTUS0468	CTV5046B	CTL05046_3B_1																
	CTUS0469	CTV5046C	CTL05046_3C_1																
			CTL05046_7A_1																
			CTL05046_7B_1																
			CTL05046_7C_1																
			CTL05046_8A_1																
			CTL05046_8B_1																
			CTL05046_8C_1																
			CTL05046_9A_1																
			CTL05046_9A_2																
			CTL05046_9B_1																
			CTL05046_9B_2																
			CTL05046_9C_1																
			CTL05046_9C_2																

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1	BBU 2	BBU 3	BBU 4															
<b>CTS Common ID</b>	CTV5046	CTL04046R	CTL05046	CTCN004046R															
<b>Soft Sector IDs</b>	CTV50461	CTL04046_2A_2	CTL05046_3A_1	CTCN004046_N005A_1															
	CTV50462	CTL04046_2B_2	CTL05046_3B_1	CTCN004046_N005B_1															
	CTV50463	CTL04046_2C_2	CTL05046_3C_1	CTCN004046_N005C_1															
		CTL04046_9A_1	CTL05046_7A_1																
		CTL04046_9A_2	CTL05046_7A_2_E																
		CTL04046_9B_1	CTL05046_7B_1																
		CTL04046_9B_2	CTL05046_7B_2_E																
		CTL04046_9C_1	CTL05046_7C_1																
		CTL04046_9C_2	CTL05046_7C_2_E																
			CTL05046_8A_1																
			CTL05046_8B_1																
			CTL05046_8C_1																



Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	5G 1ST 850										
USEID (excluding Hard Sector)	4535.850.3G.1	4535.1900.3G.1	4535.850.3G.2	4535.1900.3G.2																				
SECTOR A CELL NUMBER					15	1	8	192	149	178														
SECTOR B					16	2	9	193	150	179														
SECTOR C					17	3	10	194	151	180														
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	5G 1ST 850										
USEID (excluding Hard Sector)	4535.850.3G.1																							
SECTOR A CELL NUMBER					15	1	8		149		185	178	192	25										
SECTOR B					16	2	9		150		186	179	193	49										
SECTOR C					17	3	10		151		187	180	194	73										
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

**Section 10 - CID/SAC - existing**

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	SG 1ST 850										
<b>SECTOR A CID/SAC</b>	50461	50467	40461	50464																				
<b>SECTOR B</b>	50462	50468	40462	50465																				
<b>SECTOR C</b>	50463	50469	40463	50466																				
<b>SECTOR D</b>																								
<b>SECTOR E</b>																								
<b>SECTOR F</b>																								
<b>OMNI</b>																								

**Section 10 - CID/SAC - final**

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	SG 1ST 850										
<b>SECTOR A CID/SAC</b>	50461																							
<b>SECTOR B</b>	50462																							
<b>SECTOR C</b>	50463																							
<b>SECTOR D</b>																								
<b>SECTOR E</b>																								
<b>SECTOR F</b>																								
<b>OMNI</b>																								











Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	QS46512-6		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	Quantel		40MW			
ANTENNA SIZE (H x W x D)	52X12X10.8		48X11.8X6.9			
ANTENNA WEIGHT	75		36.4			
AZIMUTH	30		30			
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	105		105			
ANTENNA TIP HEIGHT	107		107			
MECHANICAL DOWNTILT	0		0			
FEEDER AMOUNT	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)	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		8 Andrew APTDC-BDFDM-DB(4)+TSXDC-4310FM(4)			
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		2 CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)						
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Kathrein / 860-10006					
DC BLOCK (QTY/MODEL)						
TMA/LNA (QTY/MODEL)	1 TMA21X23868-31-43 (Twin AWS-WCS w/700/850 BP)		1 Kaelus TMA2093FxxVx-1 Twin TMA 850 BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Alsig Quadplexer					
PDU FOR TMA (QTY/MODEL)						
FILTER (QTY/MODEL)						
SQUID (QTY/MODEL)						
FIBER TRUNK (QTY/MODEL)						
DC TRUNK (QTY/MODEL)						
REPEATER (QTY/MODEL)						
RRH - 700 band (QTY/MODEL)		1	RRUS-11 B12 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)		1	4478 B5			
RRH - 1900 band (QTY/MODEL)		1	RRUS-12 B2			
RRH - AWS band (QTY/MODEL)	1 4426 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30					
Additional RRH #1 - any band (QTY/MODEL)						
Additional RRH #2 - any band (QTY/MODEL)						
Additional Component 1 (QTY/MODEL)		2	K SBT 782-11055			
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)	RX/IT 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			CTV50461	CTV50461		UMTS 850	QS46512-6_850MHz_05DT	12.3	30	5	None	Andrew 1-1/4 (850)	145.04						272.27		1		
	PORT 3			CTL05046_2A_2	CTL05046_2A_2		LTE AWS	6_2170MHz_05D T	16.2	30	5	Bottom	Andrew 1-1/4 (850)	145.04							5070.2572		2	
	PORT 4			CTL05046_3A_1	CTL05046_3A_1		LTE WCS	6_2355MHz_03D T	16.7	30	3	Bottom	Andrew 1-1/4 (850)	145.04						1285.2866		2		
ANTENNA POSITION 3	PORT 1			CTL05046_7A_1	CTL05046_7A_1		LTE 700	90T-RET_725MHz_02	14.1	30	2	Bottom	LDF6-50A_700 MHz	145.04							1475.7065		5	
	PORT 3			CTL05046_9A_1	CTL05046_9A_1		LTE 1900	90T-RET_1930MHz_0	16.3	30	5	Bottom	LDF6-50A_700 MHz	145.04							3664.3757		6	
	PORT 4			CTL05046_9A_2	CTL05046_9A_2		LTE 1900	90T-RET_1930MHz_0	16.3	30	5	Bottom	LDF6-50A_700 MHz	145.04							3664.3757		6	
	PORT 5			CTL05046_8A_1	CTL05046_8A_1		LTE 850	90T-RET_850MHz_02	14.8	30	2	Bottom	LDF6-50A_700 MHz	145.04							1000		5	
	PORT 6			CTN0005046_8A_1	CTN0005046_8A_1		LTE 850	90T-RET_850MHz_02	14.8	30	2	Bottom	LDF6-50A_700 MHz	145.04							1000		5	

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	QS46512-6		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	Quantel		90MW			
ANTENNA SIZE (H x W x D)	52X12X10.8		48X11.8X6.9			
ANTENNA WEIGHT	75		36.4			
AZIMUTH	150		150			
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	105		105			
ANTENNA TIP HEIGHT	107		107			
MECHANICAL DOWNTILT	0		0			
FEEDER AMOUNT	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)	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		8 Andrew APTDC-BDFM-DB(4)+TSXDC-4310FM(4)			
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		2 CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)						
Antenna RET CONTROL UNIT (QTY/MODEL)						
DC BLOCK (QTY/MODEL)						
TMA/TNA (QTY/MODEL)	1 TMA21X23868-31-43 (Twin AWS-WCS w/700/850 BP)		1 Kaelus TMA2093FxxVx-1 Twin TMA 850 BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Aisg Quadplexer					
PDU FOR TMAS (QTY/MODEL)						
FILTER (QTY/MODEL)						
SQUID (QTY/MODEL)						
FIBER TRUNK (QTY/MODEL)						
DC TRUNK (QTY/MODEL)						
REPEATER (QTY/MODEL)						
RRH - 700 band (QTY/MODEL)			1 RRUS-11 B12 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)			1 4478 B5			
RRH - 1900 band (QTY/MODEL)			1 RRUS-12 B2			
RRH - AWS band (QTY/MODEL)	1 4426 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30					
Additional RRH #1 - any band (QTY/MODEL)						
Additional RRH #2 - any band (QTY/MODEL)						
Additional Component 1 (QTY/MODEL)			2 K SBT 782-11055			
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)	RX/IT 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			CTL05046	CTL05046		UMTS 850	QS46512-6_850MHz_10DT	12	150	10	None	Andrew 1-1/4 (850)	145.04						272.27		9	
	PORT 3			CTL05046_2B_2	CTL05046_2B_2		LTE AWS	6_2170MHz_05D T	16.2	150	5	Bottom	Andrew 1-1/4 (850)	145.04						5070.2572		10	
	PORT 4			CTL05046_3B_1	CTL05046_3B_1		LTE WCS	6_2355MHz_03D T	16.7	150	3	Bottom	Andrew 1-1/4 (850)	145.04						1285.2866		10	
ANTENNA POSITION 3	PORT 1			CTL05046_7B_1	CTL05046_7B_1		LTE 700	90T-RET_725MHz_02	14.1	150	2	Bottom	LDF6-50A_700 MHz	145.04						1475.7065		13	
	PORT 3			CTL05046_9B_1	CTL05046_9B_1		LTE 1900	90T-RET_1930MHz_0	16.3	150	5	Bottom	LDF6-50A_700 MHz	145.04						3664.3757		14	
	PORT 4			CTL05046_9B_2	CTL05046_9B_2		LTE 1900	90T-RET_1930MHz_0	16.3	150	5	Bottom	LDF6-50A_700 MHz	145.04						3664.3757		14	
	PORT 5			CTL05046_8B_1	CTL05046_8B_1		LTE 850	90T-RET_850MHz_02	14.8	150	2	Bottom	LDF6-50A_700 MHz	145.04						1000		13	
	PORT 6			CTN0005046_8B_1	CTN0005046_8B_1		LTE 850	90T-RET_850MHz_02	14.8	150	2	Bottom	LDF6-50A_700 MHz	145.04						1000		13	
	PORT 6			CTN0005046_8B_1	CTN0005046_8B_1		LTE 850	90T-RET_850MHz_02	14.8	150	2	Bottom	LDF6-50A_700 MHz	145.04						1000		13	

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	QS46512-6		AM-X-CD-14-65-00T-RET			
ANTENNA VENDOR	Quintel		90MW			
ANTENNA SIZE (H x W x D)	52X12X10.8		48X11.8X6.9			
ANTENNA WEIGHT	75		36.4			
AZIMUTH	270		270			
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	105		105			
ANTENNA TIP HEIGHT	107		107			
MECHANICAL DOWNTILT	0		0			
FEEDER AMOUNT	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)	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		8 Andrew APTDC-BDFM-DB(4)+TSXDC-4310FM(4)			
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		2 CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)						
Antenna RET CONTROL UNIT (QTY/MODEL)						
DC BLOCK (QTY/MODEL)						
TMA/LNA (QTY/MODEL)	1 TMA21X23868-31-43 (Twin AWS-WCS w/700/850 BP)		1 Kaelus TMA2093FxxVx-1 Twin TMA 850 BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Aisg Quadplexer					
PDU FOR TMA (QTY/MODEL)						
FILTER (QTY/MODEL)						
SQUID (QTY/MODEL)						
FIBER TRUNK (QTY/MODEL)						
DC TRUNK (QTY/MODEL)						
REPEATER (QTY/MODEL)						
RRH - 700 band (QTY/MODEL)			1 RRUS-11 B12 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)			1 4478 B5			
RRH - 1900 band (QTY/MODEL)			1 RRUS-12 B2			
RRH - AWS band (QTY/MODEL)	1 4426 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30					
Additional RRH #1 - any band (QTY/MODEL)						
Additional RRH #2 - any band (QTY/MODEL)						
Additional Component 1 (QTY/MODEL)			2 K SBT 782-11055			
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)	RX/IT 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			CTL05046_2C_2	CTL05046_2C_2		LTE AWS	6_2170MHz_02D T	15.9	270	2	Bottom	Andrew 1-1/4 (850)	145.04						5070.2572		18	
	PORT 3			CTL05046_3C_1	CTL05046_3C_1		LTE WCS	6_2355MHz_03D T	16.7	270	3	Bottom	Andrew 1-1/4 (850)	145.04						1285.2866		18	
	PORT 4																						
ANTENNA POSITION 3	PORT 1			CTL05046_7C_1	CTL05046_7C_1		LTE 700	90T-RET_725MHz_02	14.1	270	2	Bottom	LDF6-50A_700 MHz	145.04						1475.7065		21	
	PORT 3			CTL05046_9C_1	CTL05046_9C_1		LTE 1900	90T-RET_1930MHz_0	16.3	270	2	Bottom	LDF6-50A_700 MHz	145.04						3664.3757		22	
	PORT 4			CTL05046_9C_2	CTL05046_9C_2		LTE 1900	90T-RET_1930MHz_0	16.3	270	2	Bottom	LDF6-50A_700 MHz	145.04						3664.3757		22	
	PORT 5			CTL05046_8C_1	CTL05046_8C_1		LTE 850	90T-RET_850MHz_02	14.8	270	2	Bottom	LDF6-50A_700 MHz	145.04						1000		21	
	PORT 6			CTN0005046_8C_1	CTN0005046_8C_1		LTE 850	90T-RET_850MHz_02	14.8	270	2	Bottom	LDF6-50A_700 MHz	145.04						1000		21	

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION IS LEFT TO RIGHT FROM BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?	Yes						
ANTENNA MAKE - MODEL			SBNH-1D65A				
ANTENNA VENDOR			Andrew				
ANTENNA SIZE (H x W x D)			55X11.9X7.1				
ANTENNA WEIGHT			33.5				
AZIMUTH			30				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			105				
ANTENNA TIP HEIGHT			107				
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)				Built in			
SURGE ARRESTOR (QTY/MODEL)	10	TSXDC-4310FM	12	Andrew APTDC-BDFDM-DB(4)+TSXDC-4310FM(8)			
DIPLEXER (QTY/MODEL)			2	CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)			2	TMABPD7823VG12A			
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)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	RRUS-E2 B29	1				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1	8843 B2/B66A					
RRH - AWS band (QTY/MODEL)				RRH is shared with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)			2	K SBT 782-11055			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							// Follow Antenna/RRHs
Local Market Note 2							
Local Market Note 3							140MB3 / 146630 + IDLe

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)	SCPAM/CPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 2			CTL05046_7A_2_E	CTL05046_7A_2_E		LTE 700	6_2355MHz_03D	16.7	30	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			2	
	PORT 3		4535.A.1900.4G.1	CTL04046_9A_1	CTL04046_9A_1		LTE 1900	6_1930MHz_05D	15.5	30	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757				
	PORT 4		4535.A.1900.4G.4	CTL04046_9A_2	CTL04046_9A_2		LTE 1900	6_1930MHz_05D	15.5	30	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757				
ANTENNA POSITION 3	PORT 1		4535.A.700.4G.1	CTL05046_7A_1	CTL05046_7A_1		LTE 700	1D65A_722MHz_02DT	13.1	30	2	Bottom	LDF6-50A_700 MHz	145.04					1475.7065				
	PORT 3		4535.A.AWS.4G.4	CTL04046_2A_2	CTL04046_2A_2		LTE AWS	1D65A_2170MHz_05DT	17.1	30	5	Bottom	LDF6-50A_700 MHz	145.04					3837.0724				
	PORT 5		4535.A.850.4G.1	CTL05046_8A_1	CTL05046_8A_1		LTE 850	1D65A_851MHz_02DT	13.1	30	2	Bottom	LDF6-50A_700 MHz	145.04					1000				
	PORT 6		4535.A.850.5G.1	CTCND04046_ND05A_1	CTCND04046_ND05A_1		5G 850	1D65A_851MHz_02DT	13.1	30	2	Bottom	LDF6-50A_700 MHz	145.04					1000				

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?	Yes						
ANTENNA MAKE - MODEL			SBN#1-1D65A				
ANTENNA VENDOR			Andrew				
ANTENNA SIZE (H x W x D)			55X11.9X7.1				
ANTENNA WEIGHT			33.5				
AZIMUTH			150				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			105				
ANTENNA TIP HEIGHT			107				
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)				Built in			
SURGE ARRESTOR (QTY/MODEL)	10	TSXDC-4310FM	12	Andrew APTDC-RDFDM-DB(4)+TSXDC-4310FM(8)			
DIPLEXER (QTY/MODEL)			2	CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)			2	TMABPD7823VG12A			
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)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	RRUS-E2 B29	1				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1	8843 B2/B66A					
RRH - AWS band (QTY/MODEL)				RRH is shared with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)			2	K SBT 782-11055			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	// Follow Antenna/RRHs positions as per PDs. // Swap LTE Antennas with a Hex port Antenna.						
Local Market Note 2							
Local Market Note 3	1x6601 / 1x5216 / 1x0MU03 / 1x6630 + IDLE						

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)	SCPAM/CPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 2			CTL05046_7B_2_E	CTL05046_7B_2_E		LTE 700	6_2355MHz_03D T	16.7	150	3	Bottom	Andrew 1-1/4 (850)	145.04						1285.2866		10	
	PORT 3		4535.B.1900.4G.1	CTL04046_9B_1	CTL04046_9B_1		LTE 1900	6_1930MHz_05D T	15.5	150	5	Bottom	Andrew 1-1/4 (850)	145.04						3664.3757			
	PORT 4		4535.B.1900.4G.4	CTL04046_9B_2	CTL04046_9B_2		LTE 1900	6_1930MHz_05D T	15.5	150	5	Bottom	Andrew 1-1/4 (850)	145.04						3664.3757			
	PORT 5		4535.B.1900.4G.1	CTL04046_9B_1	CTL04046_9B_1		LTE 1900	6_1930MHz_05D T	15.5	150	5	Bottom	Andrew 1-1/4 (850)	145.04						3664.3757			
ANTENNA POSITION 3	PORT 1		4535.B.700.4G.1	CTL05046_7B_1	CTL05046_7B_1		LTE 700	1D65A_722MHz_02DT	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04						1475.7065			
	PORT 3		4535.B.AWS.4G.4	CTL04046_2B_2	CTL04046_2B_2		LTE AWS	1D65A_2170MHz_05DT	17.1	150	5	Bottom	LDF6-50A_700 MHz	145.04						3837.0724			
	PORT 5		4535.B.850.4G.1	CTL05046_8B_1	CTL05046_8B_1		LTE 850	1D65A_851MHz_02DT	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04						1000			
	PORT 6		4535.B.850.5G.1	CTCN004046_N050B_1	CTCN004046_N050B_1		5G 850	1D65A_851MHz_02DT	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04						1000			



Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?	Yes						
ANTENNA MAKE - MODEL			SBNH-1D65A				
ANTENNA VENDOR			Andrew				
ANTENNA SIZE (H x W x D)			55X11.9X7.1				
ANTENNA WEIGHT			33.5				
AZIMUTH			270				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			105				
ANTENNA TIP HEIGHT			107				
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)			Built in				
SURGE ARRESTOR (QTY/MODEL)	10	TSXDC-4310FM	12	Andrew APTDC-RDFDM-DB(4)+TSXDC-4310FM(8)			
DIPLEXER (QTY/MODEL)			2	CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)			2	TMABPD7823VG12A			
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)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	RRUS-E2 B29	1				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1	8843 B2/B66A					
RRH - AWS band (QTY/MODEL)				RRH is shared with another band			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)			2	K SBT 782-11055			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	// Follow Antenna/RRHs positions as per PDs. // Swap LTE Antennas with a Hex port Antenna.						
Local Market Note 2							
Local Market Note 3	1x6601 / 1x5216 / 1x0MU03 / 1x6630 + IDLE						

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)	SCPAM/CPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(cssng)
ANTENNA POSITION 1	PORT 2			CTL05046_7C_2_E	CTL05046_7C_2		LTE 700	6_2355MHz_03D	16.7	270	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			18	
	PORT 3		4535.C.1900.4G.1	CTL04046_9C_1	CTL04046_9C_1		LTE 1900	6_1930MHz_02D	15.7	270	2	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757				
	PORT 4		4535.C.1900.4G.4	CTL04046_9C_2	CTL04046_9C_2		LTE 1900	6_1930MHz_02D	15.7	270	2	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757				
ANTENNA POSITION 3	PORT 1		4535.C.700.4G.1	CTL05046_7C_1	CTL05046_7C_1		LTE 700	1D65A_722MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1475.7065				
	PORT 3		4535.C.AWS.4G.4	CTL04046_2C_2	CTL04046_2C_2		LTE AWS	1D65A_2170MHz_02DT	17.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					3837.0724				
	PORT 5		4535.C.850.4G.1	CTL05046_8C_1	CTL05046_8C_1		LTE 850	1D65A_851MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1000				
	PORT 6		4535.C.850.5G.1	CTCN004046_N05C_1	CTCN004046_N05C_1		5G 850	1D65A_851MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1000				

Section 16.5A - SCOPING TOWER CONFIGURATION - SECTOR A (OR OMNI)

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	Q546512-6		SBN#1-1D65A				
ANTENNA VENDOR	Qunitel		Andrew				
ANTENNA SIZE (H x W x D)	52X12X10.8		55X11.9X7.1				
ANTENNA WEIGHT	75		33.5				
AZIMUTH	30		30				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	105		105				
ANTENNA TIP HEIGHT	107		107				
MECHANICAL DOWNTILT	0		0				
FEEDER AMOUNT	4		4				
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)	Built in		Built in				
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		12 Andrew APTDC-RDFDM-DB(4)+TSXDC-4310FM(8)				
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		4 CCI Triplexer -TPX-070821				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Kathrein / 860-10006						
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)	1 TMA T21X23868-31-43 (T with AWS-WCS w/700/850 BP)		2 TMABPD7823VG12A				
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Align Quadplexer						
PDU FOR TMA (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2 B29		1 RRUS-11 B12 (REUSE ONLY)				
RRH - 850 band (QTY/MODEL)			1 4478 B5				
RRH - 1900 band (QTY/MODEL)	1 8843 B2/B66A						
RRH - AWS band (QTY/MODEL)			RRH is shared with another band				
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)			2 K SBT 782-11055				
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	// Follow Antenna/RRHs positions as per PDs // Swap LTE Antennas with a Hex port Antenna						
Local Market Note 2							
Local Market Note 3	1x6601 / 1x5216 / 1xXMU03 / 1x6630 + IDLE						

PORT SPECIFIC FIELDS	PORT NUMBER	USED (CSS#)	USEID (AtoI)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/M/CPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(css#)		
ANTENNA POSITION 1	PORT 1	4535.A.850.3G.1		CTV50461	CTV50461		UMTS 850	Q546512-6_850MHz_05DT	12.3	30	5	None	Andrew 1-1/4 (850)	145.04						272.27					
	PORT 2	mp4	4535.A.700.4G.1		CTL05046_7A_2_E	CTL05046_7A_2_E		LTE 700	6_2355MHz_03D T	16.7	30	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			2		
		mp1	4535.A.1900.4G.1	4535.A.1900.4G.1	CTL04046_9A_1	CTL04046_9A_1		LTE 1900	6_1930MHz_05D T	15.5	30	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			2		
	PORT 4	mp4	4535.A.1900.4G.4	4535.A.1900.4G.4	CTL04046_9A_2	CTL04046_9A_2		LTE 1900	6_1930MHz_05D T	15.5	30	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			2		
		mp1	4535.A.WCS.4G.1	4535.A.WCS.4G.1	CTL05046_3A_1	CTL05046_3A_1		LTE WCS	6_2355MHz_03D T	16.7	30	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			2		
	ANTENNA POSITION 3	PORT 1	4535.A.700.4G.1	4535.A.700.4G.1	CTL05046_7A_1	CTL05046_7A_1		LTE 700	1D65A_722MHz_02DT	13.1	30	2	Bottom	LDF6-50A_700 MHz	145.04						1475.7065			5	
		PORT 3	mp4	4535.A.AWS.4G.4	4535.A.AWS.4G.4	CTL04046_2A_2	CTL04046_2A_2		LTE AWS	1D65A_2170MHz_05DT	17.1	30	5	Bottom	LDF6-50A_700 MHz	145.04					3637.0724			8	
PORT 5		mp4	4535.A.850.4G.1	4535.A.850.4G.1	CTL05046_8A_1	CTL05046_8A_1		LTE 850	1D65A_851MHz_02DT	13.1	30	2	Bottom	LDF6-50A_700 MHz	145.04					1000			5		

		4535.A.850.SG.1		CTCN004046_ND05A_1	CTCN004046_ND05A_1		SG 850		1D65A_851MHz_020T	13.1	30	2	Bottom	LDF6-50A_700MHz	145.04						1000		5	
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Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA POSITION is LEFT TO RIGHT from BACK OF ANTENNA (unless otherwise specified)						
ANTENNA MAKE - MODEL	QS46512-6		SBFH-1D65A			
ANTENNA VENDOR	Quintel		Andrew			
ANTENNA SIZE (H x W x D)	52X12X10.8		55X11.9X7.1			
ANTENNA WEIGHT	75		33.5			
AZIMUTH	150		150			
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	105		105			
ANTENNA TIP HEIGHT	107		107			
MECHANICAL DOWNTILT	0		0			
FEEDER AMOUNT	4		4			
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)	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		12 Andrew APTDC-BDFDM-DB(4)+TSXDC-4310FM(8)			
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		4 CCI Triplexer -TPX-070821			
DUPLEXER (QTY/MODEL)						
Antenna RET CONTROL UNIT (QTY/MODEL)						
DC BLOCK (QTY/MODEL)						
TMA/LNA (QTY/MODEL)	1 TMA21X23868-31-43 (Twin AWS-WCS w/700/850 BP)		2 TMABPD7823VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Aisg Quadplexer					
PDU FOR TMA (QTY/MODEL)						
FILTER (QTY/MODEL)						
SQUID (QTY/MODEL)						
FIBER TRUNK (QTY/MODEL)						
DC TRUNK (QTY/MODEL)						
REPEATER (QTY/MODEL)						
RRH - 700 band (QTY/MODEL)	1 RRUS-E2 B29		1 RRUS-11 B12 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)			1 4478 B5			
RRH - 1900 band (QTY/MODEL)	1 8843 B2/B66A					
RRH - AWS band (QTY/MODEL)						
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30					
Additional RRH #1 - any band (QTY/MODEL)						
Additional RRH #2 - any band (QTY/MODEL)						
Additional Component 1 (QTY/MODEL)			2 K SBT 782-11055			
Additional Component 2 (QTY/MODEL)						
Additional Component 3 (QTY/MODEL)						
Local Market Note 1	// Follow Antenna/RRH positions as per PDs. // Swap LTE Antenna with a Hex port Antenna.					
Local Market Note 2						
Local Market Note 3	1x6601 / 1x5216 / 1x0MU03 / 1x6630 + IDLe					

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TXRX?	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	4535.B.850.3G.1		CTV50462	CTV50462		UMTS 850	QS46512-6_850MHz_10DT	12	150	10	None	Andrew 1-1/4 (850)	145.04					272.27				
	PORT 2	4535.B.700.4G.1		CTL05046_7B_2_E	CTL05046_7B_2_E		LTE 700	6_2355MHz_03D	16.7	150	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			10	
	PORT 3	4535.B.1900.4G.1	4535.B.1900.4G.1	CTL04046_9B_1	CTL04046_9B_1		LTE 1900	6_1930MHz_05D	15.5	150	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			10	
	PORT 4	4535.B.1900.4G.1	4535.B.1900.4G.1	CTL04046_9B_2	CTL04046_9B_2		LTE 1900	6_1930MHz_05D	15.5	150	5	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			10	
	PORT 5	4535.B.WCS.4G.1	4535.B.WCS.4G.1	CTL05046_3B_1	CTL05046_3B_1		LTE WCS	6_2355MHz_03D	16.7	150	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			10	
	PORT 6	4535.B.850.4G.1	4535.B.850.4G.1	CTL05046_7B_1	CTL05046_7B_1		LTE 700	1D65A_722MHz_020T	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04					1475.7065			13	
	PORT 7	4535.B.AWS.4G.1	4535.B.AWS.4G.1	CTL04046_2B_2	CTL04046_2B_2		LTE AWS	1D65A_2170MHz_05DT	17.1	150	5	Bottom	LDF6-50A_700 MHz	145.04					3837.0724			14	
ANTENNA POSITION 3	PORT 8	4535.B.850.4G.1	4535.B.850.4G.1	CTL05046_8B_1	CTL05046_8B_1		LTE 850	1D65A_851MHz_020T	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04					1000			13	
	PORT 9	4535.B.850.5G.1	4535.B.850.5G.1	CTCN004046_N0058_1	CTCN004046_N0058_1		5G 850	1D65A_851MHz_020T	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04				1000			13		
	PORT 10	4535.B.850.5G.1	4535.B.850.5G.1	CTCN004046_N0058_1	CTCN004046_N0058_1		5G 850	1D65A_851MHz_020T	13.1	150	2	Bottom	LDF6-50A_700 MHz	145.04				1000			13		

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)						
ANTENNA MAKE - MODEL	QS46512-6		SBFH-1D65A			
ANTENNA VENDOR	Quintel		Andrew			
ANTENNA SIZE (H x W x D)	52X12X10.8		55X11.9X7.1			
ANTENNA WEIGHT	75		33.5			
AZIMUTH	270		270			
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	105		105			
ANTENNA TIP HEIGHT	107		107			
MECHANICAL DOWNTILT	0		0			
FEEDER AMOUNT	4		4			
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)	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)	8 TSXDC-4310FM		12 Andrew APTDC-BDFDM-DB(4)+TSXDC-4310FM(8)			
DIPLEXER (QTY/MODEL)	4 QBC0007F1V51-1		4 CCI Triplexer -TPX-070821			
DIPLEXER (QTY/MODEL)						
Antenna RET CONTROL UNIT (QTY/MODEL)						
DC BLOCK (QTY/MODEL)						
TMA/LNA (QTY/MODEL)	1 TMA21X23868-31-43 (Twin AWS-WCS w/700/850 BP)		2 TMABPD7823VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Aisg Quadplexer					
PDU FOR TMA (QTY/MODEL)						
FILTER (QTY/MODEL)						
SQUID (QTY/MODEL)						
FIBER TRUNK (QTY/MODEL)						
DC TRUNK (QTY/MODEL)						
REPEATER (QTY/MODEL)						
RRH - 700 band (QTY/MODEL)	1 RRUS-E2 B29		1 RRUS-11 B12 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)			1 4478 B5			
RRH - 1900 band (QTY/MODEL)	1 8843 B2/B66A					
RRH - AWS band (QTY/MODEL)						
RRH - WCS band (QTY/MODEL)	1 RRUS-32 B30					
Additional RRH #1 - any band (QTY/MODEL)						
Additional RRH #2 - any band (QTY/MODEL)						
Additional Component 1 (QTY/MODEL)			2 K SBT 782-11055			
Additional Component 2 (QTY/MODEL)						
Additional Component 3 (QTY/MODEL)						
Local Market Note 1	// Follow Antenna/RRH positions as per PDs. // Swap LTE Antenna with a Hex port Antenna.					
Local Market Note 2						
Local Market Note 3	1x6601 / 1x5216 / 1x0MU03 / 1x6630 + IDLe					

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	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)	RX/IT 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	4535.C.850.3G.1		CTV50463	CTV50463		UMTS 850	QS46512-6_850MHz_02DT	12.2	270	2	None	Andrew 1-1/4 (850)	145.04					272.27				
	PORT 2	4535.C.700.4G.1		CTL05046_7C_2_E	CTL05046_7C_2_E		LTE 700	6_2355MHz_03D	16.7	270	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			18	
	PORT 3	4535.C.1900.4G.1	4535.C.1900.4G.1	CTL04046_9C_1	CTL04046_9C_1		LTE 1900	6_1930MHz_02D	15.7	270	2	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			18	
	PORT 4	4535.C.1900.4G.1	4535.C.1900.4G.1	CTL04046_9C_2	CTL04046_9C_2		LTE 1900	6_1930MHz_02D	15.7	270	2	Bottom	Andrew 1-1/4 (850)	145.04					3664.3757			18	
	PORT 5	4535.C.WCS.4G.1	4535.C.WCS.4G.1	CTL05046_3C_1	CTL05046_3C_1		LTE WCS	6_2355MHz_03D	16.7	270	3	Bottom	Andrew 1-1/4 (850)	145.04					1285.2866			18	
	PORT 6	4535.C.850.4G.1	4535.C.850.4G.1	CTL05046_7C_1	CTL05046_7C_1		LTE 700	1D65A_722MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1475.7065			21	
	PORT 7	4535.C.AWS.4G.4	4535.C.AWS.4G.4	CTL04046_2C_2	CTL04046_2C_2		LTE AWS	1D65A_2170MHz_02DT	17.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					3837.0724			22	
ANTENNA POSITION 3	PORT 1	4535.C.850.4G.1	4535.C.850.4G.1	CTL05046_8C_1	CTL05046_8C_1		LTE 850	1D65A_851MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1000			21	
	PORT 2	4535.C.850.5G.1	4535.C.850.5G.1	CTCN004046_N05C_1	CTCN004046_N05C_1		5G 850	1D65A_851MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1000			21	
	PORT 3	4535.C.850.5G.1	4535.C.850.5G.1	CTCN004046_N05C_1	CTCN004046_N05C_1		5G 850	1D65A_851MHz_02DT	13.1	270	2	Bottom	LDF6-50A_700 MHz	145.04					1000			21	

DIAGRAM A

Diagram Sector: A  
 Atoll Site Name: CTLO5046  
 Market: CONNECTICUT  
 Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna\_Radio Connection Dra

Diagram File Name: CT5046\_A\_B\_C\_LTE\_700DE\_PCS\_Utility\_2A  
 Location Name: NORWALK CENTER  
 Market Cluster: NEW ENGLAND

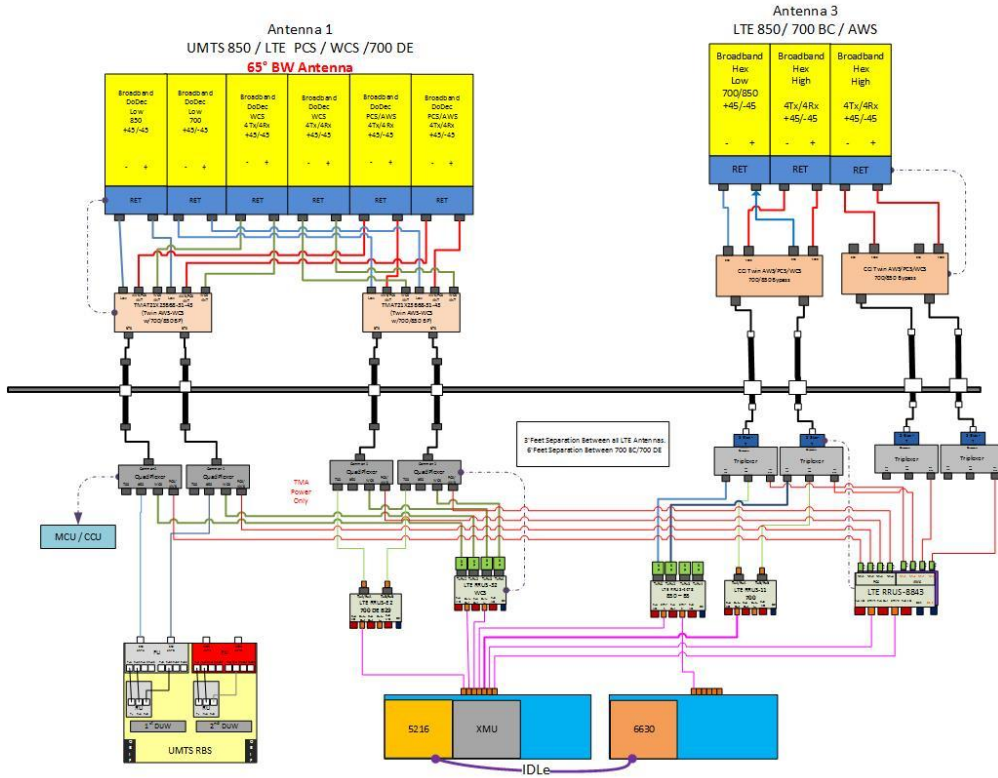


DIAGRAM B

Diagram Sector: B  
 Atoll Site Name: CTLO5046  
 Market: CONNECTICUT  
 Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna\_Radio Connection Dra

Diagram File Name: CT5046\_A\_B\_C\_LTE\_700DE\_PCS\_Utility\_2A  
 Location Name: NORWALK CENTER  
 Market Cluster: NEW ENGLAND

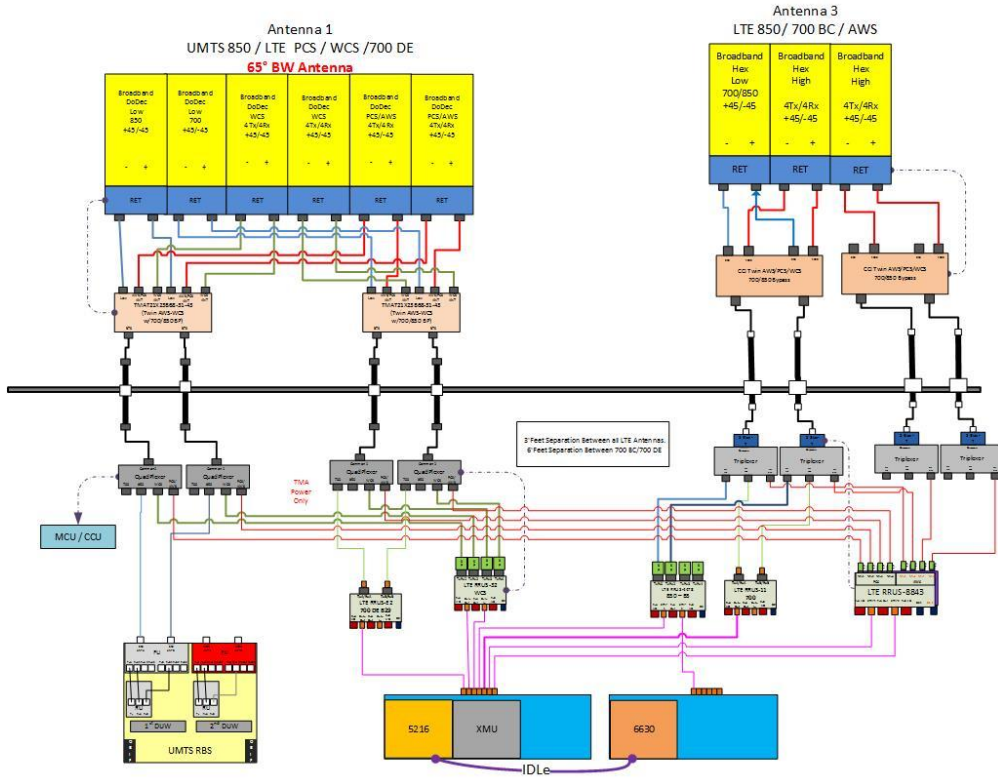
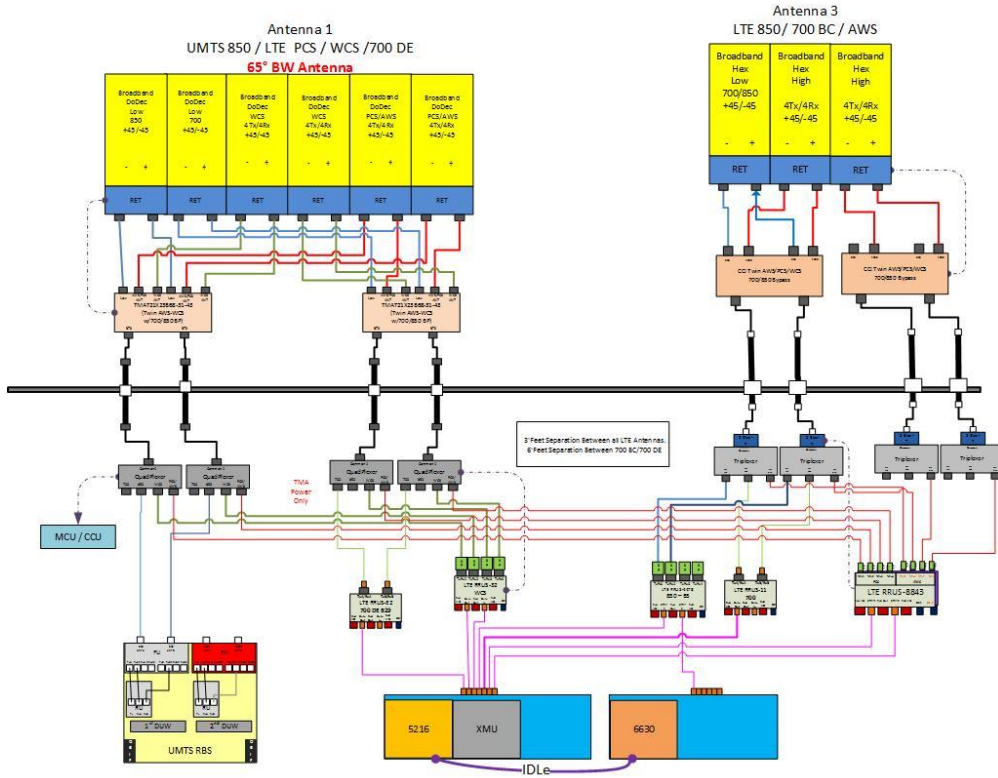


DIAGRAM C

Diagram Sector: C  
 Atoll Site Name: CTLO5046  
 Market: CONNECTICUT  
 Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna\_Radio Connection Dra

Diagram File Name: CT5046\_A\_B\_C\_LTE 700DE\_PCS\_Utility\_2A  
 Location Name: NORWALK CENTER  
 Market Cluster: NEW ENGLAND







## 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
Gain by Beam Tilt, average, dBi	0°   13.4	0°   13.4	0°   16.0	0°   16.3	0°   16.5	0°   17.0
	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

SBNHH-1D65A

POWERED BY



## 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**

RoHS 2011/65/EU  
China RoHS SJ/T 11364-2006  
ISO 9001:2008

**Classification**

Compliant by Exemption  
Above Maximum Concentration Value (MCV)  
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.

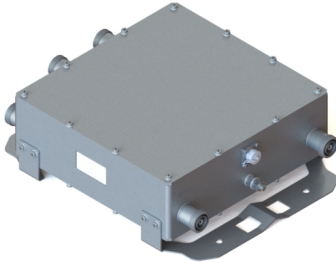


# Amplifiers

## Triple Band Twin TMA (AWS/PCS/WCS) with AWS-3 and 700/850 Bypass

TMABPD7823VG12A

DATA SHEET



- Triple Band Twin TMA (AWS/PCS/WCS) which includes AWS-3 and 700/850 Bypass
- Each TMA has independent gain control of 6 to 12dB
- Fail-safe bypass mode and multi-strike lightning protection
- Small lightweight unit offers high reliability of >500K Hours MTBF
- Highly linear amplifier with low intermodulation

### Overview

CCI's Triple Band Twin TMA (AWS/PCS/WCS), which includes AWS-3 and 700/850 bypass, contains two triple band TMA's in a single housing. Each TMA in the housing is fully duplexed and shares a single LNA for all three bands. The bypass path provides excellent isolation to the TMA path. Separate antenna ports for the bypass path and TMA path are combined onto a single BTS port. The Twin TMA's low noise, highly linear amplifiers improve the uplink sensitivity and the receive performance of the base station. The TMA is fully compliant with the AISG 2.0 specification and supports CDMA, EDGE/GSM, UMTS and LTE BTS equipment. The unit is ideally suited for sites upgraded to quad-band using the existing infrastructure. The TMA allows the sharing of feeder lines for all bands thus reducing tower loading, leasing, and installation costs. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

### Technical Description:

The TMA system is an outdoor triple band twin tower mount unit which provides low noise amplification of PCS, AWS, AWS-3, and WCS uplink signals combined with 700/850 bypassed signals from separate antenna ports to a common BTS port. The tower mount unit consists of 14 band-pass filters, two redundant low noise amplifiers (LNA) with bypass failure circuitry, two bias tees, AISG control circuitry, and lightning protection circuitry all housed in an IP67 enclosure suited to long life masthead mounting. The AWS, PCS and WCS paths are dual duplexed to separate the low power uplink signals from the high power down link signals at the BTS and antenna ports. The AWS, PCS, and WCS uplink signals are amplified with a dedicated ultra-low noise PHEMT LNA with adjustable gain control. The unit provides protection against lightning strikes via a multistage surge protection circuit. DC power and AISG 2.0 control is provided via the BTS feeder cable. The unit operates in current window alarm (CWA) mode until a valid AISG message is detected, at which point it automatically switches to AISG mode. Once in AISG mode, the unit can only switch back to CWA mode with the receipt of an AISG CCI vendor defined command. In CWA mode, the unit requires 12VDC at each BTS port and follows typical current window convention. In AISG mode, the unit will accept 10-30 VDC from either BTS port. In AISG mode, the unit does not require an AISG 2.0 compatible site control unit (SCU) and may also be powered by a standard power distribution unit (PDU).

An optional Site Control Unit (SCU) is available to power up to 32 AISG modules per sector and to provide the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains dual redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.



# Amplifiers

## Triple Band Twin TMA (AWS/PCS/WCS) with AWS-3 and 700/850 Bypass

TMABPD7823VG12A

### SPECIFICATIONS

#### Electrical

RF Parameters	Ports	Frequency(MHz)	Specification	
Return Loss (minimum)	700/850 ANT	698 - 894	18 dB	
		PCS/AWS/WCS ANT	1850 - 1910	18 dB (10 dB bypass mode)
			1930 - 1990	18 dB
			1710 - 1780	18 dB (10 dB bypass mode)
			2110 - 2180	18 dB
			2305 - 2320	18 dB (10 dB bypass mode)
			2345 - 2360	18 dB
	BTS	698 - 894	18 dB	
		1850 - 1910	18 dB (10 dB bypass mode)	
		1930 - 1990	18 dB	
		1710 - 1780	18 dB (10 dB bypass mode)	
		2110 - 2180	18 dB	
		2305 - 2320	18 dB (10 dB bypass mode)	
		2345 - 2360	18 dB	
Gain Setting	PCS/AWS/WCS ANT to BTS	1710 - 1780, 1850 - 1910, 2305 - 2320	6 to 12 dB adjustable in 0.25 dB steps via AISG ( $\pm 1.0$ dB)	
Gain, Actual (when set for 6 dB)	PCS/AWS/WCS ANT to BTS	1710 - 1780, 1850 - 1910	$6 \pm 1.0$ dB	
		2305 - 2320	$5 \pm 1.0$ dB	
Gain, Actual (when set for 9 dB)	PCS/AWS/WCS ANT to BTS	1710 - 1780, 1850 - 1910	$9 \pm 1.0$ dB	
		2305 - 2320	$8 \pm 1.0$ dB	
Gain, Actual (when set for 12 dB)	PCS/AWS/WCS ANT to BTS	1710 - 1780, 1850 - 1910	$12 \pm 1.0$ dB	
		2305 - 2320	$11 \pm 1.0$ dB	
Insertion Loss	700/850 ANT - BTS	698 - 894	0.25 dB typical	
		PCS/AWS/WCS ANT to BTS (RX Bypass mode)	1850 - 1910	2.5 dB typical
			1710 - 1780	2.5 dB typical
	PCS/AWS/WCS ANT to BTS (TX)	2305 - 2320	4.5 dB typical	
		1930 - 1990	0.5 dB typical	
		2110 - 2180	0.4 dB typical	
		2345 - 2360	0.7 dB typical	
Isolation	700/850 ANT to PCS/AWS/WCS ANT	698 - 894	70 dB	
		1710 - 2360	70 dB	
Noise Figure	PCS/AWS/WCS ANT to BTS	1850 - 1910	1.5 dB typical	
		1710 - 1780	1.3 dB typical	
		2305 - 2320	2.3 dB typical	
Input Third Order Intercept Point (minimum)	PCS/AWS/WCS ANT to BTS	1710 - 1780	+12 dBm at maximum gain	
		1850 - 1910	+12 dBm at maximum gain	
		2305 - 2320	+12 dBm at maximum gain	
<b>General Characteristics</b>				
Impedance	50 ohms			
Continuous Average Power	200 W max.			
Peak Envelope Power	2 kW max.			
Intermodulation Performance(all ports)	< -117 dBm (-160 dBc) typical (2 x +43 dBm tones) all bands			
Operating Voltage	+10V to +30V DC provided via coax or AISG			
Power Consumption	< 2.0 W			



# Amplifiers

Triple Band Twin TMA (AWS/PCS/WCS)  
with AWS-3 and 700/850 Bypass

TMABPD7823VG12A

## SPECIFICATIONS

### Environmental

<b>Operating Temperature</b>	-40 °C to +65 °C
<b>Ingress Protection</b>	IP67
<b>MTBF</b>	>500,000 hours
<b>Lightning Protection</b>	8/20us, ±10KA max, 10 strikes each per IEC61000-4-5

### Mechanical

<b>Connectors</b>	6 × 7-16 DIN female 1 × AISG
<b>Dimensions enclosure (H×W×D)</b>	10.63 × 11.04 × 3.75 in. (270.0 × 280.3 × 95.2 mm)
<b>Dimensions with brackets (H×W×D)</b>	14.22 × 11.56 × 4.24 in. (361.8 × 293.5 × 107.6 mm)
<b>Weight enclosure</b>	25.0 lbs (11.3 kg)
<b>Weight with brackets</b>	26.0 lbs (11.8 kg)
<b>Mounting</b>	Pole/Wall mounting bracket

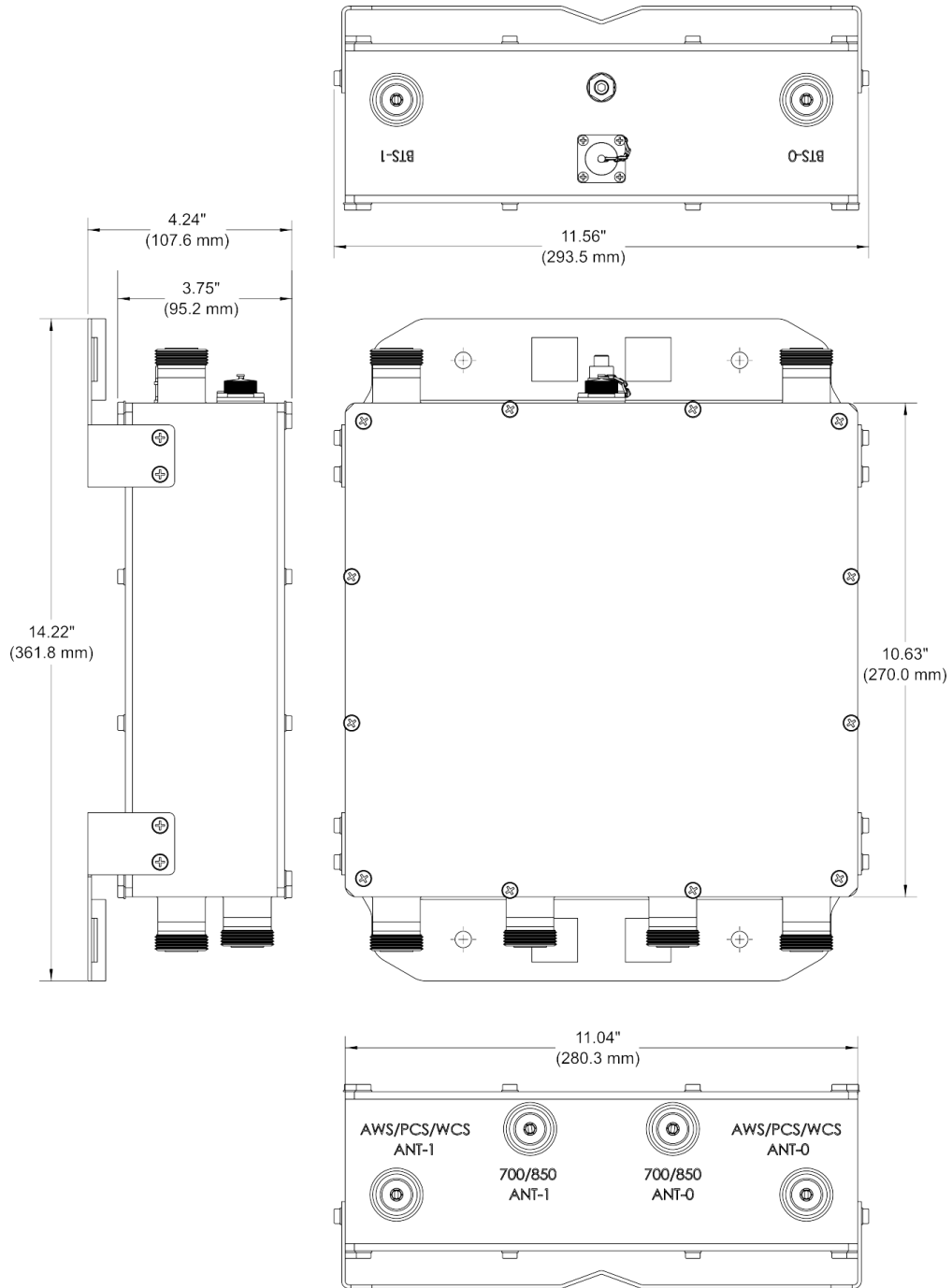


# Amplifiers

Triple Band Twin TMA (AWS/PCS/WCS)  
with AWS-3 and 700/850 Bypass

SPECIFICATIONS

TMABPD7823VG12A



TMABPD7823VG12A Outline Drawing



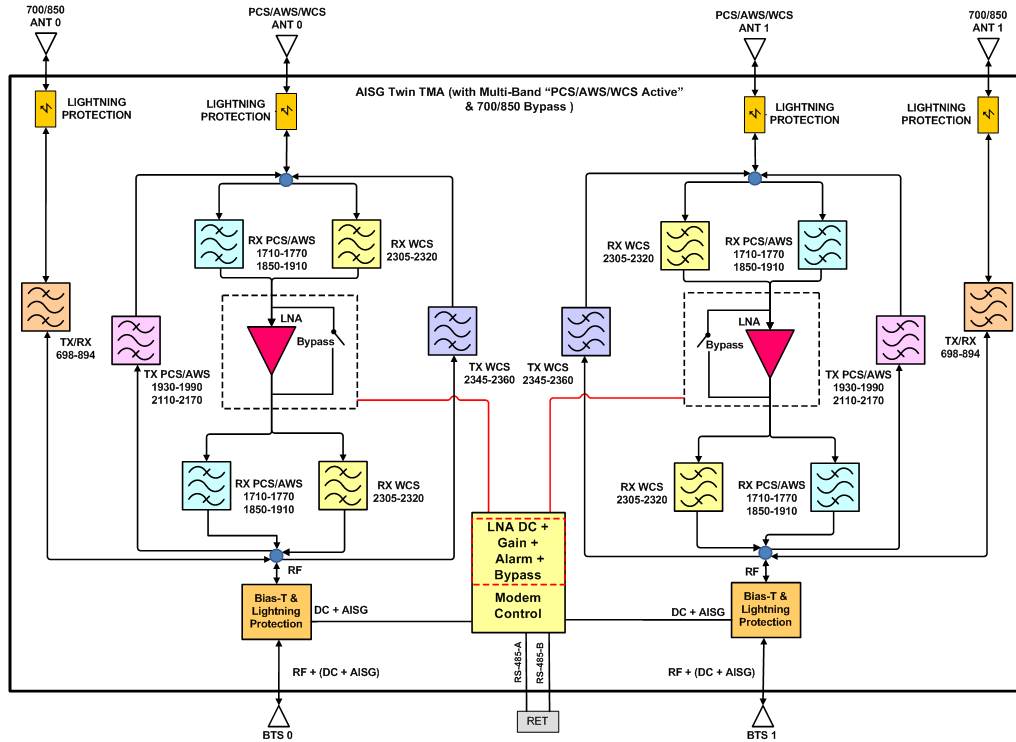
# Amplifiers

## Triple Band Twin TMA (AWS/PCS/WCS) with AWS-3 and 700/850 Bypass

TMABPD7823VG12A

### SPECIFICATIONS

### Block Diagram



TMABPD7823VG12A Block Diagram



# Amplifiers

## Triple Band Twin TMA (AWS/PCS/WCS) with AWS-3 and 700/850 Bypass

TMABPD7823VG12A

### STANDARDS & CERTIFICATIONS

#### Parts & Accessories

**TMABPD7823VG12A** Triple Band Twin TMA (PCS/AWS/WCS) with 700/850 Bypass with 7/16 DIN connectors

#### Standards & Compliance

<b>Safety</b>	EN 60950-1, UL 60950-1
<b>Emission</b>	EN 55022
<b>Immunity</b>	EN 55024
<b>Environmental</b>	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, IEC61000-4-5, GR-63-CORE 4.3.1, EN 60529 IP68

#### Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001





## 29 WILLRUSS CT

**Location** 29 WILLRUSS CT

**Mblu** 5/ 56/ 152/ 0/

**Acct#** 19010

**Owner** CONN LIGHT \* POWER CO

**Assessment** \$171,880

**Appraisal** \$245,540

**PID** 19010

**Building Count** 1

### Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$0	\$245,540	\$245,540

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$0	\$171,880	\$171,880

### Owner of Record

**Owner** CONN LIGHT \* POWER CO  
**Co-Owner** ATTN TAX DIVISION  
**Address** 107 SELDEN ST  
 BERLIN, CT 06037-0000

**Sale Price** \$0  
**Certificate**  
**Book & Page** 279/372  
**Sale Date** 12/31/1940

### Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CONN LIGHT * POWER CO	\$0		279/372	12/31/1940

### Building Information

**Building 1 : Section 1**

**Year Built:**

**Living Area:** 0

**Replacement Cost:** \$0

**Building Percent**

**Good:**

**Replacement Cost**

**Less Depreciation:** \$0

Building Attributes	
Field	Description
Style	Vacant Land
Model	
Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
AC Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Bath Style	
Kitchen Style	
Extra Kitchens	
Frame	
Insulation	
Bsmt Garage	
Foundation	
FBM Area	
FBM Quality	
Fireplaces	
# of Heat Systems	

**Building Photo**



(http://images.vgsi.com/photos/NorwalkCTPhotos//default.jpg)

**Building Layout**

(ParcelSketch.ashx?pid=19010&bid=19010)

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

**Extra Features**

Extra Features	<a href="#">Legend</a>
No Data for Extra Features	

**Land**

**Land Use**

**Use Code** 100  
**Description** Resid Vacant  
**Zone** B  
**Neighborhood** 0334

**Land Line Valuation**

**Size (Acres)** 0.87  
**Frontage**  
**Depth**  
**Assessed Value** \$171,880  
**Appraised Value** \$245,540

**Outbuildings**

Outbuildings	<a href="#">Legend</a>
No Data for Outbuildings	

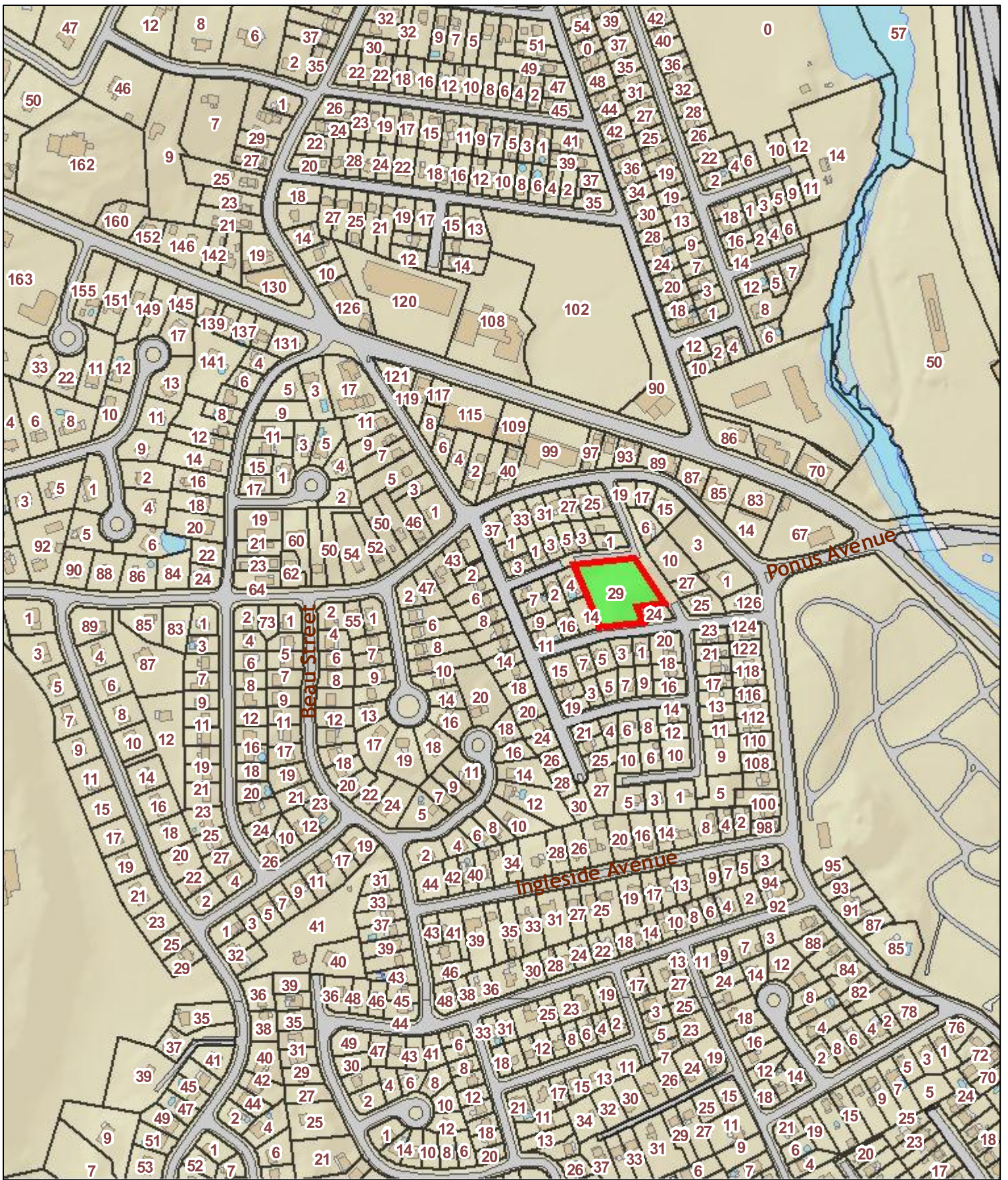
**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$0	\$245,540	\$245,540
2017	\$0	\$229,270	\$229,270
2016	\$0	\$229,270	\$229,270

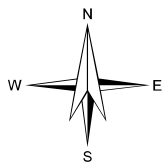
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$0	\$171,880	\$171,880
2017	\$0	\$160,490	\$160,490
2016	\$0	\$160,490	\$160,490

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**29 WILLRUSS CT**



0 375 750 1,500 Feet

1 inch = 545 feet





Petition No. 446  
AT&T Wireless PCS, Inc.  
Staff Report  
April 12, 2000

On March 8, 2000, Connecticut Siting Council (Council) member Gerald J. Heffernan, and Fred Cunliffe of Council staff met AT&T Wireless PCS (AT&T) representatives Michael Murphy and Daniel Garber and Michael Austin of Pinnacle Site Development for inspection of a Connecticut Light & Power Company (CL&P) electric transmission line structure (no. 1102) located off Willruss Court in Norwalk. AT&T, with the agreement of CL&P, proposes to modify the transmission structure for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

AT&T proposes to attach an 8.6-inch diameter pipe extending the existing structure height of 94 feet by 12 feet for a total height of 106 feet. AT&T proposes a low profile antenna cluster mount at the top of the pipe and placing associated equipment cabinets on a steel frame within the base of the existing structure. The proposed site is on property owned by CL&P within an urban setting consisting primarily of residential homes. Eight residences are within approximately 200 feet of the proposed site. Buffers of vegetation exist on both sides of the right-of-way.

Minor clearing of vegetation and debris is expected both for the site and to improve an existing access from Willruss Court to the structure. A 30 ft. by 40 ft., 8-foot high chain link fence would surround the structure. Utilities would be routed underground within the access drive approximately 100 feet from an existing utility pole to the site.

The worst case power density for the telecommunications operations at the site has been calculated to be less than 2.6% of the applicable standard for uncontrolled environments. AT&T contends that the proposed installation will not cause a substantial adverse environmental effect, and for this reason would not require a Certificate.



56 Prospect Street,  
Hartford, CT 06103

P.O. Box 270  
Hartford, CT 06141-0270  
(860) 665-5000

July 20, 2020

Mr. Tim Burks  
SAI Communications  
12 Industrial Way  
Salem, NH 03079

RE: AT&T Antenna Site CT5046, Willrus Court, Norwalk CT, Eversource Structure 1102

Dear Mr. Burks:

Based on our reviews of the site drawings, the structural analysis and foundation review provided by Centek Engineering, along with a third party review performed by Paul J. Ford and Company, we accept the proposed modification.

Please work with Christopher Gelinis of Eversource Real Estate to process the site lease amendment. Please do not hesitate to contact us with questions or concerns. Christopher can be contacted at 860-665-2008, and I can be contacted at (203) 623-0409.

Sincerely,

*Richard Badon*

Richard Badon  
Transmission Line Engineering

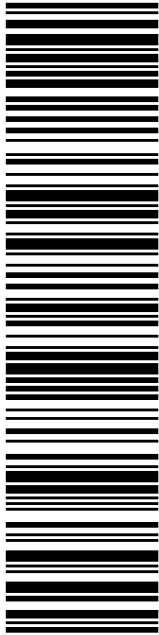
Ref: 19157.00 - CT5046 Structural Analysis Rev4 20.05.18  
19157.00 CT5046 Norwalk Center - Rev0 CDs (S&S)

**SHIP TO:** MR. CHRISTOPHER GELINAS  
EVERSOURCE ENERGY  
PO BOX 270  
REAL ESTATE DEPARTMENT  
HARTFORD CT 06141-0270

**QC DEVELOPMENT**  
PO BOX 916  
STORRS CT 06268-0916

**P**  
usps.com  
**US POSTAGE** \$7.75  
Flat Rate Env  
08/01/2020

**USPS TRACKING #**



**9405 5036 9930 0474 7764 93**

**PRIORITY MAIL 1-DAY™**

Expected Delivery Date: 08/03/20

Mailed from 06268 062S0000001310

**Carrier -- Leave if No Response**

**B060**

**0024**

Electronic Rate Approved #038555749

**Click-N-Ship®**



Cut on dotted line.

### Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0474 7764 93**

Trans. #: 501376014	Priority Mail® Postage: <b>\$7.75</b>
Print Date: 07/30/2020	Total: <b>\$7.75</b>
Ship Date: 08/01/2020	
Expected Delivery Date: 08/03/2020	

**From:** QC DEVELOPMENT  
PO BOX 916  
STORRS CT 06268-0916

**To:** MR. CHRISTOPHER GELINAS  
EVERSOURCE ENERGY  
PO BOX 270  
REAL ESTATE DEPARTMENT  
HARTFORD CT 06141-0270

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
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**SHIP TO:** MAYOR HARRY RILLING  
CITY OF NORWALK  
125 EAST AVE  
NORWALK CT 06851-5702

**SHIP CC:** MR STEVEN KLEPPIN, PLANNING & ZO  
NORWALK CT 06851-5702

**USPS TRACKING #**

**9405 5036 9930 0474 7765 09**

**QC DEVELOPMENT**  
PO BOX 916  
STORRS CT 06268-0916

**Expected Delivery Date: 08/04/20**

**Carrier -- Leave if No Response**

**C005**

**P**

08/01/2020

**PRIORITY MAIL 2-DAY™**

**0004**

usps.com  
**US POSTAGE**  
Flat Rate Env  
\$7.75

9405 5036 9930 0474 7765 09 0077 5000 0010 6851

Mailed from 06268 062S0000001311

**UNITED STATES POSTAL SERVICE®**

**Click-N-Ship®**

062S0000001311



Cut on dotted line.

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Trans. #: 501376014	Priority Mail® Postage: <b>\$7.75</b>
Print Date: 07/30/2020	Total: <b>\$7.75</b>
Ship Date: 08/01/2020	
Expected Delivery Date: 08/04/2020	

**From:** QC DEVELOPMENT  
PO BOX 916  
STORRS CT 06268-0916

**To:** MAYOR HARRY RILLING  
CITY OF NORWALK  
125 EAST AVE  
CC: MR STEVEN KLEPPIN, PLANNING & ZO  
NORWALK CT 06851-5702

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at usps.com





**SITE ACQUISITION, LLC**  
 12 INDUSTRIAL WAY  
 SALEM, NH 03079

BANK OF AMERICA

$\frac{54-49}{114}$

68859

Pay: \*\*\*\*\*Six hundred twenty-five dollars and no cents

DATE

CHECK NO.

AMOUNT

October 8, 2019

68859 \$\*\*\*\*\*625.00

**PAY**  
TO THE  
ORDER  
OF

Connecticut Siting Council  
 10 Franklin Sq  
 New Britain, CT 06051

*Ann J. Miller*

⑈068859⑈ ⑆011400495⑆ 00008987744⑈

SAI  
SITE ACQUISITION, LLC

68859

~~CONN03 Connecticut Siting Council~~

DATE	INVOICE NO.	DESCRIPTION	INVOICE AMOUNT	DEDUCTION	BALANCE	
10-08-19	CR100819	CT5046 - CSC Filing	625.00		625.00	
CHECK DATE	10-08-19	CHECK NUMBER	68859	TOTALS	625.00	625.00