EMPIRE telecom

January 19, 2017

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas and 3 TMAs and addition of 3 TMAs and associated lines
Property Address:	17 Daybreak Lane, Shelton, CT (the "Property", AT&T Site # CT2044)
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 97 foot, 6 inch utility tower ("tower") at the above-referenced address, latitude 41.27252, longitude -73.1183319. AT&T's facility consists of nine (9) wireless telecommunications antennas at 98 feet. The tower is controlled and owned by Eversource Energy. Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas, swapping (3) TMAs and adding (3) TMAs and associated lines. The centerline height of said antennas is and will remain at 98 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of the City of Shelton and the Planning & Zoning Administrator of the City of Shelton. A copy of this letter is also being sent to Eversource, Energy, the owner of the structure that AT&T is located.

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

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and associated lines will be installed at 98 foot level of the 97'6" foot utility tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

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

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Centek Engineering January 4, 2017).

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

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

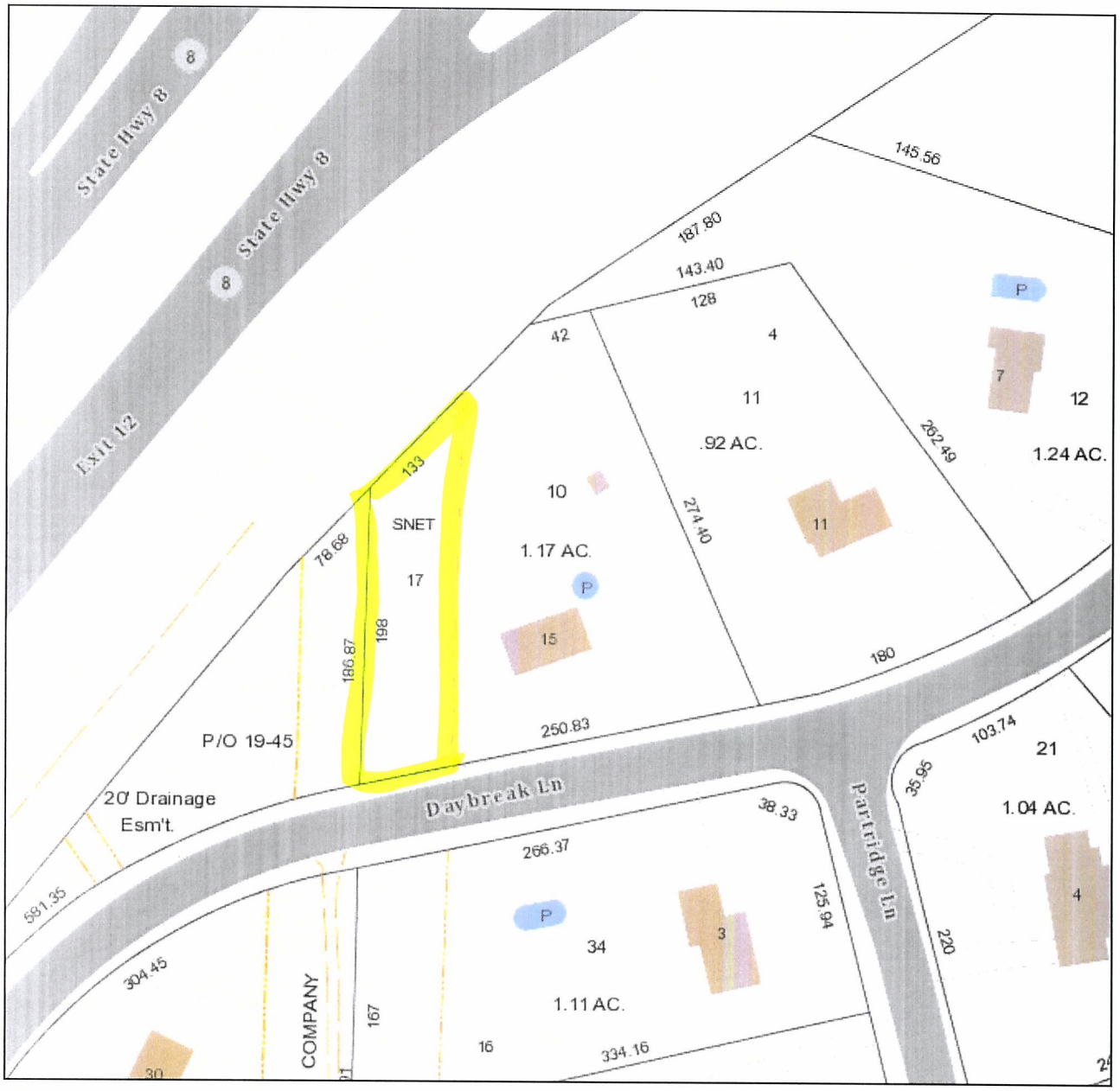
CC: The Honorable Mark A. Lauretti, Mayor, City of Shelton
Rick Schultz, Planning & Zoning Administrator, City of Shelton
Eversource Energy, c/o Robert Gray

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

City of Shelton

Geographic Information System (GIS)

Date Printed: 7/21/2016



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of Shelton and its mapping contractors assume no legal responsibility for the information contained herein.

0 100 Feet

N W E S

WIRELESS COMMUNICATIONS FACILITY
CT2044 - LTE BWE
SHELTON NU
CROWN CASTLE SITE NO.: 841300
17 DAYBREAK LANE
SHELTON, CT 06484

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

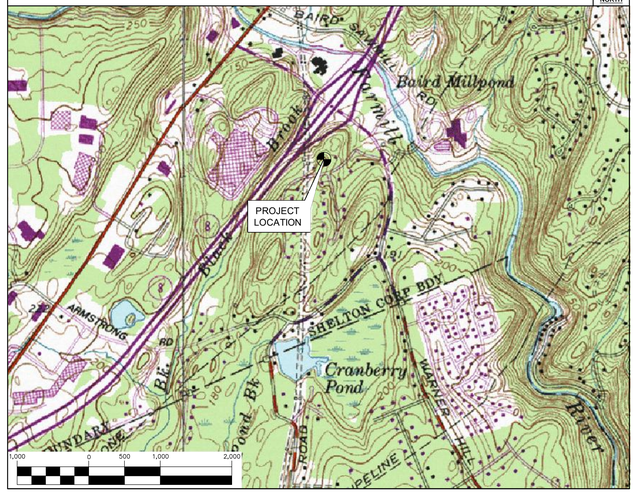
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 17 DAYBREAK LANE, SHELTON, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5.	MERGE ONTO CT-15 S EXIT 17 TOWARD EAST MAIN ST	27.63 MI
6.	TAKE CT-110 EXIT 53 TOWARD STRATFORD/SHELTON	0.33 MI
7.	TURN RIGHT ONTO MAIN ST/CT-110	0.57 MI
8.	TAKE SECOND LEFT ONTO WARNER HILL RD	1.31 MI
9.	WARNER HILL BECOMES OLD STRATFORD RD	0.28 MI
10.	TURN LEFT ONTO DAYBREAK LANE 17 DAYBREAK LANE IS ON THE RIGHT	0.20 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING POSITION 4 LTE ANTENNA FOR PROPOSED LTE HEXPORT ANTENNA, (1) PER SECTOR.
   B. REPLACE (3) EXISTING RRUS-11 WITH (6) PROPOSED RRUS-12 WITHIN EXISTING EQUIPMENT SHELTER.
   C. INSTALL (2) NEW COMMSCOPE WCS-IMFQ-AMT FILTERS WITHIN EXISTING EQUIPMENT SHELTER, (1) PER SECTOR. (ALPHA/BETA SECTORS ONLY)

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2044
AT&T SITE NAME:	SHELTON NU
SITE ADDRESS:	CROWN CASTLE SITE NO.: 841300 17 DAYBREAK LANE SHELTON, CT 06484
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-16'-21.072" N LONGITUDE: 73°-07'-5.995" W GROUND ELEVATION: ±175' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
N-1	NOTES AND SPECIFICATIONS	1
C-1	COMPOUND PLAN AND TOWER ELEVATION	1
C-2	LTE EQUIPMENT DETAILS	1
C-3	EQUIPMENT SHELTER PLAN DETAILS	1
E-1	TYPICAL ELECTRICAL DETAILS	1

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/13/17	CAG	LVP	PRELIMINARY CDs - REVISED PER CLIENT COMMENTS
1	07/12/16	KAW	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

EMPIRE telecom

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Centered on Solutions℠
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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SHELTON NU
CT2044 - LTE BWE
17 DAYBREAK LANE
SHELTON, CT 06484

DATE: 07/06/16
SCALE: AS NOTED
JOB NO. 16071.30

TITLE SHEET

T-1

Sheet No. 1 of 6

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CT STATE BUILDING CODE.

1. DESIGN CRITERIA:
   ANTENNA MAST
   - WIND LOAD: PER ANSI/TIA 222 G (ANTENNA MOUNTS): 90–110 MPH (3 SECOND GUST).

   TRANSMISSION TOWER
   - WIND LOAD: PER NESC C2–2012 SECTION 25 RULE 250C (TOWER & FOUNDATION) 110 MPH (3 SECOND GUST)
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

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

STRUCTURAL STEEL

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

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

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

PAINT NOTES

PAINTING SCHEDULE:

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

EXAMINATION AND PREPARATION:

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

CLEANING:

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

APPLICATION:

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

COMPLETED WORK:

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/13/17	CAG	LVP	PRELIMINARY CDs – REVISED PER CLIENT COMMENTS
1	07/12/16	KAW	CAG	PRELIMINARY CDs – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

SHELTON NU
CT2044 - LTE BWE
17 DAYBREAK LANE
SHELTON, CT 06484

DATE: 07/06/16
SCALE: AS NOTED
JOB NO. 16071.30

NOTES AND SPECIFICATIONS

N–1

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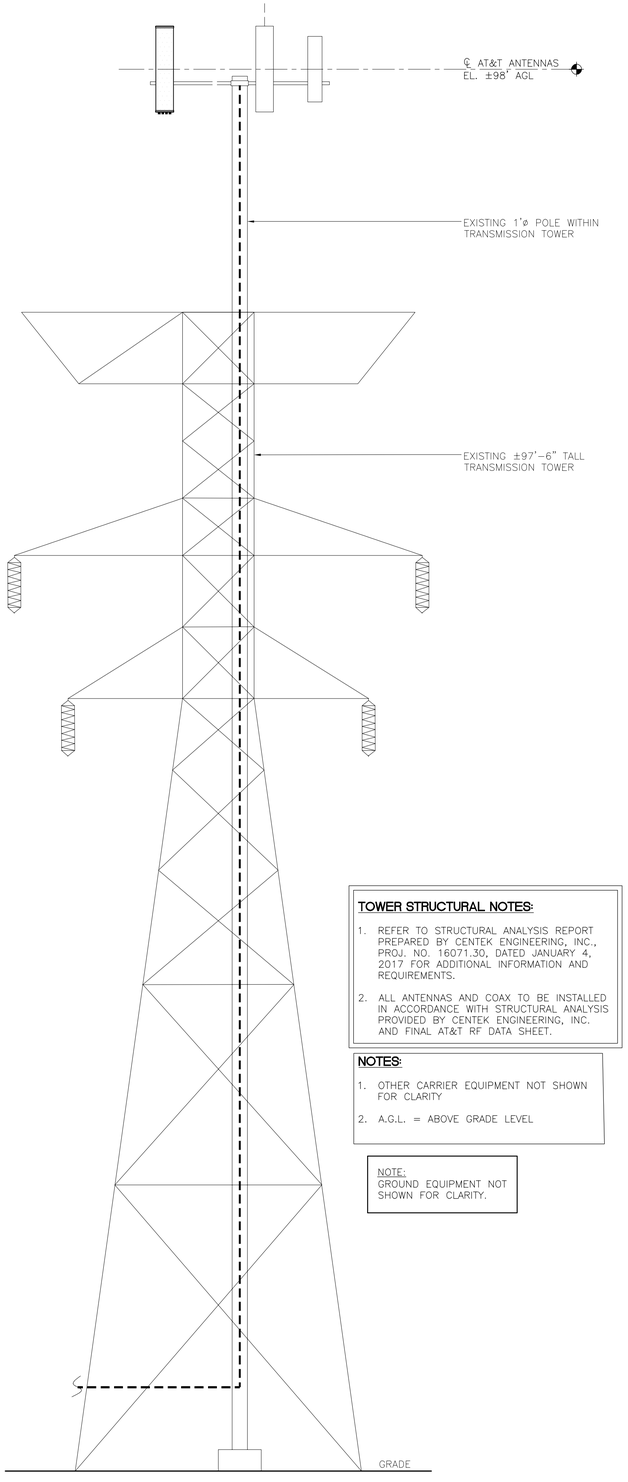


TOWER STRUCTURAL NOTES:

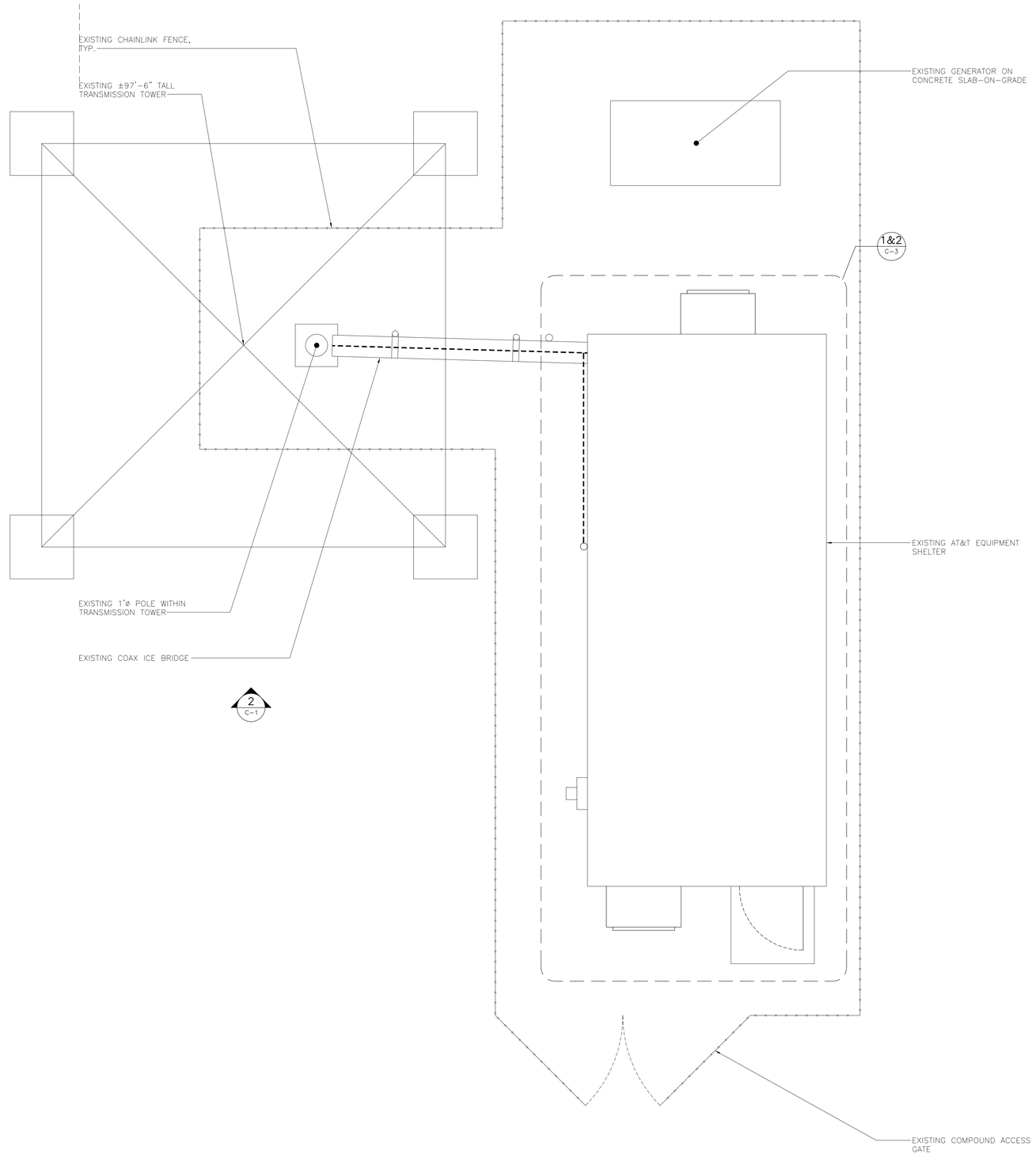
1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 16071.30, DATED JANUARY 4, 2017 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CENTEK ENGINEERING, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

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

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

2 / C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1" = 5'



2 / C-1

1 / C-1 **COMPOUND PLAN**
SCALE: 3/8" = 1'-0"

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/13/17	CAG	LVP	PRELIMINARY CDs - REVISED PER CLIENT COMMENTS
1	07/12/16	KAW	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

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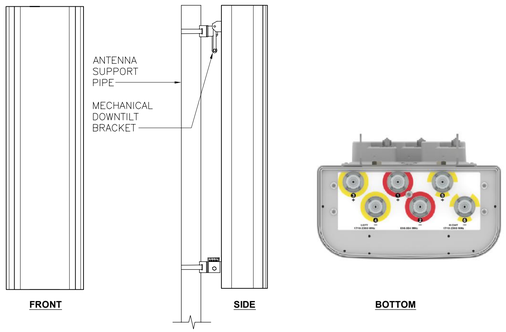
COMPOUND PLAN AND TOWER ELEVATION

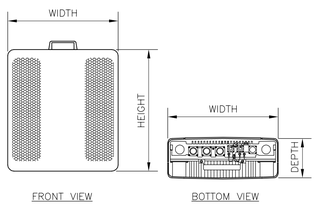
C-1

Sheet No. 3 of 6



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6	72.0"L x 14.8"W x 9.0"D	42.9 LBS.

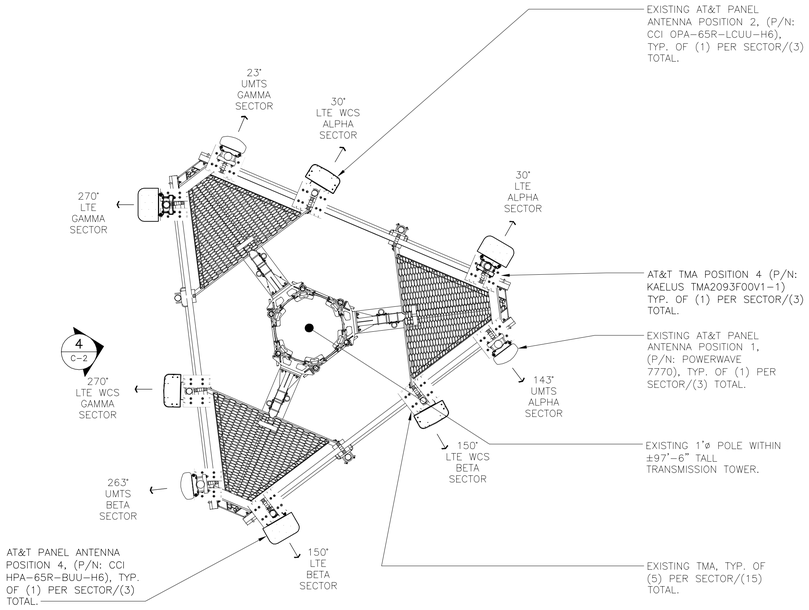
5 / C-2 **PROPOSED ANTENNA DETAIL**
SCALE: 1/2" = 1'-0"



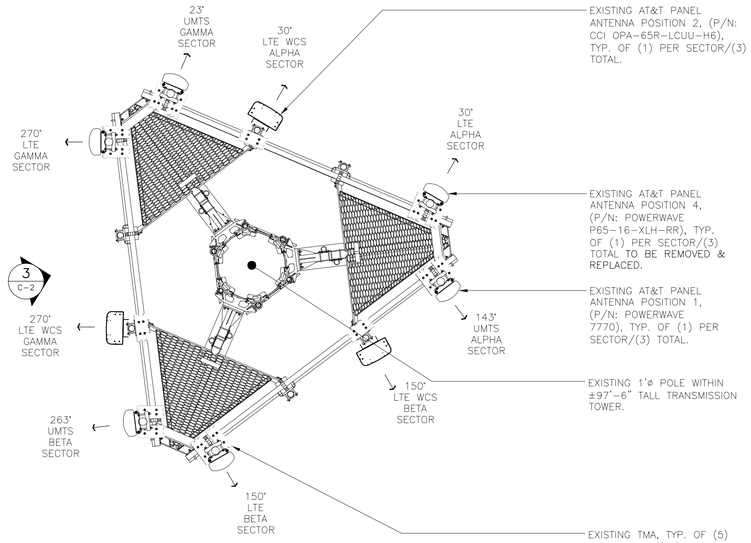
RRUS-12

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"H x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

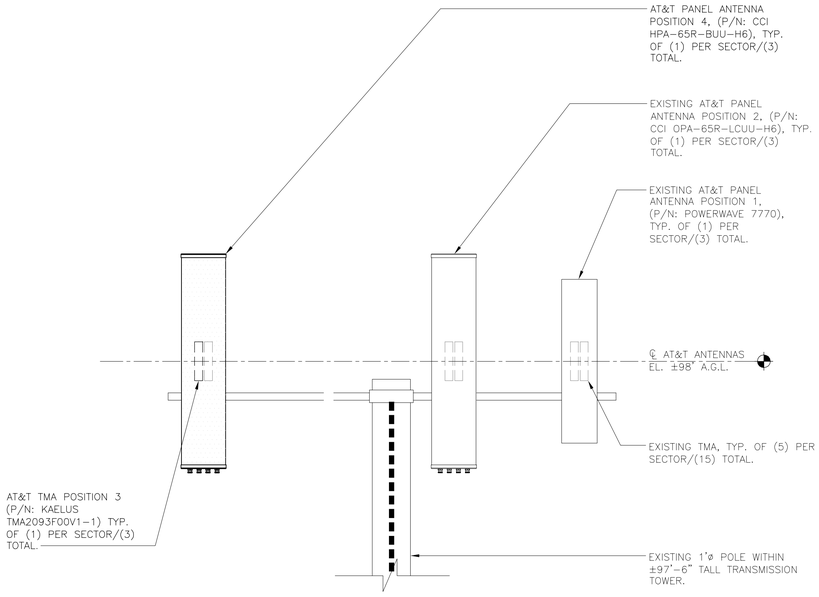
6 / C-2 **ERICSSON RRUS 12 DETAIL**
SCALE: 1" = 1'-0"



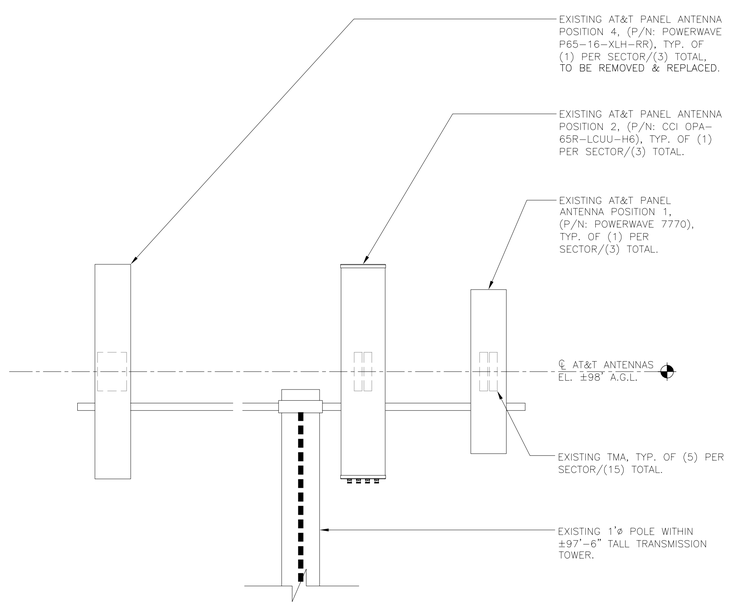
2 / C-2 **PROPOSED ANTENNA PLAN**
SCALE: 3/8" = 1'-0"
NORTH



1 / C-2 **EXISTING ANTENNA PLAN**
SCALE: 3/8" = 1'-0"
NORTH



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



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

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1	07/12/16	KAW	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

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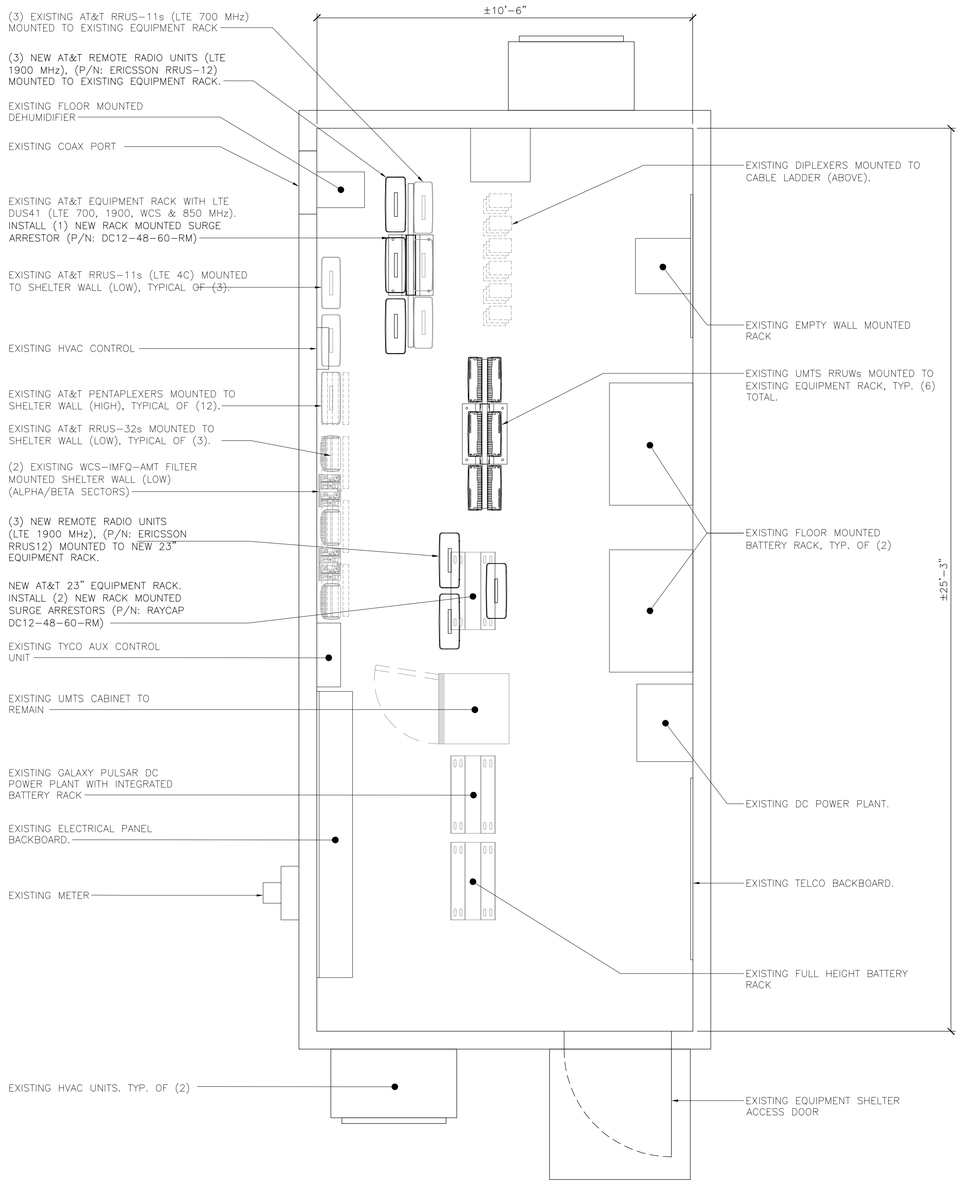
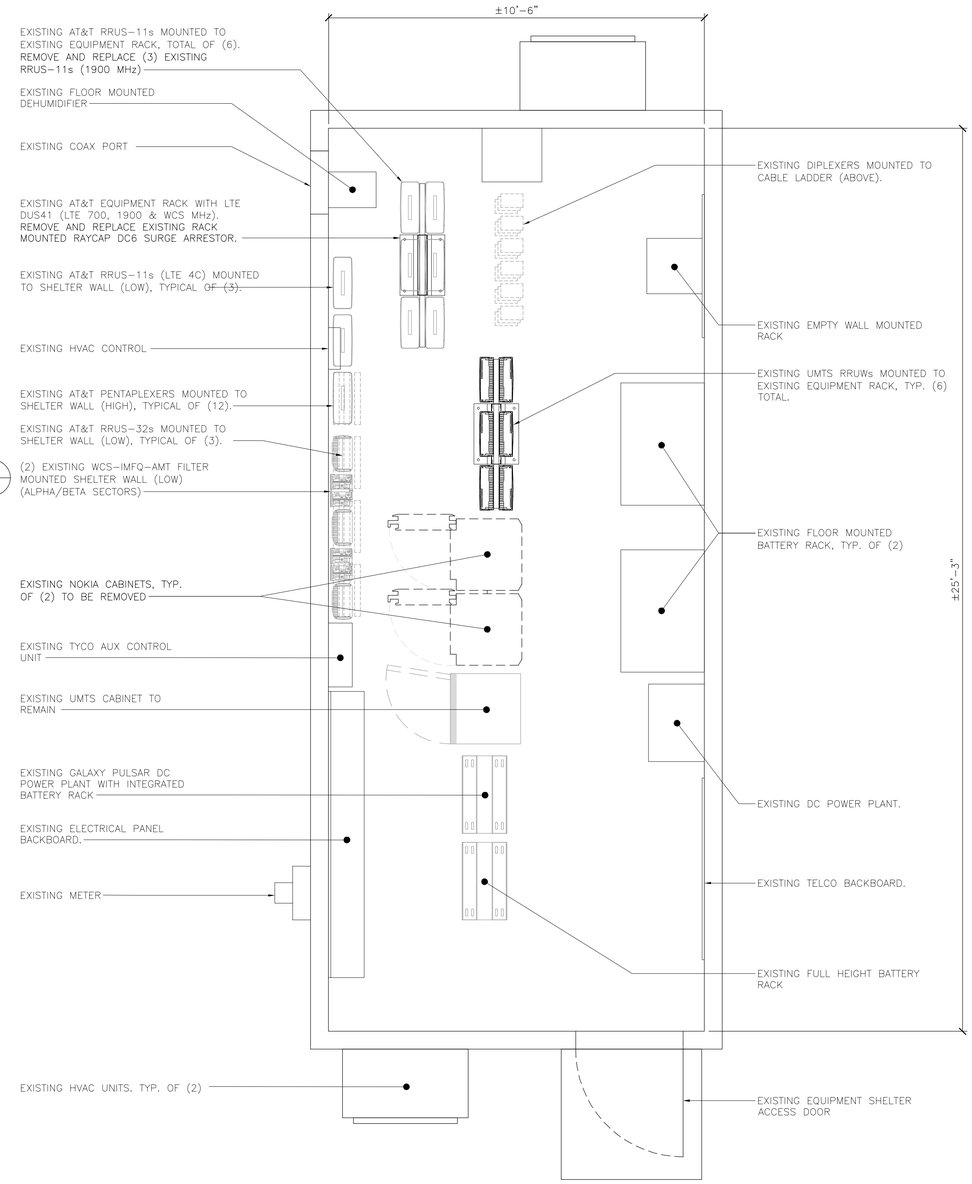
LTE EQUIPMENT DETAILS

C-2
Sheet No. 4 of 6



1 C-3 **EQUIPMENT LAYOUT PLAN - PROPOSED**
SCALE: 1/2" = 1'-0"

TRUE NORTH



2 C-3 **EQUIPMENT LAYOUT PLAN - EXISTING**
SCALE: 1/2" = 1'-0"

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/13/17	CAG	LVP	PRELIMINARY CDs - REVISED PER CLIENT COMMENTS
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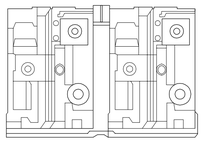
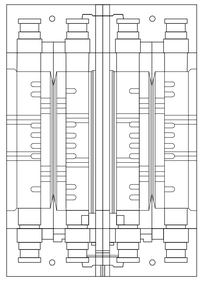
EQUIPMENT SHELTER PLAN DETAILS

C-3

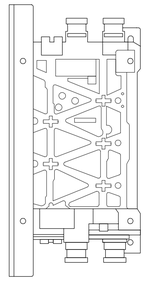
Sheet No. 4 of 6



TOP



FRONT



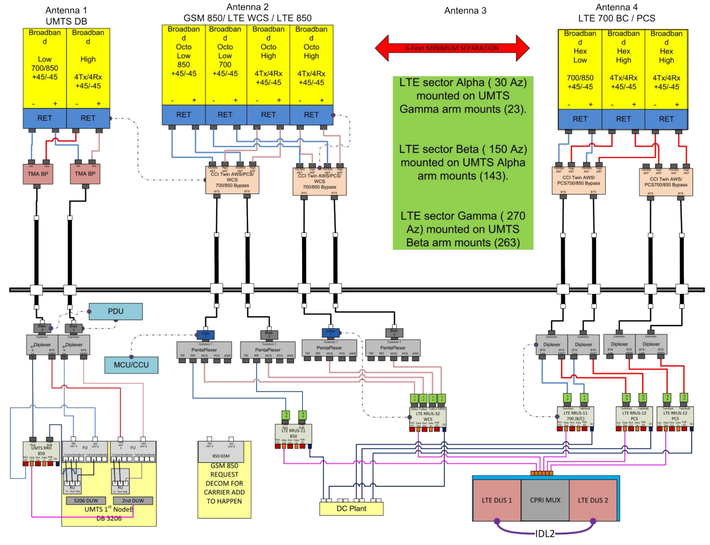
SIDE

FILTER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: WCS-IMFQ-AMT	11.2"H x 10.6"W x 6.9"D	34.5 LBS.

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

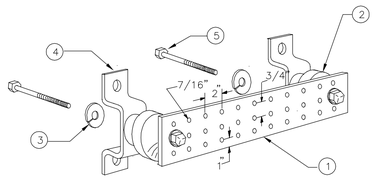
2 E-1 COMMSCOPE WCS FILTER DETAIL

SCALE: NTS



1 E-1 TYPICAL PROPOSED RF PLUMBING DIAGRAM

SCALE: NTS

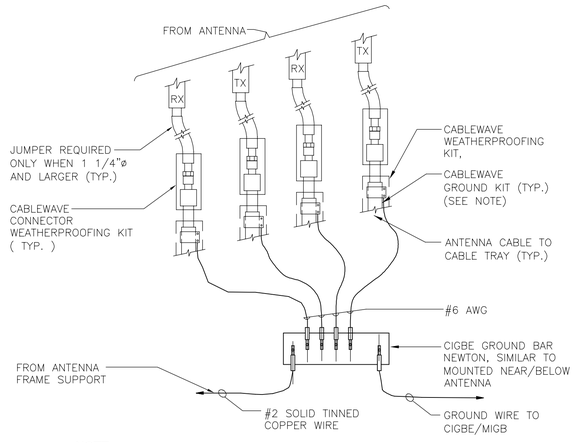


LEGEND

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

5 E-1 GROUND BAR DETAIL

NOT TO SCALE

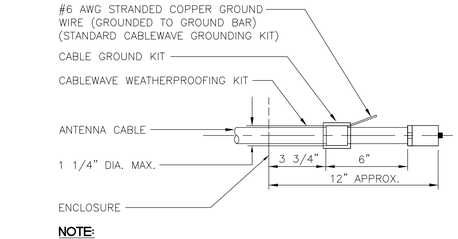


NOTE:

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

4 E-1 CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE



NOTE:

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

3 E-1 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 6 of 6

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Structural Analysis of Antenna Mast and Tower

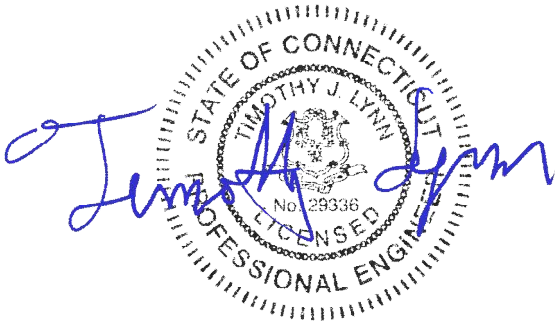
AT&T Site Ref: CT2044

Eversource Structure No. 1340
81' Electric Transmission Lattice Tower

17 Daybreak Lane
Shelton, CT

CENTEK Project No. 16071.30

~~Date: November 15, 2016~~
Rev 1: January 4, 2017



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

Table of Contents

Introduction

The purpose of this report is to analyze the existing antenna mast and 81' utility tower located at 17 Daybreak Lane in Shelton, CT for the proposed antenna and equipment upgrade by AT&T.

The existing and proposed loads consist of the following:

- AT&T (Existing to Remain):
  Antennas: Three (3) Powerwave 7770 panel antennas, three (3) CCI OPA-65R-LCUU-H6 panel antennas, six (6) Powerwave LGP214 TMAs and six (6) Kaelus TMA2117F00V1-1 TMAs mounted on a low profile platform with a RAD center elevation of 98-ft above grade.
  Coax Cables: Eighteen (18) 7/8" ∅ coax cables running on the inside of the existing antenna mast. Six (6) 7/8" ∅ coax cables running on the exterior of the existing antenna mast.
- AT&T (Existing to Remove):
  Antennas: Three (3) Powerwave P65-16-XLH-RR panel antennas and three (3) CCI DTMABP7819VG12A TMAs mounted on a low profile platform with a RAD center elevation of 98-ft above grade.
- **AT&T (Proposed):**
  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas, six (6) Kaelus TMA2093F00V1-1 TMAs mounted on a low profile platform with a RAD center elevation of 98-ft above grade.
  Coax Cables: Six (6) 7/8" ∅ coax cables running on the exterior of the existing antenna mast.

Primary assumptions used in the analysis

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

A n a l y s i s

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

The existing antenna mast consisting of a 12" std. pipe conforming to ASTM A500 Grade C (Fy = 50ksi) connected at five points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA-222-G standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

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

The existing 81-ft tall lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the antenna mast and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

D e s i g n B a s i s

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

- UTILITY TOWER ANALYSIS

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

  Load cases considered:

  Load Case 1: NESC Heavy
  Wind Pressure..... 4.0 psf
  Radial Ice Thickness..... 0.5"
  Vertical Overload Capacity Factor..... 1.50
  Wind Overload Capacity Factor..... 2.50
  Wire Tension Overload Capacity Factor..... 1.65

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

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

- MAST ASSEMBLY ANALYSIS

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

  Load cases considered:

  Load Case 1:
  Wind Speed……... 97 mph (2016 CSBC Appendix-N)
  Radial Ice Thickness…..…….. 0”

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

R e s u l t s

- ANTENNA MAST

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

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12” Std. Pipe	Bending	62.4%	**PASS**
L2.5x2x3/16 Brace	Bending	66.3%	**PASS**
Connection	Shear	76.8%	**PASS**

- UTILITY TOWER

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

  A maximum usage of **96.92%** occurs in the utility tower under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g45Y	96.92%	**PASS**

- FOUNDATION AND ANCHORS

  The existing foundation consists of four (4) 2-ft square tapering to 5-ft square x 5-ft-8” long reinforced concrete piers and four (4) 8-ft square x 2-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by four (4) 1-1/4” ∅ ASTM A36 anchor bolts per leg. Foundation information was obtained from NUSCO drawing # 01021-60001.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	7.94 kips	21.17 kips	37.13 kips
NESC Extreme Wind	13.31 kips	51.74 kips	58.36 kips

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

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	61.9%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Required FS (1)	Proposed Loading FS (2)	Result
Reinf. Conc. Pad & Pier w/ Mat	Uplift	1.0	1.28	**PASS**
	Bearing Pressure	4 ksf	2.79 ksf	**PASS**

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

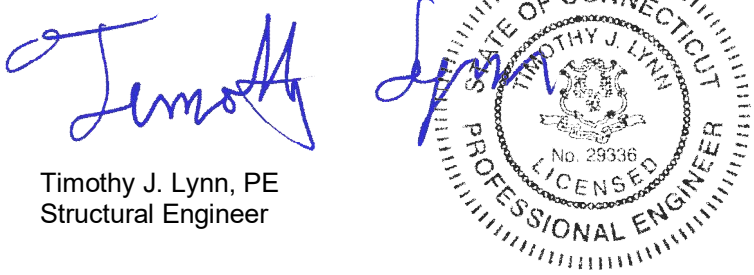
Conclusion

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

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

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

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

Results Features:

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

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

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

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

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

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

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

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

Attachment A

NU Design Criteria

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

Shape Factor Criteria shall be per TIA Shape Factors.

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

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

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

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

c) Electric Transmission Structure

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

ii) Shape Factor Multiplier:

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

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

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

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

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

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

Northeast Utilities System

Job :		Page	of
Description:	Spec. Number	Sheet	of
	Computed by	Date	3/22/11
	Checked by	Date	

INPUT DATA

TOWER ID: 1340

Structure Height (ft) : 81

Wind Zone : Central CT (green)

Wind Speed : 110 mph

Tower Type : (●) Suspension ( ) Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

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

Conductor Properties:

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

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,800	7,000	3,800	7,000
EXTREME WIND =	3,689	8,275	3,689	8,275
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,517	3,103	1,517	3,103

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	1	AHEAD:	1	**2**
WIND SPAN (ft) =	BACK:	360	AHEAD:	360	**720**
WEIGHT SPAN (ft) =	BACK:	470	AHEAD:	470	**940**

Northeast Utilities System

Job :		Page	of
Description:	Spec. Number	Sheet	of
	Computed by	Date	3/22/11
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1340

Wind Span =	720	ft	
Weight Span =	940	ft	
Total Angle =	2	degrees	

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

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,050 lb	0 lb	1,145 lb	525 lb	6,269 lb	573 lb
Conductor =	1,641 lb	0 lb	2,632 lb	820 lb	11,548 lb	1,316 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	782 lb	0 lb	246 lb
Conductor =	2,091 lb	0 lb	841 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	246 lb
Conductor =	#VALUE!	#VALUE!	841 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,865 lb
Conductor =	#VALUE!	#VALUE!	3,253 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	763 lb
Conductor =	#VALUE!	#VALUE!	1,755 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	53 lb	0 lb	246 lb
Conductor =	108 lb	0 lb	841 lb

7. Construction

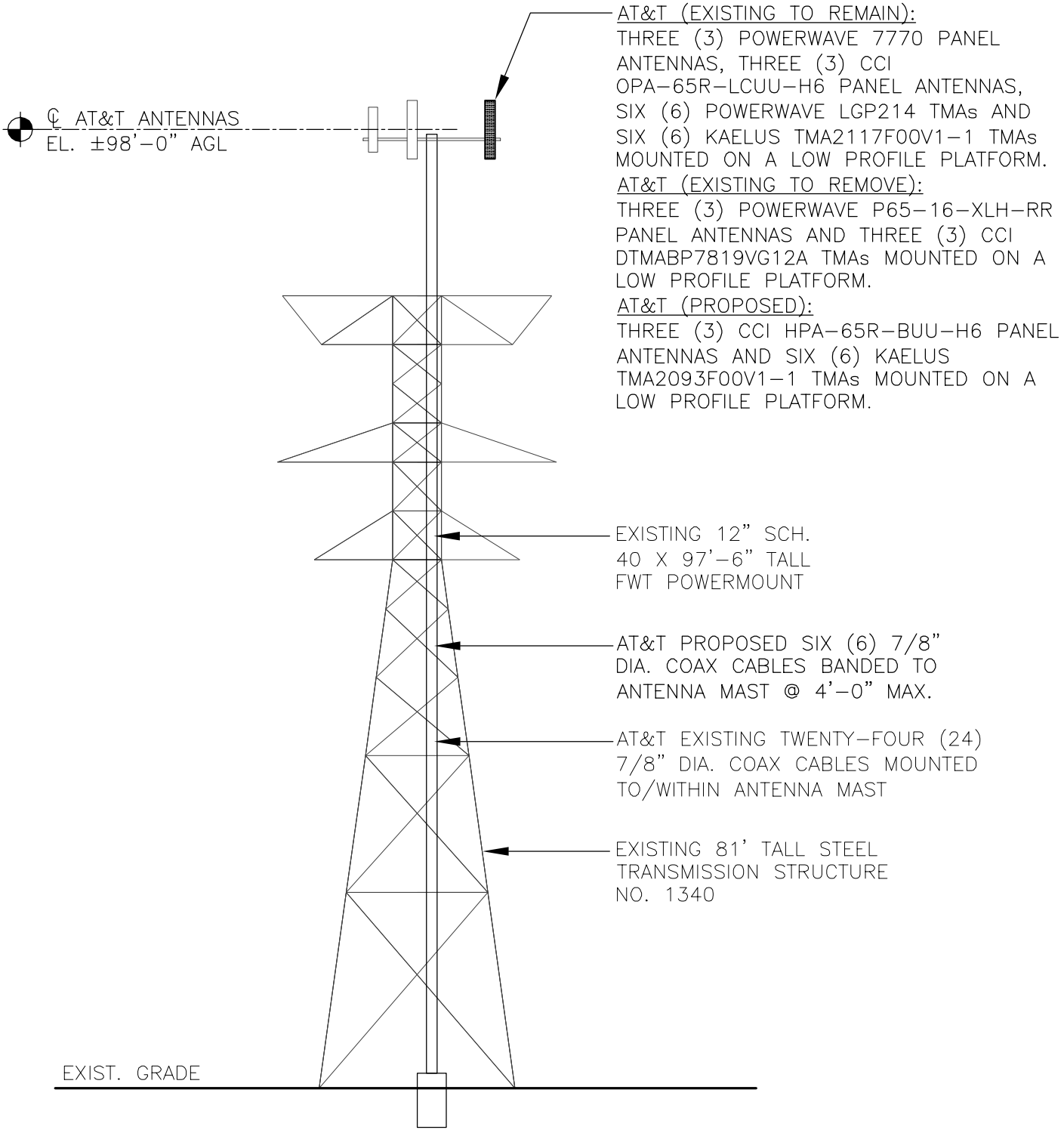
	Horizontal	Longitudinal	Vertical
Shield Wire =	53 lb	0 lb	246 lb
Conductor =	108 lb	0 lb	841 lb

Northeast
Utilities System

Job :	Spec. Number	Page	of
Description:	Computed by	Sheet	of
	Checked by	Date	3/22/11
		Date	

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

LC 1		HORIZONTAL	LONGITUDINAL	VERTICAL
NESC Heavy	shield - back	524.9265884	6269.045049	572.5090597
	shield - ahead	524.9265884	-6269.045049	572.5090597
	SHIELD - SUM	**1049.853177**	**0**	**1145.018119**
	conductor - back	820.4752944	11548.24088	1316.116597
	conductor - ahead	820.4752944	-11548.24088	1316.116597
	CONDUCTOR - SUM	**1640.950589**	**0**	**2632.233194**
LC 2		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Extreme Wind	shield - back	390.7505901	3688.438147	123.046
	shield - ahead	390.7505901	-3688.438147	123.046
	SHIELD - SUM	**781.5011803**	**0**	**246.092**
	conductor - back	1045.535257	8273.739677	420.65
	conductor - ahead	1045.535257	-8273.739677	420.65
	CONDUCTOR - SUM	**2091.070514**	**0**	**841.3**
LC 3		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Long. Wind	shield - back	#VALUE!	#VALUE!	123.046
	shield - ahead	#VALUE!	#VALUE!	123.046
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**246.092**
	conductor - back	#VALUE!	#VALUE!	420.65
	conductor - ahead	#VALUE!	#VALUE!	420.65
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**841.3**
LC 4		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
RULE 250D	shield - back	#VALUE!	#VALUE!	932.5329796
	shield - ahead	#VALUE!	#VALUE!	932.5329796
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**1865.065959**
	conductor - back	#VALUE!	#VALUE!	1626.405696
	conductor - ahead	#VALUE!	#VALUE!	1626.405696
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**3252.811392**
LC 5		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
NESC w/o OLF's	shield - back	#VALUE!	#VALUE!	381.6727065
	shield - ahead	#VALUE!	#VALUE!	381.6727065
	SHIELD - SUM	**#VALUE!**	**#VALUE!**	**763.3454129**
	conductor - back	#VALUE!	#VALUE!	877.4110646
	conductor - ahead	#VALUE!	#VALUE!	877.4110646
	CONDUCTOR - SUM	**#VALUE!**	**#VALUE!**	**1754.822129**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
Raking	shield - back	26.47530057	1516.768954	123.046
	shield - ahead	26.47530057	-1516.768954	123.046
	SHIELD - SUM	**52.95060113**	**0**	**246.092**
	conductor - back	54.15481717	3102.527398	420.65
	conductor - ahead	54.15481717	-3102.527398	420.65
	CONDUCTOR - SUM	**108.3096343**	**0**	**841.3**
LC 6		**HORIZONTAL**	**LONGITUDINAL**	**VERTICAL**
60 DEG F NO WIND	shield - back	26.47530057	1516.768954	123.046
	shield - ahead	26.47530057	-1516.768954	123.046
	SHIELD - SUM	**52.95060113**	**0**	**246.092**
	conductor - back	54.15481717	3102.527398	420.65
	conductor - ahead	54.15481717	-3102.527398	420.65
	CONDUCTOR - SUM	**108.3096343**	**0**	**841.3**



1
EL-1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
0	11/15/2016	ISSUED FOR REVIEW

CENTEK engineering
Centered on Solutions℠
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CT2044
EVERSOURCE 1340

17 DAYBREAK LANE
SHELTON, CT 06484

PROJECT NO:	16071.30
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	11/15/16

TOWER AND MAST ELEVATION

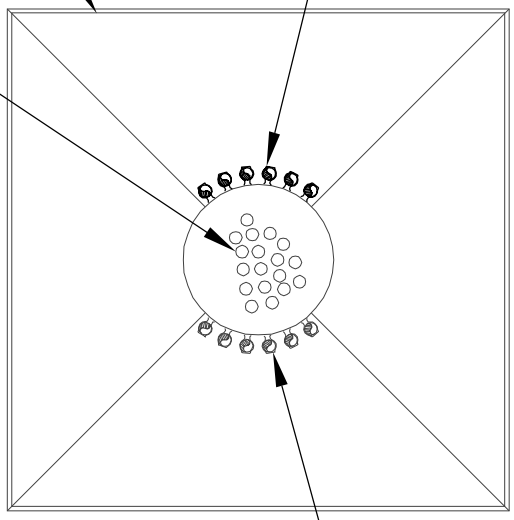
EL-1

DWG. 1 OF 2

EXISTING 81' TALL STEEL TRANSMISSION STRUCTURE NO. 1340

AT&T PROPOSED SIX (6) 7/8" DIA. COAX CABLES BANDED TO ANTENNA MAST @ 4'-0" MAX.

AT&T EXISTING EIGHTEEN (18) 7/8" DIA. COAX CABLES MOUNTED WITHIN ANTENNA MAST



AT&T EXISTING SIX (6) 7/8" DIA. COAX CABLES BANDED TO ANTENNA MAST @ 4'-0" MAX.

1 / EL-2 COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
0	11/15/2016	ISSUED FOR REVIEW

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CT2044
EVERSOURCE 1340

17 DAYBREAK LANE
SHELTON, CT 06484

PROJECT NO:	16071.30
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	11/15/16

FEEDLINE PLAN

EL-2

DWG. 2 OF 2

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

Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

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

Wind Speeds

Basic Wind Speed: $V := 97$ mph (User Input - 2016 CSBC Appendix N)

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

Input

Structure Type =	Structure_Type := Lattice		(User Input)
Structure Category =	SC := III		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	$h := 81$	ft	(User Input)
Height to Center of Antennas =	$z_{AT\&T} := 98$	ft	(User Input)
Height to Center of Mast =	$z_{Mast5} := 90$	ft	(User Input)
Height to Center of Mast =	$z_{Mast4} := 70$	ft	(User Input)
Height to Center of Mast =	$z_{Mast3} := 50$	ft	(User Input)
Height to Center of Mast =	$z_{Mast2} := 30$	ft	(User Input)
Height to Center of Mast =	$z_{Mast1} := 10$	ft	(User Input)
Radial Ice Thickness =	$t_i := 0.75$	in	(User Input per Annex B of TIA-222-G)
Radial Ice Density =	Id := 56.00	pcf	(User Input)
Topograpic Factor =	$K_{zt} := 1.0$		(User Input)
	$K_a := 1.0$		(User Input)
Gust Response Factor =	$G_H := 1.35$		(User Input)

Mast Based on Max 20-ft Section per 2.6.9.1.3

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.85$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if SC = 1} \\ 1.00 & \text{if SC = 2} \\ 1.15 & \text{if SC = 3} \end{cases} = 1.15$$

(Per Table 2-3 of TIA-222-G)

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

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

$$K_{iz} := \left(\frac{z_{AT\&T}}{33}\right)^{0.1} = 1.115 \qquad t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.091$$

Velocity Pressure Coefficient Antennas = $$Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.26$$

Velocity Pressure w/o Ice Antennas = $$qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V^2 \cdot I_{Wind} = 29.673$$

Velocity Pressure with Ice Antennas = $$qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V_i^2 \cdot I_{Wind} = 7.884$$

$$K_{izMast5} := \left(\frac{z_{Mast5}}{33}\right)^{0.1} = 1.106 \qquad t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.073$$

Velocity Pressure Coefficient Mast = $$Kz_{Mast5} := 2.01\left(\left(\frac{z_{Mast5}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.238$$

Velocity Pressure w/o Ice Mast = $$qz_{Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V^2 \cdot I_{Wind\_w\_Ice} = 25.344$$

Velocity Pressure with Ice Mast = $$qz_{ice.Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.734$$

$$K_{izMast4} := \left(\frac{z_{Mast4}}{33}\right)^{0.1} = 1.078 \qquad t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.021$$

Velocity Pressure Coefficient Mast = $$Kz_{Mast4} := 2.01\left(\left(\frac{z_{Mast4}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.174$$

Velocity Pressure w/o Ice Mast = $$qz_{Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V^2 \cdot I_{Wind\_w\_Ice} = 24.038$$

Velocity Pressure with Ice Mast = $$qz_{ice.Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.387$$

$$K_{izMast3} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.042 \qquad t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 1.955$$

Velocity Pressure Coefficient Mast = $$Kz_{Mast3} := 2.01\left(\left(\frac{z_{Mast3}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.094$$

Velocity Pressure w/o Ice Mast = $$qz_{Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V^2 \cdot I_{Wind\_w\_Ice} = 22.394$$

Velocity Pressure with Ice Mast = $$qz_{ice.Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.95$$

$$K_{izMast2} := \left(\frac{z_{Mast2}}{33}\right)^{0.1} = 0.991 \qquad t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 1.857$$

Velocity Pressure Coefficient Mast =

$$Kz_{Mast2} := 2.01\left(\left(\frac{z_{Mast2}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.982$$

Velocity Pressure w/o Ice Mast =

$$qz_{Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V^2 \cdot I_{Wind\_w\_Ice} = 20.111$$

Velocity Pressure with Ice Mast =

$$qz_{ice.Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.343$$

$$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 0.887 \qquad t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 1.664$$

Velocity Pressure Coefficient Mast =

$$Kz_{Mast1} := 2.01\left(\left(\frac{z_{Mast1}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.779$$

Velocity Pressure w/o Ice Mast =

$$qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind\_w\_Ice} = 15.958$$

Velocity Pressure with Ice Mast =

$$qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.24$$

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Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on Mast

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

Mast Shape = Round (User Input)

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

Mast Length = $L_{mast} := 97.5$ ft (User Input)

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

Velocity Coefficient = $C := \sqrt{I \cdot Kz_{Mast1}} \cdot V \cdot \frac{D_{mast}}{12} = 91$

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

Wind Load (without ice)

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

Total Mast Wind Force =	$qz_{Mast5} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 22$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast4} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 21$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast3} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 19$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast2} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 17$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast1} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 14$	plf	**BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.412$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast5} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 8$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.404$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.392$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast3} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.376$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast2} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 6$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.344$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$ plf **BLC 4**

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast5}\cdot 2\right)^2 - D_{mast}^2\right] = 96.9$		sq in	
Weight of Ice on Mast =	$W_{ICEmast5} := Id\cdot\frac{Ai_{mast}}{144} = 38$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast4}\cdot 2\right)^2 - D_{mast}^2\right] = 94.1$		sq in	
Weight of Ice on Mast =	$W_{ICEmast4} := Id\cdot\frac{Ai_{mast}}{144} = 37$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast3}\cdot 2\right)^2 - D_{mast}^2\right] = 90.6$		sq in	
Weight of Ice on Mast =	$W_{ICEmast3} := Id\cdot\frac{Ai_{mast}}{144} = 35$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast2}\cdot 2\right)^2 - D_{mast}^2\right] = 85.5$		sq in	
Weight of Ice on Mast =	$W_{ICEmast2} := Id\cdot\frac{Ai_{mast}}{144} = 33$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast1}\cdot 2\right)^2 - D_{mast}^2\right] = 75.6$		sq in	
Weight of Ice on Mast =	$W_{ICEmast1} := Id\cdot\frac{Ai_{mast}}{144} = 29$		plf	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Powerwave 7770			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 55$	in	(User Input)	
Antenna Width =	$W_{ant} := 11$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 5$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 39$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$			
Antenna Force Coefficient =	$Ca_{ant} = 1.31$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf		
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 12.6$	sf		
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 662$	lbs	**BLC 5**	

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.2$	sf		
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 18.7$	sf		
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 261$	lbs	**BLC 4**	

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 117$	lbs	**BLC 2**	

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in		
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5224$			cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 169$	lbs		
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 508$	lbs	**BLC 3**	

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI HPA-65R-BUU-H6			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 72$	in	(User Input)	
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 9$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 51$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.31$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1161$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 10$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 418$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9590$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 9470$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 307$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 921$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI OPA-65R-LCUU-H6			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 72$	in	(User Input)	
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.31$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1161$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 10$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 418$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 225$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 7885$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 8861$		cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 287$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 861$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 9.2$	in	(User Input)
TMA Width =	$W_{TMA} := 14.4$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.6$	in	(User Input)
TMA Weight =	$WT_{TMA} := 14.1$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 0.6$		
TMA Force Coefficient =	$Ca_{TMA} = 1.2$		

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 5.5$	sf	
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 265$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 1.7$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 10.4$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 132$	lbs	**BLC 4**

Gravity Load (without ice)

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

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz})(T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 1 \times 10^3$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 43$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 261$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	Kaleus TMA2117F00V1-1		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 8.46$	in	(User Input)
TMA Width =	$W_{TMA} := 11.81$	in	(User Input)
TMA Thickness =	$T_{TMA} := 4.21$	in	(User Input)
TMA Weight =	$WT_{TMA} := 18$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 0.7$		
TMA Force Coefficient =	$Ca_{TMA} = 1.2$		

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.7$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.2$	sf	
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 200$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 1.4$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 8.4$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 108$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 108$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 421$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz})(T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 1 \times 10^3$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 41$	lbs	
Weight of Ice on All TMA's =	$W_{ICETMA} \cdot N_{TMA} = 248$	lbs	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	Kaleus TMA2093F00V1-1		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 11.8$	in	(User Input)
TMA Width =	$W_{TMA} := 9.8$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.7$	in	(User Input)
TMA Weight =	$WT_{TMA} := 23$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1.2$		
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 =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.8$	sf	
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 232$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 1.6$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 9.3$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 119$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$WT_{TMA} \cdot N_{TMA} = 138$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 428$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz})(T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 1 \times 10^3$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 43$	lbs	
Weight of Ice on All TMA's	$W_{ICETMA} \cdot N_{TMA} = 259$	lbs	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type:	10 Low Profile Platform		
Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CaAa := 19$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CaAa_{ice} := 26$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 2902$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 4400$	lbs	

Wind Load (without ice)

Total Mount Wind Force = $F_{mnt} := qz_{AT\&T} \cdot G_H \cdot CaAa = 761$ lbs **BLC 5**

Wind Load (with ice)

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.AT\&T} \cdot G_H \cdot CaAa_{ice} = 277$ lbs **BLC 4**

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 2902$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 1498$ lbs **BLC 3**

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Location:	Shelton, CT
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Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 78"			
Shape =	Round		(User Input)	
Coax Outside Diameter =	$D_{coax} := 1.11$	in	(User Input)	
Coax Cable Length =	$L_{coax} := 97$	ft	(User Input)	
Weight of Coax per foot =	$Wt_{coax} := 0.54$	plf	(User Input)	
Total Number of Coax =	$N_{coax} := 30$		(User Input)	
Total Number of Exterior Coax =	$Ne_{coax} := 12$		(User Input)	(18 coax within mast)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 2$		(User Input)	
Coax aspect ratio,	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 1 \times 10^{3}$			
Coax Cable Force Factor Coefficient =	$Ca_{coax} = 1.2$			

Wind Load (without ice)

Coax projected surface area =	$A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.2$	sf/ft	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast5} \cdot G_H \cdot A_{coax} = 8$	plf	**BLC 5**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 7$	plf	**BLC 5**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast3} \cdot G_H \cdot A_{coax} = 7$	plf	**BLC 5**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast2} \cdot G_H \cdot A_{coax} = 6$	plf	**BLC 5**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 5$	plf	**BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast5})}{12} = 0.5$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast5} \cdot G_H \cdot AICE_{coax} = 6$	plf	**BLC 4**
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast4})}{12} = 0.5$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast4} \cdot G_H \cdot AICE_{coax} = 5$	plf	**BLC 4**
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast3})}{12} = 0.5$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast3} \cdot G_H \cdot AICE_{coax} = 5$	plf	**BLC 4**

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{\left(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast2}\right)}{12} = 0.5$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast2} \cdot G_H \cdot AICE_{coax} = 4$	plf	**BLC 4**
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{\left(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast1}\right)}{12} = 0.5$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 3$	plf	**BLC 4**
Gravity Loads (without ice)			
Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 16$	plf	**BLC 2**
Gravity Loads (ice only)			
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast5}\right)^2 - D_{coax}^2\right] = 20.7$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 97$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast4}\right)^2 - D_{coax}^2\right] = 19.9$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 93$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast3}\right)^2 - D_{coax}^2\right] = 18.8$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 88$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast2}\right)^2 - D_{coax}^2\right] = 17.3$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 81$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast1}\right)^2 - D_{coax}^2\right] = 14.5$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 68$	plf	**BLC 3**

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Subject:	Loads on AT&T Equipmnet Structure 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on Brace Member

Member Data: L2.5x2.5x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 2.5$ in (User Input)

Width = $W_{mem} := 2.5$ in (User Input)

Thickness = $t_{mem} := 0.1875$ in (User Input)

Length = $L_{mem} := 42$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 16.8$

Member Force Coefficient = $Ca_{mem} = 1.73$

Wind Load (without ice)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.2$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{AT\&T} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 14$ plf **BLC 5**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.6$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 10$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 38 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 15$ plf **BLC 3**

CENTEK engineering, INC.	Subject:	Analysis of TIA/EIA Wind and Ice Loads for Analysis of Mast Only		
Consulting Engineers		Tabulated Load Cases		
63-2 North Branford Road	Location:	Shelton, CT		
Branford, CT 06405				
Ph. 203-488-0580 / Fax. 203-488-8587	Date: 11/15/16	Prepared by: T.J.L.	Checked by: C.F.C.	Job No. 16071.30

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

Footnotes:

CENTEK engineering, INC.
Consulting Engineers
63-2 North Branford Road
Branford, CT 06405
Ph. 203-488-0580 / Fax. 203-488-8587

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

Location: **Shelton, CT**

Date: 11/15/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D + 1.6W (X-direction)		1		1	1.2	2	1.2	5	1.6				
2	0.9D + 1.6W (X-direction)		1		1	0.9	2	0.9	5	1.6				
3	1.2D + 1.0Di + 1.0Wi (X-direction)		1		1	1.2	2	1.2	3	1.0	4	1.0		
4	1.2D + 1.6W (Z-direction)		1		1	1.2	2	1.2	7	1.6				
5	0.9D + 1.6W (Z-direction)		1		1	0.9	2	0.9	7	1.6				
6	1.2D + 1.0Di + 1.0Wi (Z-direction)		1		1	1.2	2	1.2	3	1.0	6	1.0		

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

Global

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

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

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

Global, Continued

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

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp t...	Lcomp b...	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Powermount	98	20	20	20	20	20				Lateral
2	M2	L3.5x3.5x1/4	9.253									Lateral
3	M3	L3.5x3.5x1/4	9.253									Lateral
4	M4	L2x2x3/16	1.5									Lateral
5	M5	L2x2x3/16	2.693									Lateral
6	M6	L2x2x3/16	2.693									Lateral
7	M7	L2x2x3/16	1.5									Lateral
8	M8	L2x2x3/16	2.693									Lateral
9	M9	L2x2x3/16	2.693									Lateral
10	M10	L2x2x3/16	1.5									Lateral
11	M11	L2.5x2.5x1/4	2.693									Lateral
12	M12	L2.5x2.5x1/4	2.693									Lateral
13	M13	PL6X3/4	1.5									Lateral
14	M14	L2.5x2.5x1/4	2.693									Lateral
15	M15	L2.5x2.5x1/4	2.693									Lateral
16	M16	PL6X3/4	1.5									Lateral
17	M17	L2.5x2x3/16	7.071	Segment	Segment							Lateral
18	M18	L2.5x2x3/16	7.071	Segment	Segment							Lateral
19	M19	L2.5x2x3/16	7.071	Segment	Segment							Lateral
20	M20	L2.5x2x3/16	7.071	Segment	Segment							Lateral
21	M21	L2.5x2x3/16	7.071	Segment	Segment							Lateral
22	M22	L2.5x2x3/16	7.071	Segment	Segment							Lateral
23	M23	L2.5x2x3/16	7.071	Segment	Segment							Lateral
24	M24	L2.5x2x3/16	7.071	Segment	Segment							Lateral
25	M25	L2.5x2.5x3/16	20.506	Segment	Segment							Lateral
26	M26	L2.5x2.5x3/16	20.506	Segment	Segment							Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	PIPE 12.0	Beam	Pipe	A500 Gr. C 50	Typical	13.7	262	262	523
2	L2x2x3/16	L2x2x3	Beam	Pipe	A36 Gr.36	Typical	.722	.271	.271	.009
3	L3.5x3.5x1/4	L3.5x3.5x4	Beam	Pipe	A36 Gr.36	Typical	1.7	2	2	.039
4	PL6X3/4	6"X3/4" PL	Beam	None	A36 Gr.36	Typical	4.5	.211	13.5	.777
5	L2.5x2.5x1/4	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	.692	.692	.026
6	L2.5x2x3/16	L2.5x2x3	Beam	None	A36 Gr.36	Typical	.818	.292	.511	.01
7	L2.5x2.5x3/16	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N7			Powermount	Beam	Pipe	A500 Gr. C 50	Typical
2	M2	N2	N8			L3.5x3.5x1/4	Beam	Pipe	A36 Gr.36	Typical
3	M3	N2	N9			L3.5x3.5x1/4	Beam	Pipe	A36 Gr.36	Typical
4	M4	N10	N2			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
5	M5	N3	N12			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
6	M6	N3	N11			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
7	M7	N13	N3			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
8	M8	N4	N15			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
9	M9	N4	N14			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
10	M10	N16	N4			L2x2x3/16	Beam	Pipe	A36 Gr.36	Typical
11	M11	N5	N18			L2.5x2.5x1/4	Beam	None	A36 Gr.36	Typical
12	M12	N5	N17			L2.5x2.5x1/4	Beam	None	A36 Gr.36	Typical
13	M13	N19	N5		90	PL6X3/4	Beam	None	A36 Gr.36	Typical
14	M14	N6	N21			L2.5x2.5x1/4	Beam	None	A36 Gr.36	Typical
15	M15	N6	N20			L2.5x2.5x1/4	Beam	None	A36 Gr.36	Typical
16	M16	N22	N6		90	PL6X3/4	Beam	None	A36 Gr.36	Typical
17	M17	N21	N28			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
18	M18	N27	N20			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
19	M19	N18	N31			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
20	M20	N30	N17			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
21	M21	N15	N34			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
22	M22	N33	N14			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
23	M23	N12	N37			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
24	M24	N36	N11			L2.5x2x3/16	Beam	None	A36 Gr.36	Typical
25	M25	N9	N40			L2.5x2.5x3/16	Beam	None	A36 Gr.36	Typical
26	M26	N39	N8			L2.5x2.5x3/16	Beam	None	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
1	N1	0	0	0	0	
2	N2	0	20	0	0	
3	N3	0	54	0	0	
4	N4	0	64	0	0	
5	N5	0	76	0	0	
6	N6	0	81	0	0	
7	N7	0	98	0	0	
8	N8	5.75	20	-7.25	0	
9	N9	5.75	20	7.25	0	
10	N10	-1.5	20	0	0	
11	N11	1	54	-2.5	0	
12	N12	1	54	2.5	0	
13	N13	-1.5	54	0	0	
14	N14	1	64	-2.5	0	
15	N15	1	64	2.5	0	
16	N16	-1.5	64	0	0	
17	N17	1	76	-2.5	0	
18	N18	1	76	2.5	0	
19	N19	-1.5	76	0	0	
20	N20	1	81	-2.5	0	
21	N21	1	81	2.5	0	
22	N22	-1.5	81	0	0	
23	N23	0	18	0	0	
24	N24	0	38	0	0	
25	N25	0	58	0	0	
26	N26	0	78	0	0	
27	N27	-4	81	2.5	0	
28	N28	-4	81	-2.5	0	
29	N30	-4	76	2.5	0	
30	N31	-4	76	-2.5	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
31	N33	-4	64	2.5	0	
32	N34	-4	64	-2.5	0	
33	N36	-4	54	2.5	0	
34	N37	-4	54	-2.5	0	
35	N39	-8.75	20	7.25	0	
36	N40	-8.75	20	-7.25	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N2							
3	N3							
4	N4							
5	N5							
6	N6							
7	N7							
8	N9	Reaction	Reaction	Reaction				
9	N10							
10	N12	Reaction	Reaction	Reaction				
11	N13							
12	N15	Reaction	Reaction	Reaction				
13	N16							
14	N18	Reaction	Reaction	Reaction				
15	N19							
16	N21	Reaction	Reaction	Reaction				
17	N22							
18	N11	Reaction	Reaction	Reaction				
19	N14	Reaction	Reaction	Reaction				
20	N17	Reaction	Reaction	Reaction				
21	N20	Reaction	Reaction	Reaction				
22	N8	Reaction	Reaction	Reaction				
23	N27	Reaction	Reaction	Reaction				
24	N28	Reaction	Reaction	Reaction				
25	N23							
26	N26							
27	N30	Reaction	Reaction	Reaction				
28	N31	Reaction	Reaction	Reaction				
29	N34	Reaction	Reaction	Reaction				
30	N25							
31	N33	Reaction	Reaction	Reaction				
32	N36	Reaction	Reaction	Reaction				
33	N37	Reaction	Reaction	Reaction				
34	N39	Reaction	Reaction	Reaction				
35	N40	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.117	98
2	M1	Y	-.153	98

Member Point Loads (BLC 2 : Weight of Appurtenances) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
3	M1	Y	-.225	98
4	M1	Y	-.085	98
5	M1	Y	-.108	98
6	M1	Y	-.138	98
7	M1	Y	-2.902	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.508	98
2	M1	Y	-.921	98
3	M1	Y	-.861	98
4	M1	Y	-.261	98
5	M1	Y	-.248	98
6	M1	Y	-.259	98
7	M1	Y	-1.498	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.261	98
2	M1	X	.418	98
3	M1	X	.418	98
4	M1	X	.132	98
5	M1	X	.108	98
6	M1	X	.119	98
7	M1	X	.277	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.662	98
2	M1	X	1.161	98
3	M1	X	1.161	98
4	M1	X	.265	98
5	M1	X	.2	98
6	M1	X	.232	98
7	M1	X	.761	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.261	98
2	M1	Z	.418	98
3	M1	Z	.418	98
4	M1	Z	.132	98
5	M1	Z	.108	98
6	M1	Z	.119	98
7	M1	Z	.277	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.662	98

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	Z	1.161	98
3	M1	Z	1.161	98
4	M1	Z	.265	98
5	M1	Z	.2	98
6	M1	Z	.232	98
7	M1	Z	.761	98

Joint Loads and Enforced Displacements

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

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.016	-.016	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.038	-.038	80	0
2	M1	Y	-.037	-.037	60	80
3	M1	Y	-.035	-.035	40	60
4	M1	Y	-.033	-.033	20	40
5	M1	Y	-.029	-.029	0	20
6	M1	Y	-.097	-.097	80	0
7	M1	Y	-.093	-.093	60	80
8	M1	Y	-.088	-.088	40	60
9	M1	Y	-.081	-.081	20	40
10	M1	Y	-.068	-.068	0	20
11	M14	Y	-.015	-.015	0	0
12	M16	Y	-.015	-.015	0	0
13	M15	Y	-.015	-.015	0	0
14	M11	Y	-.015	-.015	0	0
15	M13	Y	-.015	-.015	0	0
16	M12	Y	-.015	-.015	0	0
17	M8	Y	-.015	-.015	0	0
18	M10	Y	-.015	-.015	0	0
19	M9	Y	-.015	-.015	0	0
20	M5	Y	-.015	-.015	0	0
21	M7	Y	-.015	-.015	0	0
22	M6	Y	-.015	-.015	0	0
23	M3	Y	-.015	-.015	0	0
24	M4	Y	-.015	-.015	0	0
25	M2	Y	-.015	-.015	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.008	.008	80	0
2	M1	X	.007	.007	60	80
3	M1	X	.007	.007	40	60

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
4	M1	X	.006	.006	20	40
5	M1	X	.005	.005	0	20
6	M1	X	.006	.006	80	0
7	M1	X	.005	.005	60	80
8	M1	X	.005	.005	40	60
9	M1	X	.004	.004	20	40
10	M1	X	.003	.003	0	20
11	M14	X	.01	.01	0	0
12	M15	X	.01	.01	0	0
13	M11	X	.01	.01	0	0
14	M12	X	.01	.01	0	0
15	M8	X	.01	.01	0	0
16	M9	X	.01	.01	0	0
17	M5	X	.01	.01	0	0
18	M6	X	.01	.01	0	0
19	M3	X	.01	.01	0	0
20	M2	X	.01	.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.022	.022	80	0
2	M1	X	.021	.021	60	80
3	M1	X	.019	.019	40	60
4	M1	X	.017	.017	20	40
5	M1	X	.014	.014	0	20
6	M1	X	.008	.008	80	0
7	M1	X	.007	.007	60	80
8	M1	X	.007	.007	40	60
9	M1	X	.006	.006	20	40
10	M1	X	.005	.005	0	20
11	M14	X	.014	.014	0	0
12	M15	X	.014	.014	0	0
13	M11	X	.014	.014	0	0
14	M12	X	.014	.014	0	0
15	M8	X	.014	.014	0	0
16	M9	X	.014	.014	0	0
17	M5	X	.014	.014	0	0
18	M6	X	.014	.014	0	0
19	M3	X	.014	.014	0	0
20	M2	X	.014	.014	0	0

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.008	.008	80	0
2	M1	Z	.007	.007	60	80
3	M1	Z	.007	.007	40	60
4	M1	Z	.006	.006	20	40
5	M1	Z	.005	.005	0	20
6	M1	Z	.006	.006	80	0
7	M1	Z	.005	.005	60	80
8	M1	Z	.005	.005	40	60

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
9	M1	Z	.004	.004	20	40
10	M1	Z	.003	.003	0	20
11	M14	Z	.01	.01	0	0
12	M15	Z	.01	.01	0	0
13	M11	Z	.01	.01	0	0
14	M12	Z	.01	.01	0	0
15	M8	Z	.01	.01	0	0
16	M9	Z	.01	.01	0	0
17	M5	Z	.01	.01	0	0
18	M6	Z	.01	.01	0	0
19	M3	Z	.01	.01	0	0
20	M2	Z	.01	.01	0	0
21	M16	Z	.01	.01	0	0
22	M13	Z	.01	.01	0	0
23	M10	Z	.01	.01	0	0
24	M7	Z	.01	.01	0	0
25	M4	Z	.01	.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.022	.022	80	0
2	M1	X	.021	.021	60	80
3	M1	X	.019	.019	40	60
4	M1	X	.017	.017	20	40
5	M1	X	.014	.014	0	20
6	M1	X	.008	.008	80	0
7	M1	X	.007	.007	60	80
8	M1	X	.007	.007	40	60
9	M1	X	.006	.006	20	40
10	M1	X	.005	.005	0	20
11	M14	Z	.014	.014	0	0
12	M15	Z	.014	.014	0	0
13	M11	Z	.014	.014	0	0
14	M12	Z	.014	.014	0	0
15	M8	Z	.014	.014	0	0
16	M9	Z	.014	.014	0	0
17	M5	Z	.014	.014	0	0
18	M6	Z	.014	.014	0	0
19	M3	Z	.014	.014	0	0
20	M2	Z	.014	.014	0	0
21	M16	Z	.014	.014	0	0
22	M13	Z	.014	.014	0	0
23	M10	Z	.014	.014	0	0
24	M7	Z	.014	.014	0	0
25	M4	Z	.014	.014	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gravity	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					7	1		
3	Weight of Ice Only	None					7	25		
4	(x) TIA Wind with Ice	None					7	20		
5	(x) TIA Wind	None					7	20		
6	(z) TIA Wind with Ice	None					7	25		
7	(z) TIA Wind	None					7	25		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	1.2D + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6										
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6										
3	1.2D + 1.0Di + 1.0Wi (X-di...	Yes	Y		1	1.2	2	1.2	3	1	4	1								
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6										
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6										
6	1.2D + 1.0Di + 1.0Wi (Z-dir...	Yes	Y		1	1.2	2	1.2	3	1	6	1								

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo..	LC	z-z Mo...	LC
1	M1	1	max	28.625	3	.158	5	.005	4	0	1	.002	6	.079	5
2			min	8.991	2	0	6	-.038	6	0	1	-.025	4	.002	3
3		2	max	24.084	3	.473	1	0	3	0	1	.148	6	.538	1
4			min	7.531	2	0	6	-.131	6	0	1	0	2	.005	6
5		3	max	19.369	3	0	6	.135	6	0	1	.053	6	.352	4
6			min	6.151	2	-.482	4	-.009	4	0	1	-.194	4	-.001	6
7		4	max	14.3	3	.692	1	0	3	0	1	0	2	0	6
8			min	4.755	2	-.167	5	-1.13	4	0	1	-8.435	4	-7.232	1
9		5	max	9.03	3	7.227	1	0	3	0	1	0	1	0	1
10			min	3.355	2	0	6	-7.22	4	0	1	0	1	0	1
11	M2	1	max	.474	2	.115	6	-.037	6	.012	6	0	1	0	1
12			min	-.23	6	.032	5	-.082	1	.007	5	0	1	0	1
13		2	max	.507	2	.065	6	-.023	6	.012	6	.098	6	-.123	5
14			min	-.248	6	.02	5	-.042	1	.007	5	-.056	2	-.202	3
15		3	max	.539	2	.014	6	0	2	.012	6	.137	6	-.174	5
16			min	-.266	6	.008	5	-.008	6	.007	5	-.065	2	-.292	3
17		4	max	.571	2	-.003	2	.041	2	.012	6	.116	6	-.152	5
18			min	-.284	6	-.038	3	.006	6	.007	5	-.027	2	-.269	3
19		5	max	.603	2	-.016	2	.081	2	.012	6	.065	1	-.055	2
20			min	-.302	6	-.088	3	.02	6	.007	5	.036	6	-.145	6
21	M3	1	max	.521	5	.112	6	.076	1	-.003	2	0	1	0	1
22			min	.13	3	.028	2	-.06	5	-.009	4	0	1	0	1
23		2	max	.561	5	.061	6	.035	1	-.003	2	.174	3	.055	2
24			min	.145	3	.016	2	-.028	5	-.009	4	-.028	5	-.177	6
25		3	max	.602	5	.011	4	.004	4	-.003	2	.235	3	.063	2
26			min	.159	3	.004	2	-.006	2	-.009	4	-.023	5	-.246	6
27		4	max	.642	5	-.003	5	.037	4	-.003	2	.183	3	.024	2
28			min	.173	3	-.043	3	-.046	2	-.009	4	.015	5	-.21	6
29		5	max	.683	5	-.015	5	.069	4	-.003	2	.1	4	-.028	5
30			min	.188	3	-.094	3	-.087	2	-.009	4	-.012	2	-.078	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
31	M4	1	max	-.018	6	.013	3	0	3	0	5	0	1	0	1
32			min	-.622	1	.002	2	-.017	5	0	6	0	1	0	1
33		2	max	-.018	6	.007	3	0	3	0	5	.003	3	0	2
34			min	-.622	1	0	2	-.008	5	0	6	-.003	5	-.004	6
35		3	max	-.018	6	0	1	0	1	0	5	.004	3	0	2
36			min	-.622	1	0	1	0	1	0	6	-.004	5	-.006	6
37		4	max	-.018	6	0	5	.008	4	0	5	.003	3	0	2
38			min	-.622	1	-.007	6	0	2	0	6	-.003	5	-.004	6
39		5	max	-.018	6	-.002	5	.017	4	0	5	0	1	0	1
40			min	-.622	1	-.013	6	0	2	0	6	0	1	0	1
41	M5	1	max	.35	2	.023	6	.024	2	0	3	0	1	0	1
42			min	.101	3	.003	2	-.011	4	0	4	0	1	0	1
43		2	max	.356	2	.011	6	.01	2	0	3	.011	3	.007	2
44			min	.104	3	.001	2	-.005	4	0	4	-.003	5	-.011	6
45		3	max	.362	2	0	4	0	5	0	3	.013	3	.008	2
46			min	.106	3	0	3	-.004	1	0	4	-.003	5	-.015	6
47		4	max	.367	2	-.001	5	.006	5	0	3	.007	3	.003	2
48			min	.109	3	-.013	3	-.018	1	0	4	-.002	5	-.011	6
49		5	max	.373	2	-.003	5	.012	5	0	3	.002	5	.001	5
50			min	.111	3	-.025	3	-.032	1	0	4	-.009	1	-.008	1
51	M6	1	max	.522	4	.024	3	-.006	6	0	1	0	1	0	1
52			min	-.163	6	.003	5	-.024	1	0	3	0	1	0	1
53		2	max	.508	4	.011	3	-.003	6	0	1	.006	6	-.004	5
54			min	-.169	6	.001	5	-.01	1	0	3	-.007	2	-.013	3
55		3	max	.494	4	0	1	.004	2	0	1	.008	6	-.005	5
56			min	-.175	6	0	6	0	6	0	3	-.008	2	-.016	3
57		4	max	.48	4	-.001	2	.018	2	0	1	.005	6	-.003	5
58			min	-.182	6	-.013	6	.002	6	0	3	-.003	2	-.011	3
59		5	max	.466	4	-.003	2	.032	2	0	1	.007	1	.007	2
60			min	-.188	6	-.025	6	.004	6	0	3	-.002	6	0	6
61	M7	1	max	0	6	.013	3	0	1	0	5	0	1	0	1
62			min	-.937	4	.002	5	-.017	4	0	3	0	1	0	1
63		2	max	0	6	.007	6	0	1	0	5	.003	3	0	2
64			min	-.937	4	0	5	-.008	4	0	3	-.003	5	-.004	6
65		3	max	0	6	0	1	0	1	0	5	.004	3	0	2
66			min	-.937	4	0	1	0	1	0	3	-.004	5	-.006	6
67		4	max	0	6	0	5	.008	4	0	5	.003	3	0	2
68			min	-.937	4	-.007	3	0	3	0	3	-.003	5	-.004	6
69		5	max	0	6	-.002	2	.017	4	0	5	0	1	0	1
70			min	-.937	4	-.013	3	0	3	0	3	0	1	0	1
71	M8	1	max	.803	4	.023	6	.024	2	0	3	0	1	0	1
72			min	.094	3	.003	2	-.01	4	0	4	0	1	0	1
73		2	max	.817	4	.011	6	.01	2	0	3	.011	3	.007	2
74			min	.096	3	.001	2	-.005	4	0	4	-.002	5	-.011	6
75		3	max	.831	4	0	4	0	5	0	3	.013	3	.008	2
76			min	.099	3	0	3	-.004	1	0	4	-.003	5	-.014	6
77		4	max	.845	4	-.001	5	.007	5	0	3	.006	3	.003	2
78			min	.101	3	-.013	3	-.018	1	0	4	-.001	5	-.011	6
79		5	max	.859	4	-.003	5	.012	5	0	3	.002	5	.002	5
80			min	.104	3	-.025	3	-.032	1	0	4	-.009	3	-.008	1
81	M9	1	max	.377	1	.023	3	-.005	6	0	1	0	1	0	1
82			min	-.714	4	.003	5	-.024	1	0	6	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
83		2	max	.383	1	.011	3	-.003	6	0	1	.006	6	-.004	5
84			min	-.728	4	.002	5	-.01	1	0	6	-.007	2	-.012	3
85		3	max	.388	1	0	1	.004	2	0	1	.008	6	-.005	5
86			min	-.742	4	0	6	0	6	0	6	-.008	2	-.016	3
87		4	max	.394	1	-.001	2	.018	2	0	1	.005	6	-.003	5
88			min	-.756	4	-.013	6	.002	6	0	6	-.003	2	-.011	3
89		5	max	.399	1	-.003	2	.032	2	0	1	.007	2	.007	2
90			min	-.77	4	-.025	6	.005	6	0	6	-.002	6	0	6
91	M10	1	max	-.001	6	.013	6	0	2	0	2	0	1	0	1
92			min	-.922	1	.002	2	-.017	4	0	4	0	1	0	1
93		2	max	-.001	6	.007	6	0	2	0	2	.003	3	0	2
94			min	-.922	1	0	2	-.008	5	0	4	-.003	5	-.004	6
95		3	max	-.001	6	0	1	0	1	0	2	.004	3	0	2
96			min	-.922	1	0	1	0	1	0	4	-.004	5	-.006	6
97		4	max	-.001	6	0	5	.008	4	0	2	.003	3	0	2
98			min	-.922	1	-.007	3	0	3	0	4	-.003	5	-.004	6
99		5	max	-.001	6	-.002	5	.017	4	0	2	0	1	0	1
100			min	-.922	1	-.013	3	0	3	0	4	0	1	0	1
101	M11	1	max	-2.218	3	.026	6	.027	2	.001	3	0	1	0	1
102			min	-15.334	4	.005	5	-.012	4	0	1	0	1	0	1
103		2	max	-2.216	3	.012	6	.013	2	.001	3	.012	3	.007	2
104			min	-15.32	4	.003	5	-.006	4	0	1	-.002	5	-.012	6
105		3	max	-2.213	3	0	1	0	5	.001	3	.016	1	.009	2
106			min	-15.306	4	-.001	3	-.002	3	0	1	-.003	5	-.016	6
107		4	max	-2.211	3	-.002	2	.005	5	.001	3	.012	1	.006	2
108			min	-15.292	4	-.015	3	-.015	1	0	1	-.002	5	-.012	6
109		5	max	-2.208	3	-.004	2	.011	5	.001	3	0	5	0	6
110			min	-15.278	4	-.028	3	-.029	1	0	1	-.007	3	-.004	1
111	M12	1	max	14.699	4	.026	6	-.005	6	0	1	0	1	0	1
112			min	-8.845	1	.005	5	-.028	1	0	3	0	1	0	1
113		2	max	14.685	4	.012	6	-.003	6	0	1	.007	6	-.006	5
114			min	-8.839	1	.003	5	-.014	1	0	3	-.008	2	-.013	3
115		3	max	14.671	4	.001	1	0	3	0	1	.009	6	-.008	5
116			min	-8.834	1	-.001	3	0	6	0	3	-.01	2	-.017	1
117		4	max	14.657	4	-.001	2	.014	2	0	1	.006	6	-.006	5
118			min	-8.828	1	-.014	3	.002	6	0	3	-.006	2	-.014	1
119		5	max	14.643	4	-.004	2	.028	2	0	1	.003	1	.003	3
120			min	-8.823	1	-.028	3	.005	6	0	3	-.002	6	-.002	1
121	M13	1	max	21.564	1	0	1	-.01	5	.03	4	0	1	0	1
122			min	-.002	6	-.017	4	-.025	3	0	3	0	1	0	1
123		2	max	21.564	1	0	1	-.005	5	.03	4	-.003	5	.005	4
124			min	-.002	6	-.008	4	-.013	3	0	3	-.007	3	0	1
125		3	max	21.564	1	0	1	0	1	.03	4	-.004	5	.006	4
126			min	-.002	6	0	1	0	1	0	3	-.009	3	0	1
127		4	max	21.564	1	.008	5	.013	3	.03	4	-.003	5	.005	4
128			min	-.002	6	0	1	.005	2	0	3	-.007	3	0	1
129		5	max	21.564	1	.017	5	.025	3	.03	4	0	1	0	1
130			min	-.002	6	0	1	.01	2	0	3	0	1	0	1
131	M14	1	max	18.983	4	.026	3	.024	2	0	6	0	1	0	1
132			min	2.811	3	.005	5	-.013	4	-.003	1	0	1	0	1
133		2	max	18.997	4	.013	3	.01	2	0	6	.012	3	.005	2
134			min	2.813	3	.003	5	-.008	4	-.003	1	-.003	5	-.012	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
135		3	max	19.011	4	.003	1	-.002	5	0	6	.015	3	.005	2
136			min	2.816	3	-.001	6	-.004	1	-.003	1	-.005	5	-.016	6
137		4	max	19.025	4	0	2	.004	5	0	6	.01	1	-.001	2
138			min	2.818	3	-.015	6	-.018	1	-.003	1	-.005	5	-.012	6
139		5	max	19.039	4	-.002	2	.009	5	0	6	-.003	2	-.001	6
140			min	2.821	3	-.028	6	-.032	1	-.003	1	-.006	3	-.013	1
141	M15	1	max	11.234	1	.027	3	-.005	6	.004	1	0	1	0	1
142			min	-17.539	4	.006	5	-.025	2	0	6	0	1	0	1
143		2	max	11.24	1	.013	3	-.003	6	.004	1	.007	6	-.007	5
144			min	-17.553	4	.003	5	-.011	2	0	6	-.006	2	-.014	3
145		3	max	11.246	1	.003	1	.003	1	.004	1	.009	6	-.01	5
146			min	-17.567	4	0	6	-.001	4	0	6	-.006	2	-.018	3
147		4	max	11.251	1	0	2	.017	1	.004	1	.006	3	-.009	5
148			min	-17.581	4	-.014	6	.002	6	0	6	-.003	5	-.013	1
149		5	max	11.257	1	-.002	2	.031	1	.004	1	.011	1	.002	3
150			min	-17.595	4	-.028	6	.005	6	0	6	-.003	6	-.005	4
151	M16	1	max	-.002	6	0	1	-.01	2	0	2	0	1	0	1
152			min	-27.482	1	-.017	5	-.025	3	-.154	4	0	1	0	1
153		2	max	-.002	6	0	1	-.005	2	0	2	-.003	2	.005	5
154			min	-27.482	1	-.008	5	-.013	3	-.154	4	-.007	3	0	1
155		3	max	-.002	6	0	1	0	1	0	2	-.004	2	.006	5
156			min	-27.482	1	0	1	0	1	-.154	4	-.009	3	0	1
157		4	max	-.002	6	.008	4	.013	3	0	2	-.003	2	.005	5
158			min	-27.482	1	0	1	.005	5	-.154	4	-.007	3	0	1
159		5	max	-.002	6	.017	4	.025	3	0	2	0	1	0	1
160			min	-27.482	1	0	1	.01	5	-.154	4	0	1	0	1
161	M17	1	max	9.71	1	.03	4	-.002	5	0	3	-.003	6	0	2
162			min	-.003	6	.015	2	-.005	3	0	4	-.014	1	-.005	6
163		2	max	9.71	1	.025	4	-.002	5	0	3	.017	4	-.02	2
164			min	-.003	6	.01	2	-.005	3	0	4	-.005	2	-.046	4
165		3	max	9.71	1	.019	4	.008	1	0	3	.033	4	-.037	2
166			min	-.628	4	-.008	3	-.005	6	0	4	-.006	2	-.081	4
167		4	max	.003	6	.009	5	.008	1	0	1	.005	3	.006	5
168			min	-9.71	1	-.014	3	.003	5	0	1	-.011	5	-.032	3
169		5	max	.003	6	.004	5	.008	1	0	1	0	1	0	1
170			min	-9.71	1	-.02	3	.003	5	0	1	0	1	0	1
171	M18	1	max	.007	6	.03	4	-.004	5	0	1	0	1	0	1
172			min	-9.711	1	.012	2	-.008	1	0	1	0	1	0	1
173		2	max	.007	6	.025	4	-.004	5	0	1	.018	4	-.022	2
174			min	-9.711	1	.008	2	-.008	1	0	1	-.001	2	-.046	4
175		3	max	2.431	3	.019	4	-.004	5	0	4	.031	4	-.037	2
176			min	-9.711	1	.004	2	-.008	1	0	3	-.006	2	-.083	4
177		4	max	9.711	1	.008	5	.007	6	0	4	.004	3	.008	5
178			min	-.007	6	-.014	3	.004	2	0	3	-.011	5	-.033	3
179		5	max	9.711	1	.003	5	.007	6	0	4	.002	6	.004	4
180			min	-.007	6	-.02	3	.004	2	0	3	-.011	1	-.002	6
181	M19	1	max	-.003	6	.022	1	-.002	2	0	3	-.001	5	0	5
182			min	-7.629	1	.009	5	-.005	6	0	1	-.004	1	-.007	3
183		2	max	-.003	6	.016	1	-.002	2	0	3	.008	1	-.012	5
184			min	-7.629	1	.004	5	-.005	6	0	1	0	5	-.031	1
185		3	max	.269	4	-.005	3	.006	6	0	3	.015	1	-.036	5
186			min	-7.629	1	-.009	1	.003	5	0	1	.007	6	-.055	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
187		4	max	7.629	1	-.01	5	.006	6	0	1	.01	1	-.021	5
188			min	.003	6	-.015	1	.003	5	0	1	.006	3	-.032	1
189		5	max	7.629	1	-.014	5	.006	6	0	1	0	1	0	1
190			min	.003	6	-.021	1	.003	5	0	1	0	1	0	1
191	M20	1	max	7.628	1	.021	1	-.004	5	0	1	0	1	0	1
192			min	.008	6	.008	5	-.006	6	0	1	0	1	0	1
193		2	max	7.628	1	.015	1	-.004	5	0	1	.009	1	-.012	5
194			min	.008	6	.004	5	-.006	6	0	1	0	5	-.032	1
195		3	max	7.628	1	.005	3	.006	6	0	1	.015	1	-.036	5
196			min	-.281	4	-.01	1	-.005	3	0	3	.006	6	-.056	1
197		4	max	-.008	6	-.01	5	.006	6	0	1	.009	1	-.021	5
198			min	-7.628	1	-.016	1	.003	2	0	3	.006	5	-.031	6
199		5	max	-.008	6	-.015	5	.006	6	0	1	.001	6	.003	1
200			min	-7.628	1	-.022	1	.003	2	0	3	-.002	1	-.003	3
201	M21	1	max	.324	1	.015	6	.002	2	0	3	.002	5	.002	5
202			min	-.002	6	.009	2	-.004	4	0	5	-.01	1	-.007	3
203		2	max	.324	1	.009	6	.002	2	0	3	.004	4	-.012	5
204			min	-.002	6	.005	2	-.004	4	0	5	0	2	-.027	3
205		3	max	.324	1	0	4	.005	6	0	3	.006	3	-.02	2
206			min	-.043	5	-.004	3	-.004	4	0	5	0	5	-.038	6
207		4	max	.002	6	-.005	5	.005	6	0	1	.005	3	-.013	2
208			min	-.324	1	-.01	3	.003	2	0	1	.002	5	-.023	3
209		5	max	.002	6	-.009	5	.005	6	0	1	0	1	0	1
210			min	-.324	1	-.015	3	.003	2	0	1	0	1	0	1
211	M22	1	max	.006	6	.016	3	-.002	5	0	1	0	1	0	1
212			min	-.325	1	.009	5	-.005	3	0	1	0	1	0	1
213		2	max	.006	6	.01	3	-.002	5	0	1	.004	6	-.013	5
214			min	-.325	1	.005	5	-.005	3	0	1	.002	2	-.024	3
215		3	max	.03	5	.004	3	.005	6	0	2	.006	1	-.019	5
216			min	-.325	1	-.003	6	-.005	3	0	6	.002	5	-.039	3
217		4	max	.325	1	-.005	5	.005	6	0	2	.005	6	-.014	5
218			min	-.006	6	-.009	3	-.002	2	0	6	0	2	-.025	3
219		5	max	.325	1	-.009	5	.005	6	0	2	.002	6	-.001	6
220			min	-.006	6	-.015	3	-.002	2	0	6	-.009	2	-.005	2
221	M23	1	max	.335	5	.015	6	.002	2	0	3	.002	5	.001	5
222			min	-.002	6	.009	2	-.004	4	0	4	-.01	1	-.007	3
223		2	max	.335	5	.009	6	.002	2	0	3	.004	4	-.012	5
224			min	-.002	6	.005	2	-.004	4	0	4	0	2	-.026	3
225		3	max	.335	5	0	4	.005	6	0	3	.006	3	-.02	2
226			min	-.002	6	-.004	3	-.004	4	0	4	0	5	-.037	6
227		4	max	.002	6	-.005	5	.005	6	0	1	.005	3	-.013	2
228			min	-.335	5	-.01	3	.003	2	0	1	.002	5	-.023	3
229		5	max	.002	6	-.009	5	.005	6	0	1	0	1	0	1
230			min	-.335	5	-.015	3	.003	2	0	1	0	1	0	1
231	M24	1	max	.007	6	.015	3	-.003	5	0	1	0	1	0	1
232			min	-.322	5	.009	5	-.005	3	0	1	0	1	0	1
233		2	max	.007	6	.01	3	-.003	5	0	1	.004	6	-.013	5
234			min	-.322	5	.005	5	-.005	3	0	1	.002	2	-.024	3
235		3	max	.007	6	.004	3	.005	6	0	1	.006	1	-.019	5
236			min	-.322	5	-.003	6	-.005	3	0	6	.002	5	-.038	3
237		4	max	.322	5	-.005	5	.005	6	0	1	.005	6	-.014	5
238			min	-.007	6	-.009	3	-.002	2	0	6	0	2	-.024	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torqu...	LC	y-y Mo...	LC	z-z Mo...	LC
239		5	max	.322	5	-.009	5	.005	6	0	1	.002	6	0	6
240			min	-.007	6	-.015	3	-.002	2	0	6	-.009	1	-.005	2
241	M25	1	max	.213	2	.044	6	.002	2	0	2	-.028	5	.101	4
242			min	-.008	6	.025	2	-.012	4	-.002	4	-.078	3	-.012	2
243		2	max	.213	2	.025	6	.002	2	0	2	.021	4	-.031	5
244			min	-.008	6	.01	2	-.012	4	-.002	4	.009	2	-.108	3
245		3	max	.211	1	.009	1	.011	3	0	2	.043	3	-.097	2
246			min	-.213	2	.001	5	-.011	6	-.002	4	.011	5	-.206	6
247		4	max	.008	6	-.007	2	.012	6	0	1	.049	6	-.074	2
248			min	-.213	2	-.016	6	.006	2	0	1	.027	5	-.137	6
249		5	max	.008	6	-.021	2	.012	6	0	1	0	1	0	1
250			min	-.213	2	-.035	6	.006	2	0	1	0	1	0	1
251	M26	1	max	.008	6	.036	6	-.006	5	0	1	0	1	0	1
252			min	-.216	2	.022	5	-.014	6	0	1	0	1	0	1
253		2	max	.008	6	.017	6	-.006	5	0	1	.045	6	-.076	5
254			min	-.216	2	.008	5	-.014	6	0	1	.028	2	-.146	6
255		3	max	-.008	6	-.006	2	.02	6	.003	6	.033	3	-.101	5
256			min	-.216	2	-.01	6	-.01	1	.002	5	.016	5	-.224	6
257		4	max	.216	2	-.015	5	.02	6	.003	6	.032	6	-.042	5
258			min	-.008	6	-.029	6	.004	2	.002	5	.01	5	-.067	6
259		5	max	.216	2	-.029	5	.02	6	.003	6	-.036	6	.145	6
260			min	-.008	6	-.048	6	.004	2	.002	5	-.066	1	.055	2

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	2.089	3	.023	5	0	4	0	3	.023	5	0	6	.007	4
2			min	.656	2	0	6	-.006	6	-.023	5	0	3	-.007	4	0	6
3		2	max	1.758	3	.069	1	0	3	-.002	6	.158	1	.043	6	0	2
4			min	.55	2	0	6	-.019	6	-.158	1	.002	6	0	2	-.043	6
5		3	max	1.414	3	0	6	.02	6	0	6	.103	4	.016	6	.057	4
6			min	.449	2	-.07	4	-.001	4	-.103	4	0	6	-.057	4	-.016	6
7		4	max	1.044	3	.101	1	0	3	2.12	1	0	6	0	2	2.472	4
8			min	.347	2	-.024	5	-.165	4	0	6	-2.12	1	-2.472	4	0	2
9		5	max	.659	3	1.055	1	0	1	0	1	0	1	0	1	0	1
10			min	.245	2	0	6	-1.054	4	0	1	0	1	0	1	0	1
11	M2	1	max	.279	2	.158	6	-.051	6	0	1	0	1	0	1	0	1
12			min	-.135	6	.044	5	-.113	1	0	1	0	1	0	1	0	1
13		2	max	.298	2	.089	6	-.031	6	1.813	3	-1.103	5	1.78	6	1.122	2
14			min	-.146	6	.027	5	-.057	1	1.103	5	-1.813	3	-1.01	2	-1.978	6
15		3	max	.317	2	.019	6	0	2	2.615	3	-1.556	5	2.482	6	1.305	2
16			min	-.156	6	.011	5	-.011	6	1.556	5	-2.615	3	-1.174	2	-2.758	6
17		4	max	.336	2	-.005	2	.056	2	2.408	3	-1.362	5	2.107	6	.547	2
18			min	-.167	6	-.052	3	.008	6	1.362	5	-2.408	3	-.492	2	-2.341	6
19		5	max	.355	2	-.021	2	.112	2	1.295	6	-.49	2	1.182	1	-.727	6
20			min	-.178	6	-.121	3	.028	6	.49	2	-1.295	6	.654	6	-1.313	1
21	M3	1	max	.306	5	.154	6	.104	1	0	1	0	1	0	1	0	1
22			min	.077	3	.038	2	-.082	5	0	1	0	1	0	1	0	1
23		2	max	.33	5	.084	6	.048	1	1.582	6	.491	2	3.146	3	.565	5
24			min	.085	3	.022	2	-.038	5	-.491	2	-1.582	6	-.508	5	-3.496	3
25		3	max	.354	5	.015	4	.006	4	2.209	6	.564	2	4.252	3	.466	5

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
26			min	.093	3	.005	2	-.008	2	-.564	2	-2.209	6	-.419	5	-4.725	3
27		4	max	.378	5	-.005	5	.05	4	1.881	6	.218	2	3.317	3	-.297	5
28			min	.102	3	-.059	3	-.063	2	-.218	2	-1.881	6	.267	5	-3.686	3
29		5	max	.402	5	-.021	5	.094	4	.699	3	-.253	5	1.817	4	.24	2
30			min	.11	3	-.129	3	-.119	2	.253	5	-.699	3	-.216	2	-2.019	4
31	M4	1	max	-.025	6	.043	3	0	1	0	1	0	1	0	1	0	1
32			min	-.861	1	.005	2	-.054	5	0	1	0	1	0	1	0	1
33		2	max	-.025	6	.022	3	0	1	.156	6	-.012	2	.202	3	.262	5
34			min	-.861	1	.003	2	-.027	5	.012	2	-.156	6	-.227	5	-.233	3
35		3	max	-.025	6	0	1	0	1	.208	6	-.016	2	.269	3	.35	5
36			min	-.861	1	0	1	0	1	.016	2	-.208	6	-.303	5	-.311	3
37		4	max	-.025	6	-.003	5	.027	4	.156	6	-.012	2	.202	3	.262	5
38			min	-.861	1	-.022	6	0	1	.012	2	-.156	6	-.227	5	-.233	3
39		5	max	-.025	6	-.005	5	.054	4	0	1	0	1	0	1	0	1
40			min	-.861	1	-.043	6	0	1	0	1	0	1	0	1	0	1
41	M5	1	max	.485	2	.075	6	.076	2	0	1	0	1	0	1	0	1
42			min	.14	3	.009	2	-.034	4	0	1	0	1	0	1	0	1
43		2	max	.493	2	.037	6	.031	2	.401	6	.264	2	.826	3	.219	5
44			min	.143	3	.004	2	-.016	4	-.264	2	-.401	6	-.19	5	-.954	3
45		3	max	.501	2	0	4	.002	5	.543	6	.305	2	.993	3	.268	5
46			min	.147	3	-.003	3	-.014	1	-.305	2	-.543	6	-.232	5	-1.147	3
47		4	max	.509	2	-.004	5	.02	5	.425	6	.123	2	.502	3	.146	5
48			min	.15	3	-.041	3	-.059	1	-.123	2	-.425	6	-.126	5	-.58	3
49		5	max	.516	2	-.009	5	.038	5	.293	1	.044	5	.127	5	.766	1
50			min	.154	3	-.08	3	-.104	1	-.044	5	-.293	1	-.663	1	-.147	5
51	M6	1	max	.723	4	.075	3	-.018	6	0	1	0	1	0	1	0	1
52			min	-.226	6	.01	5	-.077	1	0	1	0	1	0	1	0	1
53		2	max	.704	4	.037	3	-.01	6	.468	3	-.162	5	.474	6	.62	2
54			min	-.234	6	.005	5	-.033	1	.162	5	-.468	3	-.537	2	-.548	6
55		3	max	.684	4	0	1	.012	2	.61	3	-.199	5	.604	6	.721	2
56			min	-.243	6	-.002	6	-.002	6	.199	5	-.61	3	-.624	2	-.698	6
57		4	max	.665	4	-.005	2	.057	2	.426	3	-.109	5	.39	6	.302	2
58			min	-.252	6	-.041	6	.006	6	.109	5	-.426	3	-.262	2	-.451	6
59		5	max	.645	4	-.009	2	.102	2	-.01	6	.268	2	.551	1	.194	6
60			min	-.26	6	-.079	6	.014	6	-.268	2	.01	6	-.168	6	-.636	1
61	M7	1	max	0	6	.043	3	0	1	0	1	0	1	0	1	0	1
62			min	-1.297	4	.005	5	-.054	4	0	1	0	1	0	1	0	1
63		2	max	0	6	.022	6	0	1	.156	6	-.012	2	.202	3	.262	5
64			min	-1.297	4	.003	5	-.027	4	.012	2	-.156	6	-.227	5	-.233	3
65		3	max	0	6	0	1	0	1	.208	6	-.016	2	.269	3	.35	5
66			min	-1.297	4	0	1	0	1	.016	2	-.208	6	-.303	5	-.311	3
67		4	max	0	6	-.003	5	.027	4	.156	6	-.012	2	.202	3	.262	5
68			min	-1.297	4	-.022	3	0	1	.012	2	-.156	6	-.227	5	-.233	3
69		5	max	0	6	-.005	2	.054	4	0	1	0	1	0	1	0	1
70			min	-1.297	4	-.043	3	0	1	0	1	0	1	0	1	0	1
71	M8	1	max	1.113	4	.075	6	.076	2	0	1	0	1	0	1	0	1
72			min	.13	3	.009	2	-.033	4	0	1	0	1	0	1	0	1
73		2	max	1.132	4	.036	6	.031	2	.398	6	.263	2	.822	3	.21	5
74			min	.133	3	.004	2	-.015	4	-.263	2	-.398	6	-.182	5	-.949	3
75		3	max	1.152	4	0	4	.003	5	.537	6	.303	2	.985	3	.249	5
76			min	.137	3	-.003	3	-.014	1	-.303	2	-.537	6	-.216	5	-1.138	3
77		4	max	1.171	4	-.004	5	.021	5	.416	6	.121	2	.49	3	.117	5

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
78			min	.14	3	-.042	3	-.059	1	-.121	2	-.416	6	-.102	5	-.566	3
79		5	max	1.19	4	-.009	5	.039	5	.295	1	.062	5	.16	5	.766	3
80			min	.143	3	-.08	3	-.104	1	-.062	5	-.295	1	-.664	3	-.184	5
81	M9	1	max	.522	1	.075	3	-.017	6	0	1	0	1	0	1	0	1
82			min	-.989	4	.01	5	-.077	1	0	1	0	1	0	1	0	1
83		2	max	.53	1	.036	3	-.009	6	.465	3	-.164	5	.472	6	.619	2
84			min	-1.008	4	.005	5	-.033	1	.164	5	-.465	3	-.536	2	-.545	6
85		3	max	.538	1	0	1	.012	2	.603	3	-.203	5	.6	6	.718	2
86			min	-1.028	4	-.003	6	-.001	6	.203	5	-.603	3	-.622	2	-.692	6
87		4	max	.545	1	-.005	2	.057	2	.416	3	-.115	5	.383	6	.299	2
88			min	-1.047	4	-.041	6	.007	6	.115	5	-.416	3	-.259	2	-.442	6
89		5	max	.553	1	-.009	2	.102	2	-.026	6	.264	2	.554	2	.205	6
90			min	-1.066	4	-.08	6	.015	6	-.264	2	.026	6	-.177	6	-.639	2
91	M10	1	max	-.002	6	.043	6	0	1	0	1	0	1	0	1	0	1
92			min	-1.277	1	.005	2	-.054	4	0	1	0	1	0	1	0	1
93		2	max	-.002	6	.022	6	0	1	.156	6	-.012	2	.202	3	.262	5
94			min	-1.277	1	.003	2	-.027	5	.012	2	-.156	6	-.227	5	-.233	3
95		3	max	-.002	6	0	1	0	1	.208	6	-.016	2	.269	3	.35	5
96			min	-1.277	1	0	1	0	1	.016	2	-.208	6	-.303	5	-.311	3
97		4	max	-.002	6	-.003	5	.027	4	.156	6	-.012	2	.202	3	.262	5
98			min	-1.277	1	-.022	3	0	1	.012	2	-.156	6	-.227	5	-.233	3
99		5	max	-.002	6	-.005	5	.054	4	0	1	0	1	0	1	0	1
100			min	-1.277	1	-.043	3	0	1	0	1	0	1	0	1	0	1
101	M11	1	max	-1.864	3	.049	6	.052	2	0	1	0	1	0	1	0	1
102			min	-12.886	4	.01	5	-.022	4	0	1	0	1	0	1	0	1
103		2	max	-1.862	3	.024	6	.025	2	.211	6	.135	2	.452	3	.096	5
104			min	-12.874	4	.005	5	-.012	4	-.135	2	-.211	6	-.082	5	-.534	3
105		3	max	-1.86	3	.001	1	0	5	.284	6	.17	2	.588	1	.127	5
106			min	-12.862	4	-.003	3	-.004	3	-.17	2	-.284	6	-.108	5	-.695	1
107		4	max	-1.858	3	-.004	2	.01	5	.22	6	.105	2	.427	1	.093	5
108			min	-12.85	4	-.028	3	-.029	1	-.105	2	-.22	6	-.079	5	-.504	1
109		5	max	-1.856	3	-.008	2	.021	5	.07	1	-.018	6	.006	5	.307	3
110			min	-12.839	4	-.054	3	-.056	1	.018	6	-.07	1	-.26	3	-.007	5
111	M12	1	max	12.352	4	.05	6	-.01	6	0	1	0	1	0	1	0	1
112			min	-7.433	1	.01	5	-.053	1	0	1	0	1	0	1	0	1
113		2	max	12.34	4	.024	6	-.005	6	.241	3	-.107	5	.269	6	.331	2
114			min	-7.428	1	.005	5	-.026	1	.107	5	-.241	3	-.28	2	-.318	6
115		3	max	12.328	4	.002	1	0	3	.317	1	-.144	5	.347	6	.422	2
116			min	-7.423	1	-.002	3	0	6	.144	5	-.317	1	-.357	2	-.41	6
117		4	max	12.317	4	-.003	2	.027	2	.25	1	-.111	5	.234	6	.273	2
118			min	-7.419	1	-.028	3	.005	6	.111	5	-.25	1	-.231	2	-.277	6
119		5	max	12.305	4	-.007	2	.054	2	.035	1	.055	3	.106	1	.082	6
120			min	-7.414	1	-.053	3	.01	6	-.055	3	-.035	1	-.07	6	-.125	1
121	M13	1	max	4.792	1	0	1	-.003	5	0	1	0	1	0	1	0	1
122			min	0	6	-.006	4	-.008	3	0	1	0	1	0	1	0	1
123		2	max	4.792	1	0	1	-.002	5	0	1	.013	4	-.062	5	.15	3
124			min	0	6	-.003	4	-.004	3	-.013	4	0	1	-.15	3	.062	5
125		3	max	4.792	1	0	1	0	1	0	1	.017	4	-.083	5	.2	3
126			min	0	6	0	1	0	1	-.017	4	0	1	-.2	3	.083	5
127		4	max	4.792	1	.003	5	.004	3	0	1	.013	4	-.062	5	.15	3
128			min	0	6	0	1	.002	2	-.013	4	0	1	-.15	3	.062	5
129		5	max	4.792	1	.006	5	.008	3	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
130			min	0	6	0	1	.003	2	0	1	0	1	0	1	0	1
131	M14	1	max	15.952	4	.051	3	.046	2	0	1	0	1	0	1	0	1
132			min	2.362	3	.01	5	-.025	4	0	1	0	1	0	1	0	1
133		2	max	15.964	4	.025	3	.019	2	.212	6	.093	2	.457	3	.135	5
134			min	2.364	3	.005	5	-.015	4	-.093	2	-.212	6	-.114	5	-.541	3
135		3	max	15.975	4	.005	1	-.004	5	.287	6	.087	2	.57	3	.204	5
136			min	2.366	3	-.002	6	-.008	1	-.087	2	-.287	6	-.172	5	-.674	3
137		4	max	15.987	4	0	2	.007	5	.225	6	-.02	2	.376	1	.207	5
138			min	2.368	3	-.028	6	-.035	1	.02	2	-.225	6	-.176	5	-.444	1
139		5	max	15.999	4	-.005	2	.018	5	.234	1	-.025	6	-.1	2	.282	3
140			min	2.37	3	-.054	6	-.062	1	.025	6	-.234	1	-.239	3	.118	2
141	M15	1	max	9.441	1	.051	3	-.01	6	0	1	0	1	0	1	0	1
142			min	-14.739	4	.011	5	-.049	2	0	1	0	1	0	1	0	1
143		2	max	9.445	1	.025	3	-.006	6	.246	3	-.125	5	.263	6	.246	2
144			min	-14.751	4	.006	5	-.022	2	.125	5	-.246	3	-.208	2	-.311	6
145		3	max	9.45	1	.006	1	.005	1	.323	3	-.18	5	.334	6	.253	2
146			min	-14.762	4	-.002	6	-.003	4	.18	5	-.323	3	-.214	2	-.395	6
147		4	max	9.455	1	0	2	.032	1	.236	1	-.165	5	.219	3	.137	5
148			min	-14.774	4	-.027	6	.004	6	.165	5	-.236	1	-.116	5	-.259	3
149		5	max	9.46	1	-.004	2	.059	1	.084	4	.034	3	.39	1	.113	6
150			min	-14.786	4	-.053	6	.009	6	-.034	3	-.084	4	-.095	6	-.461	1
151	M16	1	max	0	6	0	1	-.003	2	0	1	0	1	0	1	0	1
152			min	-6.107	1	-.006	5	-.008	3	0	1	0	1	0	1	0	1
153		2	max	0	6	0	1	-.002	2	0	1	.013	5	-.062	2	.15	3
154			min	-6.107	1	-.003	5	-.004	3	-.013	5	0	1	-.15	3	.062	2
155		3	max	0	6	0	1	0	1	0	1	.017	5	-.083	2	.2	3
156			min	-6.107	1	0	1	0	1	-.017	5	0	1	-.2	3	.083	2
157		4	max	0	6	.003	4	.004	3	0	1	.013	5	-.062	2	.15	3
158			min	-6.107	1	0	1	.002	5	-.013	5	0	1	-.15	3	.062	2
159		5	max	0	6	.006	4	.008	3	0	1	0	1	0	1	0	1
160			min	-6.107	1	0	1	.003	5	0	1	0	1	0	1	0	1
161	M17	1	max	11.87	1	.078	4	-.006	5	.17	6	.019	2	-.19	6	.914	1
162			min	-.004	6	.037	2	-.015	3	-.024	2	-.136	6	-1.002	1	.173	6
163		2	max	11.87	1	.063	4	-.006	5	1.442	4	-.492	2	1.235	4	.315	2
164			min	-.004	6	.026	2	-.015	3	.617	2	-1.149	4	-.345	2	-1.126	4
165		3	max	11.87	1	.048	4	.026	1	2.531	4	-.909	2	2.423	4	.387	2
166			min	-.768	4	-.021	3	-.014	6	1.141	2	-2.016	4	-.425	2	-2.21	4
167		4	max	.004	6	.022	5	.026	1	1.009	3	.157	5	.352	3	.745	5
168			min	-11.87	1	-.036	3	.011	5	-.197	5	-.804	3	-.817	5	-.321	3
169		5	max	.004	6	.011	5	.026	1	0	1	0	1	0	1	0	1
170			min	-11.87	1	-.051	3	.011	5	0	1	0	1	0	1	0	1
171	M18	1	max	.009	6	.078	4	-.013	5	0	1	0	1	0	1	0	1
172			min	-11.871	1	.032	2	-.027	1	0	1	0	1	0	1	0	1
173		2	max	.009	6	.063	4	-.013	5	1.437	4	-.547	2	1.33	4	.074	2
174			min	-11.871	1	.021	2	-.027	1	.686	2	-1.145	4	-.081	2	-1.214	4
175		3	max	2.972	3	.048	4	-.013	5	2.598	4	-.929	2	2.252	4	.428	2
176			min	-11.871	1	.009	2	-.027	1	1.166	2	-2.07	4	-.47	2	-2.054	4
177		4	max	11.871	1	.02	5	.022	6	1.034	3	.193	5	.327	3	.715	5
178			min	-.009	6	-.036	3	.011	2	-.243	5	-.824	3	-.784	5	-.298	3
179		5	max	11.871	1	.008	5	.022	6	.047	6	.111	4	.173	6	.709	1
180			min	-.009	6	-.051	3	.011	2	-.139	4	-.037	6	-.777	1	-.157	6
181	M19	1	max	-.004	6	.055	1	-.007	2	.205	3	.012	5	-.091	5	.27	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
182			min	-9.326	1	.022	5	-.016	6	-.015	5	-.164	3	-.296	1	.083	5
183		2	max	-.004	6	.04	1	-.007	2	.975	1	-.299	5	.609	1	-.01	5
184			min	-9.326	1	.011	5	-.016	6	.375	5	-.776	1	.011	5	-.556	1
185		3	max	.329	4	-.013	3	.019	6	1.71	1	-.898	5	1.105	1	-.457	6
186			min	-9.326	1	-.024	1	.011	5	1.127	5	-1.362	1	.501	6	-1.008	1
187		4	max	9.326	1	-.025	5	.019	6	.992	1	-.531	5	.708	1	-.399	3
188			min	.004	6	-.039	1	.011	5	.667	5	-.791	1	.438	3	-.646	1
189		5	max	9.326	1	-.037	5	.019	6	0	1	0	1	0	1	0	1
190			min	.004	6	-.054	1	.011	5	0	1	0	1	0	1	0	1
191	M20	1	max	9.326	1	.054	1	-.011	5	0	1	0	1	0	1	0	1
192			min	.009	6	.021	5	-.02	6	0	1	0	1	0	1	0	1
193		2	max	9.326	1	.039	1	-.011	5	1.003	1	-.309	5	.694	1	-.033	5
194			min	.009	6	.01	5	-.02	6	.388	5	-.799	1	.036	5	-.633	1
195		3	max	9.326	1	.013	3	.02	6	1.73	1	-.892	5	1.076	1	-.424	6
196			min	-.343	4	-.026	1	-.017	3	1.12	5	-1.379	1	.465	6	-.981	1
197		4	max	-.009	6	-.026	5	.02	6	.979	6	-.52	5	.653	1	-.408	5
198			min	-9.326	1	-.041	1	.01	2	.653	5	-.78	6	.448	5	-.596	1
199		5	max	-.009	6	-.037	5	.02	6	.103	3	.064	1	.11	6	.164	1
200			min	-9.326	1	-.057	1	.01	2	-.081	1	-.082	3	-.18	1	-.101	6
201	M21	1	max	.397	1	.038	6	.006	2	.232	3	.042	5	.153	5	.648	1
202			min	-.003	6	.023	2	-.014	4	-.053	5	-.185	3	-.711	1	-.139	5
203		2	max	.397	1	.023	6	.006	2	.826	3	-.305	5	.317	4	-.011	2
204			min	-.003	6	.012	2	-.014	4	.383	5	-.658	3	.012	2	-.289	4
205		3	max	.397	1	.002	4	.015	6	1.178	6	-.488	2	.447	3	-.052	5
206			min	-.053	5	-.009	3	-.014	4	.612	2	-.938	6	.057	5	-.408	3
207		4	max	.003	6	-.012	5	.015	6	.721	3	-.326	2	.354	3	-.155	5
208			min	-.397	1	-.025	3	.009	2	.409	2	-.574	3	.17	5	-.323	3
209		5	max	.003	6	-.024	5	.015	6	0	1	0	1	0	1	0	1
210			min	-.397	1	-.04	3	.009	2	0	1	0	1	0	1	0	1
211	M22	1	max	.008	6	.04	3	-.008	5	0	1	0	1	0	1	0	1
212			min	-.397	1	.024	5	-.017	3	0	1	0	1	0	1	0	1
213		2	max	.008	6	.025	3	-.008	5	.739	3	-.318	5	.307	6	-.167	2
214			min	-.397	1	.012	5	-.017	3	.399	5	-.589	3	.183	2	-.28	6
215		3	max	.037	5	.009	3	.017	6	1.203	3	-.471	5	.427	1	-.139	5
216			min	-.397	1	-.008	6	-.017	3	.591	5	-.958	3	.153	5	-.39	1
217		4	max	.397	1	-.012	5	.017	6	.77	3	-.339	5	.391	6	-.027	2
218			min	-.008	6	-.023	3	-.005	2	.425	5	-.613	3	.029	2	-.357	6
219		5	max	.397	1	-.024	5	.017	6	.164	2	-.029	6	.157	6	.587	2
220			min	-.008	6	-.039	3	-.005	2	.037	6	-.13	2	-.643	2	-.143	6
221	M23	1	max	.41	5	.038	6	.006	2	.224	3	.034	5	.113	5	.644	1
222			min	-.003	6	.023	2	-.013	4	-.043	5	-.178	3	-.706	1	-.103	5
223		2	max	.41	5	.023	6	.006	2	.817	3	-.309	5	.293	4	-.013	2
224			min	-.003	6	.012	2	-.013	4	.388	5	-.651	3	.014	2	-.267	4
225		3	max	.41	5	.002	4	.015	6	1.168	6	-.488	2	.448	3	-.047	5
226			min	-.003	6	-.009	3	-.013	4	.612	2	-.93	6	.052	5	-.408	3
227		4	max	.003	6	-.012	5	.015	6	.718	3	-.326	2	.354	3	-.148	5
228			min	-.41	5	-.024	3	.009	2	.409	2	-.572	3	.163	5	-.323	3
229		5	max	.003	6	-.024	5	.015	6	0	1	0	1	0	1	0	1
230			min	-.41	5	-.04	3	.009	2	0	1	0	1	0	1	0	1
231	M24	1	max	.008	6	.04	3	-.008	5	0	1	0	1	0	1	0	1
232			min	-.393	5	.024	5	-.017	3	0	1	0	1	0	1	0	1
233		2	max	.008	6	.024	3	-.008	5	.736	3	-.32	5	.304	6	-.168	2

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
234			min	-.393	5	.012	5	-.017	3	.402	5	-.587	3	.184	2	-.277	6
235		3	max	.008	6	.009	3	.017	6	1.197	3	-.475	5	.427	1	-.13	5
236			min	-.393	5	-.008	6	-.017	3	.597	5	-.954	3	.142	5	-.389	1
237		4	max	.393	5	-.012	5	.017	6	.76	3	-.342	5	.389	6	-.028	2
238			min	-.008	6	-.024	3	-.005	2	.43	5	-.605	3	.031	2	-.355	6
239		5	max	.393	5	-.024	5	.017	6	.167	2	-.019	6	.155	6	.584	1
240			min	-.008	6	-.039	3	-.005	2	.023	6	-.133	2	-.641	1	-.141	6
241	M25	1	max	.236	2	.113	6	.005	2	.281	2	2.387	4	-1.407	5	4.352	3
242			min	-.009	6	.063	2	-.03	4	-2.387	4	-.281	2	-3.863	3	1.585	5
243		2	max	.236	2	.065	6	.005	2	2.559	3	-.746	5	1.046	4	-.499	2
244			min	-.009	6	.027	2	-.03	4	.746	5	-2.559	3	.443	2	-1.179	4
245		3	max	.234	1	.024	1	.028	3	4.876	6	-2.307	2	2.115	3	-.624	5
246			min	-.236	2	.003	5	-.027	6	2.307	2	-4.876	6	.554	5	-2.382	3
247		4	max	.009	6	-.018	2	.031	6	3.249	6	-1.762	2	2.44	6	-1.526	5
248			min	-.236	2	-.042	6	.016	2	1.762	2	-3.249	6	1.355	5	-2.749	6
249		5	max	.009	6	-.055	2	.031	6	0	1	0	1	0	1	0	1
250			min	-.236	2	-.09	6	.016	2	0	1	0	1	0	1	0	1
251	M26	1	max	.008	6	.092	6	-.016	5	0	1	0	1	0	1	0	1
252			min	-.24	2	.055	5	-.036	6	0	1	0	1	0	1	0	1
253		2	max	.008	6	.044	6	-.016	5	3.469	6	-1.803	5	2.246	6	-1.58	2
254			min	-.24	2	.019	5	-.036	6	1.803	5	-3.469	6	1.403	2	-2.53	6
255		3	max	-.008	6	-.015	2	.051	6	5.315	6	-2.389	5	1.644	3	-.881	5
256			min	-.24	2	-.027	6	-.025	1	2.389	5	-5.315	6	.782	5	-1.852	3
257		4	max	.24	2	-.037	5	.051	6	1.595	6	-.994	5	1.587	6	-.559	5
258			min	-.008	6	-.075	6	.011	2	.994	5	-1.595	6	.496	5	-1.788	6
259		5	max	.24	2	-.074	5	.051	6	-1.302	2	3.437	6	-1.803	6	3.652	1
260			min	-.008	6	-.123	6	.011	2	-3.437	6	1.302	2	-3.242	1	2.032	6

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	N1	max	0	6	28.625	3	.005	4	.025	4	0	1	.079	5
2		min	-.158	5	8.991	2	-.038	6	-.002	6	0	1	.002	3
3	N9	max	-.155	6	.135	6	-.157	3	0	1	0	1	0	1
4		min	-.595	2	.044	2	-.702	5	0	1	0	1	0	1
5	N12	max	-.065	6	.04	3	-.157	3	0	1	0	1	0	1
6		min	-.381	2	.012	5	-.549	2	0	1	0	1	0	1
7	N15	max	-.085	6	.04	3	-.145	3	0	1	0	1	0	1
8		min	-.407	1	.012	5	-.829	4	0	1	0	1	0	1
9	N18	max	8.648	1	.051	6	14.375	4	0	1	0	1	0	1
10		min	1.442	6	.021	5	3.41	3	0	1	0	1	0	1
11	N21	max	-1.822	6	.042	6	-4.328	3	0	1	0	1	0	1
12		min	-11.068	1	.009	2	-18.121	4	0	1	0	1	0	1
13	N11	max	.066	6	.04	6	.654	5	0	1	0	1	0	1
14		min	-.413	4	.012	5	-.185	6	0	1	0	1	0	1
15	N14	max	.252	4	.04	6	.589	1	0	1	0	1	0	1
16		min	-.407	1	.012	2	-.7	4	0	1	0	1	0	1
17	N17	max	8.648	1	.049	3	13.388	4	0	1	0	1	0	1
18		min	-5.256	4	.012	5	-13.595	1	0	1	0	1	0	1
19	N20	max	6.081	4	.049	6	17.31	1	0	1	0	1	0	1
20		min	-11.068	1	.009	2	-15.91	4	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
21	N8	max	.163	6	.136	6	.572	2	0	1	0	1	0	1
22		min	-.595	2	.044	5	-.269	6	0	1	0	1	0	1
23	N27	max	0	6	.031	4	6.858	1	0	1	0	1	0	1
24		min	-6.875	1	.015	2	-.01	6	0	1	0	1	0	1
25	N28	max	-.002	6	.022	3	.006	6	0	1	0	1	0	1
26		min	-6.874	1	-.004	5	-6.857	1	0	1	0	1	0	1
27	N30	max	5.389	1	.018	6	-.01	6	0	1	0	1	0	1
28		min	0	6	.008	5	-5.399	1	0	1	0	1	0	1
29	N31	max	5.389	1	.019	6	5.4	1	0	1	0	1	0	1
30		min	-.002	6	.011	2	.006	6	0	1	0	1	0	1
31	N34	max	-.002	6	.016	3	.005	6	0	1	0	1	0	1
32		min	-.232	1	.009	5	-.227	2	0	1	0	1	0	1
33	N33	max	0	6	.016	3	.227	2	0	1	0	1	0	1
34		min	-.232	1	.009	5	-.008	6	0	1	0	1	0	1
35	N36	max	.001	6	.016	3	.226	5	0	1	0	1	0	1
36		min	-.23	4	.009	5	-.008	6	0	1	0	1	0	1
37	N37	max	-.002	6	.015	3	.005	6	0	1	0	1	0	1
38		min	-.239	4	.009	5	-.235	5	0	1	0	1	0	1
39	N39	max	-.004	6	.036	6	.148	2	0	1	0	1	0	1
40		min	-.159	1	.022	5	-.015	6	0	1	0	1	0	1
41	N40	max	-.003	6	.035	6	.014	6	0	1	0	1	0	1
42		min	-.155	1	.022	2	-.146	2	0	1	0	1	0	1
43	Totals:	max	0	6	29.437	6	0	2						
44		min	-11.94	2	9.344	2	-8.172	5						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotatio...	LC	Z Rotation...	LC
1	N1	max	0	5	0	2	0	6	0	6	0	1	0	3
2		min	0	6	0	3	0	4	0	4	0	1	0	5
3	N2	max	.002	2	-.005	2	0	6	7.348e-5	6	0	1	1.375e-6	6
4		min	0	6	-.016	3	0	2	-1.991e-7	3	0	1	-2.541e-4	1
5	N3	max	.002	5	-.012	2	0	6	1.573e-8	1	0	1	2.627e-4	1
6		min	0	6	-.039	3	0	4	-7.97e-5	6	0	1	-2.45e-7	6
7	N4	max	.002	1	-.014	2	.001	4	1.876e-4	4	0	1	4.931e-8	6
8		min	0	6	-.044	3	0	2	0	3	0	1	-1.889e-4	1
9	N5	max	0	6	-.016	2	0	3	0	2	0	1	1.024e-3	1
10		min	-.022	1	-.049	3	-.015	4	-1.086e-3	4	0	1	-2.105e-8	6
11	N6	max	.028	1	-.016	2	.018	4	5.507e-3	4	0	1	-5.587e-8	6
12		min	0	6	-.051	3	0	2	-1.737e-8	3	0	1	-6.131e-3	1
13	N7	max	4.805	1	-.018	2	4.521	4	3.022e-2	4	0	1	-5.8e-8	6
14		min	0	6	-.057	3	0	3	-1.803e-8	3	0	1	-3.18e-2	1
15	N8	max	0	2	0	5	0	6	-1.251e-2	5	1.588e-3	2	3.114e-2	6
16		min	0	6	0	6	0	2	-1.924e-2	6	-1.089e-3	6	1.671e-2	5
17	N9	max	0	2	0	2	0	5	1.638e-2	4	3.945e-4	5	2.438e-2	6
18		min	0	6	0	6	0	3	4.066e-3	2	-3.332e-3	3	9.321e-3	2
19	N10	max	.001	2	-.457	5	0	5	1.507e-4	5	6.145e-4	3	1.648e-3	6
20		min	0	6	-.925	6	0	3	-1.772e-4	3	-2.271e-4	5	8.368e-4	2
21	N11	max	0	4	0	5	0	6	1.907e-3	6	2.799e-4	2	4.701e-4	1
22		min	0	6	0	6	0	5	1.589e-4	2	-1.213e-4	6	-5.509e-4	6
23	N12	max	0	2	0	5	0	2	-1.419e-4	5	8.275e-5	5	6.958e-4	4

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotatio...	LC	Z Rotation...	LC
24		min	0	6	0	3	0	3	-2.125e-3	3	-3.085e-4	1	-9.705e-4	3
25	N13	max	0	5	-.012	5	0	5	1.716e-5	5	3.919e-5	3	1.602e-6	4
26		min	0	6	-.024	3	0	3	-2.381e-5	3	-2.842e-5	5	-1.448e-5	3
27	N14	max	0	1	0	2	0	4	2.173e-3	6	2.82e-4	2	3.461e-4	4
28		min	0	4	0	6	0	1	2.594e-4	2	-1.195e-4	6	-8.018e-4	6
29	N15	max	0	1	0	5	0	4	-2.402e-4	5	1.212e-4	5	5.97e-4	4
30		min	0	6	0	3	0	3	-2.385e-3	3	-3.118e-4	1	-1.212e-3	3
31	N16	max	0	1	-.013	2	0	5	2.026e-5	5	3.826e-5	3	1.306e-6	5
32		min	0	6	-.024	3	0	3	-2.325e-5	3	-3.154e-5	5	-1.697e-5	3
33	N17	max	0	4	0	5	0	1	1.904e-3	3	-1.181e-4	6	2.338e-3	1
34		min	0	1	0	3	0	4	-3.77e-4	2	-4.688e-4	1	-2.951e-4	3
35	N18	max	0	6	0	5	0	3	-5.778e-5	2	4.004e-4	2	1.882e-3	1
36		min	0	1	0	6	0	4	-2.071e-3	3	-8.255e-5	4	-5.466e-4	3
37	N19	max	0	6	-.017	5	0	5	-1.741e-6	2	1.89e-4	4	1.747e-5	1
38		min	-.019	1	-.042	1	0	3	-3.364e-4	4	8.037e-6	2	-2.131e-5	3
39	N20	max	0	1	0	2	0	4	2.145e-3	6	8.794e-4	2	-4.136e-4	3
40		min	0	4	0	6	0	1	8.291e-4	2	-3.4e-6	6	-7.79e-4	5
41	N21	max	0	1	0	2	0	4	2.489e-4	5	2.909e-4	5	2.015e-3	4
42		min	0	6	0	6	0	3	-2.203e-3	3	-9.99e-4	1	-9.185e-4	2
43	N22	max	.025	1	-.011	2	0	5	1.675e-3	4	2.422e-5	3	3.931e-5	1
44		min	0	6	-.032	3	0	3	-1.083e-5	3	-8.935e-4	4	-1.823e-5	6
45	N23	max	0	6	-.005	2	0	4	3.918e-5	6	0	1	9.51e-7	6
46		min	-.003	4	-.015	3	0	6	-1.049e-7	1	0	1	-1.309e-4	1
47	N24	max	.067	1	-.009	2	.019	6	6.77e-6	4	0	1	5.652e-5	4
48		min	0	6	-.029	3	0	1	-1.477e-5	6	0	1	-4.116e-7	6
49	N25	max	0	6	-.013	2	0	3	0	2	0	1	2.669e-5	1
50		min	-.005	1	-.041	3	-.003	4	-3.107e-5	4	0	1	0	6
51	N26	max	0	6	-.016	2	0	3	0	2	0	1	1.318e-4	1
52		min	-.05	1	-.05	3	-.045	4	-3.517e-4	4	0	1	0	6
53	N27	max	0	1	0	2	0	6	-2.221e-5	5	4.53e-4	4	-2.82e-4	2
54		min	0	6	0	4	0	1	-8.299e-4	3	-5.835e-4	2	-1.841e-3	4
55	N28	max	0	1	0	5	0	1	1.02e-3	4	5.685e-4	2	8.121e-4	5
56		min	0	6	0	3	0	6	3.231e-4	2	6.324e-5	6	-8.432e-4	3
57	N30	max	0	6	0	5	0	1	-5.506e-4	5	5.236e-4	1	-2.113e-4	5
58		min	0	1	0	6	0	6	-1.092e-3	1	-4.141e-5	5	-1.071e-3	1
59	N31	max	0	6	0	2	0	6	1.09e-3	1	-8.09e-5	6	-7.108e-4	5
60		min	0	1	0	6	0	1	3.82e-4	5	-5.337e-4	1	-1.076e-3	1
61	N33	max	0	1	0	5	0	6	-3.426e-4	5	5.806e-5	4	-3.456e-4	2
62		min	0	6	0	3	0	2	-6.395e-4	3	1.171e-5	2	-6.362e-4	6
63	N34	max	0	1	0	5	0	2	6.278e-4	3	-1.636e-5	2	-3.312e-4	5
64		min	0	6	0	3	0	6	3.449e-4	2	-6.034e-5	3	-6.68e-4	3
65	N36	max	0	4	0	5	0	6	-3.379e-4	5	3.802e-5	4	-3.463e-4	2
66		min	0	6	0	3	0	5	-6.369e-4	3	1.32e-5	2	-6.297e-4	6
67	N37	max	0	4	0	5	0	5	6.249e-4	3	-5.118e-8	5	-3.28e-4	5
68		min	0	6	0	3	0	6	3.453e-4	2	-6.039e-5	3	-6.632e-4	3
69	N39	max	0	1	0	5	0	6	-5.563e-3	5	9.939e-4	4	-4.578e-3	5
70		min	0	6	0	6	0	2	-1.033e-2	6	5.908e-4	2	-8.51e-3	6
71	N40	max	0	1	0	2	0	2	1.024e-2	6	-5.743e-4	5	-4.352e-3	5
72		min	0	6	0	6	0	6	5.639e-3	5	-1.234e-3	3	-8.764e-3	6

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

	Member	Shape	Code Check	Loc...	LC	Sh...	Loc[ft]	Dir	LC	phi*Pn..	phi*...	phi*...	phi*...	...	Eqn
1	M1	PIPE_12.0	.624	81....	1	.150	80.646		1	494.643	616.5	201...	201...	1	H1...
2	M2	L3.5x3.5x4	.138	5.205	3	.046	0	y	6	14.744	55.08	2.416	3.949	...	H2-1
3	M3	L3.5x3.5x4	.145	4.916	3	.036	0	y	6	14.744	55.08	2.416	3.95	...	H2-1
4	M4	L2x2x3	.034	.75	5	.003	1.5	y	6	20.899	23.3..	.558	1.239	...	H2-1
5	M5	L2x2x3	.049	1.15	1	.008	2.693	y	3	16.268	23.3..	.558	1.212	...	H2-1
6	M6	L2x2x3	.047	1.178	2	.007	2.693	y	3	16.268	23.3..	.558	1.203	...	H2-1
7	M7	L2x2x3	.051	.75	5	.003	1.5	z	5	20.899	23.3..	.558	1.239	...	H2-1
8	M8	L2x2x3	.061	1.318	4	.009	2.693	y	3	16.268	23.3..	.558	1.195	...	H2-1
9	M9	L2x2x3	.048	1.178	2	.008	2.693	y	6	16.268	23.3..	.558	1.203	...	H2-1
10	M10	L2x2x3	.041	.75	1	.003	0	z	4	20.899	23.3..	.558	1.239	...	H2-1
11	M11	L2.5x2.5x4	.403	1.29	4	.008	2.693	y	3	30.433	38.5..	1.114	2.537	...	H2-1
12	M12	L2.5x2.5x4	.487	1.206	4	.007	2.693	z	1	30.433	38.5..	1.114	2.537	...	H2-1
13	M13	6"X3/4" PL	.215	.75	1	.018	0	y	4	101.328	145.8	2.278	17.6...	1	H1...
14	M14	L2.5x2.5x4	.633	1.767	4	.019	2.693	z	1	30.433	38.5..	1.114	2.537	...	H2-1
15	M15	L2.5x2.5x4	.463	1.627	4	.021	2.693	z	1	30.433	38.5..	1.114	2.537	...	H2-1
16	M16	6"X3/4" PL	.097	.75	1	.091	1.5	y	4	101.328	145.8	2.278	17.6...	1	H1...
17	M17	L2.5x2x3	.663	3.536	1	.006	0	y	3	15.593	26.5..	.625	1.4	...	H2-1
18	M18	L2.5x2x3	.653	3.609	1	.006	7.071	y	3	15.593	26.5..	.625	1.413	...	H2-1
19	M19	L2.5x2x3	.550	3.609	1	.006	0	y	3	15.593	26.5..	.625	1.391	...	H2-1
20	M20	L2.5x2x3	.553	3.536	1	.006	7.071	y	1	15.593	26.5..	.625	1.392	...	H2-1
21	M21	L2.5x2x3	.050	3.536	1	.007	0	y	3	15.593	26.5..	.625	1.343	...	H2-1
22	M22	L2.5x2x3	.048	3.609	1	.006	7.071	y	6	15.593	26.5..	.625	1.352	...	H2-1
23	M23	L2.5x2x3	.048	3.536	1	.006	0	y	3	15.593	26.5..	.625	1.343	...	H2-1
24	M24	L2.5x2x3	.046	3.609	1	.005	7.071	y	6	15.593	26.5..	.625	1.352	...	H2-1
25	M25	L2.5x2.5x3	.256	11....	6	.024	0	y	4	3.124	29.1..	.873	.95	...	H2-1
26	M26	L2.5x2.5x3	.271	10....	6	.030	20.506	y	6	3.124	29.1..	.873	.959	...	H2-1

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.156	11.996	0	-.001	0	.067
2	1	N9	-.594	.059	-.571	0	0	0
3	1	N12	-.381	.016	-.548	0	0	0
4	1	N15	-.407	.016	-.589	0	0	0
5	1	N18	8.648	.041	13.595	0	0	0
6	1	N21	-11.068	.011	-17.31	0	0	0
7	1	N11	-.381	.016	.548	0	0	0
8	1	N14	-.407	.016	.589	0	0	0
9	1	N17	8.648	.041	-13.595	0	0	0
10	1	N20	-11.068	.011	17.31	0	0	0
11	1	N8	-.594	.059	.569	0	0	0
12	1	N27	-6.875	.02	6.858	0	0	0
13	1	N28	-6.874	.02	-6.857	0	0	0
14	1	N30	5.389	.014	-5.399	0	0	0
15	1	N31	5.389	.014	5.4	0	0	0
16	1	N34	-.232	.013	-.227	0	0	0
17	1	N33	-.232	.013	.227	0	0	0
18	1	N36	-.216	.013	.211	0	0	0
19	1	N37	-.216	.012	-.211	0	0	0
20	1	N39	-.159	.031	.146	0	0	0
21	1	N40	-.155	.03	-.143	0	0	0
22	1	Totals:	-11.94	12.458	0			
23	1	COG (ft):	X: -.012	Y: 66.521	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.156	8.991	0	-.001	0	.069
2	2	N9	-.595	.044	-.574	0	0	0
3	2	N12	-.381	.012	-.549	0	0	0
4	2	N15	-.406	.012	-.589	0	0	0
5	2	N18	8.612	.032	13.536	0	0	0
6	2	N21	-11.033	.009	-17.258	0	0	0
7	2	N11	-.381	.012	.549	0	0	0
8	2	N14	-.406	.012	.589	0	0	0
9	2	N17	8.612	.032	-13.537	0	0	0
10	2	N20	-11.033	.009	17.258	0	0	0
11	2	N8	-.595	.045	.572	0	0	0
12	2	N27	-6.854	.015	6.838	0	0	0
13	2	N28	-6.853	.015	-6.837	0	0	0
14	2	N30	5.367	.011	-5.375	0	0	0
15	2	N31	5.367	.011	5.376	0	0	0
16	2	N34	-.231	.009	-.227	0	0	0
17	2	N33	-.231	.009	.227	0	0	0
18	2	N36	-.216	.009	.212	0	0	0
19	2	N37	-.216	.009	-.212	0	0	0
20	2	N39	-.158	.023	.148	0	0	0
21	2	N40	-.155	.022	-.146	0	0	0
22	2	Totals:	-11.94	9.344	0			
23	2	COG (ft):	X: -.012	Y: 66.521	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	-.039	28.625	0	-.002	0	.002
2	3	N9	-.19	.134	-.157	0	0	0
3	3	N12	-.118	.04	-.157	0	0	0
4	3	N15	-.11	.04	-.145	0	0	0
5	3	N18	2.157	.049	3.41	0	0	0
6	3	N21	-2.782	.041	-4.328	0	0	0
7	3	N11	-.118	.04	.156	0	0	0
8	3	N14	-.11	.04	.144	0	0	0
9	3	N17	2.158	.049	-3.411	0	0	0
10	3	N20	-2.782	.041	4.328	0	0	0
11	3	N8	-.19	.134	.153	0	0	0
12	3	N27	-1.725	.022	1.713	0	0	0
13	3	N28	-1.723	.022	-1.712	0	0	0
14	3	N30	1.348	.016	-1.356	0	0	0
15	3	N31	1.349	.016	1.356	0	0	0
16	3	N34	-.059	.016	-.053	0	0	0
17	3	N33	-.061	.016	.054	0	0	0
18	3	N36	-.065	.016	.058	0	0	0
19	3	N37	-.064	.015	-.057	0	0	0
20	3	N39	-.054	.035	.035	0	0	0
21	3	N40	-.046	.034	-.031	0	0	0
22	3	Totals:	-3.225	29.437	0			
23	3	COG (ft):	X: .025	Y: 65.179	Z: 0			

Joint Reactions

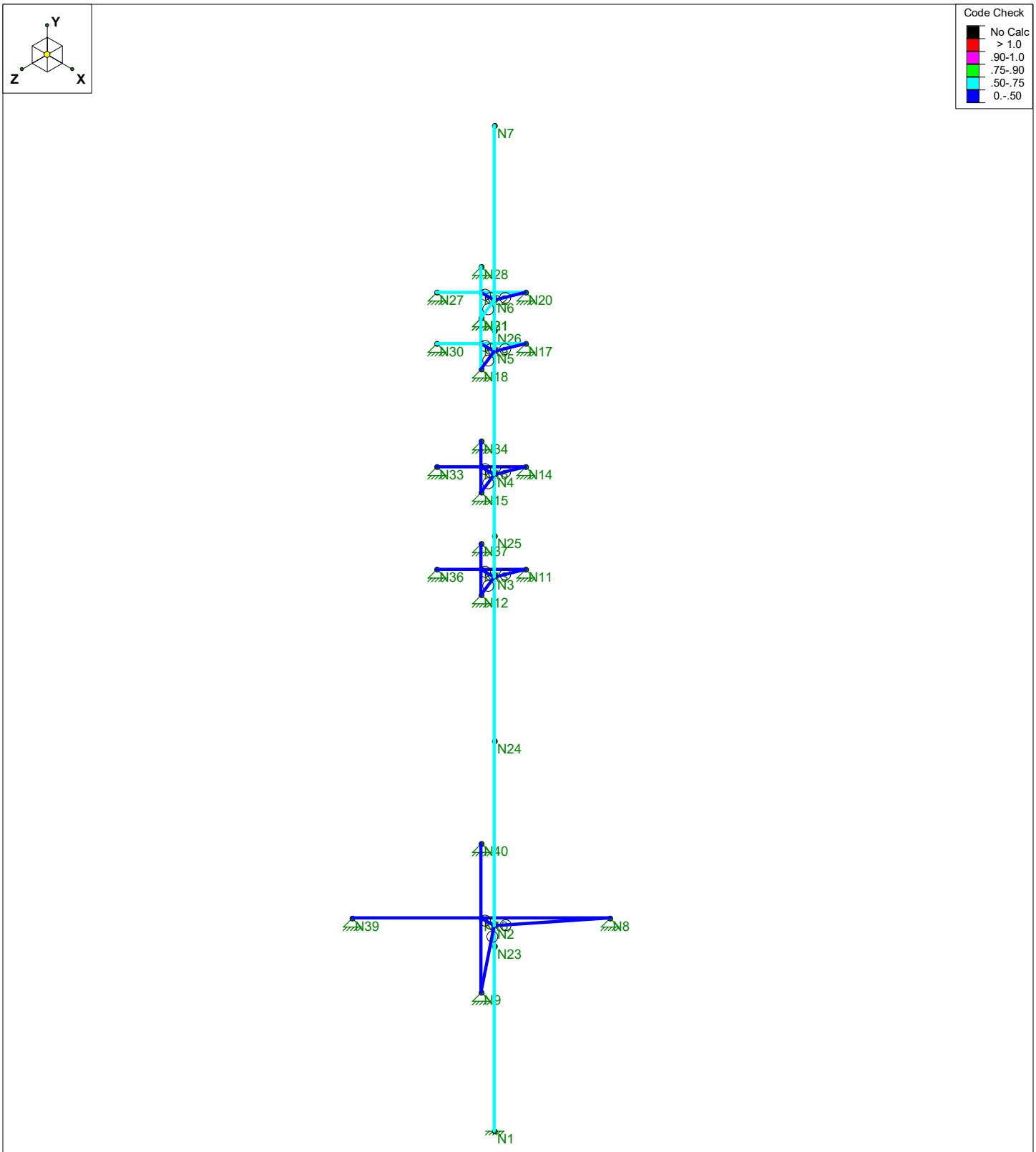
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	-.158	12.021	.005	.025	0	.077
2	4	N9	-.508	.059	-.698	0	0	0
3	4	N12	-.347	.016	-.536	0	0	0
4	4	N15	-.341	.016	-.829	0	0	0
5	4	N18	5.869	.029	14.375	0	0	0
6	4	N21	-7.511	.024	-18.121	0	0	0
7	4	N11	-.413	.016	.654	0	0	0
8	4	N14	.252	.017	-.7	0	0	0
9	4	N17	-5.256	.015	13.388	0	0	0
10	4	N20	6.081	.018	-15.91	0	0	0
11	4	N8	-.31	.059	.245	0	0	0
12	4	N27	-.44	.031	.433	0	0	0
13	4	N28	-.447	0	-.441	0	0	0
14	4	N30	.195	.012	-.202	0	0	0
15	4	N31	.187	.018	.193	0	0	0
16	4	N34	-.033	.012	-.027	0	0	0
17	4	N33	-.023	.012	.018	0	0	0
18	4	N36	-.23	.012	.225	0	0	0
19	4	N37	-.239	.012	-.234	0	0	0
20	4	N39	-.126	.03	.114	0	0	0
21	4	N40	-.136	.03	-.123	0	0	0
22	4	Totals:	-3.936	12.458	-8.172			
23	4	COG (ft):	X: -.012	Y: 66.521	Z: 0			

Joint Reactions

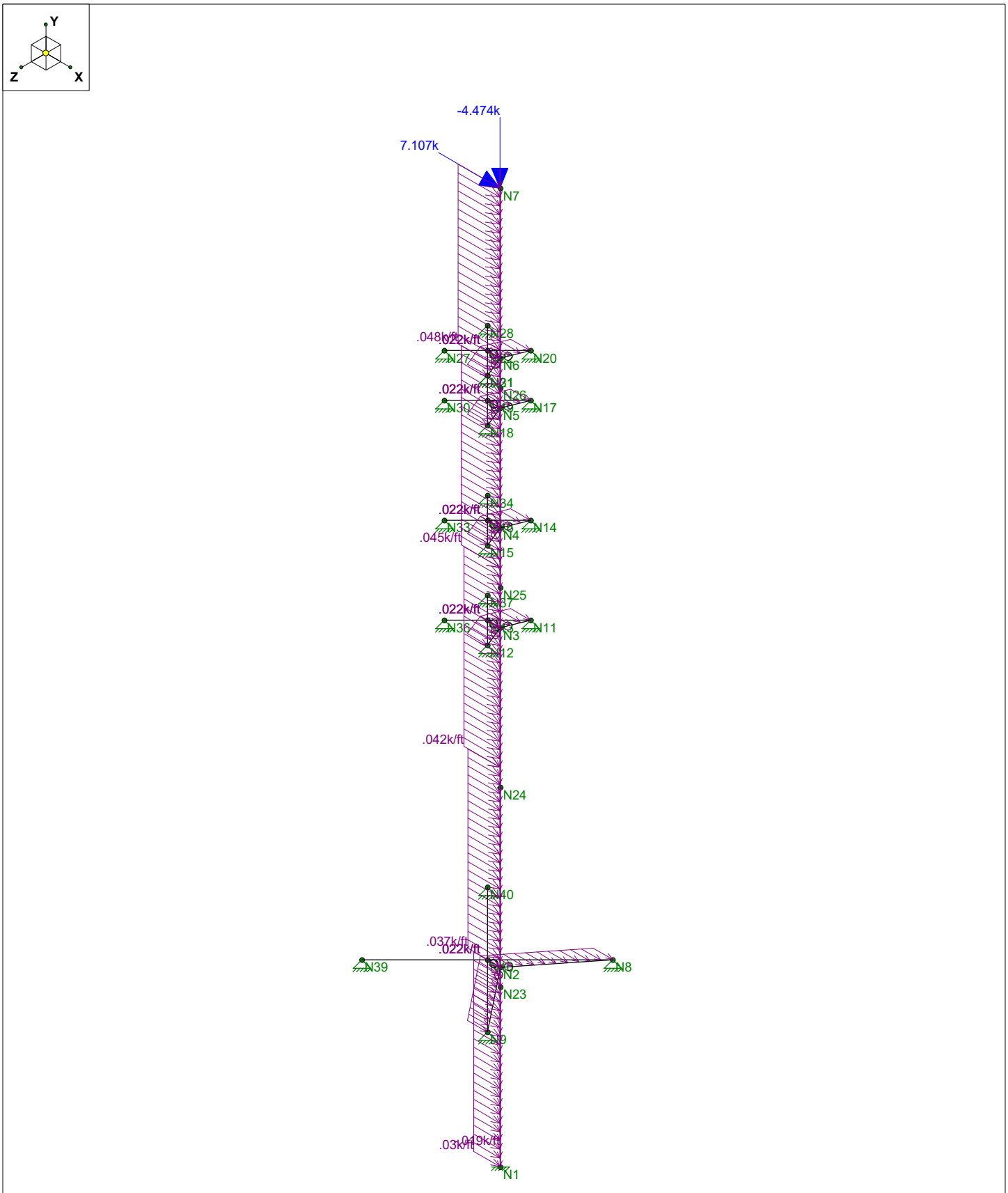
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N1	-.158	9.016	.005	.025	0	.079
2	5	N9	-.508	.044	-.702	0	0	0
3	5	N12	-.348	.012	-.538	0	0	0
4	5	N15	-.34	.012	-.828	0	0	0
5	5	N18	5.845	.021	14.314	0	0	0
6	5	N21	-7.488	.022	-18.068	0	0	0
7	5	N11	-.413	.012	.654	0	0	0
8	5	N14	.251	.013	-.695	0	0	0
9	5	N17	-5.235	.012	13.337	0	0	0
10	5	N20	6.061	.009	-15.856	0	0	0
11	5	N8	-.311	.044	.249	0	0	0
12	5	N27	-.439	.027	.433	0	0	0
13	5	N28	-.446	-.004	-.442	0	0	0
14	5	N30	.195	.008	-.2	0	0	0
15	5	N31	.186	.014	.191	0	0	0
16	5	N34	-.033	.009	-.029	0	0	0
17	5	N33	-.023	.009	.02	0	0	0
18	5	N36	-.229	.009	.226	0	0	0
19	5	N37	-.239	.009	-.235	0	0	0
20	5	N39	-.125	.022	.116	0	0	0
21	5	N40	-.136	.022	-.126	0	0	0
22	5	Totals:	-3.936	9.344	-8.172			
23	5	COG (ft):	X: -.012	Y: 66.521	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N1	0	28.619	-.038	-.002	0	.004
2	6	N9	-.155	.135	-.227	0	0	0
3	6	N12	-.065	.04	-.167	0	0	0
4	6	N15	-.085	.04	-.215	0	0	0
5	6	N18	1.442	.051	3.604	0	0	0
6	6	N21	-1.822	.042	-4.556	0	0	0
7	6	N11	.066	.04	-.185	0	0	0
8	6	N14	.085	.04	-.232	0	0	0
9	6	N17	-1.44	.04	3.578	0	0	0
10	6	N20	1.824	.049	-4.581	0	0	0
11	6	N8	.163	.136	-.269	0	0	0
12	6	N27	0	.023	-.01	0	0	0
13	6	N28	-.002	.014	.006	0	0	0
14	6	N30	0	.018	-.01	0	0	0
15	6	N31	-.002	.019	.006	0	0	0
16	6	N34	-.002	.015	.005	0	0	0
17	6	N33	0	.015	-.008	0	0	0
18	6	N36	.001	.015	-.008	0	0	0
19	6	N37	-.002	.015	.005	0	0	0
20	6	N39	-.004	.036	-.015	0	0	0
21	6	N40	-.003	.035	.014	0	0	0
22	6	Totals:	0	29.437	-3.3			
23	6	COG (ft):	X: .025	Y: 65.179	Z: 0			

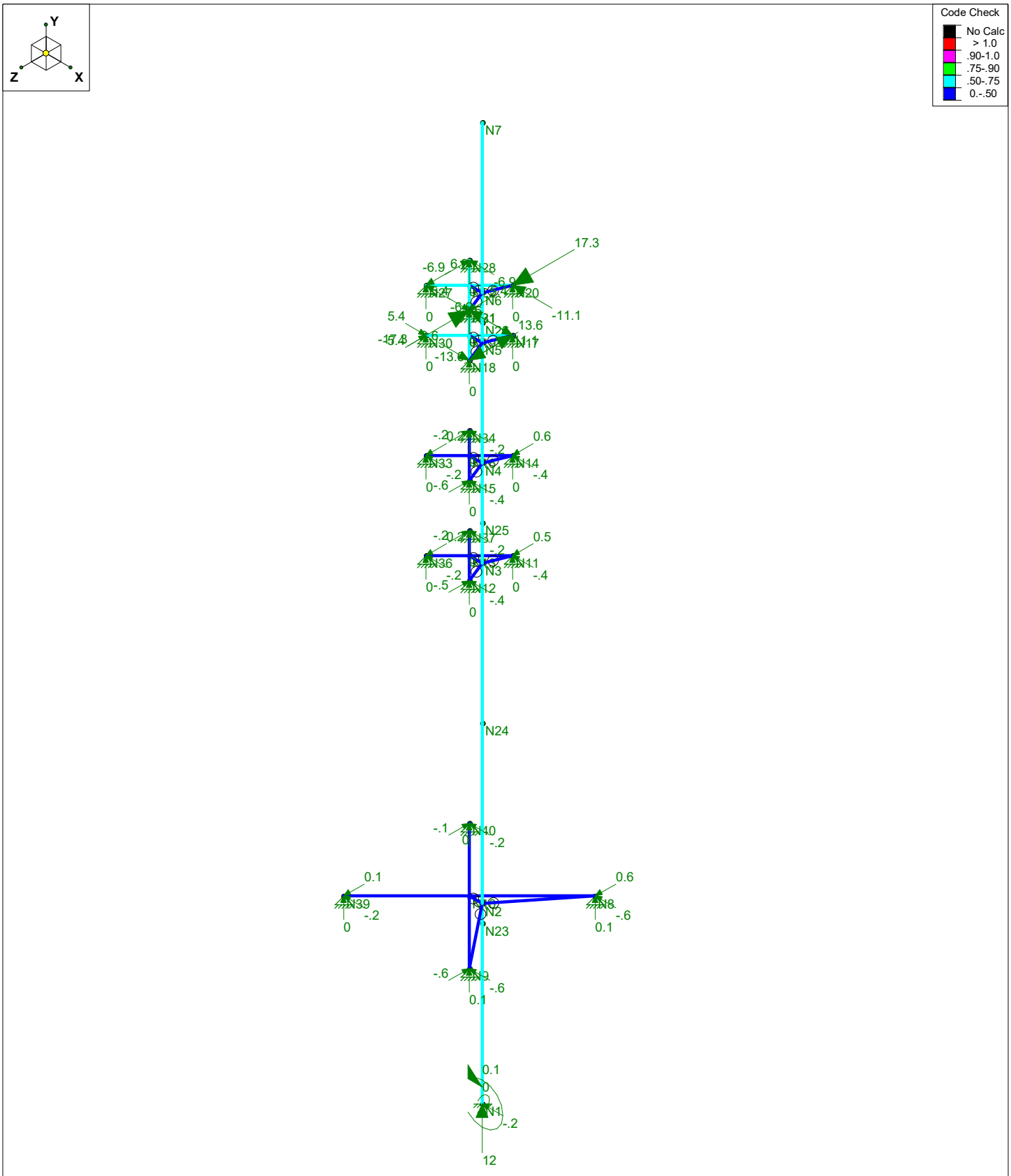


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:10 PM
16071.30 - CT2044	Unity Check	TIA-222-G - Powermount.r3d

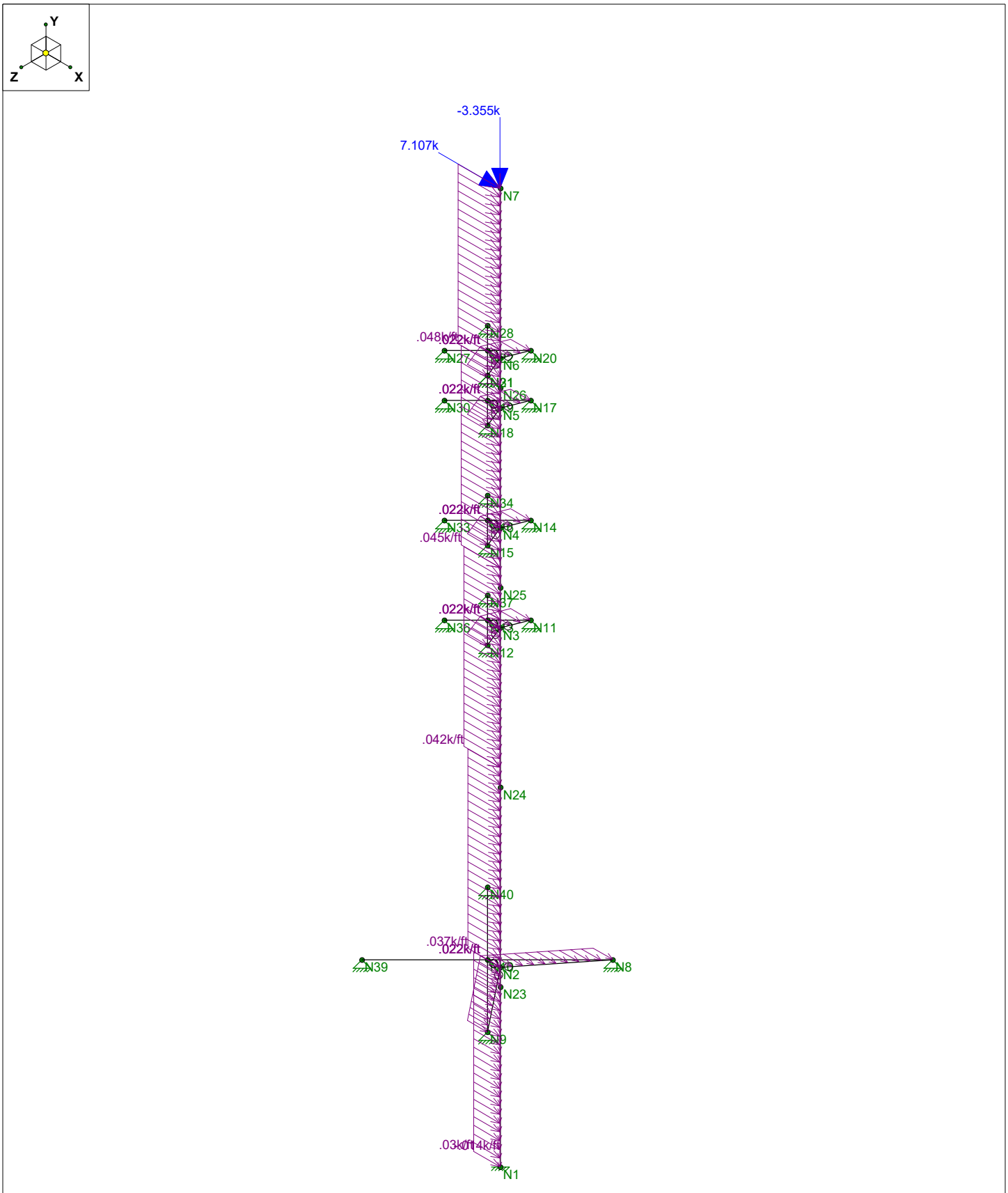


Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:08 PM
16071.30 - CT2044	LC #1 Loads	TIA-222-G - Powermount.r3d

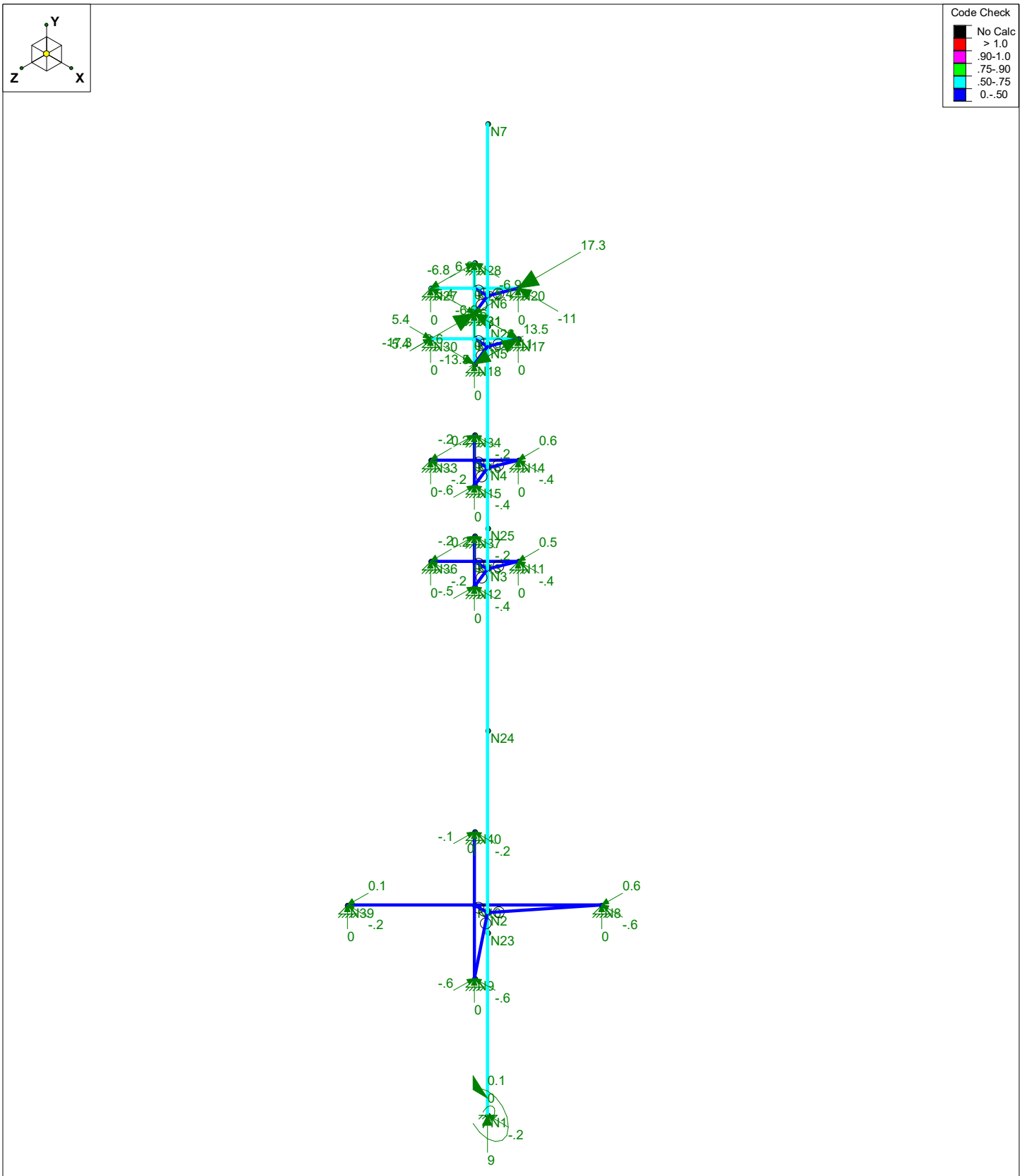


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:12 PM
16071.30 - CT2044	LC #1 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d

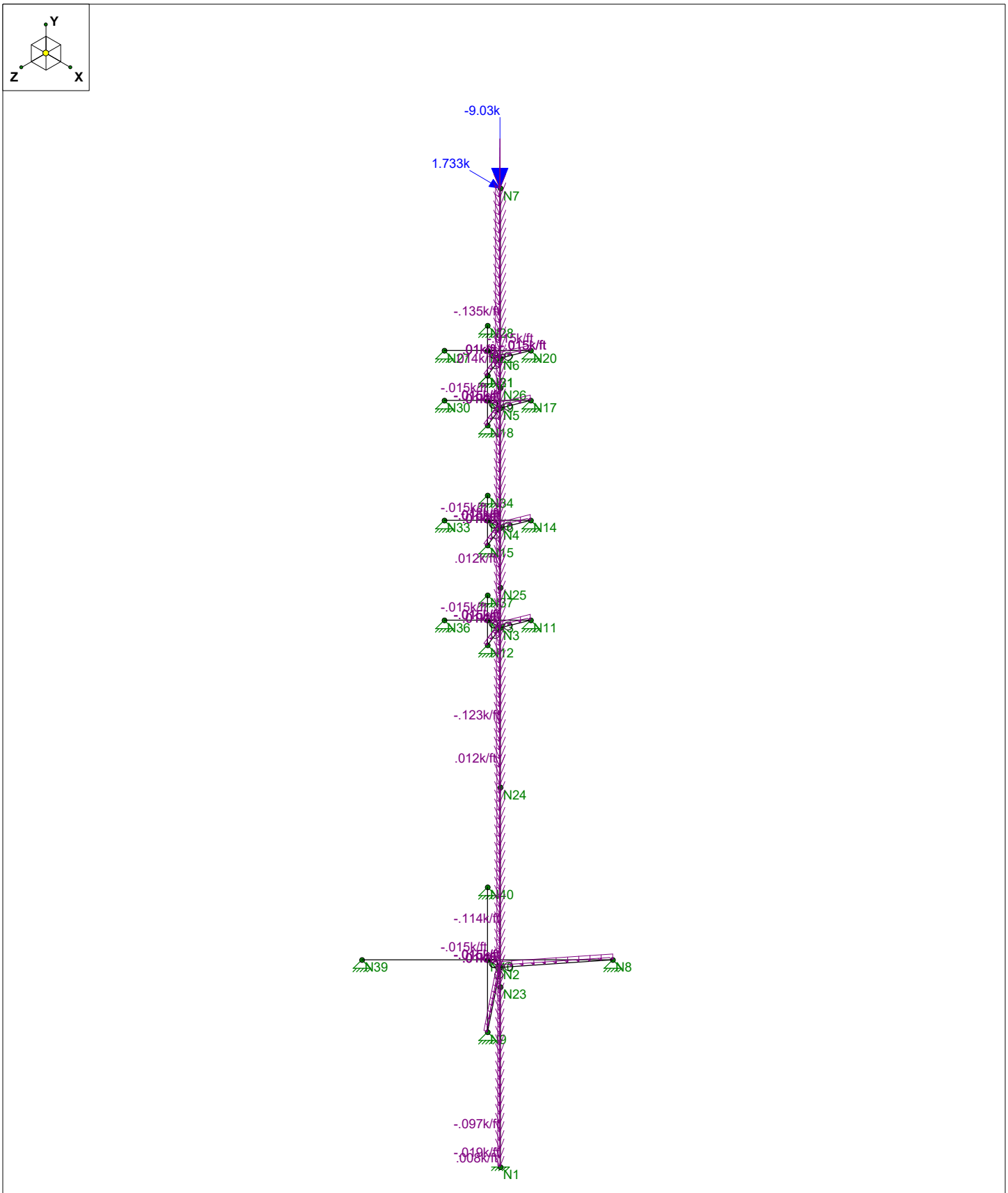


Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:08 PM
16071.30 - CT2044	LC #2 Loads	TIA-222-G - Powermount.r3d

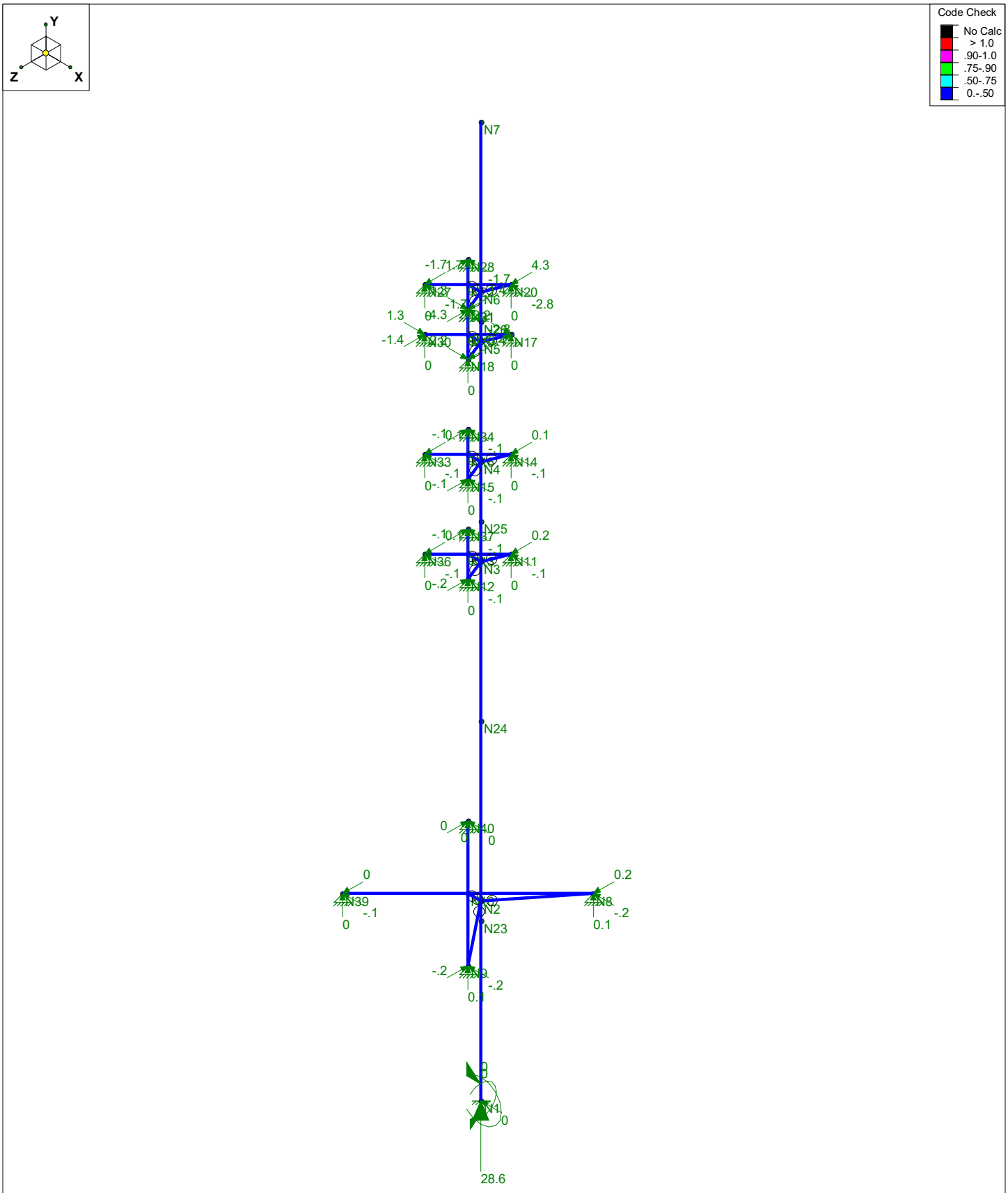


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:12 PM
16071.30 - CT2044	LC #2 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d

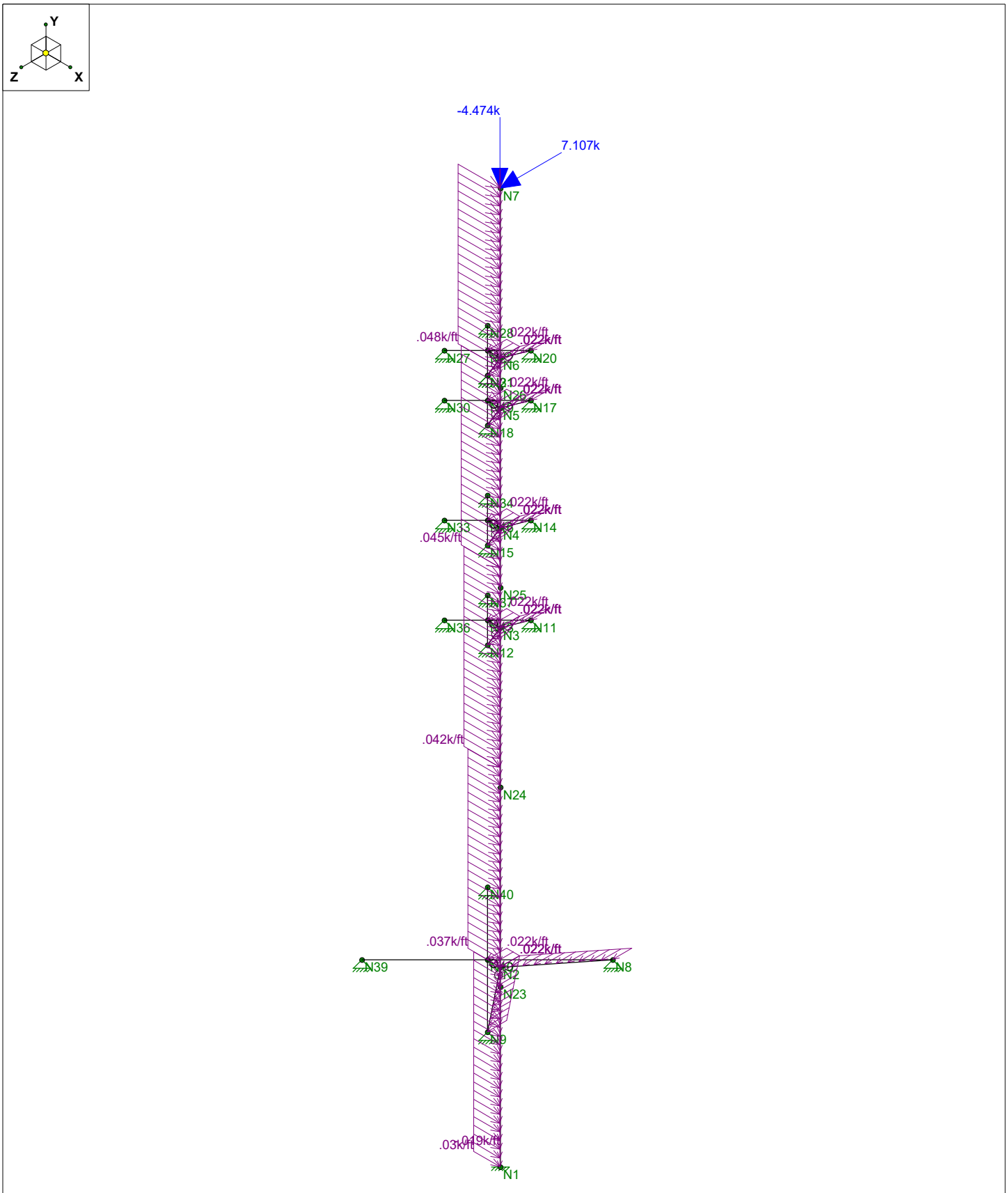


Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:08 PM
16071.30 - CT2044	LC #3 Loads	TIA-222-G - Powermount.r3d

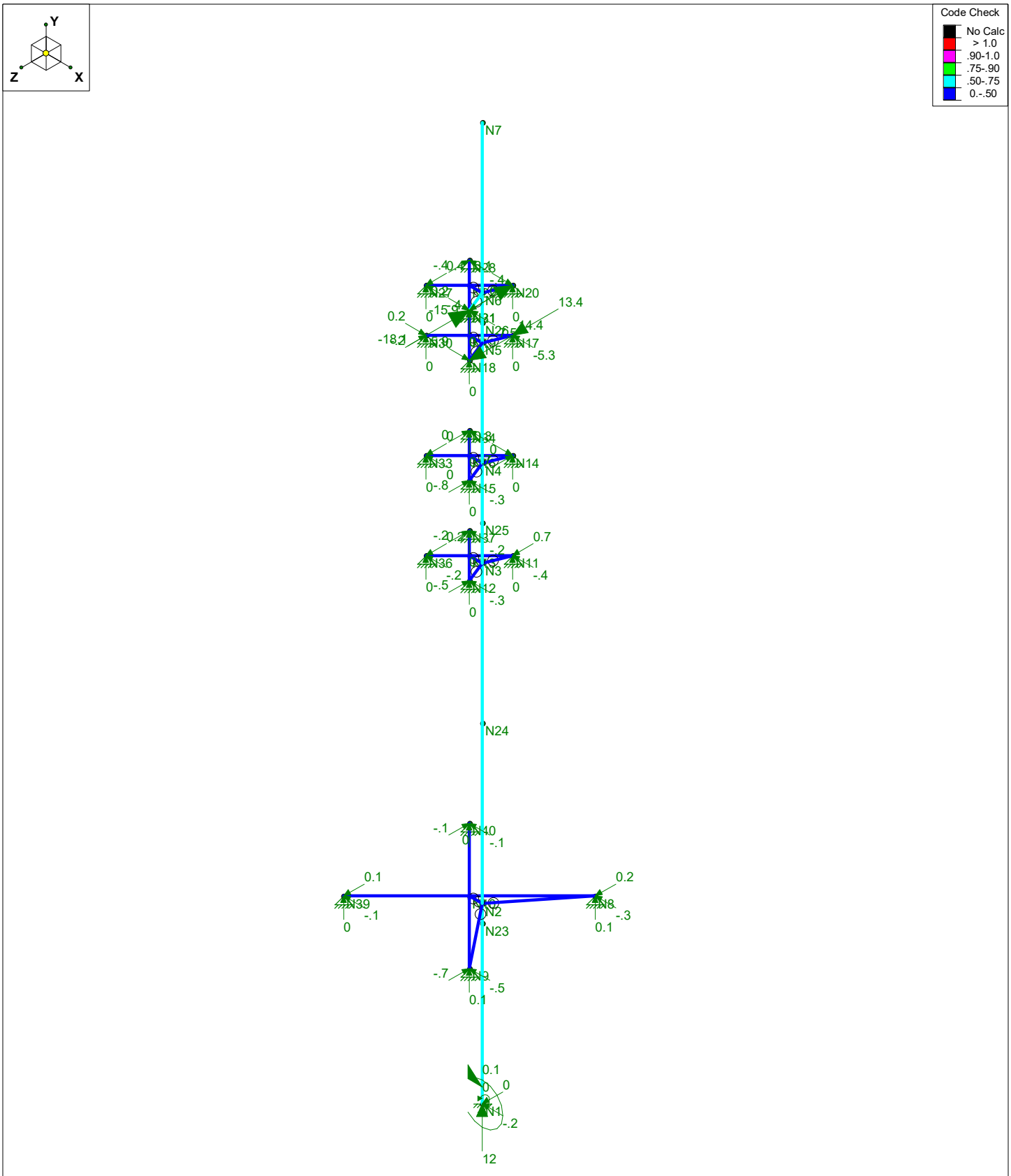


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:13 PM
16071.30 - CT2044	LC #3 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d

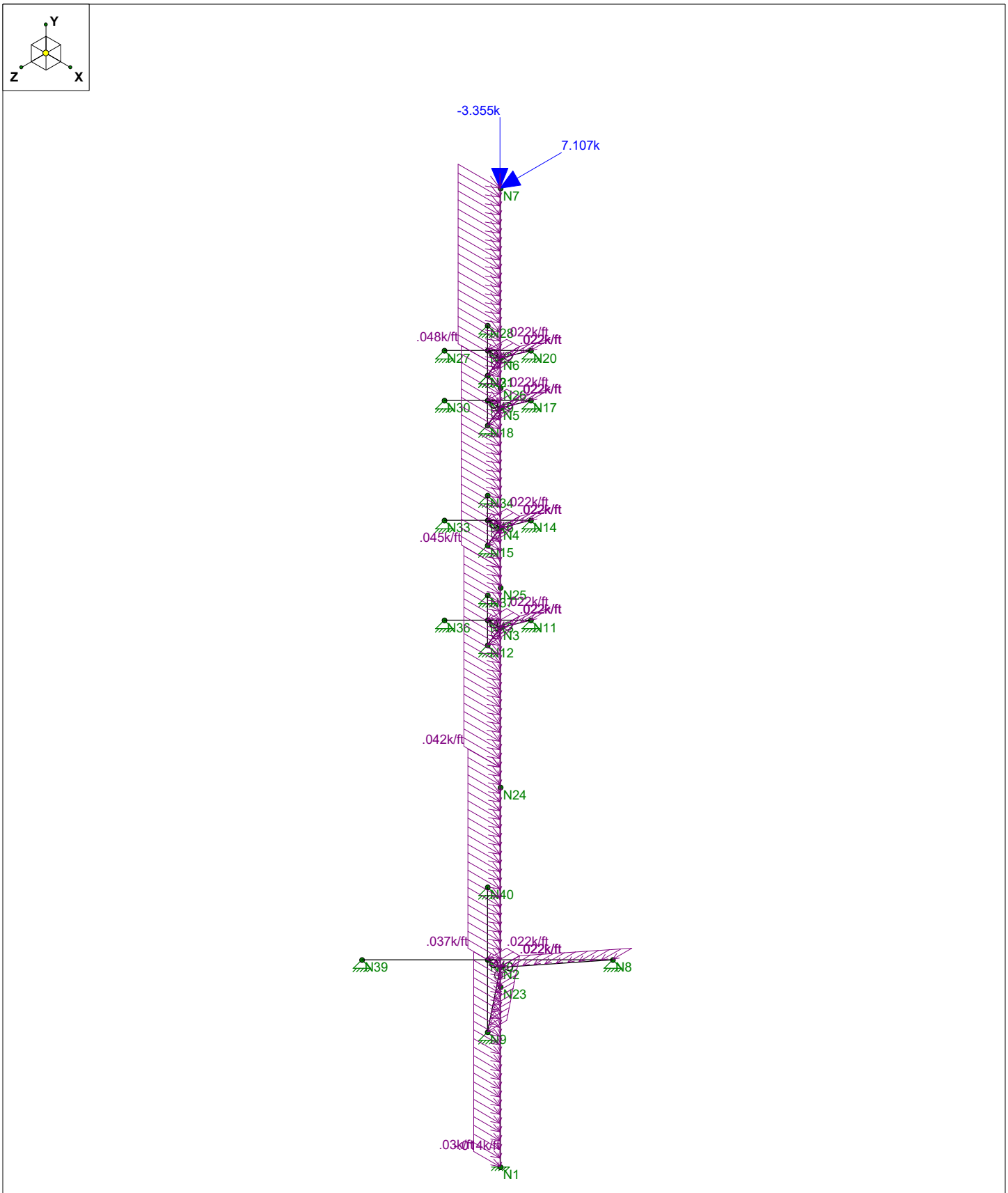


Loads: LC 4, 1.2D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:08 PM
16071.30 - CT2044	LC #4 Loads	TIA-222-G - Powermount.r3d

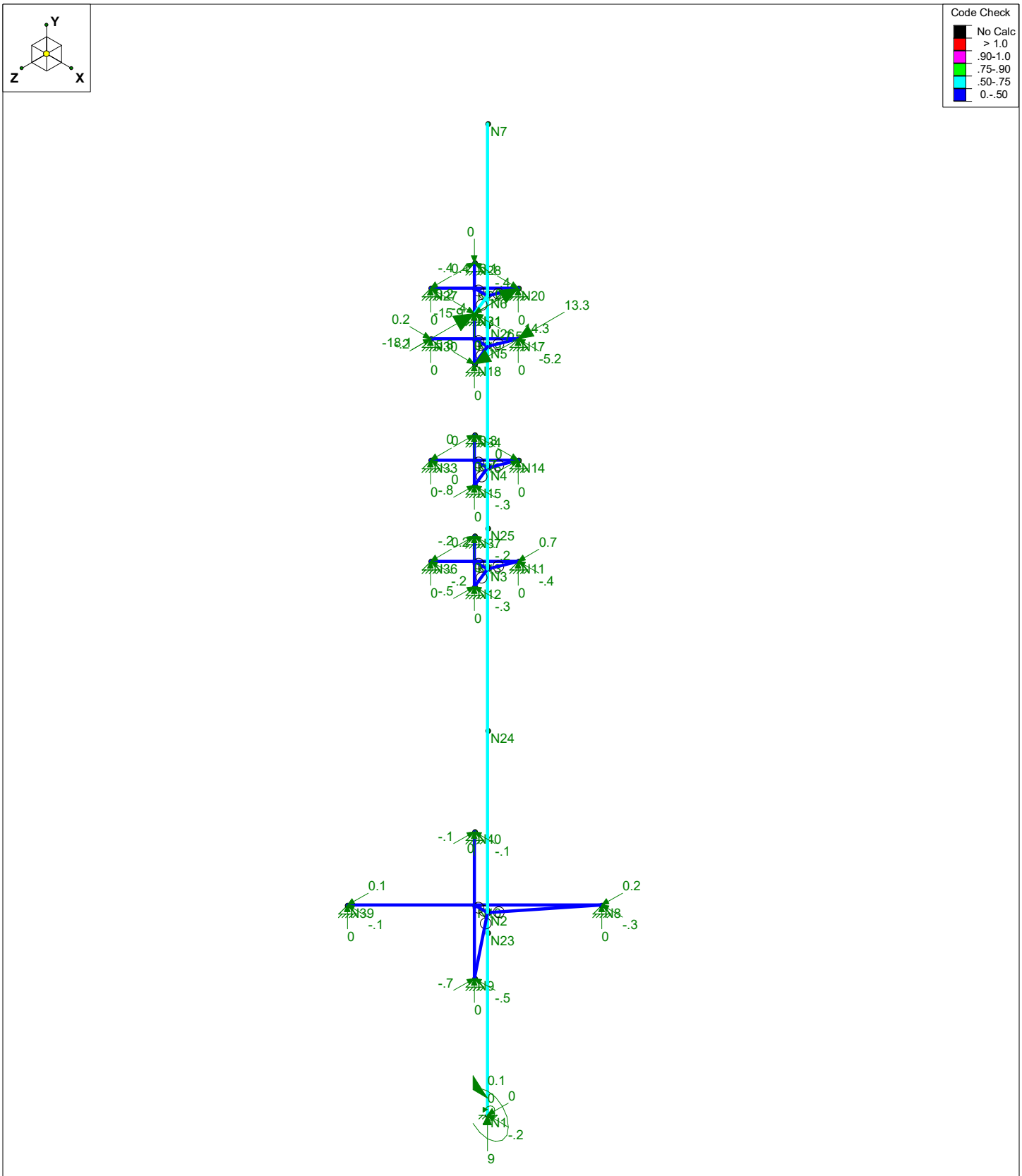


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:13 PM
16071.30 - CT2044	LC #4 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d

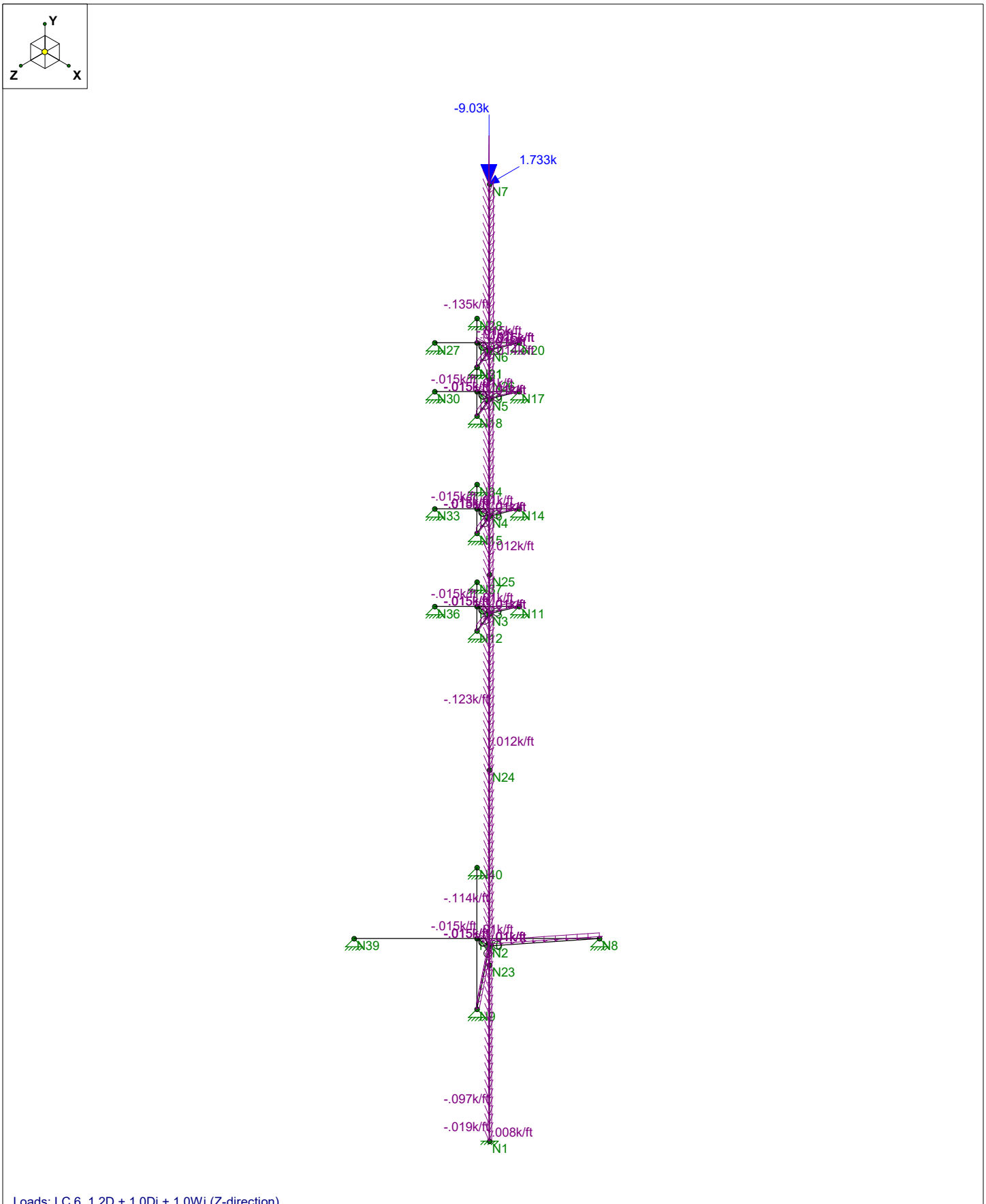


Loads: LC 5, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:09 PM
16071.30 - CT2044	LC #5 Loads	TIA-222-G - Powermount.r3d

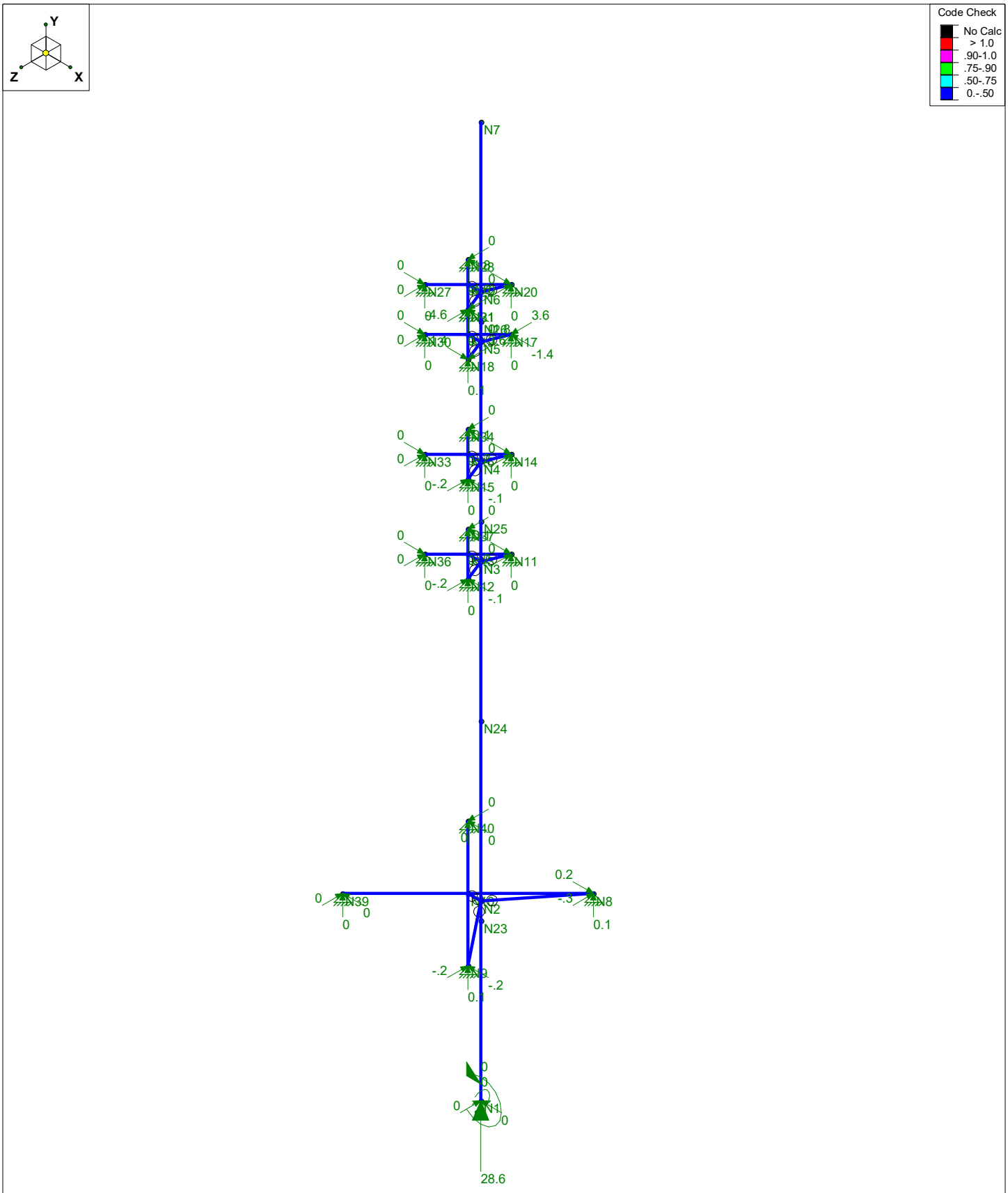


CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:14 PM
16071.30 - CT2044	LC #5 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d



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

CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:10 PM
16071.30 - CT2044	LC #6 Loads	TIA-222-G - Powermount.r3d



CENTEK Engineering, INC.		
tjl, cfc	Tower # 1340 - Mast	Nov 15, 2016 at 3:14 PM
16071.30 - CT2044	LC #6 Reactions and Deflected Shape	TIA-222-G - Powermount.r3d

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

Subject:	Connection of Powermount to Tower # 1340
Location:	Shelton, CT
Rev. 0: 11/15/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Antenna Mast Connection to Tower:

Reactions:

Horz =	Horz := 36.5·kips	(User Input)

Pipe Collar:

Bolt Data:

Bolt Type =	ASTM A325	(User Input)
Bolt Diameter =	D := 0.75·in	(User Input)
Number of Bolts =	$N_b := 4$	(User Input)
Design Tensile Strength =	$F_t := 29.8 \cdot kips$	(User Input)
Design Shear Strength =	$F_v := 17.9 \cdot kips$	(User Input)

Plate Data:

Plate Width =	$W_{plt} := 5 \cdot in$	(User Input)
Plate Thickness =	$t_{plt} := 1 \cdot in$	(User Input)
Distance from Bolt to Collar =	$d_{st} := 1.5 \cdot in$	(User Input)
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)

Weld Data:

Weld Size =	$sw := \frac{5}{16} \cdot in$	(User Input)
Weld Length =	$l_w := 5 \cdot in$	(User Input)
Number of Welds =	$n_w := 2$	(User Input)
Weld Strength =	$F_w := 70 \cdot ksi$	(User Input)

Check Pipe Collar Bolts:

Tension Force =

$$f_t := \frac{Horz}{N_b} = 9.1 \cdot kips$$

Bolt Tenison % of Capacity =

$$\frac{f_t}{F_t} = 30.62 \cdot \%$$

Check Bolt Tension =

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

Bolt_Tension = "OK"

Check Pipe Collar Plate:

Design Bending Strength =

$$F_b := 0.9F_y = 32.4 \cdot ksi$$

Plate Section Modulus =

$$Z_{plt} := \frac{1}{4} \cdot W_{plt} \cdot t_{plt}^{2} = 1.25 \cdot in^{3}$$

Plate Bending Moment =

$$M := \frac{Horz}{2} \cdot d_{st} = 27.375 \cdot in \cdot kips$$

Plate Bending Stress =

$$f_b := \frac{M}{Z_{plt}} = 21.9 \cdot ksi$$

$$Plate\_Bending := if\left(f_b < F_b, "OK", "Overstressed"\right)$$

Plate_Bending = "OK"

Check Pipe Collar Weld:

Design Weld Strength =

$$F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$$

Weld Section Modulus =

$$S_w := \frac{1}{6} \cdot .707 \cdot sw \cdot l_w^{2} = 0.921 \cdot in^{3}$$

Weld Area =

$$A_w := .707 \cdot sw \cdot l_w = 1.105 \cdot in^{2}$$

Plate Stress =

$$f_w := \frac{Horz}{A_w \cdot n_w} = 16.521 \cdot ksi$$

$$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$$

Weld = "OK"

Reactions:

Plate Force =	Fab := 27.5·kips	(User Input)	

Angle Plate:

Bolt Data:

Bolt Type =	ASTM A325	(User Input)	
Bolt Diameter =	$D := 0.75 \cdot in$	(User Input)	
Number of Bolts =	$N_b := 1$	(User Input)	
Design Tensile Strength =	$F_t := 29.8 \cdot kips$	(User Input)	
Design Shear Strength =	$F_v := 35.8 \cdot kips$	(User Input)	Double Shear

Plate Data:

Plate Width =	$W_{plt} := 6 \cdot in$	(User Input)	
Plate Thickness =	$t_{plt} := 0.75 \cdot in$	(User Input)	
Distance from Bolt to Collar =	$d_{st} := 1.5 \cdot in$	(User Input)	
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)	
Tensile Strength =	$F_u := 58 \cdot ksi$	(User Input)	
Hole Diamter =	$Hole_d := .8125 \cdot in$	(User Input)	

Weld Data:

Weld Size =	$sw := \frac{5}{16} \cdot in$	(User Input)	
Weld Length =	$l_w := 3 \cdot in$	(User Input)	
Number of Welds =	$n_w := 2$	(User Input)	
Weld Strength =	$F_w := 70 \cdot ksi$	(User Input)	

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 27.5 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 76.82 \cdot \%$

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

Bolt_Shear = "OK"

Check Angle Connection Plate:

Plate Gross Area = $A_g := W_{plt} \cdot t_{plt} = 4.5 \cdot in^2$

Plate Net Area = $A_n := \left[W_{plt} - \left(Hole_d + .0625 \cdot in\right)\right] \cdot t_{plt} = 3.844 \cdot in^2$

Shear Lag Factor = $U := 1.0$

Plate Effective Net Area = $A_e := A_n \cdot U = 3.844 \cdot in^2$

Yielding Factor = $\phi_t := 0.9$

Rupture Factor = $\phi_r := 0.75$

Bearing Strength Factor = $\phi_b := 0.75$

Clear Distance = $l_c := d_{st} - \frac{Hole_d}{2} = 1.094 \cdot in$

Tensile Yielding = $P_{at} := \phi_t \cdot F_y \cdot A_g = 145.8 \cdot kips$

Tensile Rupture = $P_{ar} := \phi_r \cdot F_u \cdot A_e = 167.203 \cdot kips$

Bearing Strength = $R_a := \phi_b \cdot 1.2 \cdot l_c \cdot t_{plt} \cdot F_u = 42.82 \cdot kips$

$Pa := \min\left(P_{at}, P_{ar}, R_a\right) = 42.82 \cdot kips$

$Plate := if\left(Fab < Pa, "OK", "Overstressed"\right)$

Plate = "OK"

Check Angle Connection Plate Weld:

Design Weld Strength = $F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 0.663 \cdot in^2$

Plate Stress = $f_w := \frac{Fab}{A_w \cdot n_w} = 20.745 \cdot ksi$

$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$

Weld = "OK"

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Subject:	Load Analysis of Antenna Mast on Tower # 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.30

Basic Components

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

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	TME := 98	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.25		(User Input - Only for NESC Extreme wind case)
NESC Factor =	kv := 1.43		(User Input from NESC 2007 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2007 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01\cdot\left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.26$		(NESC 2007 Table 250-2)
Exposure Factor =	$Es := 0.346\left[\frac{33}{(0.67\cdot TME)}\right]^{\frac{1}{7}} = 0.314$		(NESC 2007 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375\cdot\frac{TME}{220}\right)} = 0.857$		(NESC 2007 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7\cdot Es\cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.872$		(NESC 2007 Table 250-3)
Wind Pressure =	$qz := 0.00256\cdot Kz\cdot V^2\cdot Grf\cdot I = 34.1$	psf	(NESC 2007 Section 250.C.2)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

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Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Powerwave 7770		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55$	in	(User Input)
Antenna Width =	$W_{ant} := 11$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 39$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 12.6$	sf	
Total Antenna Wind Force =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 858$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 90$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant1} := (WT_{ant} \cdot N_{ant}) = 117$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 33$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 98$	lbs	**BLC 3**

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Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.30

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI HPA-65R-BUU-H6		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 51$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$	sf	
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1512$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 8$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 24$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 154$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant2} := (WT_{ant} \cdot N_{ant}) = 153$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9590$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1944$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 63$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 189$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI OPA-65R-LCUU-H6		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$	sf	
Total Antenna Wind Force =	$F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1512$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 8$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 24$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 154$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant3} := (WT_{ant} \cdot N_{ant}) = 225$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 7885$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1803$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 58$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 175$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 9.2$	in	(User Input)
TMA Width =	$W_{TMA} := 14.4$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.6$	in	(User Input)
TMA Weight =	$WT_{TMA} := 14.1$	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 =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 5.5$	sf	
Total TMA Wind Force =	$F_{TMA1} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 376$	lbs	**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 =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 6.5$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA1} := p \cdot Cd_F \cdot A_{ICETMA} = 42$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA1} := (WT_{TMA} \cdot N_{TMA}) = 85$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA1} := W_{ICETMA} \cdot N_{TMA} = 43$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model =	Kaleus TMA2117F00V1-1		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 8.46$	in	(User Input)
TMA Width =	$W_{TMA} := 11.81$	in	(User Input)
TMA Thickness =	$T_{TMA} := 4.21$	in	(User Input)
TMA Weight =	$WT_{TMA} := 18$	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 =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.7$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.2$	sf	
Total TMA Wind Force =	$F_{TMA2} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 284$	lbs	**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 =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 0.8$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA2} := p \cdot Cd_F \cdot A_{ICETMA} = 32$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA2} := (WT_{TMA} \cdot N_{TMA}) = 108$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 421$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 211$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA2} := W_{ICETMA} \cdot N_{TMA} = 41$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model =	Kaleus TMA2093F00V1-1		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 11.8$	in	(User Input)
TMA Width =	$W_{TMA} := 9.8$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.7$	in	(User Input)
TMA Weight =	$WT_{TMA} := 23$	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 =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.8$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.8$	sf	
Total TMA Wind Force =	$F_{TMA3} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 328$	lbs	**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 =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5.8$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA3} := p \cdot Cd_F \cdot A_{ICETMA} = 37$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA3} := (WT_{TMA} \cdot N_{TMA}) = 138$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 428$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 222$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA3} := W_{ICETMA} \cdot N_{TMA} = 43$	lbs	**BLC 3**

Development of Wind & Ice Load on Platform

Platform Data: (AT&T)

Platform Model =	10' Low Profile Platform		(User Input)
Platform Shape =	Flat		(User Input)
Platform Area =	$A_{plt} := 10.58$	sq ft	(User Input)
Platform Area w/ Ice =	$A_{ICEplt} := 13.38$	sq ft	(User Input)
Platform Weight =	$WT_{plt} := 2902$	lbs	(User Input)
Platform Weight w/ Ice =	$WT_{ICEplt} := 3953$	lbs	(User Input)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt1} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 721$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt1} := p \cdot Cd_F \cdot A_{ICEplt} = 86$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt1} := WT_{plt} = 2902$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt1} := WT_{ICEplt} - WT_{plt} = 1051$ lbs **BLC 3**

Total Equipment Loads:

AT&T @ 98-ft AGL

NESC Heavy Wind Vertical =

$$NESC_{Heavy.Vert} := \left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{TMA1} + Wt_{ice.TMA1} + Wt_{TMA2} + Wt_{ice.TMA2} + Wt_{TMA3} +\right.$$

$$NESC_{Heavy.Vert} = 8052$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{TMA1} + Fi_{TMA2} + Fi_{TMA3} + Fi_{mnt1}\right) \cdot 2.5 = 1485$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{TMA1} + Wt_{TMA2} + Wt_{TMA3} + Wt_{mnt1}\right) = 3728$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{TMA1} + F_{TMA2} + F_{TMA3} + F_{mnt1}\right) = 5591$

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Subject:	Coax Cable on Antenna Mast on Tower # 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16071.30

Coax Cable on Antenna Mast

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 8.5 \\ 11 \\ 8.5 \\ 11 \\ 22 \\ 37 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable =	$D_{coax} := 1.11 \cdot in$	*(User Input)*	
Weight of Coax Cable =	$W_{coax} := 0.54 \cdot plf$	*(User Input)*	
Number of Coax Cables =	$N_{coax} := 30$	*(User Input)*	(18 Cables inside Powermount 12 outside)
Number of Projected Coax Cables Transverse =	$NP_{coax} := 2$	*(User Input)*	
Number of Coax Cables Outside Mast =	$NE_{coax} := 12$	*(User Input)*	
Extreme Wind Pressure =	$qz := 34.1 \cdot psf$	*(User Input)*	
Heavy Wind Pressure =	$p := 4 \cdot psf$	*(User Input)*	
Radial Ice Thickness =	$Ir := 0.5 \cdot in$	*(User Input)*	
Radial Ice Density =	$Id := 56 \cdot pcf$	*(User Input)*	
Shape Factor =	$Cd_{coax} := 1.6$	*(User Input)*	
Overload Factor for NESC Heavy Wind Load =	$OF_{HW} := 2.5$	*(User Input)*	
Overload Factor for NESC Extreme Wind Load =	$OF_{EW} := 1.0$	*(User Input)*	
Overload Factor for NESC Heavy Vertical Load =	$OF_{HV} := 1.5$	*(User Input)*	
Overload Factor for NESC Extreme Vertical Load =	$OF_{EV} := 1.0$	*(User Input)*	

Wind Area without Ice =	$A := \left(NP_{coax} \cdot D_{coax}\right) = 2.22 \cdot in$
Wind Area with Ice =	$A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 3.22 \cdot in$
Ice Area per Liner Ft =	$Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.018\,ft^2$
Weight of Ice on All Coax Cables =	$W_{ice} := Ai_{coax} \cdot Id \cdot NE_{coax} = 11.802 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 357 \\ 462 \\ 357 \\ 462 \\ 924 \\ 1554 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 36 \\ 47 \\ 36 \\ 47 \\ 94 \\ 159 \end{pmatrix} lb$$

Extreme Vertical Load =

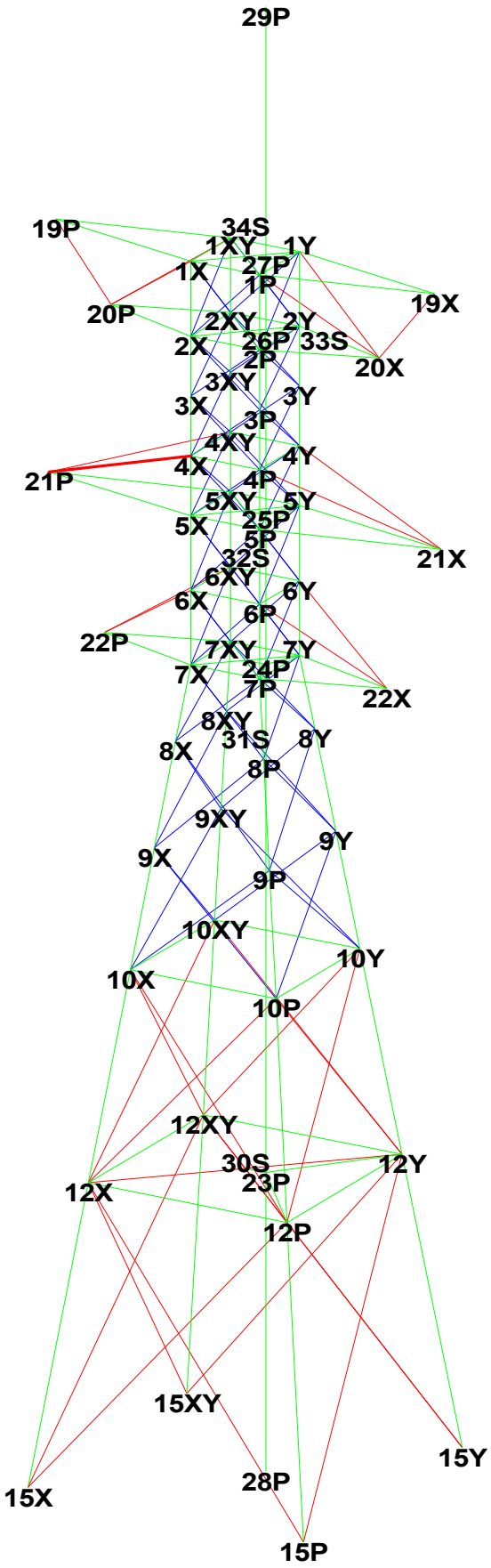
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

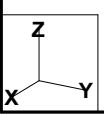
Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 138 \\ 178 \\ 138 \\ 178 \\ 356 \\ 599 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 86 \\ 111 \\ 86 \\ 111 \\ 222 \\ 373 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p tower #1340 w_pwmt"
Tower Version 12.50, 4:22:26 PM Monday, November 14, 2016
Undeformed geometry displayed





Project Name : 16071.30 - Shelton, CT
Project Notes: Structure # 1340/ AT&T CT2044
Project File : J:\Jobs\1607100.WI\30_Shelton NU CT2044\04_Structural\Backup Documentation\Calcs\PLS Tower\cl&p tower #1340 w_pwmt.tow
Date run : 10:32:02 AM Tuesday, November 15, 2016
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block 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 "g8X" will not be checked for block 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 "g8XY" will not be checked for block 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 "g8Y" will not be checked for block 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 "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12X" will not be checked for block 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 "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57P" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57Y" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64P" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64Y" ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 21 warnings. ??

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

Loads from file: j:\jobs\1607100.wi\30_shelton nu ct2044\04_structural\backup documentation\calcs\pls tower\cl&p # 1340.lca

*** Analysis Results:

Maximum element usage is 96.92% for Angle "g45Y" in load case "NESC Extreme"
Maximum insulator usage is 18.34% for Clamp "CLamp24" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	15P	-5.08	-6.09	-37.13	7.94	0.06	0.03	0.07	0.01	0.00
NESC Heavy	28P	0.00	-0.13	-22.63	0.13	2.49	0.00	2.49	0.00	0.00
NESC Heavy	15X	4.34	-3.12	21.17	5.35	0.04	-0.03	0.05	0.01	0.00
NESC Heavy	15XY	-4.34	-3.12	21.17	5.35	0.04	0.03	0.05	-0.01	0.00
NESC Heavy	15Y	5.08	-6.09	-37.13	7.94	0.06	-0.03	0.07	-0.01	0.00
NESC Extreme	15P	-8.02	-9.58	-58.36	12.50	0.13	0.03	0.13	0.01	0.00
NESC Extreme	28P	0.00	-0.58	-13.80	0.58	4.12	0.00	4.12	-0.00	0.00
NESC Extreme	15X	10.47	-8.23	51.74	13.31	0.11	-0.00	0.11	0.00	0.00
NESC Extreme	15XY	-10.47	-8.23	51.74	13.31	0.11	0.00	0.11	-0.00	0.00
NESC Extreme	15Y	8.02	-9.58	-58.36	12.50	0.13	-0.03	0.13	-0.01	0.00

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

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	15P	12P	g13X	37.953	0.946	0.954	-0.059	0.952	-5.08	-6.09	-37.13
NESC Heavy	15X	12X	g13P	-21.791	1.405	1.421	-1.409	0.190	4.34	-3.12	21.17
NESC Heavy	15XY	12XY	g13Y	-21.791	1.405	1.421	1.409	0.190	-4.34	-3.12	21.17
NESC Heavy	15Y	12Y	g13XY	37.953	0.946	0.954	0.059	0.952	5.08	-6.09	-37.13
NESC Extreme	15P	12P	g13X	59.664	1.484	1.496	-0.059	1.495	-8.02	-9.58	-58.36
NESC Extreme	15X	12X	g13P	-53.312	3.419	3.470	-3.304	1.060	10.47	-8.23	51.74
NESC Extreme	15XY	12XY	g13Y	-53.312	3.419	3.470	3.304	1.060	-10.47	-8.23	51.74
NESC Extreme	15Y	12Y	g13XY	59.664	1.484	1.496	0.059	1.495	8.02	-9.58	-58.36

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
3	98.000	42.000	53	182	0.00	8.34	257.590	0.00	8.34	627.090
1	42.000	0.000	20	53	8.34	20.00	595.340	8.34	20.00	595.340

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle No.	Angle Type	Steel Size	Steel Strength	Max Usage Cont-rol	Max Use In	Comp. Control Member	Comp. Force Load	Comp. Control	L/R Capacity	Comp. Connect. Shear	Comp. Connect. Bearing	RLX	RLY	RLZ	L/R KL/R	Comp. Length	Comp. Curve	No. Of Member	Bolts

Comp. (ksi) % Comp. % (kips) Case (kips) Capacity (kips) Capacity (kips)

(ft)

Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	57.18	Tens	47.43	g8X	-42.444	NESC Ext	89.489	136.000	210.937	1.000	1.000	1.000	60.36	60.36	5.000	1	10	
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	58.57	Comp	58.57	g10X	-53.546	NESC Ext	91.422	136.000	210.937	1.000	1.000	1.000	71.33	71.33	7.133	1	10	
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	45.97	Comp	45.97	g13X	-57.371	NESC Ext	124.805	163.200	303.750	0.330	0.330	0.330	67.82	67.82	20.380	1	12	
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.64	Comp	55.64	g18P	-9.728	NESC Ext	17.484	27.200	25.312	0.500	0.750	0.500	106.07	109.55	7.071	2	2	
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.48	Comp	20.48	g20Y	-4.974	NESC Ext	24.281	27.200	33.750	0.500	0.750	0.500	97.34	103.01	6.403	2	2	
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	25.00	Cross	25.00	g29P	-6.063	NESC Ext	24.256	40.800	50.625	1.000	0.500	0.500	110.34	115.17	7.071	3	3	
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	7.29	Comp	7.29	g31Y	-1.983	NESC Ext	28.168	27.200	42.187	1.000	0.560	0.560	120.07	120.04	7.614	6	2	
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0	
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	26.78	Comp	26.78	g67X	-4.190	NESC Ext	15.646	27.200	33.750	0.500	1.000	0.500	164.79	147.54	10.560	6	2	
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	41.44	Tens	24.91	g44P	-6.533	NESC Ext	26.226	27.200	33.750	1.000	1.000	1.000	113.64	116.82	5.000	3	2	
M4	L3x3x1/4	SAE	3X3X0.25	33.0	14.37	Comp	14.37	g46P	-4.471	NESC Hea	31.104	40.800	50.625	1.000	0.500	0.500	98.95	109.48	7.669	3	3	
M5	L4x3x1/4	SAU	4X3X0.25	33.0	25.32	Comp	25.32	g69X	-6.886	NESC Ext	28.782	27.200	33.750	1.000	0.500	0.500	135.56	129.57	14.460	6	2	
M6	L4x4x1/4	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0	
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	20.10	Tens	0.00	g62Y	0.000		3.215	27.200	25.312	1.000	1.000	1.000	268.55	268.55	9.556	4	2	
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	18.33	Tens	0.00	g56Y	0.000		2.363	27.200	33.750	1.000	1.000	1.000	358.34	358.34	12.661	4	2	
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	88.67	Comp	88.67	g38P	-2.165	NESC Ext	2.442	27.200	33.750	0.420	0.790	0.420	425.05	352.49	26.543	5	2	
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	65.32	Tens	54.83	g63X	-6.438	NESC Ext	11.742	13.600	12.656	1.000	1.000	1.000	140.52	140.52	5.000	4	1	
M10	**L2.5x2x3/16**	**SAU**	**2.5X2X0.1875**	**33.0**	**96.92**	**Tens**	**60.55**	**g45X**	**-7.019**	**NESC Ext**	**11.592**	**13.600**	**12.656**	**1.000**	**2.000**	**1.000**	**141.42**	**141.42**	**3.536**	**4**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45X g45XY ??**
M11	L5x5x3/8	SAE	5X5X0.375	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0	
M12	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	11.90	Comp	11.90	g72P	-0.532	NESC Ext	4.475	13.600	12.656	2.000	1.000	1.000	315.42	240.18	10.225	6	1	
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	50.0	4.23	Comp	4.23	g71P	-17.904	NESC Hea	423.485	0.000	0.000	1.000	1.000	1.000	92.94	92.94	34.000	1	0	
PwmntBR1	**L2x2x3/16**	**SAE**	**2X2X0.1875**	**36.0**	**12.95**	**Tens**	**7.80**	**g89P**	**-0.795**	**NESC Ext**	**20.044**	**16.800**	**10.195**	**1.000**	**1.000**	**1.000**	**45.69**	**82.84**	**1.500**	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g83P g84P g85P g86P g89P ??**
PwmntBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	4.15	Comp	4.15	g90P	-0.564	NESC Ext	19.010	16.800	13.594	1.000	1.000	1.000	159.51	159.51	9.225	4	1	
NewBR	**L2.5x2.5x1/4**	**SAE**	**2.5X2.5X0.25**	**36.0**	**34.03**	**Tens**	**24.36**	**g79P**	**-3.973**	**NESC Ext**	**31.213**	**31.340**	**16.312**	**1.000**	**1.000**	**1.000**	**65.81**	**92.90**	**2.693**	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g78P g79P g81P g82P ??**
Plate	6"x3/4"	Bar	6x3/4	36.0	34.99	Tens	25.79	g80P	-16.167	NESC Ext	126.788	62.680	0.000	1.000	1.000	1.000	83.14	83.14	1.500	1	1	

M13	Bar 2.5x1/4	Bar	2-1/2x1/4	33.0	23.94	Tens	0.00	g64Y	0.000		0.259	13.600	16.875	1.000	1.000	1.000	831.02	831.02	5.000	4	1
M14	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	14.78	Comp	14.78	g49X	-1.584	NESC Hea	10.714	13.600	12.656	1.000	1.000	1.000	155.23	155.23	6.403	4	1

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	57.18	Tens	57.18	g8P	40.093	NESC Ext	70.122	136.000	210.937	183.823	5.000	10	3.310	0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	58.57	Comp	57.86	g9Y	48.810	NESC Ext	84.356	0.000	0.000	0.000	5.097	0	4.000	0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	45.97	Comp	44.21	g13P	47.763	NESC Ext	108.039	163.200	303.750	264.705	20.380	12	3.310	0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.64	Comp	50.58	g18XY	9.704	NESC Ext	19.184	27.200	25.312	21.094	7.071	2	1.000	0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.48	Comp	19.90	g22X	4.972	NESC Ext	24.985	27.200	33.750	26.766	6.403	2	1.000	0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	25.00	Cross	24.36	g28X	7.027	NESC Ext	28.846	40.800	50.625	42.187	7.071	3	1.000	0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	7.29	Comp	6.16	g31X	1.676	NESC Ext	35.241	27.200	42.187	35.156	7.614	2	1.000	0.875
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	26.78	Comp	13.35	g67P	2.934	NESC Hea	28.846	27.200	33.750	21.984	10.560	2	1.000	0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	41.44	Tens	41.44	g44X	8.682	NESC Ext	25.913	27.200	33.750	20.953	5.000	2	2.000	0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	14.37	Comp	8.84	g43P	3.206	NESC Hea	36.271	0.000	0.000	0.000	5.000	0	1.000	0.875
M5	L4x3x1/4	SAU	4X3X0.25	33.0	25.32	Comp	7.56	g69P	1.740	NESC Hea	29.774	27.200	33.750	23.016	14.460	2	2.000	0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	20.10	Tens	20.10	g50P	3.626	NESC Hea	19.184	27.200	25.312	18.035	9.155	2	1.000	0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	18.33	Tens	18.33	g56P	4.407	NESC Hea	24.985	27.200	33.750	24.047	12.661	2	1.000	0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	88.67	Comp	27.11	g39XY	5.960	NESC Ext	24.985	27.200	33.750	21.984	26.543	2	1.000	0.875
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	65.32	Tens	65.32	g63P	6.297	NESC Ext	19.184	13.600	12.656	9.640	5.000	1	1.000	0.875
M10	**L2.5x2x3/16**	**SAU**	**2.5X2X0.1875**	**33.0**	**96.92**	**Tens**	**96.92**	**g45Y**	**8.621**	**NESC Ext**	**19.184**	**13.600**	**12.656**	**8.895**	**3.536**	**1**	**1.000**	**0.875**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45X g45XY ??

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
M11	L5x5x3/8	SAE	5X5X0.375	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M12	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	11.90	Comp	0.97	g72P	0.086	NESC Hea	21.917	13.600	12.656	8.895	10.225	1	1.000	0.875
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	50.0	4.23	Comp	0.00	g76P	0.000		679.999	0.000	0.000	0.000	17.000	0	0.000	

0
PwmntBR1 L2x2x3/16 SAE 2X2X0.1875 36.0 12.95 Tens 12.95 g86P 1.128NESC Ext 18.827 16.800 10.195 8.712 1.500 1 1.000 0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g83P g84P g85P g86P g89P ??
PwmntBR2 L3.5x3.5x1/4 SAE 3.5X3.5X0.25 36.0 4.15 Comp 2.41 g90P 0.280NESC Hea 49.187 16.800 13.594 11.616 9.225 1 1.000 0.6875
NewBR L2.5x2.5x1/4 SAE 2.5X2.5X0.25 36.0 34.03 Tens 34.03 g82P 3.576NESC Ext 31.975 31.340 16.312 10.509 2.693 1 1.000 0.8125 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g78P g79P g81P g82P ??
Plate 6"x3/4" Bar 6x3/4 36.0 34.99 Tens 34.99 g77P 21.933NESC Ext 162.000 62.680 0.000 0.000 1.500 1 2.000 0.8125
M13 Bar 2.5x1/4 Bar 2-1/2x1/4 33.0 23.94 Tens 23.94 g57P 2.889NESC Hea 12.066 13.600 16.875 0.000 5.000 1 1.000 0.875
M14 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 33.0 14.78 Comp 0.00 g49X 0.000 21.917 13.600 12.656 10.652 6.403 1 1.000 0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

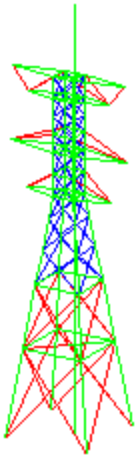
Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	82.86	g37P	Angle
NESC Extreme	96.92	g45Y	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.30	NESC Heavy	0.0
Clamp2	Clamp	3.26	NESC Heavy	0.0
Clamp3	Clamp	6.47	NESC Heavy	0.0
Clamp4	Clamp	6.39	NESC Heavy	0.0
Clamp5	Clamp	6.56	NESC Heavy	0.0
Clamp6	Clamp	6.50	NESC Heavy	0.0
Clamp7	Clamp	6.43	NESC Heavy	0.0
Clamp8	Clamp	6.37	NESC Heavy	0.0
Clamp9	Clamp	0.40	NESC Extreme	0.0
Clamp10	Clamp	0.40	NESC Extreme	0.0
Clamp11	Clamp	0.42	NESC Heavy	0.0
Clamp12	Clamp	0.42	NESC Heavy	0.0
Clamp13	Clamp	0.50	NESC Heavy	0.0
Clamp14	Clamp	0.50	NESC Heavy	0.0
Clamp15	Clamp	0.53	NESC Heavy	0.0
Clamp16	Clamp	0.53	NESC Heavy	0.0
Clamp17	Clamp	1.81	NESC Heavy	0.0
Clamp18	Clamp	1.81	NESC Heavy	0.0
Clamp19	Clamp	3.34	NESC Heavy	0.0
Clamp20	Clamp	1.92	NESC Heavy	0.0
Clamp21	Clamp	0.99	NESC Heavy	0.0
Clamp22	Clamp	0.81	NESC Heavy	0.0
Clamp23	Clamp	1.02	NESC Heavy	0.0

```
   CLamp24     Clamp   18.34   NESC Heavy    0.0

*** Weight of structure (lbs):
    Weight of Angles*Section DLF:     16193.4
    Total:                            16193.4

*** End of Report
```

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

Project Name : 16071.30 - Shelton, CT
Project Notes: Structure # 1340/ AT&T CT2044
Project File : J:\Jobs\1607100.WI\30_Shelton NU CT2044\04_Structural\Backup Documentation\Calcs\PLS Tower\cl&p tower #1340 w_pwmt.tow
Date run     : 10:32:01 AM Tuesday, November 15, 2016
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block 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 "g8X" will not be checked for block 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 "g8XY" will not be checked for block 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 "g8Y" will not be checked for block 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 "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12X" will not be checked for block 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 "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57P" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57Y" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64P" ??
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64Y" ??
Unusual number of fixed joints found: 5.  Towers normally have from between 1 and 4 fixed joints. ??
The model has 21 warnings.  ??
```



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

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	2.5	2.5	81	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	76	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	2.5	72	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2.5	2.5	68	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	64	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	59	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	2.5	2.5	54	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.2	3.2	49	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	4.17	4.17	42	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	5.28	5.28	34	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	7.23	7.23	20	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	10	10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19P	X-Symmetry	0	-13.75	81	Free	Free	Free	Free	Free	Free
20P	X-Symmetry	0	-9.75	76	Free	Free	Free	Free	Free	Free
21P	X-Symmetry	0	-14.25	64	Free	Free	Free	Free	Free	Free
22P	X-Symmetry	0	-10.25	54	Free	Free	Free	Free	Free	Free
23P	None	0	1.5	20	Free	Free	Free	Free	Free	Free
24P	None	0	1.5	54	Free	Free	Free	Free	Free	Free
25P	None	0	1.5	64	Free	Free	Free	Free	Free	Free
26P	None	0	1.5	76	Free	Free	Free	Free	Free	Free
27P	None	0	1.5	81	Free	Free	Free	Free	Free	Free
28P	None	0	1.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

29P	None	0	1.5	98	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	-2.5	81	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	81	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	81	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2.5	-2.5	76	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	76	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	76	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	72	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	72	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	72	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	68	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	68	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	68	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	64	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	64	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	64	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	59	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	59	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	59	Free	Free	Free	Free	Free	Free
7X	X-GenXY	2.5	-2.5	54	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-2.5	-2.5	54	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-2.5	2.5	54	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.2	-3.2	49	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.2	-3.2	49	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.2	3.2	49	Free	Free	Free	Free	Free	Free
9X	X-GenXY	4.17	-4.17	42	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-4.17	-4.17	42	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-4.17	4.17	42	Free	Free	Free	Free	Free	Free
10X	X-GenXY	5.28	-5.28	34	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-5.28	-5.28	34	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-5.28	5.28	34	Free	Free	Free	Free	Free	Free
12X	X-GenXY	7.23	-7.23	20	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-7.23	-7.23	20	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-7.23	7.23	20	Free	Free	Free	Free	Free	Free
15X	X-GenXY	10	-10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15XY	XY-GenXY	-10	-10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15Y	Y-GenXY	-10	10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19X	X-Gen	0	13.75	81	Free	Free	Free	Free	Free	Free
20X	X-Gen	0	9.75	76	Free	Free	Free	Free	Free	Free
21X	X-Gen	0	14.25	64	Free	Free	Free	Free	Free	Free
22X	X-Gen	0	10.25	54	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.
30S	None	12X	12Y	0.5	0	Free	Free	Free	Free	Free	Free
31S	None	7X	7Y	0.5	0	Free	Free	Free	Free	Free	Free
32S	None	5X	5Y	0.5	0	Free	Free	Free	Free	Free	Free
33S	None	2XY	2P	0.5	0	Free	Free	Free	Free	Free	Free
34S	None	1XY	1P	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 63 primary and 5 secondary joints for a total of 68 joints.

Steel Material Properties:

Steel	Modulus	Yield	Ultimate	Member	Member	Member	Member	Member	Member

Material Label	of Elasticity (ksi)	Stress Fy (ksi)	Stress All. Fu (ksi)	Stress All. Hyp. 1 (ksi)	Stress All. Hyp. 2 (ksi)	Rupture Hyp. 1 (ksi)	Rupture Hyp. 2 (ksi)	Bearing Hyp. 1 (ksi)	Bearing Hyp. 2 (ksi)
A 36	2.9e+004	36	58	0	0	0	0	0	0
A7	2.9e+004	33	60	0	0	0	0	0	0
A500-50	2.9e+004	50	62	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
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0
3/4 A490	0.75	0.8125	31.34	1.35	1.8	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394	502
3/4 A490	6
5/8 A325	9

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	6X6X0.3125	6	6	0.3125	12.5	3.65	16.6	1.89	1.89	1.2	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	5X5X0.3125	5	5	0.3125	10.3	3.03	13.4	1.57	1.57	0.994	1	5	2.5	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.3125	2.5	2.5	0.3125	5	1.46	6	0.761	0.761	0.489	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
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	4X3X0.25	4	3	0.25	5.8	1.69	13.25	1.28	0.896	0.651	1	4	1.5	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
Pwmnt	Pipe 12" Std.	12.75	12	0	49.6	13.6	1	4.39	4.39	4.39	1	12.75	0	0	0.0000	0
Bar	6x3/4	6	0.75	0	15.3	4.5	8	0.2165	1.732	1.732	1	6	0	0	0.0000	0
Bar	2-1/2x1/4	2.5	0	0.25	2.13	0.625	10	0.7217	0.0722	0.7217	1	2.5	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Add. Angle Width For Optimize

								(in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	A7	Beam	Leg	None	0.000
Leg2	L6x6x5/16	SAE	6X6X0.3125	A7	Beam	Leg	None	0.000
Leg3	L6x6x3/8	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss Crossing Diagonal		None	0.000
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss Crossing Diagonal		None	0.000
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss Crossing Diagonal		None	0.000
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	Truss Crossing Diagonal		None	0.000
M1	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Beam	Other	None	0.000
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Beam	Other	None	0.000
M3	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
M4	L3x3x1/4	SAE	3X3X0.25	A7	Beam	Other	None	0.000
M5	L4x3x1/4	SAU	4X3X0.25	A7	Beam	Other	None	0.000
M6	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Other	None	0.000
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	T-Only	Other	None	0.000
M8	L2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Beam	Other	None	0.000
M10	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Beam	Other	None	0.000
M11	L5x5x3/8	SAE	5X5X0.375	A7	Beam	Other	None	0.000
M12	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	T-Only Beam	Other	None	0.000
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	A500-50	Beam	Other	None	0.000
PwmntBR1	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
PwmntBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A 36	Beam	Other	None	0.000
NewBR	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A 36	Beam	Other	None	0.000
Plate	6"x3/4"	Bar	6x3/4	A 36	Beam	Other	None	0.000
M13	Bar 2.5x1/4	Bar	2-1/2x1/4	A7	Beam	Other	None	0.000
M14	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	T-Only	Other	None	0.000

Aggregate Angle Information:

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

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	5X5X0.3125	A7	108.00	180.00	1112.40
SAE	6X6X0.3125	A7	48.92	97.84	611.51
SAE	6X6X0.375	A7	171.21	342.41	2550.98
SAU	2.5X2X0.1875	A7	207.98	155.98	571.94
SAU	2.5X2X0.25	A7	567.67	425.76	2054.98
SAE	2.5X2.5X0.25	A7	336.51	280.43	1379.70
SAE	2.5X2.5X0.3125	A7	60.92	50.76	304.58
SAE	3X3X0.25	A7	139.35	139.35	682.80
SAU	3X2.5X0.25	A7	40.00	36.67	180.00
SAE	2.5X2.5X0.1875	A7	53.71	44.75	164.88
SAU	4X3X0.25	A7	115.89	135.21	672.17
Bar	2-1/2x1/4	A7	20.00	8.33	42.60
Pwmnt	Pipe 12" Std.	A500-50	98.00	404.25	4860.80
Bar	6x3/4	A 36	3.00	3.38	45.90
SAE	2.5X2.5X0.25	A 36	10.77	8.98	44.16
SAE	2X2X0.1875	A 36	15.27	10.18	37.26
SAE	3.5X3.5X0.25	A 36	18.45	21.53	107.01

Sections:
The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model.

They do not apply to equipment or to manually input dead load and drag areas.

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
3	9X	1.000	3.200	3.200	1.000	1.000	0.000	0.000	3.200	3.200	0.000	0.000	None
1	15X	1.100	3.200	3.200	1.100	1.100	0.000	0.000	3.200	3.200	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
g3P	Leg1		XY-Symmetry	1X	2X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g3X	Leg1		X-GenXY	1P	2P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g3XY	Leg1		XY-GenXY	1Y	2Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g3Y	Leg1		Y-GenXY	1XY	2XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g4P	Leg1		XY-Symmetry	2X	3X	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g4X	Leg1		X-GenXY	2P	3P	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g4XY	Leg1		XY-GenXY	2Y	3Y	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g4Y	Leg1		Y-GenXY	2XY	3XY	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g5P	Leg1		XY-Symmetry	3X	4X	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g5X	Leg1		X-GenXY	3P	4P	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g5XY	Leg1		XY-GenXY	3Y	4Y	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g5Y	Leg1		Y-GenXY	3XY	4XY	1	4	1	1	1 3/4	A394	0	3.25	0		0	0	0	0	0	0	0
g6P	Leg1		XY-Symmetry	4X	5X	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g6X	Leg1		X-GenXY	4P	5P	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g6XY	Leg1		XY-GenXY	4Y	5Y	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g6Y	Leg1		Y-GenXY	4XY	5XY	1	4	1	1	1 3/4	A394	0	4	0		0	0	0	0	0	0	0
g7P	Leg1		XY-Symmetry	5X	6X	1	4	1	1	1 3/4	A394	0	2.77	0		0	0	0	0	0	0	0
g7X	Leg1		X-GenXY	5P	6P	1	4	1	1	1 3/4	A394	0	2.77	0		0	0	0	0	0	0	0
g7XY	Leg1		XY-GenXY	5Y	6Y	1	4	1	1	1 3/4	A394	0	2.77	0		0	0	0	0	0	0	0

0	0	0																			
	g7Y	Leg1	Y-GenXY	5XY	6XY	1	4	1	1	1	3/4	A394	0	2.77	0		0	0	0	0	
0	0	0																			
	g8P	Leg1	XY-Symmetry	6X	7X	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g8X	Leg1	X-GenXY	6P	7P	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g8XY	Leg1	XY-GenXY	6Y	7Y	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g8Y	Leg1	Y-GenXY	6XY	7XY	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g9P	Leg2	XY-Symmetry	7X	8X	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	
0	0	0																			
	g9X	Leg2	X-GenXY	7P	8P	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	
0	0	0																			
	g9XY	Leg2	XY-GenXY	7Y	8Y	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	
0	0	0																			
	g9Y	Leg2	Y-GenXY	7XY	8XY	1	4	1	1	1	3/4	A394	0	4	0		0	0	0	0	
0	0	0																			
	g10P	Leg2	XY-Symmetry	8X	9X	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g10X	Leg2	X-GenXY	8P	9P	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g10XY	Leg2	XY-GenXY	8Y	9Y	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g10Y	Leg2	Y-GenXY	8XY	9XY	1	4	1	1	1	3/4	A394	10	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g11P	Leg3	XY-Symmetry	9X	10X	1	4	1	1	1	3/4	A394	0	2	0		0	0	0	0	
0	0	0																			
	g11X	Leg3	X-GenXY	9P	10P	1	4	1	1	1	3/4	A394	0	2	0		0	0	0	0	
0	0	0																			
	g11XY	Leg3	XY-GenXY	9Y	10Y	1	4	1	1	1	3/4	A394	0	2	0		0	0	0	0	
0	0	0																			
	g11Y	Leg3	Y-GenXY	9XY	10XY	1	4	1	1	1	3/4	A394	0	2	0		0	0	0	0	
0	0	0																			
	g12P	Leg3	XY-Symmetry	10X	12X	1	4	0.5	0.5	0.5	3/4	A394	12	3.31	1	Both	1.4375	3.4375	1.25	3	
0	0	0																			
	g12X	Leg3	X-GenXY	10P	12P	1	4	0.5	0.5	0.5	3/4	A394	12	3.31	1	Both	1.4375	3.4375	1.25	3	
0	0	0																			
	g12XY	Leg3	XY-GenXY	10Y	12Y	1	4	0.5	0.5	0.5	3/4	A394	12	3.31	1	Both	1.4375	3.4375	1.25	3	
0	0	0																			
	g12Y	Leg3	Y-GenXY	10XY	12XY	1	4	0.5	0.5	0.5	3/4	A394	12	3.31	1	Both	1.4375	3.4375	1.25	3	
0	0	0																			
	g13P	Leg3	XY-Symmetry	12X	15X	1	4	0.33	0.33	0.33	3/4	A394	12	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g13X	Leg3	X-GenXY	12P	15P	1	4	0.33	0.33	0.33	3/4	A394	12	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g13XY	Leg3	XY-GenXY	12Y	15Y	1	4	0.33	0.33	0.33	3/4	A394	12	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g13Y	Leg3	Y-GenXY	12XY	15XY	1	4	0.33	0.33	0.33	3/4	A394	12	3.31	1	Both	1	3	1.25	3	
0	0	0																			
	g18P	Diag1	XY-Symmetry	1X	2P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125	
0	0	0																			
	g18X	Diag1	X-GenXY	1P	2X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125	
0	0	0																			
	g18XY	Diag1	XY-GenXY	1Y	2XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125	
0	0	0																			
	g18Y	Diag1	Y-GenXY	1XY	2Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125	
0	0	0																			
	g19P	Diag1	XY-Symmetry	1P	2Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125	

0	0	0																		
	g19X	Diag1	X-GenXY	1X	2XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125
0	0	0																		
	g19XY	Diag1	XY-GenXY	1XY	2X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125
0	0	0																		
	g19Y	Diag1	Y-GenXY	1Y	2P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.8125
0	0	0																		
	g20P	Diag2	XY-Symmetry	2X	3P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g20X	Diag2	X-GenXY	2P	3X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g20XY	Diag2	XY-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g20Y	Diag2	Y-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g21P	Diag2	XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g21X	Diag2	X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g21XY	Diag2	XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g21Y	Diag2	Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g22P	Diag2	XY-Symmetry	3X	4P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g22X	Diag2	X-GenXY	3P	4X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g22XY	Diag2	XY-GenXY	3Y	4XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g22Y	Diag2	Y-GenXY	3XY	4Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g23P	Diag2	XY-Symmetry	3P	4Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g23X	Diag2	X-GenXY	3X	4XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g23XY	Diag2	XY-GenXY	3XY	4X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g23Y	Diag2	Y-GenXY	3Y	4P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g24P	Diag2	XY-Symmetry	4X	5P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g24X	Diag2	X-GenXY	4P	5X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g24XY	Diag2	XY-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g24Y	Diag2	Y-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g25P	Diag2	XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g25X	Diag2	X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g25XY	Diag2	XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g25Y	Diag2	Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2.5313
0	0	0																		
	g26P	Diag3	XY-Symmetry	5X	6P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g26X	Diag3	X-GenXY	5P	6X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g26XY	Diag3	XY-GenXY	5Y	6XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125

0	0	0																		
	g26Y	Diag3		Y-GenXY	5XY	6Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g27P	Diag3		XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g27X	Diag3		X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g27XY	Diag3		XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g27Y	Diag3		Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g28P	Diag3		XY-Symmetry	6X	7P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g28X	Diag3		X-GenXY	6P	7X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g28XY	Diag3		XY-GenXY	6Y	7XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g28Y	Diag3		Y-GenXY	6XY	7Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g29P	Diag3		XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g29X	Diag3		X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g29XY	Diag3		XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g29Y	Diag3		Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	3/4	A394	3	1	1	Short only	1.125	0	1.125	2.8125
0	0	0																		
	g30P	Diag4		XY-Symmetry	7X	8P	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g30X	Diag4		X-GenXY	7P	8X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g30XY	Diag4		XY-GenXY	7Y	8XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g30Y	Diag4		Y-GenXY	7XY	8Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g31P	Diag4		XY-Symmetry	7P	8Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g31X	Diag4		X-GenXY	7X	8XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g31XY	Diag4		XY-GenXY	7XY	8X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g31Y	Diag4		Y-GenXY	7Y	8P	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.0625
0	0	0																		
	g32P	Diag3		XY-Symmetry	8X	9P	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g32X	Diag3		X-GenXY	8P	9X	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g32XY	Diag3		XY-GenXY	8Y	9XY	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g32Y	Diag3		Y-GenXY	8XY	9Y	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g33P	Diag3		XY-Symmetry	8P	9Y	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g33X	Diag3		X-GenXY	8X	9XY	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g33XY	Diag3		XY-GenXY	8XY	9X	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g33Y	Diag3		Y-GenXY	8Y	9P	2	5	0.78	0.57	0.57	3/4	A394	2	1	1	Short only	1.125	0	1.125	3.3125
0	0	0																		
	g34P	Diag3		XY-Symmetry	9X	10P	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3

0	0	0																			
g34X	Diag3	X-GenXY	9P	10X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g34XY	Diag3	XY-GenXY	9Y	10XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g34Y	Diag3	Y-GenXY	9XY	10Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g35P	Diag3	XY-Symmetry	9P	10Y	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g35X	Diag3	X-GenXY	9X	10XY	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g35XY	Diag3	XY-GenXY	9XY	10X	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g35Y	Diag3	Y-GenXY	9Y	10P	2	5	0.78	0.56	0.56	3/4	A394	2	1	1	Short only	1.125	0	1.125	3		
0	0	0																			
g36P	Diag5	XY-Symmetry	10X	12P	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g36X	Diag5	X-GenXY	10P	12X	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g36XY	Diag5	XY-GenXY	10Y	12XY	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g36Y	Diag5	Y-GenXY	10XY	12Y	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g37P	Diag5	XY-Symmetry	10P	12Y	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g37X	Diag5	X-GenXY	10X	12XY	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g37XY	Diag5	XY-GenXY	10XY	12X	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g37Y	Diag5	Y-GenXY	10Y	12P	2	5	0.58	0.79	0.58	3/4	A394	2	1	1	Long only	1.125	0	1.125	3.625		
0	0	0																			
g38P	Diag5	XY-Symmetry	12X	15P	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g38X	Diag5	X-GenXY	12P	15X	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g38XY	Diag5	XY-GenXY	12Y	15XY	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g38Y	Diag5	Y-GenXY	12XY	15Y	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g39P	Diag5	XY-Symmetry	12P	15Y	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g39X	Diag5	X-GenXY	12X	15XY	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g39XY	Diag5	XY-GenXY	12XY	15X	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g39Y	Diag5	Y-GenXY	12Y	15P	2	5	0.42	0.79	0.42	3/4	A394	2	1	1	Long only	1.125	0	1.125	2		
0	0	0																			
g42P	M4	XY-Symmetry	19P	1X	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	1.5	0	1.125	3		
0	0	0																			
g42X	M4	X-GenXY	19X	1P	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	1.5	0	1.125	3		
0	0	0																			
g42XY	M4	XY-GenXY	19X	1Y	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	1.5	0	1.125	3		
0	0	0																			
g42Y	M4	Y-GenXY	19P	1XY	3	5	1	0.5	0.5	3/4	A394	2	1	1	Long only	1.5	0	1.125	3		
0	0	0																			
g43P	M4	Y-Symmetry	1X	1P	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0		
0	0	0																			
g43Y	M4	Y-Gen	1XY	1Y	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0		
0	0	0																			
g44P	M3	X-Symmetry	1X	1XY	3	6	1	1	1	3/4	A394	2	2	1	Long only	1	0	1.125	2		

0	0	0																		
	g44X	M3	X-Gen	1P	1Y	3	6	1	1	1	3/4	A394	2	2	1	Long only	1	0	1.125	2
0	0	0																		
	g45P	M10	XY-Symmetry	1XY	34S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g45X	M10	X-GenXY	1Y	34S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g45XY	M10	XY-GenXY	1P	34S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g45Y	M10	Y-GenXY	1X	34S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g46P	M4	XY-Symmetry	20P	2X	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g46X	M4	X-GenXY	20X	2P	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g46XY	M4	XY-GenXY	20X	2Y	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g46Y	M4	Y-GenXY	20P	2XY	3	5	1	0.5	0.5	3/4	A394	3	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g47P	M4	Y-Symmetry	2X	2P	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0
0	0	0																		
	g47Y	M4	Y-Gen	2XY	2Y	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0
0	0	0																		
	g48P	M3	X-Symmetry	2X	2XY	3	6	1	1	1	3/4	A394	2	1	1	Long only	1	0	1.125	2
0	0	0																		
	g48X	M3	X-Gen	2P	2Y	3	6	1	1	1	3/4	A394	2	1	1	Long only	1	0	1.125	2
0	0	0																		
	g49P	M14	X-Symmetry	19P	20P	3	4	1	1	1	3/4	A394	1	1	1	Long only	1	0	1.5	0
0	0	0																		
	g49X	M14	X-Gen	19X	20X	3	4	1	1	1	3/4	A394	1	1	1	Long only	1	0	1.5	0
0	0	0																		
	g50P	M7	XY-Symmetry	20P	1X	3	4	1	1	1	3/4	A394	2	1	1	Long only	1.375	0	1.125	2
0	0	0																		
	g50X	M7	X-GenXY	20X	1P	3	4	1	1	1	3/4	A394	2	1	1	Long only	1.375	0	1.125	2
0	0	0																		
	g50XY	M7	XY-GenXY	20X	1Y	3	4	1	1	1	3/4	A394	2	1	1	Long only	1.375	0	1.125	2
0	0	0																		
	g50Y	M7	Y-GenXY	20P	1XY	3	4	1	1	1	3/4	A394	2	1	1	Long only	1.375	0	1.125	2
0	0	0																		
	g51P	M10	XY-Symmetry	2XY	33S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g51X	M10	X-GenXY	2Y	33S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g51XY	M10	XY-GenXY	2P	33S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g51Y	M10	Y-GenXY	2X	33S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0
0	0	0																		
	g52P	M5	XY-Symmetry	21P	5X	3	5	1	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g52X	M5	X-GenXY	21X	5P	3	5	1	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g52XY	M5	XY-GenXY	21X	5Y	3	5	1	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g52Y	M5	Y-GenXY	21P	5XY	3	5	1	0.5	0.5	3/4	A394	4	1	1	Long only	1.5	0	1.125	2.5
0	0	0																		
	g53P	M5	Y-Symmetry	5X	5P	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0
0	0	0																		
	g53Y	M5	Y-Gen	5XY	5Y	3	6	1	1	1	3/4	A394	0	1	0		0	0	0	0
0	0	0																		
	g55P	M3	X-Symmetry	5X	5XY	3	6	1	1	1	3/4	A394	2	2	1	Long only	1	0	1.125	2.5

0	0	0																			
	g55X		M3	X-Gen	5P	5Y	3	6	1	1	1 3/4	A394	2	2	1	Long only	1	0	1.125	2.5	
0	0	0																			
	g54P		M10	XY-Symmetry	5X	32S	3	4	1	2	1 3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g54X		M10	X-GenXY	5P	32S	3	4	1	2	1 3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g54XY		M10	XY-GenXY	5Y	32S	3	4	1	2	1 3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g54Y		M10	Y-GenXY	5XY	32S	3	4	1	2	1 3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g56P		M8	XY-Symmetry	21P	4X	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g56X		M8	X-GenXY	21X	4P	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g56XY		M8	XY-GenXY	21X	4Y	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g56Y		M8	Y-GenXY	21P	4XY	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g57P		M13	Y-Symmetry	4X	4P	2	4	1	1	1 3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	g57Y		M13	Y-Gen	4XY	4Y	2	4	1	1	1 3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	g58P		M9	X-Symmetry	4X	4XY	3	4	1	1	1 3/4	A394	1	1	1	Long only	1.25	0	1.125	0	
0	0	0																			
	g58X		M9	X-Gen	4P	4Y	3	4	1	1	1 3/4	A394	1	1	1	Long only	1.25	0	1.125	0	
0	0	0																			
	g59P		M4	XY-Symmetry	22P	7X	3	5	1	0.5	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.125	2.5	
0	0	0																			
	g59X		M4	X-GenXY	22X	7P	3	5	1	0.5	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.125	2.5	
0	0	0																			
	g59XY		M4	XY-GenXY	22X	7Y	3	5	1	0.5	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.125	2.5	
0	0	0																			
	g59Y		M4	Y-GenXY	22P	7XY	3	5	1	0.5	0.5	3/4 A394	3	1	1	Long only	1.5	0	1.125	2.5	
0	0	0																			
	g60P		M4	Y-Symmetry	7X	7P	3	6	1	1	1 3/4	A394	0	1	0		0	0	0	0	
0	0	0																			
	g60Y		M4	Y-Gen	7XY	7Y	3	6	1	1	1 3/4	A394	0	1	0		0	0	0	0	
0	0	0																			
	g61P		M3	X-Symmetry	7X	7XY	3	6	1	1	1 3/4	A394	2	2	1	Long only	1	0	1.125	2.5	
0	0	0																			
	g61X		M3	X-Gen	7P	7Y	3	6	1	1	1 3/4	A394	2	2	1	Long only	1	0	1.125	2.5	
0	0	0																			
	g62P		M7	XY-Symmetry	22P	6X	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g62X		M7	X-GenXY	22X	6P	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g62XY		M7	XY-GenXY	22X	6Y	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g62Y		M7	Y-GenXY	22P	6XY	3	4	1	1	1 3/4	A394	2	1	1	Long only	1.375	0	1.125	2	
0	0	0																			
	g63P		M9	X-Symmetry	6P	6Y	3	4	1	1	1 3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	g63X		M9	X-Gen	6X	6XY	3	4	1	1	1 3/4	A394	1	1	1	Long only	0	0	0	0	
0	0	0																			
	g64P		M13	Y-Symmetry	6X	6P	2	4	1	1	1 3/4	A394	1	1	1	Long only	1.25	0	1.125	2	
0	0	0																			
	g64Y		M13	Y-Gen	6XY	6Y	2	4	1	1	1 3/4	A394	1	1	1	Long only	1.25	0	1.125	2	
0	0	0																			
	g65P		M10	XY-Symmetry	7X	31S	3	4	1	2	1 3/4	A394	1	1	1	Long only	1.125	0	1.125	0	

0	0	0																			
	g65X	M10	X-GenXY	7P	31S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g65XY	M10	XY-GenXY	7Y	31S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g65Y	M10	Y-GenXY	7XY	31S	3	4	1	2	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g66P	M2	Y-Symmetry	10X	10P	3	6	0.5	1	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2	
0	0	0																			
	g66Y	M2	Y-Gen	10XY	10Y	3	6	0.5	1	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2	
0	0	0																			
	g67P	M2	X-Symmetry	10P	10Y	3	6	0.5	1	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2	
0	0	0																			
	g67X	M2	X-Gen	10X	10XY	3	6	0.5	1	0.5	3/4	A394	2	1	1	Long only	1.125	0	1.125	2	
0	0	0																			
	g68P	M5	Y-Symmetry	12X	12P	3	6	1	0.5	0.5	3/4	A394	2	2	1	Short only	1.25	0	1.125	2	
0	0	0																			
	g68Y	M5	Y-Gen	12XY	12Y	3	6	1	0.5	0.5	3/4	A394	2	2	1	Short only	1.25	0	1.125	2	
0	0	0																			
	g69P	M5	X-Symmetry	12P	12Y	3	6	1	0.5	0.5	3/4	A394	2	2	1	Short only	1.25	0	1.125	2	
0	0	0																			
	g69X	M5	X-Gen	12X	12XY	3	6	1	0.5	0.5	3/4	A394	2	2	1	Short only	1.25	0	1.125	2	
0	0	0																			
	g72P	M12	XY-Symmetry	12X	30S	3	6	2	1	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g72X	M12	X-GenXY	12P	30S	3	6	2	1	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g72XY	M12	XY-GenXY	12Y	30S	3	6	2	1	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g72Y	M12	Y-GenXY	12XY	30S	3	6	2	1	1	3/4	A394	1	1	1	Long only	1.125	0	1.125	0	
0	0	0																			
	g70P	Pwmnt	None	28P	23P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g71P	Pwmnt	None	23P	24P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g73P	Pwmnt	None	24P	25P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g74P	Pwmnt	None	25P	26P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g75P	Pwmnt	None	26P	27P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g76P	Pwmnt	None	27P	29P	1	4	1	1	1			0	0	0		0	0	0	0	
0	0	0																			
	g77P	Plate	None	34S	27P	1	4	1	1	1	3/4	A490	1	2	2	Both	1.125	0	1.125	0	
0	0	0																			
	g78P	NewBR	None	27P	1P	3	4	1	1	1	3/4	A490	1	1	1	Short only	1.125	0	1.125	0	
0	0	0																			
	g79P	NewBR	None	27P	1Y	3	4	1	1	1	3/4	A490	1	1	1	Short only	1.125	0	1.125	0	
0	0	0																			
	g80P	Plate	None	33S	26P	1	4	1	1	1	3/4	A490	1	2	2	Both	1.125	0	1.125	0	
0	0	0																			
	g81P	NewBR	None	26P	2P	3	4	1	1	1	3/4	A490	1	1	1	Short only	1	0	1	0	
0	0	0																			
	g82P	NewBR	None	26P	2Y	3	4	1	1	1	3/4	A490	1	1	1	Short only	1	0	1	0	
0	0	0																			
	g83P	PwmntBR1	None	32S	25P	3	4	1	1	1	5/8	A325	1	1	1	Short only	1	0	1	0	
0	0	0																			
	g84P	PwmntBR1	None	25P	5P	3	4	1	1	1	5/8	A325	1	1	1	Short only	1	0	1	0	
0	0	0																			
	g85P	PwmntBR1	None	25P	5Y	3	4	1	1	1	5/8	A325	1	1	1	Short only	1	0	1	0	

0	0	0																			
g86P	PwmntBR1		None	31S	24P	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			
g87P	PwmntBR1		None	24P	7P	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			
g88P	PwmntBR1		None	24P	7Y	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			
g89P	PwmntBR1		None	30S	23P	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			
g90P	PwmntBR2		None	23P	12P	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			
g91P	PwmntBR2		None	23P	12Y	3	4	1	1	1 5/8 A325	1	1	1 Short only	1	0	1	0				
0	0	0																			

Member Capacities and Overrides:

Member Label	Group Label	Design Comp. Override	Comp. Control Override	Design Tension Override	Tension Control Override	L/r Length		L/r Comp. Capacity	Connection Shear Capacity	Connection Bearing Capacity	Net Section Tension Capacity	Rupture Tension Capacity	RTE End Dist. Capacity	RTE Edge Dist. Capacity	Override Comp. Capacity	Override Warnings or Errors
		Capacity	Criterion	Capacity	Criterion											
		(kips)		(kips)		(ft)		(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	
g3P	Leg1	89.489	L/r Control	63.896	Net Sect Member	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3X	Leg1	89.489	L/r Control	63.896	Net Sect Member	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3XY	Leg1	89.489	L/r Control	63.896	Net Sect Member	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3Y	Leg1	89.489	L/r Control	63.896	Net Sect Member	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4P	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4X	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4XY	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4Y	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5P	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5X	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5XY	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5Y	Leg1	93.269	L/r Control	70.664	Net Sect Member	48	4.00	93.269	0.000	0.000	70.664	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6P	Leg1	93.269	L/r Control	63.896	Net Sect Member	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6X	Leg1	93.269	L/r Control	63.896	Net Sect Member	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													

g6XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g6Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7P	Leg1	89.489	L/r	74.995	Net Sect	60	5.00	89.489	0.000	0.000	74.995	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7X	Leg1	89.489	L/r	74.995	Net Sect	60	5.00	89.489	0.000	0.000	74.995	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7XY	Leg1	89.489	L/r	74.995	Net Sect	60	5.00	89.489	0.000	0.000	74.995	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7Y	Leg1	89.489	L/r	74.995	Net Sect	60	5.00	89.489	0.000	0.000	74.995	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g8P	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**136.000**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g8X	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**136.000**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g8XY	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**136.000**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g8Y	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**136.000**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g9P	Leg2	97.966	L/r	84.356	Net Sect	51	5.10	97.966	0.000	0.000	84.356	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g9X	Leg2	97.966	L/r	84.356	Net Sect	51	5.10	97.966	0.000	0.000	84.356	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g9XY	Leg2	97.966	L/r	84.356	Net Sect	51	5.10	97.966	0.000	0.000	84.356	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g9Y	Leg2	97.966	L/r	84.356	Net Sect	51	5.10	97.966	0.000	0.000	84.356	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g10P	**Leg2**	**91.422**	**L/r**	**90.582**	**Net Sect**	**71**	**7.13**	**91.422**	**136.000**	**210.937**	**90.582**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g10X	**Leg2**	**91.422**	**L/r**	**90.582**	**Net Sect**	**71**	**7.13**	**91.422**	**136.000**	**210.937**	**90.582**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g10XY	**Leg2**	**91.422**	**L/r**	**90.582**	**Net Sect**	**71**	**7.13**	**91.422**	**136.000**	**210.937**	**90.582**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g10Y	**Leg2**	**91.422**	**L/r**	**90.582**	**Net Sect**	**71**	**7.13**	**91.422**	**136.000**	**210.937**	**90.582**	**183.823**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g11P	Leg3	115.850	L/r	122.224	Net Sect	82	8.15	115.850	0.000	0.000	122.224	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g11X	Leg3	115.850	L/r	122.224	Net Sect	82	8.15	115.850	0.000	0.000	122.224	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g11XY	Leg3	115.850	L/r	122.224	Net Sect	82	8.15	115.850	0.000	0.000	122.224	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g11Y	Leg3	115.850	L/r	122.224	Net Sect	82	8.15	115.850	0.000	0.000	122.224	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g12P	**Leg3**	**122.414**	**L/r**	**108.039**	**Net Sect**	**72**	**14.27**	**122.414**	**163.200**	**303.750**	**108.039**	**281.250**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g12X	**Leg3**	**122.414**	**L/r**	**108.039**	**Net Sect**	**72**	**14.27**	**122.414**	**163.200**	**303.750**	**108.039**	**281.250**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g12XY	**Leg3**	**122.414**	**L/r**	**108.039**	**Net Sect**	**72**	**14.27**	**122.414**	**163.200**	**303.750**	**108.039**	**281.250**	**0.000**	**0.000**	**0.000**

0.000	0.000	Automatic Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g12Y	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	163.200	303.750	108.039	281.250	0.000	0.000	0.000
0.000	0.000	Automatic Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g13P	Leg3	124.805	L/r	108.039	Net Sect	68	20.38	124.805	163.200	303.750	108.039	264.705	0.000	0.000	0.000
0.000	0.000	Automatic Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g13X	Leg3	124.805	L/r	108.039	Net Sect	68	20.38	124.805	163.200	303.750	108.039	264.705	0.000	0.000	0.000
0.000	0.000	Automatic Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g13XY	Leg3	124.805	L/r	108.039	Net Sect	68	20.38	124.805	163.200	303.750	108.039	264.705	0.000	0.000	0.000
0.000	0.000	Automatic Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g13Y	Leg3	124.805	L/r	108.039	Net Sect	68	20.38	124.805	163.200	303.750	108.039	264.705	0.000	0.000	0.000
0.000	0.000	Automatic Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??													
g18P	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g18X	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g18XY	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g18Y	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g19P	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g19X	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g19XY	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g19Y	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	27.200	25.312	19.184	21.094	0.000	0.000	0.000
0.000	0.000	Automatic													
g20P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g20X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g20XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g20Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g21P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g21X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g21XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g21Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g22P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g22X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g22XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g22Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													
g23P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000	0.000	Automatic													

g23X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g23XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g23Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g24P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g24X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g24XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g24Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g25P	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g25X	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g25XY	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g25Y	Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	27.200	33.750	24.985	26.766	0.000	0.000	0.000
0.000		0.000		Automatic											
g26P	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g26X	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g26XY	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g26Y	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g27P	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g27X	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g27XY	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g27Y	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g28P	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g28X	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g28XY	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g28Y	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g29P	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g29X	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g29XY	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g29Y	Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	40.800	50.625	28.846	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g30P	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g30X	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g30XY	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											

g30Y	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g31P	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g31X	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g31XY	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g31Y	Diag4	27.200	Shear	27.200	Shear	105	7.61	31.837	27.200	42.187	35.241	35.156	0.000	0.000	0.000
0.000		0.000		Automatic											
g32P	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g32X	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g32XY	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g32Y	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g33P	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g33X	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g33XY	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g33Y	Diag3	18.150	L/r	27.200	Shear	142	10.21	18.150	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g34P	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g34X	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g34XY	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g34Y	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g35P	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g35X	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g35XY	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g35Y	Diag3	13.601	L/r	27.200	Shear	170	12.43	13.601	27.200	33.750	28.846	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g36P	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g36X	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g36XY	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g36Y	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g37P	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g37X	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g37XY	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g37Y	Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	27.200	33.750	24.985	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g38P	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											

g38X	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g38XY	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g38Y	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g39P	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g39X	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g39XY	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g39Y	Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	27.200	33.750	24.985	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g42P	M4	20.466	L/r	27.200	Shear	149	11.52	20.466	27.200	33.750	36.271	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g42X	M4	20.466	L/r	27.200	Shear	149	11.52	20.466	27.200	33.750	36.271	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g42XY	M4	20.466	L/r	27.200	Shear	149	11.52	20.466	27.200	33.750	36.271	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g42Y	M4	20.466	L/r	27.200	Shear	149	11.52	20.466	27.200	33.750	36.271	28.125	0.000	0.000	0.000
0.000		0.000		Automatic											
g43P	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g43Y	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g44P	M3	26.226	L/r	20.953	Rupture	114	5.00	26.226	27.200	33.750	25.913	20.953	0.000	0.000	0.000
0.000		0.000		Automatic											
g44X	M3	26.226	L/r	20.953	Rupture	114	5.00	26.226	27.200	33.750	25.913	20.953	0.000	0.000	0.000
0.000		0.000		Automatic											
g45P	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g45X	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g45XY	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g45Y	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g46P	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g46X	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g46XY	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g46Y	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g47P	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g47Y	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g48P	M3	26.226	L/r	20.953	Rupture	114	5.00	26.226	27.200	33.750	32.410	20.953	0.000	0.000	0.000
0.000		0.000		Automatic											
g48X	M3	26.226	L/r	20.953	Rupture	114	5.00	26.226	27.200	33.750	32.410	20.953	0.000	0.000	0.000
0.000		0.000		Automatic											
g49P	M14	10.714	L/r	10.652	Rupture	155	6.40	10.714	13.600	12.656	21.917	10.652	0.000	0.000	0.000
0.000		0.000		Automatic											
g49X	M14	10.714	L/r	10.652	Rupture	155	6.40	10.714	13.600	12.656	21.917	10.652	0.000	0.000	0.000
0.000		0.000		Automatic											
g50P	M7	3.502	L/r	18.035	Rupture	257	9.15	3.502	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											

g50X	M7	3.502	L/r	18.035	Rupture	257	9.15	3.502	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g50XY	M7	3.502	L/r	18.035	Rupture	257	9.15	3.502	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g50Y	M7	3.502	L/r	18.035	Rupture	257	9.15	3.502	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g51P	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g51X	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g51XY	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g51Y	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g52P	M5	34.023	L/r	43.696	Net Sect	113	12.01	34.023	54.400	67.500	43.696	56.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g52X	M5	34.023	L/r	43.696	Net Sect	113	12.01	34.023	54.400	67.500	43.696	56.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g52XY	M5	34.023	L/r	43.696	Net Sect	113	12.01	34.023	54.400	67.500	43.696	56.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g52Y	M5	34.023	L/r	43.696	Net Sect	113	12.01	34.023	54.400	67.500	43.696	56.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g53P	M5	37.680	L/r	43.696	Net Sect	92	5.00	37.680	0.000	0.000	43.696	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g53Y	M5	37.680	L/r	43.696	Net Sect	92	5.00	37.680	0.000	0.000	43.696	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g55P	M3	26.226	L/r	25.453	Rupture	114	5.00	26.226	27.200	33.750	25.913	25.453	0.000	0.000	0.000
0.000		0.000		Automatic											
g55X	M3	26.226	L/r	25.453	Rupture	114	5.00	26.226	27.200	33.750	25.913	25.453	0.000	0.000	0.000
0.000		0.000		Automatic											
g54P	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g54X	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g54XY	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g54Y	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g56P	M8	2.363	L/r	24.047	Rupture	358	12.66	2.363	27.200	33.750	24.985	24.047	0.000	0.000	0.000
0.000		0.000		Automatic											
g56X	M8	2.363	L/r	24.047	Rupture	358	12.66	2.363	27.200	33.750	24.985	24.047	0.000	0.000	0.000
0.000		0.000		Automatic											
g56XY	M8	2.363	L/r	24.047	Rupture	358	12.66	2.363	27.200	33.750	24.985	24.047	0.000	0.000	0.000
0.000		0.000		Automatic											
g56Y	M8	2.363	L/r	24.047	Rupture	358	12.66	2.363	27.200	33.750	24.985	24.047	0.000	0.000	0.000
0.000		0.000		Automatic											
g57P	**M13**	**0.259**	**L/r**	**12.066**	**Net Sect**	**831**	**5.00**	**0.259**	**13.600**	**16.875**	**12.066**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57P" ??															
g57Y	**M13**	**0.259**	**L/r**	**12.066**	**Net Sect**	**831**	**5.00**	**0.259**	**13.600**	**16.875**	**12.066**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 831.02 exceeds maximum of 200.00 for member "g57Y" ??															
g58P	M9	11.742	L/r	9.668	Rupture	141	5.00	11.742	13.600	12.656	19.184	9.668	0.000	0.000	0.000
0.000		0.000		Automatic											
g58X	M9	11.742	L/r	9.668	Rupture	141	5.00	11.742	13.600	12.656	19.184	9.668	0.000	0.000	0.000
0.000		0.000		Automatic											
g59P	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g59X	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	40.800	50.625	36.271	42.187	0.000	0.000	0.000

0.000		0.000		Automatic											
g59XY	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g59Y	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	40.800	50.625	36.271	42.187	0.000	0.000	0.000
0.000		0.000		Automatic											
g60P	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g60Y	M4	30.742	L/r	36.271	Net Sect	101	5.00	30.742	0.000	0.000	36.271	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g61P	M3	26.226	L/r	25.453	Rupture	114	5.00	26.226	27.200	33.750	25.913	25.453	0.000	0.000	0.000
0.000		0.000		Automatic											
g61X	M3	26.226	L/r	25.453	Rupture	114	5.00	26.226	27.200	33.750	25.913	25.453	0.000	0.000	0.000
0.000		0.000		Automatic											
g62P	M7	3.215	L/r	18.035	Rupture	269	9.56	3.215	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g62X	M7	3.215	L/r	18.035	Rupture	269	9.56	3.215	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g62XY	M7	3.215	L/r	18.035	Rupture	269	9.56	3.215	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g62Y	M7	3.215	L/r	18.035	Rupture	269	9.56	3.215	27.200	25.312	19.184	18.035	0.000	0.000	0.000
0.000		0.000		Automatic											
g63P	M9	11.742	L/r	9.640	Rupture	141	5.00	11.742	13.600	12.656	19.184	9.640	0.000	0.000	0.000
0.000		0.000		Automatic											
g63X	M9	11.742	L/r	9.640	Rupture	141	5.00	11.742	13.600	12.656	19.184	9.640	0.000	0.000	0.000
0.000		0.000		Automatic											
g64P	**M13**	**0.259**	**L/r**	**12.066**	**Net Sect**	**831**	**5.00**	**0.259**	**13.600**	**16.875**	**12.066**	**12.891**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64P" ??															
g64Y	**M13**	**0.259**	**L/r**	**12.066**	**Net Sect**	**831**	**5.00**	**0.259**	**13.600**	**16.875**	**12.066**	**12.891**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 831.02 exceeds maximum of 200.00 for member "g64Y" ??															
g65P	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g65X	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g65XY	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g65Y	M10	11.592	L/r	8.895	Rupture	141	3.54	11.592	13.600	12.656	19.184	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g66P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	27.200	33.750	28.846	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g66Y	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	27.200	33.750	28.846	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g67P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	27.200	33.750	28.846	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g67X	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	27.200	33.750	28.846	21.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g68P	M5	27.200	Shear	23.016	Rupture	136	14.46	28.782	27.200	33.750	29.774	23.016	0.000	0.000	0.000
0.000		0.000		Automatic											
g68Y	M5	27.200	Shear	23.016	Rupture	136	14.46	28.782	27.200	33.750	29.774	23.016	0.000	0.000	0.000
0.000		0.000		Automatic											
g69P	M5	27.200	Shear	23.016	Rupture	136	14.46	28.782	27.200	33.750	29.774	23.016	0.000	0.000	0.000
0.000		0.000		Automatic											
g69X	M5	27.200	Shear	23.016	Rupture	136	14.46	28.782	27.200	33.750	29.774	23.016	0.000	0.000	0.000
0.000		0.000		Automatic											
g72P	M12	4.475	L/r	8.895	Rupture	315	10.22	4.475	13.600	12.656	21.917	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g72X	M12	4.475	L/r	8.895	Rupture	315	10.22	4.475	13.600	12.656	21.917	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											

g72XY	M12	4.475	L/r	8.895	Rupture	315	10.22	4.475	13.600	12.656	21.917	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g72Y	M12	4.475	L/r	8.895	Rupture	315	10.22	4.475	13.600	12.656	21.917	8.895	0.000	0.000	0.000
0.000		0.000		Automatic											
g70P	Pwmnt	591.240	L/r	679.999	Net Sect	55	20.00	591.240	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g71P	Pwmnt	423.485	L/r	679.999	Net Sect	93	34.00	423.485	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g73P	Pwmnt	657.809	L/r	679.999	Net Sect	27	10.00	657.809	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g74P	Pwmnt	648.046	L/r	679.999	Net Sect	33	12.00	648.046	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g75P	Pwmnt	674.451	L/r	679.999	Net Sect	14	5.00	674.451	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g76P	Pwmnt	615.870	L/r	679.999	Net Sect	46	17.00	615.870	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g77P	Plate	62.680	Shear	62.680	Shear	83	1.50	126.788	62.680	0.000	162.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g78P	NewBR	16.312	Bearing	12.722	Rupture	66	2.69	31.213	31.340	16.312	31.975	12.722	0.000	0.000	0.000
0.000		0.000		Automatic											
g79P	NewBR	16.312	Bearing	12.722	Rupture	66	2.69	31.213	31.340	16.312	31.975	12.722	0.000	0.000	0.000
0.000		0.000		Automatic											
g80P	Plate	62.680	Shear	62.680	Shear	83	1.50	126.788	62.680	0.000	162.000	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g81P	NewBR	16.312	Bearing	10.509	Rupture	66	2.69	31.213	31.340	16.312	31.975	10.509	0.000	0.000	0.000
0.000		0.000		Automatic											
g82P	NewBR	16.312	Bearing	10.509	Rupture	66	2.69	31.213	31.340	16.312	31.975	10.509	0.000	0.000	0.000
0.000		0.000		Automatic											
g83P	PwmntBR1	10.195	Bearing	8.712	Rupture	46	1.50	20.044	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g84P	PwmntBR1	10.195	Bearing	8.712	Rupture	82	2.69	17.361	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g85P	PwmntBR1	10.195	Bearing	8.712	Rupture	82	2.69	17.361	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g86P	PwmntBR1	10.195	Bearing	8.712	Rupture	46	1.50	20.044	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g87P	PwmntBR1	10.195	Bearing	8.712	Rupture	82	2.69	17.361	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g88P	PwmntBR1	10.195	Bearing	8.712	Rupture	82	2.69	17.361	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g89P	PwmntBR1	10.195	Bearing	8.712	Rupture	46	1.50	20.044	16.800	10.195	18.827	8.712	0.000	0.000	0.000
0.000		0.000		Automatic											
g90P	PwmntBR2	13.594	Bearing	11.616	Rupture	160	9.23	19.010	16.800	13.594	49.187	11.616	0.000	0.000	0.000
0.000		0.000		Automatic											
g91P	PwmntBR2	13.594	Bearing	11.616	Rupture	160	9.23	19.010	16.800	13.594	49.187	11.616	0.000	0.000	0.000
0.000		0.000		Automatic											

The model contains 235 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	0.12	5.612	4.340
2P	0.142	6.112	5.674
3P	0.0876	3.834	3.834
4P	0.123	5.648	4.846

5P	0.167	7.351	5.726
6P	0.135	6.080	5.701
7P	0.176	6.814	6.283
8P	0.156	6.140	6.140
9P	0.198	7.712	7.712
10P	0.33	12.212	12.212
12P	0.549	20.861	21.080
15P	0.248	9.901	9.901
19P	0.0663	3.479	1.146
20P	0.0726	4.314	2.310
21P	0.116	6.503	1.816
22P	0.0662	3.859	1.790
23P	1.39	30.484	30.796
24P	1.1	23.667	23.792
25P	0.554	11.979	12.104
26P	0.444	9.615	9.552
27P	0.568	12.271	12.208
28P	0.496	10.625	10.625
29P	0.422	9.031	9.031
1X	0.114	5.508	4.079
1XY	0.114	5.508	4.079
1Y	0.12	5.612	4.340
2X	0.136	6.008	5.414
2XY	0.136	6.008	5.414
2Y	0.142	6.112	5.674
3X	0.0876	3.834	3.834
3XY	0.0876	3.834	3.834
3Y	0.0876	3.834	3.834
4X	0.123	5.648	4.846
4XY	0.123	5.648	4.846
4Y	0.123	5.648	4.846
5X	0.164	7.268	5.518
5XY	0.164	7.268	5.518
5Y	0.167	7.351	5.726
6X	0.135	6.080	5.701
6XY	0.135	6.080	5.701
6Y	0.135	6.080	5.701
7X	0.173	6.731	6.075
7XY	0.173	6.731	6.075
7Y	0.176	6.814	6.283
8X	0.156	6.140	6.140
8XY	0.156	6.140	6.140
8Y	0.156	6.140	6.140
9X	0.198	7.712	7.712
9XY	0.198	7.712	7.712
9Y	0.198	7.712	7.712
10X	0.33	12.212	12.212
10XY	0.33	12.212	12.212
10Y	0.33	12.212	12.212
12X	0.522	20.026	20.026
12XY	0.522	20.026	20.026
12Y	0.549	20.861	21.080
15X	0.248	9.901	9.901
15XY	0.248	9.901	9.901
15Y	0.248	9.901	9.901
19X	0.0663	3.479	1.146
20X	0.0726	4.314	2.310
21X	0.116	6.503	1.816
22X	0.0662	3.859	1.790
30S	0.0646	3.138	3.013

31S	0.0213	1.167	1.042
32S	0.0213	1.167	1.042
33S	0.0309	1.417	1.042
34S	0.0309	1.417	1.042
Total	15.4	542.974	499.227

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)
3	7.726	293.838	249.467	149.413	74.018
1	7.697	249.136	249.761	130.779	73.404
Total	15.424	542.974	499.227	280.192	147.422

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)
3	7.726	7.726	1231.328	1231.328
1	7.697	8.467	1037.340	1141.074
Total	15.424	16.193	2268.668	2372.402

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
3	1X	81.000
3	2X	76.000
3	1P	81.000
3	2P	76.000
3	1Y	81.000
3	2Y	76.000
3	1XY	81.000
3	2XY	76.000
3	3X	72.000
3	3P	72.000
3	3Y	72.000
3	3XY	72.000
3	4X	68.000
3	4P	68.000
3	4Y	68.000
3	4XY	68.000
3	5X	64.000
3	5P	64.000
3	5Y	64.000
3	5XY	64.000
3	6X	59.000
3	6P	59.000
3	6Y	59.000
3	6XY	59.000
3	7X	54.000
3	7P	54.000
3	7Y	54.000

3	7XY	54.000
3	8X	49.000
3	8P	49.000
3	8Y	49.000
3	8XY	49.000
3	9X	42.000
3	9P	42.000
3	9Y	42.000
3	9XY	42.000
3	19P	81.000
3	19X	81.000
3	34S	81.000
3	20P	76.000
3	20X	76.000
3	33S	76.000
3	21P	64.000
3	21X	64.000
3	32S	64.000
3	22P	54.000
3	22X	54.000
3	31S	54.000
3	24P	54.000
3	25P	64.000
3	26P	76.000
3	27P	81.000
3	29P	98.000
1	9X	42.000
1	10X	34.000
1	9P	42.000
1	10P	34.000
1	9Y	42.000
1	10Y	34.000
1	9XY	42.000
1	10XY	34.000
1	12X	20.000
1	12P	20.000
1	12Y	20.000
1	12XY	20.000
1	15X	0.000
1	15P	0.000
1	15Y	0.000
1	15XY	0.000
1	30S	20.000
1	28P	0.000
1	23P	20.000
1	24P	54.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
3	98.000	42.000	53	182	0.00	8.34	257.590	0.00	8.34	627.090
1	42.000	0.000	20	53	8.34	20.00	595.340	8.34	20.00	595.340

*** 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)
Clamp1	19P	C-EX1	No Limit
Clamp2	19X	C-EX1	No Limit
Clamp3	20P	C-EX1	No Limit
Clamp4	20X	C-EX1	No Limit
Clamp5	21P	C-EX1	No Limit
Clamp6	21X	C-EX1	No Limit
Clamp7	22P	C-EX1	No Limit
Clamp8	22X	C-EX1	No Limit
Clamp9	1P	C-EX1	No Limit
Clamp10	1Y	C-EX1	No Limit
Clamp11	2P	C-EX1	No Limit
Clamp12	2Y	C-EX1	No Limit
Clamp13	5P	C-EX1	No Limit
Clamp14	5Y	C-EX1	No Limit
Clamp15	7P	C-EX1	No Limit
Clamp16	7Y	C-EX1	No Limit
Clamp17	12P	C-EX1	No Limit
Clamp18	12Y	C-EX1	No Limit
Clamp19	30S	C-EX1	No Limit
Clamp20	31S	C-EX1	No Limit
Clamp21	32S	C-EX1	No Limit
Clamp22	33S	C-EX1	No Limit
Clamp23	34S	C-EX1	No Limit
CLamp24	29P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1607100.wi\30_shelton nu ct2044\04_structural\backup documentation\calcs\pls tower\cl&p # 1340.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)	98.00 (ft)	
Structure height	98.00 (ft)	
Structure height above ground	98.00 (ft)	
Tower Shape	Rectangular	

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	15 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	15 loads	NESC 2007	31	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
19P	1145	1050	0	3/8 AW Shield Wire
19X	1145	1050	0	3/8 AW Shield Wire
20P	2632	1641	0	Tern Conductor
20X	2632	1641	0	Tern Conductor
21P	2632	1641	0	Tern Conductor
21X	2632	1641	0	Tern Conductor
22P	2632	1641	0	Tern Conductor
22X	2632	1641	0	Tern Conductor
29P	8052	1485	0	Powermount
29P	357	36	0	Coax Cables
34S	462	47	0	Coax Cables
33S	357	36	0	Coax Cables
32S	462	47	0	Coax Cables
31S	924	94	0	Coax Cables
30S	1554	159	0	Coax Cables

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

Section Label	Z of	Z of	Ave. Elev.	Res. Adj.	Tran Adj.	Tran Drag	Tran Wind	Long Adj.	Long Drag	Long Wind	Ice Weight	Total Weight

	Top (ft)	Bottom (ft)	Above Ground (ft)	Wind Pres. (psf)	Wind Pres. (psf)	Coef	Load (lbs)	Wind Pres. (psf)	Coef	Load (lbs)	(lbs)	(lbs)
3	98.00	42.00	70.00	10.00	10.00	3.200	2368.6	0.00	3.200	0.0	0	11589
1	42.00	0.00	21.00	10.00	10.00	3.200	2348.9	0.00	3.200	0.0	0	12701

Point Loads for Load Case "NESC Extreme":

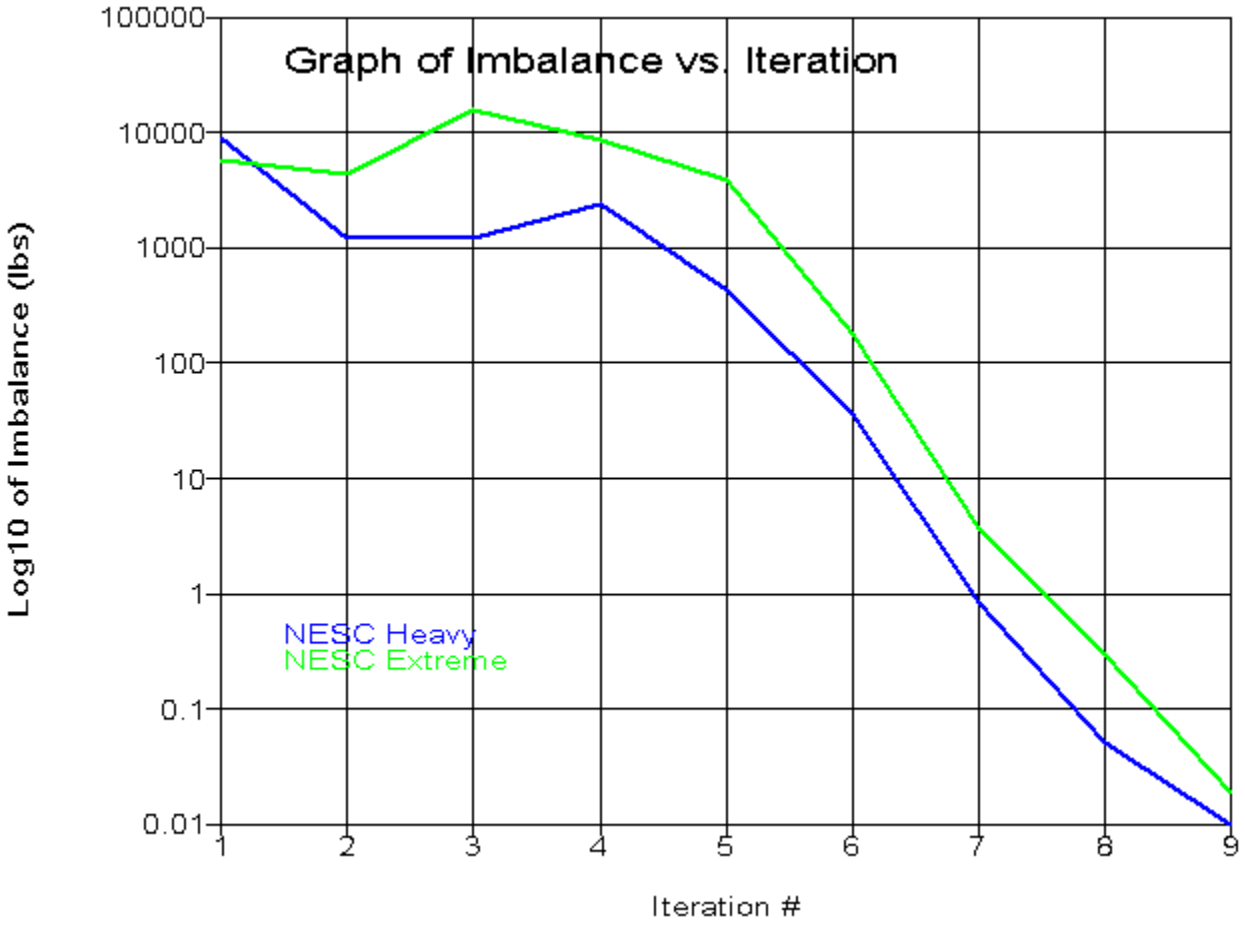
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
19P	246	782	0	3/8 AW Shield Wire
19X	246	782	0	3/8 AW Shield Wire
20P	841	2091	0	Tern Conductor
20X	841	2091	0	Tern Conductor
21P	841	2091	0	Tern Conductor
21X	841	2091	0	Tern Conductor
22P	841	2091	0	Tern Conductor
22X	841	2091	0	Tern Conductor
29P	3728	5591	0	Powermount
29P	138	86	0	Coax Cables
34S	178	111	0	Coax Cables
33S	138	86	0	Coax Cables
32S	178	111	0	Coax Cables
31S	356	222	0	Coax Cables
30S	599	373	0	Coax Cables

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
3	98.00	42.00	70.00	31.30	31.30	74.02	0.00	257.59	0.287	3.200	2.000	7412.6	0.00	102.66	46.75	627.09	0.238	3.200	2.000	0.0	0	7726
1	42.00	0.00	21.00	31.30	31.30	80.74	0.00	595.34	0.136	3.200	2.000	8086.2	0.00	80.74	63.11	595.34	0.242	3.200	2.000	0.0	0	8467

*** Analysis Results:

Maximum element usage is 96.92% for Angle "g45Y" in load case "NESC Extreme"
Maximum insulator usage is 18.34% for Clamp "CLamp24" 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)
Leg1	g3P	9.39	5.999	0.000	0.250	5.999
Leg1	g3X	7.45	0.000	-6.669	-3.636	-6.669
Leg1	g3XY	7.45	0.000	-6.669	-3.636	-6.669
Leg1	g3Y	9.39	5.999	0.000	0.250	5.999

Leg1	g4P	22.41	15.837	0.000	4.047	15.837
Leg1	g4X	16.29	0.000	-15.196	-6.907	-15.196
Leg1	g4XY	16.29	0.000	-15.196	-6.907	-15.196
Leg1	g4Y	22.41	15.837	0.000	4.047	15.837
Leg1	g5P	30.55	21.584	0.000	6.217	21.584
Leg1	g5X	23.83	0.000	-22.229	-11.125	-22.229
Leg1	g5XY	23.83	0.000	-22.229	-11.125	-22.229
Leg1	g5Y	30.55	21.584	0.000	6.217	21.584
Leg1	g6P	40.01	25.565	0.000	7.605	25.565
Leg1	g6X	29.08	0.000	-27.121	-14.806	-27.121
Leg1	g6XY	29.08	0.000	-27.121	-14.806	-27.121
Leg1	g6Y	40.01	25.565	0.000	7.605	25.565
Leg1	g7P	43.39	32.541	0.000	11.642	32.541
Leg1	g7X	37.64	0.000	-33.688	-18.333	-33.688
Leg1	g7XY	37.64	0.000	-33.688	-18.333	-33.688
Leg1	g7Y	43.39	32.541	0.000	11.642	32.541
Leg1	g8P	57.18	40.093	0.000	15.030	40.093
Leg1	g8X	47.43	0.000	-42.444	-24.295	-42.444
Leg1	g8XY	47.43	0.000	-42.444	-24.295	-42.444
Leg1	g8Y	57.18	40.093	0.000	15.030	40.093
Leg2	g9P	57.86	48.810	0.000	19.447	48.810
Leg2	g9X	52.11	0.000	-51.052	-30.096	-51.052
Leg2	g9XY	52.11	0.000	-51.052	-30.096	-51.052
Leg2	g9Y	57.86	48.810	0.000	19.447	48.810
Leg2	g10P	55.69	50.446	0.000	20.577	50.446
Leg2	g10X	58.57	0.000	-53.546	-32.613	-53.546
Leg2	g10XY	58.57	0.000	-53.546	-32.613	-53.546
Leg2	g10Y	55.69	50.446	0.000	20.577	50.446
Leg3	g11P	40.22	49.164	0.000	20.762	49.164
Leg3	g11X	45.64	0.000	-52.872	-32.843	-52.872
Leg3	g11XY	45.64	0.000	-52.872	-32.843	-52.872
Leg3	g11Y	40.22	49.164	0.000	20.762	49.164
Leg3	g12P	43.50	46.993	0.000	20.092	46.993
Leg3	g12X	44.98	0.000	-55.063	-31.542	-55.063
Leg3	g12XY	44.98	0.000	-55.063	-31.542	-55.063
Leg3	g12Y	43.50	46.993	0.000	20.092	46.993
Leg3	g13P	44.21	47.763	0.000	20.243	47.763
Leg3	g13X	45.97	0.000	-57.371	-35.976	-57.371
Leg3	g13XY	45.97	0.000	-57.371	-35.976	-57.371
Leg3	g13Y	44.21	47.763	0.000	20.243	47.763
Diag1	g18P	55.64	0.000	-9.728	-3.330	-9.728
Diag1	g18X	50.58	9.704	0.000	3.061	9.704
Diag1	g18XY	50.58	9.704	0.000	3.061	9.704
Diag1	g18Y	55.64	0.000	-9.728	-3.330	-9.728
Diag1	g19P	3.39	0.000	-0.443	-0.399	-0.443
Diag1	g19X	2.22	0.426	-0.030	-0.030	0.426
Diag1	g19XY	2.22	0.426	-0.030	-0.030	0.426
Diag1	g19Y	3.39	0.000	-0.443	-0.399	-0.443
Diag2	g20P	20.48	0.000	-4.974	-3.380	-4.974
Diag2	g20X	16.97	4.239	0.000	1.472	4.239
Diag2	g20XY	16.97	4.239	0.000	1.472	4.239
Diag2	g20Y	20.48	0.000	-4.974	-3.380	-4.974
Diag2	g21P	4.46	0.000	-0.845	-0.004	-0.845
Diag2	g21X	2.50	0.625	0.000	0.420	0.625
Diag2	g21XY	2.50	0.625	0.000	0.420	0.625
Diag2	g21Y	4.46	0.000	-0.845	-0.004	-0.845
Diag2	g22P	17.60	0.000	-4.274	-1.470	-4.274
Diag2	g22X	19.90	4.972	0.000	3.415	4.972
Diag2	g22XY	19.90	4.972	0.000	3.415	4.972
Diag2	g22Y	17.60	0.000	-4.274	-1.470	-4.274

Diag2	g23P	1.36	0.233	-0.257	-0.257	0.233
Diag2	g23X	1.71	0.000	-0.323	-0.323	-0.295
Diag2	g23XY	1.71	0.000	-0.323	-0.323	-0.295
Diag2	g23Y	1.36	0.233	-0.257	-0.257	0.233
Diag2	g24P	19.28	0.000	-4.682	-2.250	-4.682
Diag2	g24X	19.86	4.963	0.000	2.813	4.963
Diag2	g24XY	19.86	4.963	0.000	2.813	4.963
Diag2	g24Y	19.28	0.000	-4.682	-2.250	-4.682
Diag2	g25P	11.56	0.000	-2.192	-1.179	-2.192
Diag2	g25X	7.96	1.989	0.000	0.599	1.989
Diag2	g25XY	7.96	1.989	0.000	0.599	1.989
Diag2	g25Y	11.56	0.000	-2.192	-1.179	-2.192
Diag3	g26P	24.20	0.000	-7.040	-4.222	-7.040
Diag3	g26X	24.18	6.976	0.000	3.699	6.976
Diag3	g26XY	24.18	6.976	0.000	3.699	6.976
Diag3	g26Y	24.20	0.000	-7.040	-4.222	-7.040
Diag3	g27P	14.33	0.000	-3.475	-1.847	-3.475
Diag3	g27X	11.38	3.283	0.000	1.200	3.283
Diag3	g27XY	11.38	3.283	0.000	1.200	3.283
Diag3	g27Y	14.33	0.000	-3.475	-1.847	-3.475
Diag3	g28P	24.42	0.000	-7.104	-4.270	-7.104
Diag3	g28X	24.36	7.027	0.000	3.743	7.027
Diag3	g28XY	24.36	7.027	0.000	3.743	7.027
Diag3	g28Y	24.42	0.000	-7.104	-4.270	-7.104
Diag3	g29P	25.00	0.000	-6.063	-3.594	-6.063
Diag3	g29X	20.07	5.790	0.000	2.172	5.790
Diag3	g29XY	20.07	5.790	0.000	2.172	5.790
Diag3	g29Y	25.00	0.000	-6.063	-3.594	-6.063
Diag4	g30P	4.20	0.000	-1.143	-1.143	-0.011
Diag4	g30X	1.02	0.203	-0.276	0.203	-0.276
Diag4	g30XY	1.02	0.203	-0.276	0.203	-0.276
Diag4	g30Y	4.20	0.000	-1.143	-1.143	-0.011
Diag4	g31P	7.29	0.000	-1.983	-0.873	-1.983
Diag4	g31X	6.16	1.676	0.000	0.779	1.676
Diag4	g31XY	6.16	1.676	0.000	0.779	1.676
Diag4	g31Y	7.29	0.000	-1.983	-0.873	-1.983
Diag3	g32P	2.67	0.000	-0.485	-0.485	-0.072
Diag3	g32X	2.81	0.765	0.000	0.765	0.027
Diag3	g32XY	2.81	0.765	0.000	0.765	0.027
Diag3	g32Y	2.67	0.000	-0.485	-0.485	-0.072
Diag3	g33P	5.03	1.369	0.000	0.526	1.369
Diag3	g33X	6.80	0.000	-1.114	-0.526	-1.114
Diag3	g33XY	6.80	0.000	-1.114	-0.526	-1.114
Diag3	g33Y	5.03	1.369	0.000	0.526	1.369
Diag3	g34P	6.07	0.000	-0.826	-0.826	-0.771
Diag3	g34X	2.03	0.553	0.000	0.319	0.553
Diag3	g34XY	2.03	0.553	0.000	0.319	0.553
Diag3	g34Y	6.07	0.000	-0.826	-0.826	-0.771
Diag3	g35P	8.76	0.000	-1.090	-0.405	-1.090
Diag3	g35X	2.48	0.673	0.000	0.309	0.673
Diag3	g35XY	2.48	0.673	0.000	0.309	0.673
Diag3	g35Y	8.76	0.000	-1.090	-0.405	-1.090
Diag5	g36P	33.39	0.000	-1.446	-1.318	-1.446
Diag5	g36X	2.81	0.703	0.000	0.056	0.703
Diag5	g36XY	2.81	0.703	0.000	0.056	0.703
Diag5	g36Y	33.39	0.000	-1.446	-1.318	-1.446
Diag5	g37P	82.86	0.000	-3.588	-3.588	0.000
Diag5	g37X	19.23	4.804	0.000	2.012	4.804
Diag5	g37XY	19.23	4.804	0.000	2.012	4.804
Diag5	g37Y	82.86	0.000	-3.588	-3.588	0.000

Diag5	g38P	88.67	0.000	-2.165	-1.871	-2.165
Diag5	g38X	8.77	1.059	-0.214	-0.214	1.059
Diag5	g38XY	8.77	1.059	-0.214	-0.214	1.059
Diag5	g38Y	88.67	0.000	-2.165	-1.871	-2.165
Diag5	g39P	0.00	0.000	0.000	0.000	0.000
Diag5	g39X	27.11	5.960	0.000	2.490	5.960
Diag5	g39XY	27.11	5.960	0.000	2.490	5.960
Diag5	g39Y	0.00	0.000	0.000	0.000	0.000
M4	g42P	1.55	0.000	-0.317	-0.053	-0.317
M4	g42X	3.85	1.047	0.000	1.047	0.633
M4	g42XY	3.85	1.047	0.000	1.047	0.633
M4	g42Y	1.55	0.000	-0.317	-0.053	-0.317
M4	g43P	8.84	3.206	0.000	3.206	1.501
M4	g43Y	8.84	3.206	0.000	3.206	1.501
M3	g44P	24.91	0.000	-6.533	-2.854	-6.533
M3	g44X	41.44	8.682	0.000	1.222	8.682
M10	g45P	96.92	8.621	0.000	2.728	8.621
M10	g45X	60.55	0.000	-7.019	-1.425	-7.019
M10	g45XY	60.55	0.000	-7.019	-1.425	-7.019
M10	g45Y	96.92	8.621	0.000	2.728	8.621
M4	g46P	14.37	0.000	-4.471	-4.471	-2.386
M4	g46X	8.63	0.000	-2.684	-2.684	-0.013
M4	g46XY	8.63	0.000	-2.684	-2.684	-0.013
M4	g46Y	14.37	0.000	-4.471	-4.471	-2.386
M4	g47P	8.30	0.000	-2.551	-2.551	-1.250
M4	g47Y	8.30	0.000	-2.551	-2.551	-1.250
M3	g48P	19.57	4.101	0.000	2.447	4.101
M3	g48X	22.03	0.000	-5.778	-0.661	-5.778
M14	g49P	14.77	0.000	-1.583	-1.583	-0.492
M14	g49X	14.78	0.000	-1.584	-1.584	-0.495
M7	g50P	20.10	3.626	0.000	3.626	1.242
M7	g50X	20.09	3.623	0.000	3.623	1.230
M7	g50XY	20.09	3.623	0.000	3.623	1.230
M7	g50Y	20.10	3.626	0.000	3.626	1.242
M10	g51P	53.59	0.000	-6.212	-1.957	-6.212
M10	g51X	56.50	5.026	0.000	1.077	5.026
M10	g51XY	56.50	5.026	0.000	1.077	5.026
M10	g51Y	53.59	0.000	-6.212	-1.957	-6.212
M5	g52P	14.85	0.000	-5.054	-5.054	-2.606
M5	g52X	9.78	0.000	-3.327	-3.327	-0.296
M5	g52XY	9.78	0.000	-3.327	-3.327	-0.296
M5	g52Y	14.85	0.000	-5.054	-5.054	-2.606
M5	g53P	10.00	0.000	-3.769	-3.769	-1.441
M5	g53Y	10.00	0.000	-3.769	-3.769	-1.441
M3	g55P	12.49	0.000	-3.275	-0.010	-3.275
M3	g55X	14.30	3.640	0.000	2.766	3.640
M10	g54P	3.88	0.000	-0.449	-0.449	-0.158
M10	g54X	4.34	0.000	-0.503	-0.503	-0.389
M10	g54XY	4.34	0.000	-0.503	-0.503	-0.389
M10	g54Y	3.88	0.000	-0.449	-0.449	-0.158
M8	g56P	18.33	4.407	0.000	4.407	1.541
M8	g56X	18.28	4.397	0.000	4.397	1.518
M8	g56XY	18.28	4.397	0.000	4.397	1.518
M8	g56Y	18.33	4.407	0.000	4.407	1.541
M13	g57P	23.94	2.889	0.000	2.889	1.012
M13	g57Y	23.94	2.889	0.000	2.889	1.012
M9	g58P	14.80	0.000	-1.738	-1.094	-1.738
M9	g58X	15.87	1.534	0.000	0.401	1.534
M4	g59P	10.33	0.000	-3.116	-3.116	-1.984
M4	g59X	4.43	0.402	-1.337	-1.337	0.402

M4	g59XY	4.43	0.402	-1.337	-1.337	0.402
M4	g59Y	10.33	0.000	-3.116	-3.116	-1.984
M4	g60P	6.50	0.000	-1.997	-1.997	-0.683
M4	g60Y	6.50	0.000	-1.997	-1.997	-0.683
M3	g61P	5.26	1.339	0.000	1.339	1.236
M3	g61X	0.89	0.227	-0.187	0.227	-0.187
M7	g62P	14.45	2.606	0.000	2.606	0.950
M7	g62X	14.34	2.586	0.000	2.586	0.907
M7	g62XY	14.34	2.586	0.000	2.586	0.907
M7	g62Y	14.45	2.606	0.000	2.606	0.950
M9	g63P	65.32	6.297	0.000	3.062	6.297
M9	g63X	54.83	0.000	-6.438	-2.951	-6.438
M13	g64P	18.45	2.226	0.000	2.226	0.707
M13	g64Y	18.45	2.226	0.000	2.226	0.707
M10	g65P	5.64	0.501	-0.166	-0.166	0.501
M10	g65X	4.78	0.000	-0.554	-0.468	-0.554
M10	g65XY	4.78	0.000	-0.554	-0.468	-0.554
M10	g65Y	5.64	0.501	-0.166	-0.166	0.501
M2	g66P	1.80	0.396	0.000	0.396	0.252
M2	g66Y	1.80	0.396	0.000	0.396	0.252
M2	g67P	13.35	2.934	0.000	2.934	0.675
M2	g67X	26.78	0.000	-4.190	-1.831	-4.190
M5	g68P	4.61	1.062	0.000	0.663	1.062
M5	g68Y	4.61	1.062	0.000	0.663	1.062
M5	g69P	7.56	1.740	0.000	1.740	0.779
M5	g69X	25.32	0.000	-6.886	-3.197	-6.886
M12	g72P	11.90	0.086	-0.532	0.086	-0.532
M12	g72X	11.51	0.000	-0.515	-0.071	-0.515
M12	g72XY	11.51	0.000	-0.515	-0.071	-0.515
M12	g72Y	11.90	0.086	-0.532	0.086	-0.532
Pwmnt	g70P	3.69	0.000	-21.813	-21.813	-13.373
Pwmnt	g71P	4.23	0.000	-17.904	-17.904	-11.939
Pwmnt	g73P	2.30	0.000	-15.097	-15.097	-10.251
Pwmnt	g74P	2.06	0.000	-13.366	-13.366	-8.821
Pwmnt	g75P	1.67	0.000	-11.272	-11.272	-6.335
Pwmnt	g76P	1.47	0.000	-9.029	-9.029	-3.875
Plate	g77P	34.99	21.933	0.000	5.844	21.933
NewBR	g78P	24.36	0.000	-3.973	-1.085	-3.973
NewBR	g79P	24.36	0.000	-3.973	-1.085	-3.973
Plate	g80P	25.79	0.000	-16.167	-4.341	-16.167
NewBR	g81P	34.03	3.576	0.000	1.126	3.576
NewBR	g82P	34.03	3.576	0.000	1.126	3.576
PwmntBR1	g83P	0.99	0.086	0.000	0.032	0.086
PwmntBR1	g84P	10.29	0.897	0.000	0.516	0.897
PwmntBR1	g85P	10.29	0.897	0.000	0.516	0.897
PwmntBR1	g86P	12.95	1.128	0.000	0.330	1.128
PwmntBR1	g87P	5.31	0.000	-0.541	-0.241	-0.541
PwmntBR1	g88P	5.31	0.000	-0.541	-0.241	-0.541
PwmntBR1	g89P	7.80	0.078	-0.795	0.078	-0.795
PwmntBR2	g90P	4.15	0.280	-0.564	0.280	-0.564
PwmntBR2	g91P	4.15	0.280	-0.564	0.280	-0.564

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

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	8.04e-005	0.1389	-0.01309	-0.2335	0.0212	-0.0040	2.5	2.639	80.99
2P	-4.352e-005	0.1193	-0.01284	-0.2210	0.0062	0.0025	2.5	2.619	75.99
3P	0.0002939	0.1048	-0.0125	-0.1980	-0.0027	0.0011	2.5	2.605	71.99
4P	4.266e-005	0.09114	-0.01197	-0.1995	0.0015	-0.0004	2.5	2.591	67.99
5P	0.000182	0.07713	-0.01127	-0.1926	0.0017	-0.0018	2.5	2.577	63.99
6P	0.0003258	0.06192	-0.01021	-0.1701	0.0024	-0.0006	2.5	2.562	58.99
7P	1.492e-005	0.04773	-0.008803	-0.1357	-0.0060	0.0005	2.5	2.548	53.99
8P	0.001219	0.0377	-0.008551	-0.1000	-0.0141	0.0011	3.201	3.238	48.99
9P	0.001108	0.02619	-0.007913	-0.0804	0.0040	0.0017	4.171	4.196	41.99
10P	0.0004489	0.0165	-0.007186	-0.0565	0.0003	0.0000	5.28	5.296	33.99
12P	0.0002566	0.005663	-0.00509	-0.0294	0.0015	-0.0022	7.23	7.236	19.99
15P	0	0	0	0.0000	0.0000	0.0000	10	10	0
19P	5.705e-015	0.1386	0.04202	-0.1787	-0.0000	0.0000	5.705e-015	-13.61	81.04
20P	6.254e-015	0.1206	0.02822	-0.1717	0.0000	0.0000	6.254e-015	-9.629	76.03
21P	2.427e-015	0.07884	0.03264	-0.1187	0.0000	-0.0000	2.427e-015	-14.17	64.03
22P	4.33e-015	0.04867	0.02098	-0.1347	-0.0000	0.0000	4.33e-015	-10.2	54.02
23P	1.12e-016	0.005903	-0.001107	-0.0235	0.0000	-0.0000	1.12e-016	1.506	20
24P	1.255e-015	0.04787	-0.002676	-0.1444	0.0000	-0.0000	1.255e-015	1.548	54
25P	2.069e-015	0.07744	-0.003103	-0.1866	0.0000	-0.0000	2.069e-015	1.577	64
26P	4.568e-015	0.119	-0.003582	-0.2085	0.0000	-0.0000	4.568e-015	1.619	76
27P	5.617e-015	0.1394	-0.003766	-0.2844	0.0000	-0.0000	5.617e-015	1.639	81
28P	0	0	0	0.0000	0.0000	0.0000	0	1.5	0
29P	9.617e-015	0.2733	-0.004683	-0.5341	0.0000	-0.0000	9.617e-015	1.773	98
1X	-0.0001878	0.1385	0.004868	-0.2125	-0.0055	-0.0023	2.5	-2.361	81
1XY	0.0001878	0.1385	0.004868	-0.2125	0.0055	0.0023	-2.5	-2.361	81
1Y	-8.04e-005	0.1389	-0.01309	-0.2335	-0.0212	0.0040	-2.5	2.639	80.99
2X	0.000161	0.1197	0.004889	-0.2109	0.0015	-0.0001	2.5	-2.38	76
2XY	-0.000161	0.1197	0.004889	-0.2109	-0.0015	0.0001	-2.5	-2.38	76
2Y	4.352e-005	0.1193	-0.01284	-0.2210	-0.0062	-0.0025	-2.5	2.619	75.99
3X	-0.0001963	0.1049	0.004732	-0.2130	0.0034	-0.0005	2.5	-2.395	72
3XY	0.0001963	0.1049	0.004732	-0.2130	-0.0034	0.0005	-2.5	-2.395	72
3Y	-0.0002939	0.1048	-0.0125	-0.1980	0.0027	-0.0011	-2.5	2.605	71.99
4X	-0.0001164	0.09037	0.004476	-0.1959	-0.0032	-0.0009	2.5	-2.41	68
4XY	0.0001164	0.09037	0.004476	-0.1959	0.0032	0.0009	-2.5	-2.41	68
4Y	-4.266e-005	0.09114	-0.01197	-0.1995	-0.0015	0.0004	-2.5	2.591	67.99
5X	-6.632e-007	0.07754	0.00415	-0.1798	0.0015	-0.0015	2.5	-2.422	64
5XY	6.632e-007	0.07754	0.00415	-0.1798	-0.0015	0.0015	-2.5	-2.422	64
5Y	-0.000182	0.07713	-0.01127	-0.1926	-0.0017	0.0018	-2.5	2.577	63.99
6X	-0.0003141	0.06132	0.003514	-0.1746	-0.0019	-0.0024	2.5	-2.439	59
6XY	0.0003141	0.06132	0.003514	-0.1746	0.0019	0.0024	-2.5	-2.439	59
6Y	-0.0003258	0.06192	-0.01021	-0.1701	-0.0024	0.0006	-2.5	2.562	58.99
7X	8.81e-005	0.04799	0.002676	-0.1352	0.0032	-0.0036	2.5	-2.452	54
7XY	-8.81e-005	0.04799	0.002676	-0.1352	-0.0032	0.0036	-2.5	-2.452	54
7Y	-1.492e-005	0.04773	-0.008803	-0.1357	0.0060	-0.0005	-2.5	2.548	53.99
8X	-0.0008541	0.03714	0.00312	-0.1079	0.0101	-0.0033	3.199	-3.163	49
8XY	0.0008541	0.03714	0.00312	-0.1079	-0.0101	0.0033	-3.199	-3.163	49
8Y	-0.001219	0.0377	-0.008551	-0.1000	0.0141	-0.0011	-3.201	3.238	48.99
9X	-0.0006811	0.02591	0.003297	-0.0766	-0.0042	-0.0004	4.169	-4.144	42
9XY	0.0006811	0.02591	0.003297	-0.0766	0.0042	0.0004	-4.169	-4.144	42
9Y	-0.001108	0.02619	-0.007913	-0.0804	-0.0040	-0.0017	-4.171	4.196	41.99

10X	-0.0002802	0.01638	0.003315	-0.0566	0.0017	-0.0018	5.28	-5.264	34
10XY	0.0002802	0.01638	0.003315	-0.0566	-0.0017	0.0018	-5.28	-5.264	34
10Y	-0.0004489	0.0165	-0.007186	-0.0565	-0.0003	-0.0000	-5.28	5.296	33.99
12X	-0.0004716	0.005469	0.002501	-0.0342	-0.0060	-0.0023	7.23	-7.225	20
12XY	0.0004716	0.005469	0.002501	-0.0342	0.0060	0.0023	-7.23	-7.225	20
12Y	-0.0002566	0.005663	-0.00509	-0.0294	-0.0015	0.0022	-7.23	7.236	19.99
15X	0	0	0	0.0000	0.0000	0.0000	10	-10	0
15XY	0	0	0	0.0000	0.0000	0.0000	-10	-10	0
15Y	0	0	0	0.0000	0.0000	0.0000	-10	10	0
19X	2.075e-015	0.1391	-0.06147	-0.2560	0.0000	0.0000	2.075e-015	13.89	80.94
20X	3.736e-015	0.1188	-0.04467	-0.2671	-0.0000	0.0000	3.736e-015	9.869	75.96
21X	2.606e-015	0.07615	-0.06138	-0.2699	-0.0000	-0.0000	2.606e-015	14.33	63.94
22X	4.213e-016	0.04741	-0.03445	-0.2136	-0.0000	0.0000	4.213e-016	10.3	53.97
30S	-4.856e-016	0.005966	-0.01543	0.4663	0.0000	-0.0000	-4.856e-016	0.005966	19.98
31S	1.255e-015	0.04785	-0.004647	-0.0235	0.0000	0.0000	1.255e-015	0.04785	54
32S	2.757e-015	0.07744	-0.002546	-0.0928	0.0000	0.0000	2.757e-015	0.07744	64
33S	4.531e-015	0.1191	-0.00272	-0.1226	0.0000	-0.0000	4.531e-015	0.1191	76
34S	5.414e-015	0.1393	-0.002582	-0.1133	0.0000	-0.0000	5.414e-015	0.1393	81

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
15P	-5.08	0.0	-6.09	0.0	0.0	-37.13	0.0	0.0	37.96	0.0	0.06	0.0	0.0	0.0	0.0	0.01	0.0	0.0
28P	0.00	0.0	-0.13	0.0	0.0	-22.63	0.0	0.0	22.63	0.0	2.49	0.0	0.0	0.0	0.0	0.00	0.0	0.0
15X	4.34	0.0	-3.12	0.0	0.0	21.17	0.0	0.0	21.84	0.0	0.04	0.0	-0.0	0.0	0.0	0.01	0.0	0.0
15XY	-4.34	0.0	-3.12	0.0	0.0	21.17	0.0	0.0	21.84	0.0	0.04	0.0	0.0	0.0	0.0	-0.01	0.0	0.0
15Y	5.08	0.0	-6.09	0.0	0.0	-37.13	0.0	0.0	37.96	0.0	0.06	0.0	-0.0	0.0	0.0	-0.01	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1798	0.0000	0.0000	0.1798	0.0001	0.1389	-0.0131
2P	0.0000	0.0000	-0.2125	0.0000	0.0000	0.2125	-0.0000	0.1193	-0.0128
3P	0.0000	0.0000	-0.1313	-0.0000	0.0000	0.1313	0.0003	0.1048	-0.0125
4P	0.0000	0.0000	-0.1840	0.0000	0.0000	0.1840	0.0000	0.0911	-0.0120
5P	0.0000	0.0000	-0.2509	0.0000	0.0000	0.2509	0.0002	0.0771	-0.0113
6P	0.0000	0.0000	-0.2022	-0.0000	0.0000	0.2022	0.0003	0.0619	-0.0102
7P	0.0000	0.0000	-0.2644	0.0000	0.0000	0.2644	0.0000	0.0477	-0.0088
8P	0.0000	0.0000	-0.2346	0.0000	0.0000	0.2346	0.0012	0.0377	-0.0086
9P	0.0000	0.0000	-0.3140	0.0000	0.0000	0.3140	0.0011	0.0262	-0.0079
10P	0.0000	0.0000	-0.5439	0.0000	0.0000	0.5439	0.0004	0.0165	-0.0072
12P	0.0000	0.0000	-0.9056	0.0000	0.0000	0.9056	0.0003	0.0057	-0.0051
15P	0.0000	0.0000	-0.4091	5.0827	6.0940	-36.7170	0.0000	0.0000	0.0000
19P	0.0000	1.0867	-1.2444	0.0000	-1.0867	1.2444	0.0000	0.1386	0.0420
20P	0.0000	1.7149	-2.7409	-0.0000	-1.7149	2.7409	0.0000	0.1206	0.0282
21P	0.0000	1.6991	-2.8053	0.0000	-1.6991	2.8053	0.0000	0.0788	0.0326
22P	0.0000	1.6983	-2.7313	-0.0000	-1.6983	2.7313	0.0000	0.0487	0.0210
23P	0.0000	0.0000	-2.3010	-0.0000	-0.0000	2.3010	0.0000	0.0059	-0.0011
24P	0.0000	0.0000	-1.7759	0.0000	0.0000	1.7759	0.0000	0.0479	-0.0027
25P	0.0000	0.0000	-0.8310	0.0000	0.0000	0.8310	0.0000	0.0774	-0.0031
26P	0.0000	0.0000	-0.6662	-0.0000	0.0000	0.6662	0.0000	0.1190	-0.0036
27P	0.0000	0.0000	-0.8522	-0.0000	0.0000	0.8522	0.0000	0.1394	-0.0038

28P	0.0000	0.0000	-0.8184	-0.0000	0.1342	-21.8127	0.0000	0.0000	0.0000
29P	0.0000	1.5210	-9.0414	0.0000	-1.5210	9.0414	0.0000	0.2733	-0.0047
1X	0.0000	0.0855	-0.1716	0.0000	-0.0855	0.1716	-0.0002	0.1385	0.0049
1XY	0.0000	0.0855	-0.1716	-0.0000	-0.0855	0.1716	0.0002	0.1385	0.0049
1Y	0.0000	0.0000	-0.1798	-0.0000	0.0000	0.1798	-0.0001	0.1389	-0.0131
2X	0.0000	0.1149	-0.2042	-0.0000	-0.1149	0.2042	0.0002	0.1197	0.0049
2XY	0.0000	0.1149	-0.2042	0.0000	-0.1149	0.2042	-0.0002	0.1197	0.0049
2Y	0.0000	0.0000	-0.2125	-0.0000	0.0000	0.2125	0.0000	0.1193	-0.0128
3X	0.0000	0.0960	-0.1313	0.0000	-0.0960	0.1313	-0.0002	0.1049	0.0047
3XY	0.0000	0.0960	-0.1313	-0.0000	-0.0960	0.1313	0.0002	0.1049	0.0047
3Y	0.0000	0.0000	-0.1313	0.0000	0.0000	0.1313	-0.0003	0.1048	-0.0125
4X	0.0000	0.1284	-0.1840	-0.0000	-0.1284	0.1840	-0.0001	0.0904	0.0045
4XY	0.0000	0.1284	-0.1840	0.0000	-0.1284	0.1840	0.0001	0.0904	0.0045
4Y	0.0000	0.0000	-0.1840	-0.0000	0.0000	0.1840	-0.0000	0.0911	-0.0120
5X	0.0000	0.1182	-0.2460	0.0000	-0.1182	0.2460	-0.0000	0.0775	0.0041
5XY	0.0000	0.1182	-0.2460	-0.0000	-0.1182	0.2460	0.0000	0.0775	0.0041
5Y	0.0000	0.0000	-0.2509	-0.0000	0.0000	0.2509	-0.0002	0.0771	-0.0113
6X	0.0000	0.1491	-0.2022	-0.0000	-0.1491	0.2022	-0.0003	0.0613	0.0035
6XY	0.0000	0.1491	-0.2022	0.0000	-0.1491	0.2022	0.0003	0.0613	0.0035
6Y	0.0000	0.0000	-0.2022	0.0000	0.0000	0.2022	-0.0003	0.0619	-0.0102
7X	0.0000	0.1326	-0.2595	-0.0000	-0.1326	0.2595	0.0001	0.0480	0.0027
7XY	0.0000	0.1326	-0.2595	0.0000	-0.1326	0.2595	-0.0001	0.0480	0.0027
7Y	0.0000	0.0000	-0.2644	-0.0000	0.0000	0.2644	-0.0000	0.0477	-0.0088
8X	0.0000	0.1561	-0.2346	0.0000	-0.1561	0.2346	-0.0009	0.0371	0.0031
8XY	0.0000	0.1561	-0.2346	-0.0000	-0.1561	0.2346	0.0009	0.0371	0.0031
8Y	0.0000	0.0000	-0.2346	-0.0000	0.0000	0.2346	-0.0012	0.0377	-0.0086
9X	0.0000	0.1963	-0.3140	-0.0000	-0.1963	0.3140	-0.0007	0.0259	0.0033
9XY	0.0000	0.1963	-0.3140	0.0000	-0.1963	0.3140	0.0007	0.0259	0.0033
9Y	0.0000	0.0000	-0.3140	-0.0000	0.0000	0.3140	-0.0011	0.0262	-0.0079
10X	0.0000	0.3167	-0.5439	0.0000	-0.3167	0.5439	-0.0003	0.0164	0.0033
10XY	0.0000	0.3167	-0.5439	-0.0000	-0.3167	0.5439	0.0003	0.0164	0.0033
10Y	0.0000	0.0000	-0.5439	-0.0000	0.0000	0.5439	-0.0004	0.0165	-0.0072
12X	0.0000	0.5023	-0.8615	-0.0000	-0.5023	0.8615	-0.0005	0.0055	0.0025
12XY	0.0000	0.5023	-0.8615	0.0000	-0.5023	0.8615	0.0005	0.0055	0.0025
12Y	0.0000	0.0000	-0.9056	-0.0000	0.0000	0.9056	-0.0003	0.0057	-0.0051
15X	0.0000	0.2495	-0.4091	-4.3409	2.8732	21.5806	0.0000	0.0000	0.0000
15XY	0.0000	0.2495	-0.4091	4.3409	2.8732	21.5806	0.0000	0.0000	0.0000
15Y	0.0000	0.0000	-0.4091	-5.0827	6.0940	-36.7170	0.0000	0.0000	0.0000
19X	0.0000	1.0500	-1.2444	0.0000	-1.0500	1.2444	0.0000	0.1391	-0.0615
20X	0.0000	1.6410	-2.7409	-0.0000	-1.6410	2.7409	0.0000	0.1188	-0.0447
21X	0.0000	1.6410	-2.8053	-0.0000	-1.6410	2.8053	0.0000	0.0762	-0.0614
22X	0.0000	1.6410	-2.7313	-0.0000	-1.6410	2.7313	0.0000	0.0474	-0.0345
30S	0.0000	0.1590	-1.6606	0.0000	-0.1590	1.6606	-0.0000	0.0060	-0.0154
31S	0.0000	0.0940	-0.9559	0.0000	-0.0940	0.9559	0.0000	0.0479	-0.0046
32S	0.0000	0.0470	-0.4939	-0.0000	-0.0470	0.4939	0.0000	0.0774	-0.0025
33S	0.0000	0.0360	-0.4034	0.0000	-0.0360	0.4034	0.0000	0.1191	-0.0027
34S	0.0000	0.0470	-0.5084	0.0000	-0.0470	0.5084	0.0000	0.1393	-0.0026

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	RLY	RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g19P	g19Y	Long only	-0.40	-0.40	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g19X	g19XY	Long only	-0.03	-0.03	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g19XY	g19X	Long only	-0.03	-0.03	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6

g19Y	g19P	Long only	-0.40	-0.40	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g21P	g21Y	Long only	-0.00	-0.00	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g21Y	g21P	Long only	-0.00	-0.00	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23P	g23Y	Long only	-0.26	-0.26	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23X	g23XY	Long only	-0.32	-0.32	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23XY	g23X	Long only	-0.32	-0.32	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23Y	g23P	Long only	-0.26	-0.26	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g25P	g25Y	Long only	-1.18	-1.18	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g25Y	g25P	Long only	-1.18	-1.18	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g27P	g27Y	Short only	-1.85	-1.85	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g27Y	g27P	Short only	-1.85	-1.85	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g29P	g29Y	Short only	-3.59	-3.59	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g29Y	g29P	Short only	-3.59	-3.59	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g30P	g30X	Short only	-1.14	0.20	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30Y	g30XY	Short only	-1.14	0.20	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g31P	g31Y	Short only	-0.87	-0.87	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g31Y	g31P	Short only	-0.87	-0.87	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g33X	g33XY	Short only	-0.53	-0.53	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g33XY	g33X	Short only	-0.53	-0.53	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g35P	g35Y	Short only	-0.40	-0.40	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g35Y	g35P	Short only	-0.40	-0.40	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.652	50.00	50.00	3.30
Clamp2	1.628	50.00	50.00	3.26
Clamp3	3.233	50.00	50.00	6.47
Clamp4	3.195	50.00	50.00	6.39
Clamp5	3.280	50.00	50.00	6.56
Clamp6	3.250	50.00	50.00	6.50
Clamp7	3.216	50.00	50.00	6.43
Clamp8	3.186	50.00	50.00	6.37
Clamp9	0.180	50.00	50.00	0.36
Clamp10	0.180	50.00	50.00	0.36
Clamp11	0.212	50.00	50.00	0.42
Clamp12	0.212	50.00	50.00	0.42
Clamp13	0.251	50.00	50.00	0.50
Clamp14	0.251	50.00	50.00	0.50
Clamp15	0.264	50.00	50.00	0.53
Clamp16	0.264	50.00	50.00	0.53
Clamp17	0.906	50.00	50.00	1.81
Clamp18	0.906	50.00	50.00	1.81
Clamp19	1.668	50.00	50.00	3.34
Clamp20	0.961	50.00	50.00	1.92
Clamp21	0.496	50.00	50.00	0.99
Clamp22	0.405	50.00	50.00	0.81
Clamp23	0.511	50.00	50.00	1.02
CLamp24	9.168	50.00	50.00	18.34

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.0005714	0.276	-0.02121	-0.4987	0.0490	-0.0213	2.501	2.776	80.98
2P	-0.0003802	0.2346	-0.02066	-0.4578	0.0106	0.0102	2.5	2.735	75.98
3P	0.0007082	0.2045	-0.01986	-0.4154	-0.0095	0.0061	2.501	2.705	71.98
4P	0.0001633	0.1759	-0.01874	-0.4008	0.0063	0.0017	2.5	2.676	67.98
5P	0.0002395	0.1487	-0.01742	-0.3784	0.0047	-0.0025	2.5	2.649	63.98
6P	0.0006701	0.1177	-0.0154	-0.3370	0.0023	-0.0017	2.501	2.618	58.98
7P	-1.231e-005	0.09069	-0.01291	-0.2649	-0.0055	-0.0012	2.5	2.591	53.99
8P	0.001978	0.07077	-0.01288	-0.1960	-0.0264	0.0002	3.202	3.271	48.99
9P	0.002088	0.04921	-0.01214	-0.1494	0.0092	0.0040	4.172	4.219	41.99
10P	0.0001032	0.03096	-0.01145	-0.1079	0.0056	0.0019	5.28	5.311	33.99
12P	0.000115	0.01063	-0.007936	-0.0563	-0.0027	-0.0020	7.23	7.241	19.99
15P	0	0	0	0.0000	0.0000	0.0000	10	10	0
19P	1.398e-014	0.2763	0.1063	-0.4582	0.0000	0.0000	1.398e-014	-13.47	81.11
20P	5.307e-015	0.2356	0.07421	-0.4623	0.0000	-0.0000	5.307e-015	-9.514	76.07
21P	6.502e-015	0.1498	0.08964	-0.3720	-0.0000	0.0000	6.502e-015	-14.1	64.09
22P	3.256e-015	0.09136	0.05166	-0.3320	0.0000	0.0000	3.256e-015	-10.16	54.05
23P	-3.163e-015	0.01095	-0.0006812	-0.0493	-0.0000	0.0000	-3.163e-015	1.511	20
24P	2.845e-015	0.09091	-0.001804	-0.2825	0.0000	0.0000	2.845e-015	1.591	54
25P	2.674e-015	0.1491	-0.002234	-0.3705	0.0000	0.0000	2.674e-015	1.649	64
26P	3.896e-015	0.233	-0.002795	-0.4300	0.0000	0.0000	3.896e-015	1.733	76
27P	4.476e-015	0.2785	-0.003082	-0.7123	0.0000	0.0000	4.476e-015	1.778	81
28P	0	0	0	0.0000	0.0000	0.0000	0	1.5	0
29P	6.128e-015	0.6737	-0.007845	-1.6391	0.0000	0.0000	6.128e-015	2.174	97.99
1X	-0.0004299	0.276	0.01631	-0.4609	-0.0054	-0.0059	2.5	-2.224	81.02
1XY	0.0004299	0.276	0.01631	-0.4609	0.0054	0.0059	-2.5	-2.224	81.02
1Y	-0.0005714	0.276	-0.02121	-0.4987	-0.0490	0.0213	-2.501	2.776	80.98
2X	0.0002699	0.2348	0.01614	-0.4488	0.0068	0.0013	2.5	-2.265	76.02
2XY	-0.0002699	0.2348	0.01614	-0.4488	-0.0068	-0.0013	-2.5	-2.265	76.02
2Y	0.0003802	0.2346	-0.02066	-0.4578	-0.0106	-0.0102	-2.5	2.735	75.98
3X	-0.0006798	0.2047	0.01553	-0.4220	0.0053	-0.0001	2.499	-2.295	72.02
3XY	0.0006798	0.2047	0.01553	-0.4220	-0.0053	0.0001	-2.499	-2.295	72.02
3Y	-0.0007082	0.2045	-0.01986	-0.4154	0.0095	-0.0061	-2.501	2.705	71.98
4X	-0.000185	0.1758	0.01465	-0.4013	-0.0082	-0.0014	2.5	-2.324	68.01
4XY	0.000185	0.1758	0.01465	-0.4013	0.0082	0.0014	-2.5	-2.324	68.01
4Y	-0.0001633	0.1759	-0.01874	-0.4008	-0.0063	-0.0017	-2.5	2.676	67.98
5X	-0.0002155	0.1489	0.01358	-0.3662	0.0089	-0.0030	2.5	-2.351	64.01
5XY	0.0002155	0.1489	0.01358	-0.3662	-0.0089	0.0030	-2.5	-2.351	64.01
5Y	-0.0002395	0.1487	-0.01742	-0.3784	-0.0047	0.0025	-2.5	2.649	63.98
6X	-0.0006852	0.1176	0.01182	-0.3419	-0.0084	-0.0024	2.499	-2.382	59.01
6XY	0.0006852	0.1176	0.01182	-0.3419	0.0084	0.0024	-2.499	-2.382	59.01
6Y	-0.0006701	0.1177	-0.0154	-0.3370	-0.0023	0.0017	-2.501	2.618	58.98
7X	8.131e-005	0.09082	0.009615	-0.2591	0.0153	-0.0021	2.5	-2.409	54.01
7XY	-8.131e-005	0.09082	0.009615	-0.2591	-0.0153	0.0021	-2.5	-2.409	54.01
7Y	1.231e-005	0.09069	-0.01291	-0.2649	0.0055	0.0012	-2.5	2.591	53.99
8X	-0.002042	0.07067	0.009782	-0.1997	0.0221	-0.0003	3.198	-3.129	49.01
8XY	0.002042	0.07067	0.009782	-0.1997	-0.0221	0.0003	-3.198	-3.129	49.01
8Y	-0.001978	0.07077	-0.01288	-0.1960	0.0264	-0.0002	-3.202	3.271	48.99
9X	-0.001656	0.04921	0.009378	-0.1481	-0.0078	0.0038	4.168	-4.121	42.01
9XY	0.001656	0.04921	0.009378	-0.1481	0.0078	-0.0038	-4.168	-4.121	42.01
9Y	-0.002088	0.04921	-0.01214	-0.1494	-0.0092	-0.0040	-4.172	4.219	41.99

10X	-0.0006411	0.0309	0.008849	-0.1091	0.0014	0.0008	5.279	-5.249	34.01
10XY	0.0006411	0.0309	0.008849	-0.1091	-0.0014	-0.0008	-5.279	-5.249	34.01
10Y	-0.0001032	0.03096	-0.01145	-0.1079	-0.0056	-0.0019	-5.28	5.311	33.99
12X	-0.001016	0.01033	0.006272	-0.0583	-0.0010	-0.0019	7.229	-7.22	20.01
12XY	0.001016	0.01033	0.006272	-0.0583	0.0010	0.0019	-7.229	-7.22	20.01
12Y	-0.000115	0.01063	-0.007936	-0.0563	0.0027	0.0020	-7.23	7.241	19.99
15X	0	0	0	0.0000	0.0000	0.0000	10	-10	0
15XY	0	0	0	0.0000	0.0000	0.0000	-10	-10	0
15Y	0	0	0	0.0000	0.0000	0.0000	-10	10	0
19X	-1.48e-015	0.2757	-0.115	-0.4754	0.0000	0.0000	-1.48e-015	14.03	80.88
20X	3.722e-015	0.2344	-0.08157	-0.4947	0.0000	-0.0000	3.722e-015	9.984	75.92
21X	3.308e-015	0.1483	-0.101	-0.4222	0.0000	-0.0000	3.308e-015	14.4	63.9
22X	3.736e-015	0.09064	-0.05752	-0.3588	0.0000	-0.0000	3.736e-015	10.34	53.94
30S	-3.038e-015	0.01103	-0.00864	0.2520	-0.0000	0.0000	-3.038e-015	0.01103	19.99
31S	3.035e-015	0.09083	0.0003723	-0.1668	0.0000	-0.0000	3.035e-015	0.09083	54
32S	3.27e-015	0.1491	0.002088	-0.2518	0.0000	0.0000	3.27e-015	0.1491	64
33S	4.254e-015	0.2332	0.001903	-0.3050	0.0000	0.0000	4.254e-015	0.2332	76
34S	4.445e-015	0.2782	0.004317	-0.3010	0.0000	-0.0000	4.445e-015	0.2782	81

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
15P	-8.02	0.0	-9.58	0.0	0.0	-58.36	0.0	0.0	59.68	0.0	0.13	0.0	0.0	0.0	0.0	0.01	0.0	0.0
28P	0.00	0.0	-0.58	0.0	0.0	-13.80	0.0	0.0	13.81	0.0	4.12	0.0	0.0	0.0	0.0	-0.00	0.0	0.0
15X	10.47	0.0	-8.23	0.0	0.0	51.74	0.0	0.0	53.42	0.0	0.11	0.0	-0.0	0.0	0.0	0.00	0.0	0.0
15XY	-10.47	0.0	-8.23	0.0	0.0	51.74	0.0	0.0	53.42	0.0	0.11	0.0	0.0	0.0	0.0	-0.00	0.0	0.0
15Y	8.02	0.0	-9.58	0.0	0.0	-58.36	0.0	0.0	59.68	0.0	0.13	0.0	-0.0	0.0	0.0	-0.01	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0006	0.2760	-0.0212
2P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0004	0.2346	-0.0207
3P	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0007	0.2045	-0.0199
4P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0002	0.1759	-0.0187
5P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0002	0.1487	-0.0174
6P	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0007	0.1177	-0.0154
7P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0000	0.0907	-0.0129
8P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0020	0.0708	-0.0129
9P	0.0000	0.5442	-0.5691	0.0000	-0.5442	0.5691	0.0021	0.0492	-0.0121
10P	0.0000	0.4043	-0.4234	0.0000	-0.4043	0.4234	0.0001	0.0310	-0.0115
12P	0.0000	0.4043	-0.4234	0.0000	-0.4043	0.4234	0.0001	0.0106	-0.0079
15P	0.0000	0.4043	-0.4234	8.0242	9.1738	-57.9368	0.0000	0.0000	0.0000
19P	0.0000	0.9219	-0.3918	-0.0000	-0.9219	0.3918	0.0000	0.2763	0.1063
20P	0.0000	2.2309	-0.9868	0.0000	-2.2309	0.9868	0.0000	0.2356	0.0742
21P	0.0000	2.2309	-0.9868	-0.0000	-2.2309	0.9868	0.0000	0.1498	0.0896
22P	0.0000	2.2309	-0.9868	-0.0000	-2.2309	0.9868	0.0000	0.0914	0.0517
23P	0.0000	0.4043	-0.4234	0.0000	-0.4043	0.4234	-0.0000	0.0110	-0.0007
24P	0.0000	0.5442	-0.5691	-0.0000	-0.5442	0.5691	0.0000	0.0909	-0.0018
25P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0000	0.1491	-0.0022
26P	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0000	0.2330	-0.0028
27P	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0000	0.2785	-0.0031

28P	0.0000	0.4043	-0.4234	-0.0000	0.1773	-13.3734	0.0000	0.0000	0.0000
29P	0.0000	5.8169	-4.0118	0.0000	-5.8169	4.0118	0.0000	0.6737	-0.0078
1X	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0004	0.2760	0.0163
1XY	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0004	0.2760	0.0163
1Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0006	0.2760	-0.0212
2X	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0003	0.2348	0.0161
2XY	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0003	0.2348	0.0161
2Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0004	0.2346	-0.0207
3X	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0007	0.2047	0.0155
3XY	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0007	0.2047	0.0155
3Y	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0007	0.2045	-0.0199
4X	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0002	0.1758	0.0147
4XY	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0002	0.1758	0.0147
4Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0002	0.1759	-0.0187
5X	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0002	0.1489	0.0136
5XY	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0002	0.1489	0.0136
5Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0002	0.1487	-0.0174
6X	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0007	0.1176	0.0118
6XY	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	0.0007	0.1176	0.0118
6Y	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0007	0.1177	-0.0154
7X	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0001	0.0908	0.0096
7XY	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0001	0.0908	0.0096
7Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0000	0.0907	-0.0129
8X	0.0000	0.1399	-0.1458	0.0000	-0.1399	0.1458	-0.0020	0.0707	0.0098
8XY	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	0.0020	0.0707	0.0098
8Y	0.0000	0.1399	-0.1458	-0.0000	-0.1399	0.1458	-0.0020	0.0708	-0.0129
9X	0.0000	0.5442	-0.5691	0.0000	-0.5442	0.5691	-0.0017	0.0492	0.0094
9XY	0.0000	0.5442	-0.5691	-0.0000	-0.5442	0.5691	0.0017	0.0492	0.0094
9Y	0.0000	0.5442	-0.5691	-0.0000	-0.5442	0.5691	-0.0021	0.0492	-0.0121
10X	0.0000	0.4043	-0.4234	0.0000	-0.4043	0.4234	-0.0006	0.0309	0.0088
10XY	0.0000	0.4043	-0.4234	-0.0000	-0.4043	0.4234	0.0006	0.0309	0.0088
10Y	0.0000	0.4043	-0.4234	-0.0000	-0.4043	0.4234	-0.0001	0.0310	-0.0115
12X	0.0000	0.4043	-0.4234	-0.0000	-0.4043	0.4234	-0.0010	0.0103	0.0063
12XY	0.0000	0.4043	-0.4234	0.0000	-0.4043	0.4234	0.0010	0.0103	0.0063
12Y	0.0000	0.4043	-0.4234	-0.0000	-0.4043	0.4234	-0.0001	0.0106	-0.0079
15X	0.0000	0.4043	-0.4234	-10.4693	7.8211	52.1587	0.0000	0.0000	0.0000
15XY	0.0000	0.4043	-0.4234	10.4693	7.8211	52.1587	0.0000	0.0000	0.0000
15Y	0.0000	0.4043	-0.4234	-8.0242	9.1738	-57.9368	0.0000	0.0000	0.0000
19X	0.0000	0.9219	-0.3918	0.0000	-0.9219	0.3918	-0.0000	0.2757	-0.1150
20X	0.0000	2.2309	-0.9868	-0.0000	-2.2309	0.9868	0.0000	0.2344	-0.0816
21X	0.0000	2.2309	-0.9868	-0.0000	-2.2309	0.9868	0.0000	0.1483	-0.1010
22X	0.0000	2.2309	-0.9868	-0.0000	-2.2309	0.9868	0.0000	0.0906	-0.0575
30S	0.0000	0.7773	-1.0224	0.0000	-0.7773	1.0224	-0.0000	0.0110	-0.0086
31S	0.0000	0.3619	-0.5018	-0.0000	-0.3619	0.5018	0.0000	0.0908	0.0004
32S	0.0000	0.2509	-0.3238	-0.0000	-0.2509	0.3238	0.0000	0.1491	0.0021
33S	0.0000	0.2259	-0.2838	-0.0000	-0.2259	0.2838	0.0000	0.2332	0.0019
34S	0.0000	0.2509	-0.3238	0.0000	-0.2509	0.3238	0.0000	0.2782	0.0043

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R RLOUT Cap. (kips)	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g19P	g19Y	Long only	-0.44	-0.44	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07 1.000	141.42	133.17	6
g19Y	g19P	Long only	-0.44	-0.44	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07 1.000	141.42	133.17	6
g21P	g21Y	Long only	-0.85	-0.85	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97 1.000	129.79	126.02	6

g21Y	g21P	Long only	-0.85	-0.85	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23X	g23XY	Long only	-0.29	-0.29	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g23XY	g23X	Long only	-0.29	-0.29	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g25P	g25Y	Long only	-2.19	-2.19	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g25Y	g25P	Long only	-2.19	-2.19	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g27P	g27Y	Short only	-3.47	-3.47	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g27Y	g27P	Short only	-3.47	-3.47	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g29P	g29Y	Short only	-6.06	-6.06	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g29Y	g29P	Short only	-6.06	-6.06	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g30P	g30X	Short only	-0.01	-0.28	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30X	g30P	Short only	-0.28	-0.01	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30XY	g30Y	Short only	-0.28	-0.01	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30Y	g30XY	Short only	-0.01	-0.28	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g31P	g31Y	Short only	-1.98	-1.98	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g31Y	g31P	Short only	-1.98	-1.98	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g33X	g33XY	Short only	-1.11	-1.11	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g33XY	g33X	Short only	-1.11	-1.11	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g35P	g35Y	Short only	-1.09	-1.09	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g35Y	g35P	Short only	-1.09	-1.09	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	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 %
Clamp1	1.002	50.00	50.00	2.00
Clamp2	1.002	50.00	50.00	2.00
Clamp3	2.439	50.00	50.00	4.88
Clamp4	2.439	50.00	50.00	4.88
Clamp5	2.439	50.00	50.00	4.88
Clamp6	2.439	50.00	50.00	4.88
Clamp7	2.439	50.00	50.00	4.88
Clamp8	2.439	50.00	50.00	4.88
Clamp9	0.202	50.00	50.00	0.40
Clamp10	0.202	50.00	50.00	0.40
Clamp11	0.202	50.00	50.00	0.40
Clamp12	0.202	50.00	50.00	0.40
Clamp13	0.202	50.00	50.00	0.40
Clamp14	0.202	50.00	50.00	0.40
Clamp15	0.202	50.00	50.00	0.40
Clamp16	0.202	50.00	50.00	0.40
Clamp17	0.585	50.00	50.00	1.17
Clamp18	0.585	50.00	50.00	1.17
Clamp19	1.284	50.00	50.00	2.57
Clamp20	0.619	50.00	50.00	1.24
Clamp21	0.410	50.00	50.00	0.82
Clamp22	0.363	50.00	50.00	0.73
Clamp23	0.410	50.00	50.00	0.82
CLamp24	7.066	50.00	50.00	14.13

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Cont-rol	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R KL/R Comp.	Length Curve No. Member	Of Bolts (ft)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	57.18	Tens	47.43	g8X	-42.444	NESC Ext	89.489	136.000	210.937	1.000	1.000	1.000	60.36	60.36	5.000	1	10
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	58.57	Comp	58.57	g10X	-53.546	NESC Ext	91.422	136.000	210.937	1.000	1.000	1.000	71.33	71.33	7.133	1	10
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	45.97	Comp	45.97	g13X	-57.371	NESC Ext	124.805	163.200	303.750	0.330	0.330	0.330	67.82	67.82	20.380	1	12
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.64	Comp	55.64	g18P	-9.728	NESC Ext	17.484	27.200	25.312	0.500	0.750	0.500	106.07	109.55	7.071	2	2
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.48	Comp	20.48	g20Y	-4.974	NESC Ext	24.281	27.200	33.750	0.500	0.750	0.500	97.34	103.01	6.403	2	2
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	25.00	Cross	25.00	g29P	-6.063	NESC Ext	24.256	40.800	50.625	1.000	0.500	0.500	110.34	115.17	7.071	3	3
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	7.29	Comp	7.29	g31Y	-1.983	NESC Ext	28.168	27.200	42.187	1.000	0.560	0.560	120.07	120.04	7.614	6	2
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	26.78	Comp	26.78	g67X	-4.190	NESC Ext	15.646	27.200	33.750	0.500	1.000	0.500	164.79	147.54	10.560	6	2
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	41.44	Tens	24.91	g44P	-6.533	NESC Ext	26.226	27.200	33.750	1.000	1.000	1.000	113.64	116.82	5.000	3	2
M4	L3x3x1/4	SAE	3X3X0.25	33.0	14.37	Comp	14.37	g46P	-4.471	NESC Hea	31.104	40.800	50.625	1.000	0.500	0.500	98.95	109.48	7.669	3	3
M5	L4x3x1/4	SAU	4X3X0.25	33.0	25.32	Comp	25.32	g69X	-6.886	NESC Ext	28.782	27.200	33.750	1.000	0.500	0.500	135.56	129.57	14.460	6	2
M6	L4x4x1/4	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	20.10	Tens	0.00	g62Y	0.000		3.215	27.200	25.312	1.000	1.000	1.000	268.55	268.55	9.556	4	2
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	18.33	Tens	0.00	g56Y	0.000		2.363	27.200	33.750	1.000	1.000	1.000	358.34	358.34	12.661	4	2
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	88.67	Comp	88.67	g38P	-2.165	NESC Ext	2.442	27.200	33.750	0.420	0.790	0.420	425.05	352.49	26.543	5	2
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	65.32	Tens	54.83	g63X	-6.438	NESC Ext	11.742	13.600	12.656	1.000	1.000	1.000	140.52	140.52	5.000	4	1
M10	**L2.5x2x3/16**	**SAU**	**2.5X2X0.1875**	**33.0**	**96.92**	**Tens**	**60.55**	**g45X**	**-7.019**	**NESC Ext**	**11.592**	**13.600**	**12.656**	**1.000**	**2.000**	**1.000**	**141.42**	**141.42**	**3.536**	**4**	**1**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45X g45XY ??

M11	L5x5x3/8	SAE	5X5X0.375	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0	
M12	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	11.90	Comp	11.90	g72P	-0.532	NESC Ext	4.475	13.600	12.656	2.000	1.000	1.000	315.42	240.18	10.225	6	1	
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	50.0	4.23	Comp	4.23	g71P	-17.904	NESC Hea	423.485	0.000	0.000	1.000	1.000	1.000	92.94	92.94	34.000	1	0	
PwmntBR1	**L2x2x3/16**	**SAE**	**2X2X0.1875**	**36.0**	**12.95**	**Tens**	**7.80**	**g89P**	**-0.795**	**NESC Ext**	**20.044**	**16.800**	**10.195**	**1.000**	**1.000**	**1.000**	**45.69**	**82.84**	**1.500**	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g83P g84P g85P g86P g89P ??**
PwmntBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	4.15	Comp	4.15	g90P	-0.564	NESC Ext	19.010	16.800	13.594	1.000	1.000	1.000	159.51	159.51	9.225	4	1	
NewBR	**L2.5x2.5x1/4**	**SAE**	**2.5X2.5X0.25**	**36.0**	**34.03**	**Tens**	**24.36**	**g79P**	**-3.973**	**NESC Ext**	**31.213**	**31.340**	**16.312**	**1.000**	**1.000**	**1.000**	**65.81**	**92.90**	**2.693**	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g78P g79P g81P g82P ??**
Plate	6"x3/4"	Bar	6x3/4	36.0	34.99	Tens	25.79	g80P	-16.167	NESC Ext	126.788	62.680	0.000	1.000	1.000	1.000	83.14	83.14	1.500	1	1	
M13	Bar 2.5x1/4	Bar	2-1/2x1/4	33.0	23.94	Tens	0.00	g64Y	0.000		0.259	13.600	16.875	1.000	1.000	1.000	831.02	831.02	5.000	4	1	
M14	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	14.78	Comp	14.78	g49X	-1.584	NESC Hea	10.714	13.600	12.656	1.000	1.000	1.000	155.23	155.23	6.403	4	1	

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	57.18	Tens	57.18	g8P	40.093	NESC Ext	70.122	136.000	210.937	183.823	5.000	10	3.310	0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	58.57	Comp	57.86	g9Y	48.810	NESC Ext	84.356	0.000	0.000	0.000	5.097	0	4.000	0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	45.97	Comp	44.21	g13P	47.763	NESC Ext	108.039	163.200	303.750	264.705	20.380	12	3.310	0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	55.64	Comp	50.58	g18XY	9.704	NESC Ext	19.184	27.200	25.312	21.094	7.071	2	1.000	0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.48	Comp	19.90	g22X	4.972	NESC Ext	24.985	27.200	33.750	26.766	6.403	2	1.000	0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	25.00	Cross	24.36	g28X	7.027	NESC Ext	28.846	40.800	50.625	42.187	7.071	3	1.000	0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	7.29	Comp	6.16	g31X	1.676	NESC Ext	35.241	27.200	42.187	35.156	7.614	2	1.000	0.875
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	26.78	Comp	13.35	g67P	2.934	NESC Hea	28.846	27.200	33.750	21.984	10.560	2	1.000	0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	41.44	Tens	41.44	g44X	8.682	NESC Ext	25.913	27.200	33.750	20.953	5.000	2	2.000	0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	14.37	Comp	8.84	g43P	3.206	NESC Hea	36.271	0.000	0.000	0.000	5.000	0	1.000	0.875
M5	L4x3x1/4	SAU	4X3X0.25	33.0	25.32	Comp	7.56	g69P	1.740	NESC Hea	29.774	27.200	33.750	23.016	14.460	2	2.000	0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	

M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	20.10	Tens	20.10	g50P	3.626	NESC Hea	19.184	27.200	25.312	18.035	9.155	2	1.000	0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	18.33	Tens	18.33	g56P	4.407	NESC Hea	24.985	27.200	33.750	24.047	12.661	2	1.000	0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	88.67	Comp	27.11	g39XY	5.960	NESC Ext	24.985	27.200	33.750	21.984	26.543	2	1.000	0.875
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	65.32	Tens	65.32	g63P	6.297	NESC Ext	19.184	13.600	12.656	9.640	5.000	1	1.000	0.875
M10	**L2.5x2x3/16**	**SAU**	**2.5X2X0.1875**	**33.0**	**96.92**	**Tens**	**96.92**	**g45Y**	**8.621**	**NESC Ext**	**19.184**	**13.600**	**12.656**	**8.895**	**3.536**	**1**	**1.000**	**0.875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45X g45XY ??**
M11	L5x5x3/8	SAE	5X5X0.375	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M12	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	11.90	Comp	0.97	g72P	0.086	NESC Hea	21.917	13.600	12.656	8.895	10.225	1	1.000	0.875
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	50.0	4.23	Comp	0.00	g76P	0.000		679.999	0.000	0.000	0.000	17.000	0	0.000	0
PwmntBR1	**L2x2x3/16**	**SAE**	**2X2X0.1875**	**36.0**	**12.95**	**Tens**	**12.95**	**g86P**	**1.128**	**NESC Ext**	**18.827**	**16.800**	**10.195**	**8.712**	**1.500**	**1**	**1.000**	**0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g83P g84P g85P g86P g89P ??**
PwmntBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	4.15	Comp	2.41	g90P	0.280	NESC Hea	49.187	16.800	13.594	11.616	9.225	1	1.000	0.6875
NewBR	**L2.5x2.5x1/4**	**SAE**	**2.5X2.5X0.25**	**36.0**	**34.03**	**Tens**	**34.03**	**g82P**	**3.576**	**NESC Ext**	**31.975**	**31.340**	**16.312**	**10.509**	**2.693**	**1**	**1.000**	**0.8125 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g78P g79P g81P g82P ??**
Plate	6"x3/4"	Bar	6x3/4	36.0	34.99	Tens	34.99	g77P	21.933	NESC Ext	162.000	62.680	0.000	0.000	1.500	1	2.000	0.8125
M13	Bar 2.5x1/4	Bar	2-1/2x1/4	33.0	23.94	Tens	23.94	g57P	2.889	NESC Hea	12.066	13.600	16.875	0.000	5.000	1	1.000	0.875
M14	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	14.78	Comp	0.00	g49X	0.000		21.917	13.600	12.656	10.652	6.403	1	1.000	0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	82.86	g37P	Angle
NESC Extreme	96.92	g45Y	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.30	NESC Heavy	0.0
Clamp2	Clamp	3.26	NESC Heavy	0.0
Clamp3	Clamp	6.47	NESC Heavy	0.0
Clamp4	Clamp	6.39	NESC Heavy	0.0
Clamp5	Clamp	6.56	NESC Heavy	0.0
Clamp6	Clamp	6.50	NESC Heavy	0.0
Clamp7	Clamp	6.43	NESC Heavy	0.0

Clamp8	Clamp	6.37	NESC Heavy	0.0
Clamp9	Clamp	0.40	NESC Extreme	0.0
Clamp10	Clamp	0.40	NESC Extreme	0.0
Clamp11	Clamp	0.42	NESC Heavy	0.0
Clamp12	Clamp	0.42	NESC Heavy	0.0
Clamp13	Clamp	0.50	NESC Heavy	0.0
Clamp14	Clamp	0.50	NESC Heavy	0.0
Clamp15	Clamp	0.53	NESC Heavy	0.0
Clamp16	Clamp	0.53	NESC Heavy	0.0
Clamp17	Clamp	1.81	NESC Heavy	0.0
Clamp18	Clamp	1.81	NESC Heavy	0.0
Clamp19	Clamp	3.34	NESC Heavy	0.0
Clamp20	Clamp	1.92	NESC Heavy	0.0
Clamp21	Clamp	0.99	NESC Heavy	0.0
Clamp22	Clamp	0.81	NESC Heavy	0.0
Clamp23	Clamp	1.02	NESC Heavy	0.0
CLamp24	Clamp	18.34	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	Clamp1	Clamp	19P	0.000	1.087	1.244	1.652
NESC Heavy	Clamp2	Clamp	19X	0.000	1.050	1.244	1.628
NESC Heavy	Clamp3	Clamp	20P	0.000	1.715	2.741	3.233
NESC Heavy	Clamp4	Clamp	20X	0.000	1.641	2.741	3.195
NESC Heavy	Clamp5	Clamp	21P	0.000	1.699	2.805	3.280
NESC Heavy	Clamp6	Clamp	21X	0.000	1.641	2.805	3.250
NESC Heavy	Clamp7	Clamp	22P	0.000	1.698	2.731	3.216
NESC Heavy	Clamp8	Clamp	22X	0.000	1.641	2.731	3.186
NESC Heavy	Clamp9	Clamp	1P	0.000	0.000	0.180	0.180
NESC Heavy	Clamp10	Clamp	1Y	0.000	0.000	0.180	0.180
NESC Heavy	Clamp11	Clamp	2P	0.000	0.000	0.212	0.212
NESC Heavy	Clamp12	Clamp	2Y	0.000	0.000	0.212	0.212
NESC Heavy	Clamp13	Clamp	5P	0.000	0.000	0.251	0.251
NESC Heavy	Clamp14	Clamp	5Y	0.000	0.000	0.251	0.251
NESC Heavy	Clamp15	Clamp	7P	0.000	0.000	0.264	0.264
NESC Heavy	Clamp16	Clamp	7Y	0.000	0.000	0.264	0.264
NESC Heavy	Clamp17	Clamp	12P	0.000	0.000	0.906	0.906
NESC Heavy	Clamp18	Clamp	12Y	0.000	0.000	0.906	0.906
NESC Heavy	Clamp19	Clamp	30S	0.000	0.159	1.661	1.668
NESC Heavy	Clamp20	Clamp	31S	0.000	0.094	0.956	0.961
NESC Heavy	Clamp21	Clamp	32S	0.000	0.047	0.494	0.496
NESC Heavy	Clamp22	Clamp	33S	0.000	0.036	0.403	0.405
NESC Heavy	Clamp23	Clamp	34S	0.000	0.047	0.508	0.511
NESC Heavy	CLamp24	Clamp	29P	0.000	1.521	9.041	9.168
NESC Extreme	Clamp1	Clamp	19P	0.000	0.922	0.392	1.002
NESC Extreme	Clamp2	Clamp	19X	0.000	0.922	0.392	1.002
NESC Extreme	Clamp3	Clamp	20P	0.000	2.231	0.987	2.439
NESC Extreme	Clamp4	Clamp	20X	0.000	2.231	0.987	2.439
NESC Extreme	Clamp5	Clamp	21P	0.000	2.231	0.987	2.439
NESC Extreme	Clamp6	Clamp	21X	0.000	2.231	0.987	2.439
NESC Extreme	Clamp7	Clamp	22P	0.000	2.231	0.987	2.439
NESC Extreme	Clamp8	Clamp	22X	0.000	2.231	0.987	2.439
NESC Extreme	Clamp9	Clamp	1P	0.000	0.140	0.146	0.202
NESC Extreme	Clamp10	Clamp	1Y	0.000	0.140	0.146	0.202

NESC Extreme	Clamp11	Clamp	2P	0.000	0.140	0.146	0.202
NESC Extreme	Clamp12	Clamp	2Y	0.000	0.140	0.146	0.202
NESC Extreme	Clamp13	Clamp	5P	0.000	0.140	0.146	0.202
NESC Extreme	Clamp14	Clamp	5Y	0.000	0.140	0.146	0.202
NESC Extreme	Clamp15	Clamp	7P	0.000	0.140	0.146	0.202
NESC Extreme	Clamp16	Clamp	7Y	0.000	0.140	0.146	0.202
NESC Extreme	Clamp17	Clamp	12P	0.000	0.404	0.423	0.585
NESC Extreme	Clamp18	Clamp	12Y	0.000	0.404	0.423	0.585
NESC Extreme	Clamp19	Clamp	30S	0.000	0.777	1.022	1.284
NESC Extreme	Clamp20	Clamp	31S	0.000	0.362	0.502	0.619
NESC Extreme	Clamp21	Clamp	32S	0.000	0.251	0.324	0.410
NESC Extreme	Clamp22	Clamp	33S	0.000	0.226	0.284	0.363
NESC Extreme	Clamp23	Clamp	34S	0.000	0.251	0.324	0.410
NESC Extreme	CLamp24	Clamp	29P	0.000	5.817	4.012	7.066

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	13.850	0.000	30.250	986.286	0.000	0.000
NESC Extreme	20.690	0.000	10.853	1542.216	0.000	0.000

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 16193.4
Total: 16193.4

*** End of Report

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Subject:	Anchor Bolt Analysis for Tower #1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $Uplift := 51.8 \cdot kips$ (User Input)

Shear = $Shear := 13.3 \cdot kips$ (User Input)

Compression = $Compression := 58.4 \cdot kips$ (User Input)

Anchor Bolt Data:

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

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

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

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

Diameter of Bolts = $D := 1.25in$ (User Input)

Threads per Inch = $n := 7$ (User Input)

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

Anchor Bolt Area:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 1.227 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.969 \cdot in^2$ (AISC 13th Ed. pg. 7-83)

Check Tensile Force:

Maximum Tensile Force (Gross Area) =

$$F_{gross.area} := 1.0 \cdot \left(0.33 \cdot A_g \cdot F_u\right) = 23.5 \cdot kips$$

Maximum Tensile Force (Net Area) =

$$F_{net.area} := 1.0 \cdot \left(0.60 \cdot A_n \cdot F_y\right) = 20.9 \cdot kips$$

Allowable Tension =

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

$$AllowableTension = 20.9 \cdot kips$$

Applied Tension =

$$MaxTension := \frac{Uplift}{N} = 12.95 \cdot kips$$

$$\frac{MaxTension}{F_{net.area}} = 61.9 \cdot \%$$

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

$$Condition1 = "OK"$$

Check Anchor Bolt Area:

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

Required Area =

$$A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 2.2 \cdot in^2$$

$$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y}\right] = -0.251 \cdot in^2$$

Provided Area =

$$A_{sprovided} := A_n \cdot N = 3.9 \cdot in^2$$

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

$$Condition2 = "OK"$$

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

$$Condition3 = "OK"$$

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Subject:	Foundation Analysis Tower # 1340
Location:	Shelton, CT
Rev. 0: 11/14/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.30

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 13.3·1.1·kips = 14.6·kips	(User Input)
Compression =	Comp := 58.4·1.1·kips = 64.2·kips	(User Input)
Uplift =	Uplift := 51.8·1.1·kips = 57·kips	(User Input)

Tower Properties:

Tower Height =	$H_t := 81 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 5.67 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 5 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 8 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2.0 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 0 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 0 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 128 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 73.71 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := P_{w2}^2 = 25 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\psi) \cdot (P_H - P_P) + Pd_w\right]^2 = 195 ft^2$

Volume of Soil = $V_{soil} := \left[\frac{(P_H - P_P)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] - V_{pier} = 426.06 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 202 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 30.3 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 43 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 73 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.28$

$Uplift\_Check := if\left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed"\right)$

Uplift_Check = "OK"

Cross Sectional Area of Pad = $A_{pad} := Pd_w^2 = 64 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 85 \cdot ft^3$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pad}} + \frac{Shear \cdot (P_H + Pd_t)}{S_{pad}} = 2.79 \cdot ksf$

$Bearing\_Check := if\left(Bearing \leq BC_{soil}, "OK", "No Good"\right)$

Bearing_Check = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT2044	DATE:	09/22/2015	RF DESIGN ENG:	Omair Mohammed	RF PERF ENG:	Neil Alejandro	RFDS PROGRAM TYPE:	2017 LTE Multi Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	860-721-4315	RF PERF PHONE:		RFDS TECHNOLOGY:	1xBBU RRH Add
REVISION:	Final	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	om636a@att.com	RF PERF EMAIL:	na3839@att.com	State:	Preliminary
INITIATIVE /PROJECT:	LTE BWE RRUS-32 B2 for LTE 1900					TRIDENT:		Status:	Approved
						GSM FREQUENCY:	850	RFDS ID:	1154710
						UMTS FREQUENCY:	850, 1900	RFDS Version:	1.00
						LTE FREQUENCY:	700, 850, 1900, WCS	Created By:	om636a
								Date Created:	4/6/2016 10:52:26 AM
								Date Updated:	4/15/2016 11:59:42 AM
								Updated By:	om636a
						I-PLAN JOB # 1:	NER-RCTB-15-01417	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 1xBBU RRH Add
						I-PLAN JOB # 2:		IPLAN PRD GRP || SUB GRP #2:	
						I-PLAN JOB # 3:		IPLAN PRD GRP || SUB GRP #3:	
						I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:	

Section 2 - LOCATION INFORMATION

USID:	60377	FA LOCATION CODE:	10035243	LOCATION NAME:	SHELTON NU PWR MT	ORACLE PTN # 1:		PACE JOB # 1:	MRCTB018603
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:		PACE JOB # 2:	
ADDRESS:	17 DAYBREAK LANE	CITY:	SHELTON	STATE:	CT	ORACLE PTN # 3:		PACE JOB # 3:	
ZIP CODE:	06484	COUNTY:	FAIRFIELD	MSA / RSA:		ORACLE PTN # 4:		PACE JOB # 4:	
LATITUDE (D-M-S):	41d 16m 21.072s	LONGITUDE (D-M-S):	-73d -7m -5.99484s	LAT (DEC. DEG.):	41.2725200	SEARCH RING NAME:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	2044 SHELTON RT 8 SOUTH TO EXIT 12 TAKE LEFT TRAVEL 2/10 MILES AND TAKE A RIGHT ON DAYBREAK LANE FOR 2/10 MILES SITE ON RIGHT					SEARCH RING ID:		CASPR INITIATIVE # 1:	4th Carrier|Site Overlay|UMTS
						BTA:		CASPR INITIATIVE # 2:	2nd Carrier|Site Overlay|LTE
						LONG (DEC. DEG.):	-73.1183319	CASPR INITIATIVE # 3:	3rd Carrier|Site Overlay|UMTS
						BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE # 4:	Generator
						AM STUDY REQ'D (Y/N):	No		
						FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	Yes	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	No	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):	0	STRUCTURE TYPE:	UTILITY	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):		FCC ASR NUMBER:	0	MARKET LOCATION 850 MHz Band:	On-Air
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	82.00			MARKET LOCATION 1900 MHz Band:	On-Air
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:	
						MARKET LOCATION WCS Band:	
						MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR B	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR C	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR D	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
SECTOR E	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
SECTOR F	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
OMNI								

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR B	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR C	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_PAIR_B				
SECTOR D	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
SECTOR E	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
SECTOR F	CT-CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO				
OMNI								

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS						
RBS ID:	98364	175014	210606	262653	362922	RFDS_15852100						
CTS COMMON ID:	321D2044	321X2044	CTV2044	CTU2044	CTL02044	CTL06044R						
BTA/TID:	042G	321P	321U	321V	321L	321L						
4-DIGIT SITE ID:	2044	2044	2044	9044	02044	06044						
COW OR TOY?:	No	No	No	No	No	No						
CELL SITE TYPE:												
SITE TYPE:												
BTS LOCATION ID:												
ORIGINATING CO:												
CELLULAR NETWORK:												
OPS DISTRICT:												
RF DISTRICT:												
OPS ZONE:												
RF ZONE:												
BASE STATION TYPE:												
EQUIPMENT NAME:	SHELTON NU PWR MT	SHELTON NU PWR MT	SHELTON NU PWR MT	SHELTON - NU PWR MT	SHELTON NU PWR MT	SHELTON NU PWR MT						
DISASTER PRIORITY:												

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS						
RBS ID:	98364	175014	210606	262653	362922							
CTS COMMON ID:	321D2044	321X2044	CTV2044	CTU2044	CTL02044							
BTA/TID:	042G	321P	321U	321V	321L							
4-DIGIT SITE ID:	2044	2044	2044	9044	02044							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:			INTERNAL	INTERNAL								
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	CT-South	CT-South	CT-South	CT-South	CT-South							
RF DISTRICT:	NPO Triage	NPO Triage	Bridgeport	Bridgeport	NPO Triage							
OPS ZONE:	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS							
RF ZONE:	Hotseat	Hotseat	BBP08	BBP08	Hotseat							
BASE STATION TYPE:	BASE	BASE	BASE	BASE	BASE							
EQUIPMENT NAME:	SHELTON NU PWR MT	SHELTON NU PWR MT	SHELTON NU PWR MT	SHELTON - NU PWR MT	SHELTON NU PWR MT							
DISASTER PRIORITY:	0	0	0	0	3							

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS						
MSC:												
BSC/RNC/MME POOL ID:	BRPTCTBSC08	BRPTCTBSC08	BRPTCT04CR0R05	BRPTCT04CR0R05	FF01	FF01						
LAC:	05017	05017	05991	05991								
RAC:												
EQUIPMENT VENDOR:												
EQUIPMENT TYPE:	ULTRASITE	ULTRASITE										
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:												
AGPS:	Yes	Yes	Yes	Yes	Yes	Yes						
NODE B NUMBER:			0	0	2044	6044						
PARENT NAME:	BRPTCTBSC08	BRPTCTBSC08	BRPTCT04CR0R05	BRPTCT04CR0R05	FF01	FF01						

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS						
MSC:												
BSC/RNC/MME POOL ID:	BRPTCTBSC08	BRPTCTBSC08	BRPTCT04CR0R05	BRPTCT04CR0R05	FF01							
LAC:	05017	05017	05991	05991								
RAC:												
EQUIPMENT VENDOR:	NOKIA	NOKIA	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	ULTRASITE	3206 INDOOR	3206 INDOOR	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:			0	0	2044							
PARENT NAME:	BRIDGEPORT BSC 08	BRIDGEPORT BSC 08	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC5								

Section 8 - RBS INDIVIDUAL INFORMATION - existing

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS												
RBS ID:	98364	210606	262653	210606	362922	362922	362922	362922	RFDS_158521 00	RFDS_158521 01	RFDS_158521 02	RFDS_158521 03												
CELL ID/BCF:	042G2044	CTV2044	CTV2044	CTV2044	CTL02044	CTL02044	CTL02044	CTL02044	CTL06044R	CTL06044R	CTL06044R	CTL06044R												
CTS COMMON ID:	321D2044	CTV2044	CTU2044	CTV2044	CTL02044	CTL02044	CTL02044	CTL02044	CTL06044R	CTL06044R	CTL06044R	CTL06044R												

Section 8 - RBS INDIVIDUAL INFORMATION - final

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS												
RBS ID:	98364	210606	262653	210606	362922	362922	362922	362922																
CELL ID/BCF:	042G2044	CTV2044	CTV2044	CTV2044	CTL02044	CTL02044	CTL02044	CTL02044																
CTS COMMON ID:	321D2044	CTV2044	CTU2044	CTV2044	CTL02044	CTL02044	CTL02044	CTL02044																

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS													
USEID (excluding Hard Sector)	60377.850.25G.1	60377.850.3G.1	60377.1900.3G.1	60377.850.3G.4	60377.700.4G.1	60377.850.4G.tmp1	60377.1900.4G.1	60377.WCS.4G.tmp1	60377.700.4G.tmp2	60377.850.4G.tmp2	60377.1900.4G.tmp2	60377.WCS.4G.tmp2													
SECTOR A **SOFT SECTOR ID**	321G20441	CTV20441	CTU20447	CTV2044A	CTL02044_7A_1	CTL02044_8A_1	CTL02044_9A_1	CTL02044_3A_1																	
SECTOR B	321G20442	CTV20442	CTU20448	CTV2044B	CTL02044_7B_1	CTL02044_8B_1	CTL02044_9B_1	CTL02044_3B_1																	
SECTOR C	321G20443	CTV20443	CTU20449	CTV2044C					CTL06044_7C_1	CTL06044_8C_1	CTL06044_9C_1	CTL06044_3C_1													
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - SOFT SECTOR ID - final

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS													
USEID (excluding Hard Sector)	60377.850.25G.1	60377.850.3G.1	60377.1900.3G.1	60377.850.3G.4	60377.700.4G.1	60377.850.4G.tmp1	60377.1900.4G.1	60377.WCS.4G.tmp1																	
SECTOR A **SOFT SECTOR ID**	321G20441	CTV20441	CTU20447	CTV2044A	CTL02044_7A_1	CTL02044_8A_1	CTL02044_9A_1	CTL02044_3A_1																	
SECTOR B	321G20442	CTV20442	CTU20448	CTV2044B	CTL02044_7B_1	CTL02044_8B_1	CTL02044_9B_1	CTL02044_3B_1																	
SECTOR C	321G20443	CTV20443	CTU20449	CTV2044C	CTL02044_7C_1	CTL02044_8C_1	CTL02044_9C_1	CTL02044_3C_1																	
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - existing

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS														
USEID (excluding Hard Sector)	60377.850.25G.1	60377.850.3G.1	60377.1900.3G.1	60377.850.3G.4	60377.700.4G.1	60377.850.4G.tmp1	60377.1900.4G.1	60377.WCS.4G.tmp1	60377.700.4G.tmp2	60377.850.4G.tmp2	60377.1900.4G.tmp2	60377.WCS.4G.tmp2														
SECTOR A **CELL NUMBER**		0	0	0	15	1	8	149																		
SECTOR B		0	0	0	16	2	9	150																		
SECTOR C		0	0	0					17	3	10	151														
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - final

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS														
USEID (excluding Hard Sector)	60377.850.25G.1	60377.850.3G.1	60377.1900.3G.1	60377.850.3G.4	60377.700.4G.1	60377.850.4G.tmp1	60377.1900.4G.1	60377.WCS.4G.tmp1																		
SECTOR A **CELL NUMBER**		0	0	0	15	1	8	149																		
SECTOR B		0	0	0	16	2	9	150																		
SECTOR C		0	0	0	17	3	10	151																		
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - existing

		GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS															
SECTOR A	CID/SAC	20441	20441	20447	60441																							
SECTOR B		20442	20442	20448	60442																							
SECTOR C		20443	20443	20449	60443																							
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 10 - CID/SAC - final

		GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND WCS															
SECTOR A	CID/SAC	20441	20441	20447	60441																							
SECTOR B		20442	20442	20448	60442																							
SECTOR C		20443	20443	20449	60443																							
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 11 - CURRENT RADIO COUNTS existing

		GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A	RADIO COUNTS																								
SECTOR B																									
SECTOR C																									
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									
																		LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A	RADIO COUNTS																								
SECTOR B																									
SECTOR C																									
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 12 - CURRENT T1 COUNTS existing

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet	UMTS 5th Cabinet	UMTS 6th Cabinet	LTE 1st Cabinet	LTE 2nd Cabinet	LTE 3rd Cabinet	LTE 4th Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 13 - NEW/PROPOSED RADIO COUNTS

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A RADIO COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 14 - NEW/PROPOSED T1 COUNTS

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet	UMTS 5th Cabinet	UMTS 6th Cabinet	LTE 1st Cabinet	LTE 2nd Cabinet	LTE 3rd Cabinet	LTE 4th Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 15A - CURRENT SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		P65-16-XLH-RR			
ANTENNA VENDOR	Powerwave	CCI Products		Powerwave			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X12X6			
ANTENNA WEIGHT	35	73		64			
AZIMUTH	143	30		30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)	6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		4 Andrew / APTDC-BDFDM-DBW				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Powerwave / CM1007-DBPXBC-003			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Powerwave / 7070	LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		1 CCI / DTMABP7819VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-11			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze RRH Bottom.- LTE 850 will be the 4C at the site.- 850 GSM request to Decom for carrier ADD to happen.- Add 850 RRUS -11 Bottom with 2 - Surge protector.- Connect the RET cable to the UMTS ANT from TMAs on GSM line- Move existing LTE BB Antenna to POS4 from POS3 to keep 6' separation.-Add XMU (2nd DUS should be during LTE 3C)						
Local Market Note2	GSM 850 Request to DECOM for Carrier ADD to happen.						
Local Market Note3	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.A.850.25G.1,60377.A.850.3G.1	60377.A.850.3G.1	CTV20441	CTV20441		UMTS 850	7770.00.850.06	13.5	143	6	None	7/8" - Andrew	141						234.96		1	
	PORT 2	60377.A.850.3G.4	60377.A.850.3G.2	CTV20441	CTV2044A		UMTS 850	7770.00.850.06	13.5	143	6	Bottom	7/8" - Andrew	141						234.96		2	
	PORT 3	60377.A.1900.3G.1	60377.A.1900.3G.1	CTU20447	CTU20447		UMTS 1900	7770.00.1900.00	15.5	143	0	None	7/8" - Andrew	141						506.99		1	
ANTENNA POSITION 2	PORT 1	60377.A.850.4G.tmp1	60377.A.850.4G.1	CTL02044_8A_1	CTL02044_8A_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	30	2	Bottom	7/8" - Andrew	141						889.2011		3	
	PORT 3	60377.A.WCS.4G.tmp1	60377.A.WCS.4G.1	CTL02044_3A_1	CTL02044_3A_1		LTE WCS	OPA-65R-LCUU-	17.7	30	2	Bottom	7/8" - Andrew	141						1227.4392		4	

								H6_2350MHz_02DT															
ANTENNA POSITION 4	**PORT 1**	60377.A.700.4G.1	60377.A.700.4G.1	CTL02044_7A_1	CTL02044_7A_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	30	2	Bottom	7/8" - Andrew	141						1475.7065		7	
	PORT 3	60377.A.1900.4G.1	60377.A.1900.4G.1	CTL02044_9A_1	CTL02044_9A_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	30	2	Bottom	7/8" - Andrew	141						2421.029		7	

Section 15B - CURRENT SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		P65-16-XLH-RR			
ANTENNA VENDOR	Powerwave	CCI Products		Powerwave			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X12X6			
ANTENNA WEIGHT	35	73		64			
AZIMUTH	263	150		150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)	6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		4 Andrew / APTDC-BDFDM-DBW				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Powerwave / CM1007-DBPXBC-003			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		1 CCI / DTMABP7819VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-11			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze RRH Bottom.- LTE 850 will be the 4C at the site.- 850 GSM request to Decom for carrier ADD to happen.- Add 850 RRUS -11 Bottom with 2 - Surge protector.- Connect the RET cable to the UMTS ANT from TMAs on GSM line- Move existing LTE BB Antenna to POS4 from POS3 to keep 6' separation.-Add XMU (2nd DUS should be during LTE 3C)						
Local Market Note2	GSM 850 Request to DECOM for Carrier ADD to happen.						
Local Market Note3	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.B.850.25G.1,60377.B.850.3G.1	60377.B.850.3G.1	CTV20442	CTV20442		UMTS 850	7770.00.850.05	13.5	263	5	None	7/8" - Andrew	141						234.96		9	
	PORT 2	60377.B.850.3G.4	60377.B.850.3G.2	CTV20442	CTV2044B		UMTS 850	7770.00.850.05	13.5	263	5	Bottom	7/8" - Andrew	141						234.96		10	
	PORT 3	60377.B.1900.3G.1	60377.B.1900.3G.1	CTU20448	CTU20448		UMTS 1900	7770.00.1900.00	15.5	263	0	None	7/8" - Andrew	141						506.99		9	
ANTENNA POSITION 2	PORT 1	60377.B.850.4G.tmp1	60377.B.850.4G.1	CTL02044_8B_1	CTL02044_8B_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	150	2	Bottom	7/8" - Andrew	141						889.2011		11	
	PORT 3	60377.B.WCS.4G.tmp1	60377.B.WCS.4G.1	CTL02044_3B_1	CTL02044_3B_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_02DT	17.7	150	2	Bottom	7/8" - Andrew	141						1227.4392		12	

ANTENNA POSITION 4	**PORT 1**	60377.B.700.4G.1	60377.B.700.4G.1	CTL02044_7B_1	CTL02044_7B_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	150	2	Bottom	7/8" - Andrew	141						1475.7065		15	
	PORT 3	60377.B.1900.4G.1	60377.B.1900.4G.1	CTL02044_9B_1	CTL02044_9B_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	150	2	Bottom	7/8" - Andrew	141						2421.029		15	

Section 15C - CURRENT SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		P65-16-XLH-RR			
ANTENNA VENDOR	Powerwave	CCI Products		Powerwave			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X12X6			
ANTENNA WEIGHT	35	73		64			
AZIMUTH	23	270		270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	4		2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		4 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Powerwave / CM1007-DBPXBC-003			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		1 CCI / DTMABP7819VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-11			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Bronze RRH Bottom.- LTE 850 will be the 4C at the site.- 850 GSM request to Decom for carrier ADD to happen.- Add 850 RRUS -11 Bottom with 2 - Surge protector.- Connect the RET cable to the UMTS ANT from TMAs on GSM line- Move existing LTE BB Antenna to POS4 from POS3 to keep 6' separation.-Add XMU (2nd DUS should be during LTE 3C)						
Local Market Note2	GSM 850 Request to DECOM for Carrier ADD to happen.						
Local Market Note3	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.C.850.25G.1,60377.C.850.3G.1	60377.C.850.3G.1	CTV20443	CTV20443		UMTS 850	7770.00.850.05	13.5	23	5	None	7/8" - Andrew	141						234.96		17	
	PORT 2	60377.C.850.3G.4	60377.C.850.3G.2	CTV20443	CTV2044C		UMTS 850	7770.00.850.05	13.5	23	5	Bottom	7/8" - Andrew	141						234.96		18	
	PORT 3	60377.C.1900.3G.1	60377.C.1900.3G.1	CTU20449	CTU20449		UMTS 1900	7770.00.1900.00	15.5	23	0	None	7/8" - Andrew	141						506.99		17	
ANTENNA POSITION 2	PORT 1		60377.C.850.4G.1	CTL06044_8C_1	CTL06044_8C_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	270	2	Bottom	7/8" - Andrew	141						889.2011		19	
	PORT 3		60377.C.WCS.4G.1	CTL06044_3C_1	CTL06044_3C_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_02DT	17.7	270	2	Bottom	7/8" - Andrew	141						1227.4392		20	

ANTENNA POSITION 4	**PORT 1**		60377.C.700.4G.1	CTL06044_7C_1	CTL06044_7C_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	270	2	Bottom	7/8" - Andrew	141						1475.7065		23	
	PORT 3		60377.C.1900.4G.1	CTL06044_9C_1	CTL06044_9C_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	270	2	Bottom	7/8" - Andrew	141						2421.029		23	

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Products			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				51			
AZIMUTH				30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				98			
ANTENNA TIP HEIGHT				101			
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				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)							
SURGE ARRESTOR (QTY/MODEL)				2 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)				2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)				AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3	60377.A.1900.4G.1	60377.A.1900.4G.1	CTL02044_9A_1	CTL02044_9A_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	30	2	Bottom	7/8" - Andrew	141						2421.029		7	

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Products			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				51			
AZIMUTH				150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				98			
ANTENNA TIP HEIGHT				101			
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				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)							
SURGE ARRESTOR (QTY/MODEL)				2 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)				2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)				AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3	60377.B.1900.4G.1	60377.B.1900.4G.1	CTL02044_9B_1	CTL02044_9B_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	150	2	Bottom	7/8" - Andrew	141						2421.029		15	

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Products			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				51			
AZIMUTH				270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				98			
ANTENNA TIP HEIGHT				101			
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				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)							
SURGE ARRESTOR (QTY/MODEL)				2 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)				2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)				AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3		60377.C.1900.4G.1	CTL06044_9C_1	CTL06044_9C_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	270	2	Bottom	7/8" - Andrew	141						2421.029		23	

Section 17A - FINAL SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		HPA-65R-BUU-H6			
ANTENNA VENDOR	Powerwave	CCI Products		CCI Products			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X14.8X9			
ANTENNA WEIGHT	35	73		51			
AZIMUTH	143	30		30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	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)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		6 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Powerwave / 7070	LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.A.850.25G.1,60377.A.850.3G.1	60377.A.850.3G.1	CTV20441	CTV20441		UMTS 850	7770.00.850.06	13.5	143	6	None	7/8" - Andrew	141						234.96		1	
	PORT 2	60377.A.850.3G.4	60377.A.850.3G.2	CTV20441	CTV2044A		UMTS 850	7770.00.850.06	13.5	143	6	Bottom	7/8" - Andrew	141						234.96		2	
	PORT 3	60377.A.1900.3G.1	60377.A.1900.3G.1	CTU20447	CTU20447		UMTS 1900	7770.00.1900.00	15.5	143	0	None	7/8" - Andrew	141						506.99		1	
ANTENNA POSITION 2	PORT 1	60377.A.850.4G.tmp1	60377.A.850.4G.1	CTL02044_8A_1	CTL02044_8A_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	30	2	Bottom	7/8" - Andrew	141						889.2011		3	
	PORT 3	60377.A.WCS.4G.tmp1	60377.A.WCS.4G.1	CTL02044_3A_1	CTL02044_3A_1		LTE WCS	OPA-65R-LCUU-	17.7	30	2	Bottom	7/8" - Andrew	141						1227.4392		4	

								H6_2350MHz_02DT															
ANTENNA POSITION 4	**PORT 1**	60377.A.700.4G.1	60377.A.700.4G.1	CTL02044_7A_1	CTL02044_7A_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	30	2	Bottom	7/8" - Andrew	141						1475.7065		7	
	PORT 3	60377.A.1900.4G.1	60377.A.1900.4G.1	CTL02044_9A_1	CTL02044_9A_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	30	2	Bottom	7/8" - Andrew	141						2421.029		7	

Section 17B - FINAL SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		HPA-65R-BUU-H6			
ANTENNA VENDOR	Powerwave	CCI Products		CCI Products			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X14.8X9			
ANTENNA WEIGHT	35	73		51			
AZIMUTH	263	150		150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	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)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)	6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		6 Andrew / APTDC-BDFDM-DBW				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.B.850.25G.1,60377.B.850.3G.1	60377.B.850.3G.1	CTV20442	CTV20442		UMTS 850	7770.00.850.05	13.5	263	5	None	7/8" - Andrew	141						234.96		9	
	PORT 2	60377.B.850.3G.4	60377.B.850.3G.2	CTV20442	CTV2044B		UMTS 850	7770.00.850.05	13.5	263	5	Bottom	7/8" - Andrew	141						234.96		10	
	PORT 3	60377.B.1900.3G.1	60377.B.1900.3G.1	CTU20448	CTU20448		UMTS 1900	7770.00.1900.00	15.5	263	0	None	7/8" - Andrew	141						506.99		9	
ANTENNA POSITION 2	PORT 1	60377.B.850.4G.tmp1	60377.B.850.4G.1	CTL02044_8B_1	CTL02044_8B_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	150	2	Bottom	7/8" - Andrew	141						889.2011		11	
	PORT 3	60377.B.WCS.4G.tmp1	60377.B.WCS.4G.1	CTL02044_3B_1	CTL02044_3B_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_02DT	17.7	150	2	Bottom	7/8" - Andrew	141						1227.4392		12	

ANTENNA POSITION 4	**PORT 1**	60377.B.700.4G.1	60377.B.700.4G.1	CTL02044_7B_1	CTL02044_7B_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	150	2	Bottom	7/8" - Andrew	141						1475.7065		15	
	PORT 3	60377.B.1900.4G.1	60377.B.1900.4G.1	CTL02044_9B_1	CTL02044_9B_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	150	2	Bottom	7/8" - Andrew	141						2421.029		15	

Section 17C - FINAL SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		HPA-65R-BUU-H6			
ANTENNA VENDOR	Powerwave	CCI Products		CCI Products			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X14.8X9			
ANTENNA WEIGHT	35	73		51			
AZIMUTH	23	270		270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	98	98		98			
ANTENNA TIP HEIGHT	100	101		101			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	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)	2 Powerwave / 7020 (DB)	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		6 Andrew / APTDC-BDFDM-DBW (4) + Polyphaser / 1000860 (2)		6 Andrew / APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	4 CCI Pentaplexer - 5PX-0726-RM		2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH Via TMA		LTE RRH Via TMA			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave / LGP 21401 (Dual Band - 850 Bypass)	2 Kaelus TMA2117F00V1-1 (Twin PCS-WCS w/700/850 BP)		2 TMA2093F00V1-1 (Twin AWS-PCS w/ 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 1000860	2 K SBT 782-10253		AiSG Diplexer			
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	LTE RRUS-32 add, IDL2 add, Antenna Change- Replace existing LTE RRUS-12 with RRUS-32 B2- Add IDL2 link- Add 2 Coax Per sector- Replace existing TMAs and Diplexer- Removed 2nd DUS from section 6-10						
Local Market Note2	LTE alpha is with UMTS Gamma Face // LTE Beta is with UMTS Alpha Face // LTE Gamma is with UMTS Beta Face						
Local Market Note3	Baseband Config - 2 DUS + XMU + IDL2DUS-1 - 7A:7B:_:X1P1:X1P2:I2D2 XMU-1 - PA:PA2A:WA:8A:PB:PA2B:WB:8B:_:_:_:_:_:_:D1E:D1D DUS-2 - 7C:WC:8C:PC:PA2C:I2D1						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	60377.C.850.25G.1,60377.C.850.3G.1	60377.C.850.3G.1	CTV20443	CTV20443		UMTS 850	7770.00.850.05	13.5	23	5	None	7/8" - Andrew	141						234.96		17	
	PORT 2	60377.C.850.3G.4	60377.C.850.3G.2	CTV20443	CTV2044C		UMTS 850	7770.00.850.05	13.5	23	5	Bottom	7/8" - Andrew	141						234.96		18	
	PORT 3	60377.C.1900.3G.1	60377.C.1900.3G.1	CTU20449	CTU20449		UMTS 1900	7770.00.1900.00	15.5	23	0	None	7/8" - Andrew	141						506.99		17	
ANTENNA POSITION 2	PORT 1	60377.C.850.4G.tmp1	60377.C.850.4G.1	CTL02044_8C_1	CTL06044_8C_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	270	2	Bottom	7/8" - Andrew	141						889.2011		19	
	PORT 3	60377.C.WCS.4G.tmp1	60377.C.WCS.4G.1	CTL02044_3C_1	CTL06044_3C_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_02DT	17.7	270	2	Bottom	7/8" - Andrew	141						1227.4392		20	

ANTENNA POSITION 4	**PORT 1**	60377.C.700.4G.tmp1	60377.C.700.4G.1	CTL02044_7C_1	CTL06044_7C_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8	270	2	Bottom	7/8" - Andrew	141						1475.7065		23	
	PORT 3	60377.C.1900.4G.tmp1	60377.C.1900.4G.1	CTL02044_9C_1	CTL06044_9C_1		LTE 1900	P65-16-XLH-RR_1930MHz_02DT	17.2	270	2	Bottom	7/8" - Andrew	141						2421.029		23	

Diagram - Sector	A	Diagram File Name - CT2044_A_B_C_LTEBWE_Rev1.vsd					
Atoll Site Name -	CT2044	Location Name -	SHELTON NU PWR MT	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

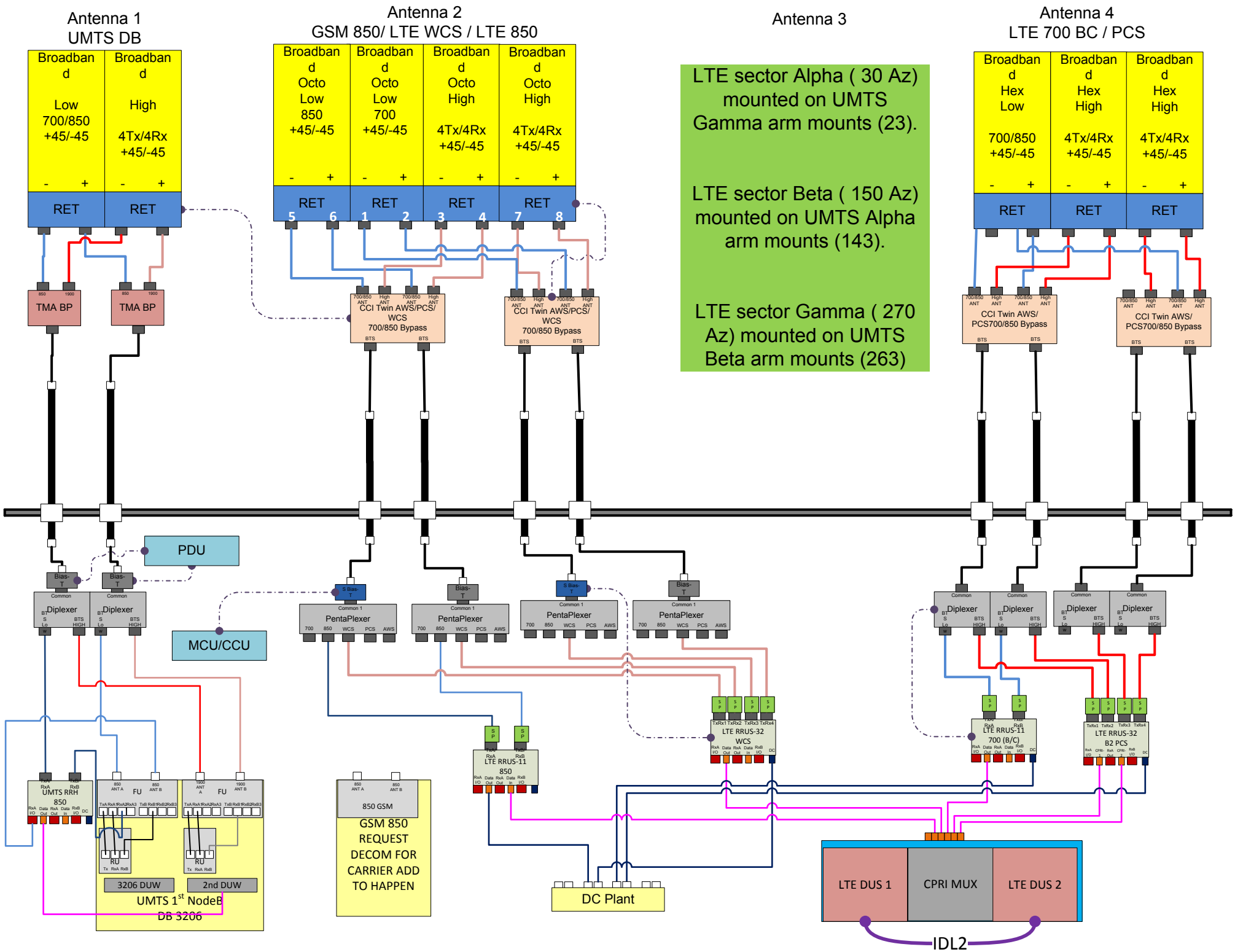


Diagram - Sector B | Diagram File Name - CT2044_A_B_C_LTEBWE_Rev1.vsd

Atoll Site Name - CT2044 | Location Name - SHELTON NU PWR MT | Market - CONNECTICUT | Market Cluster - NEW ENGLAND

Comments:

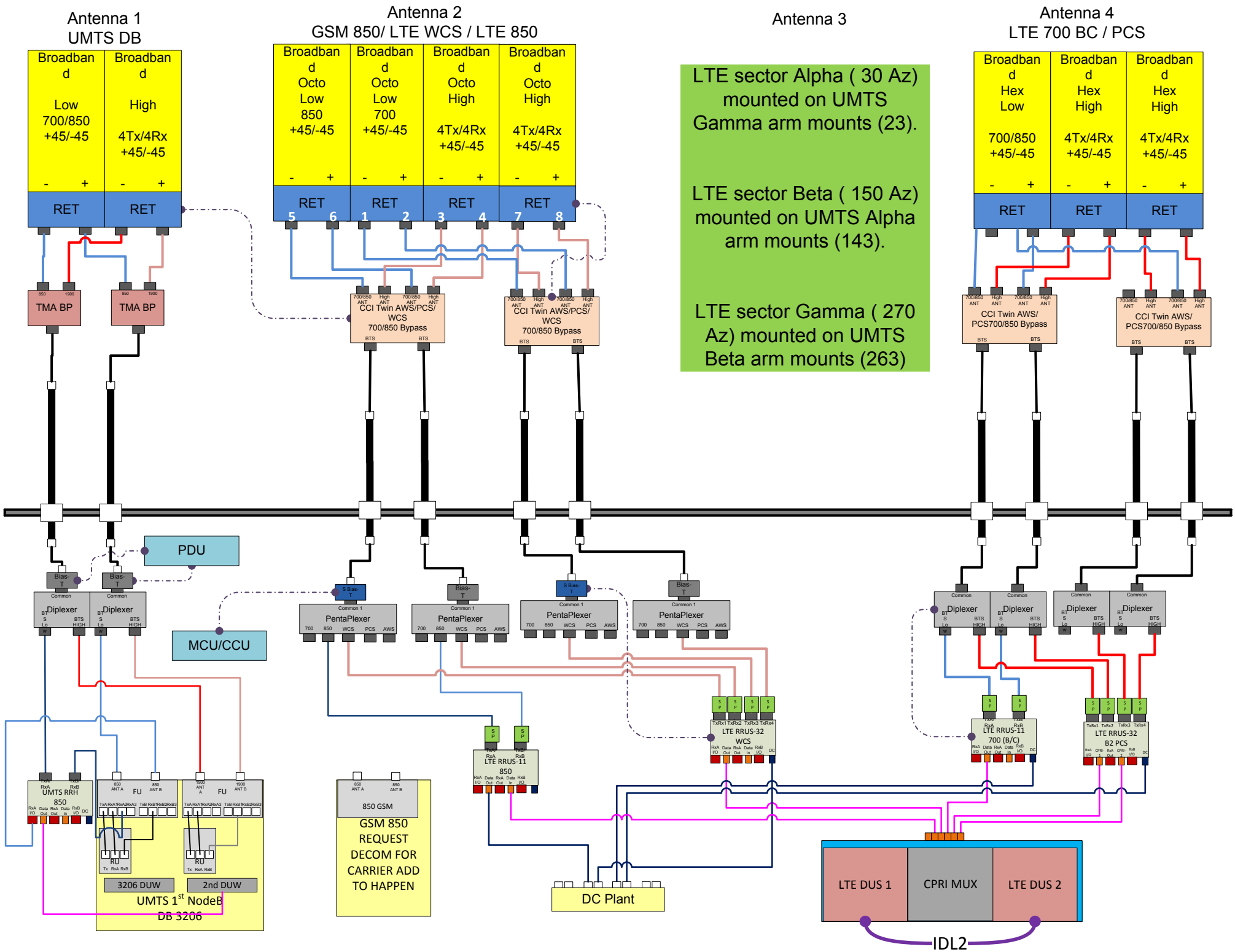
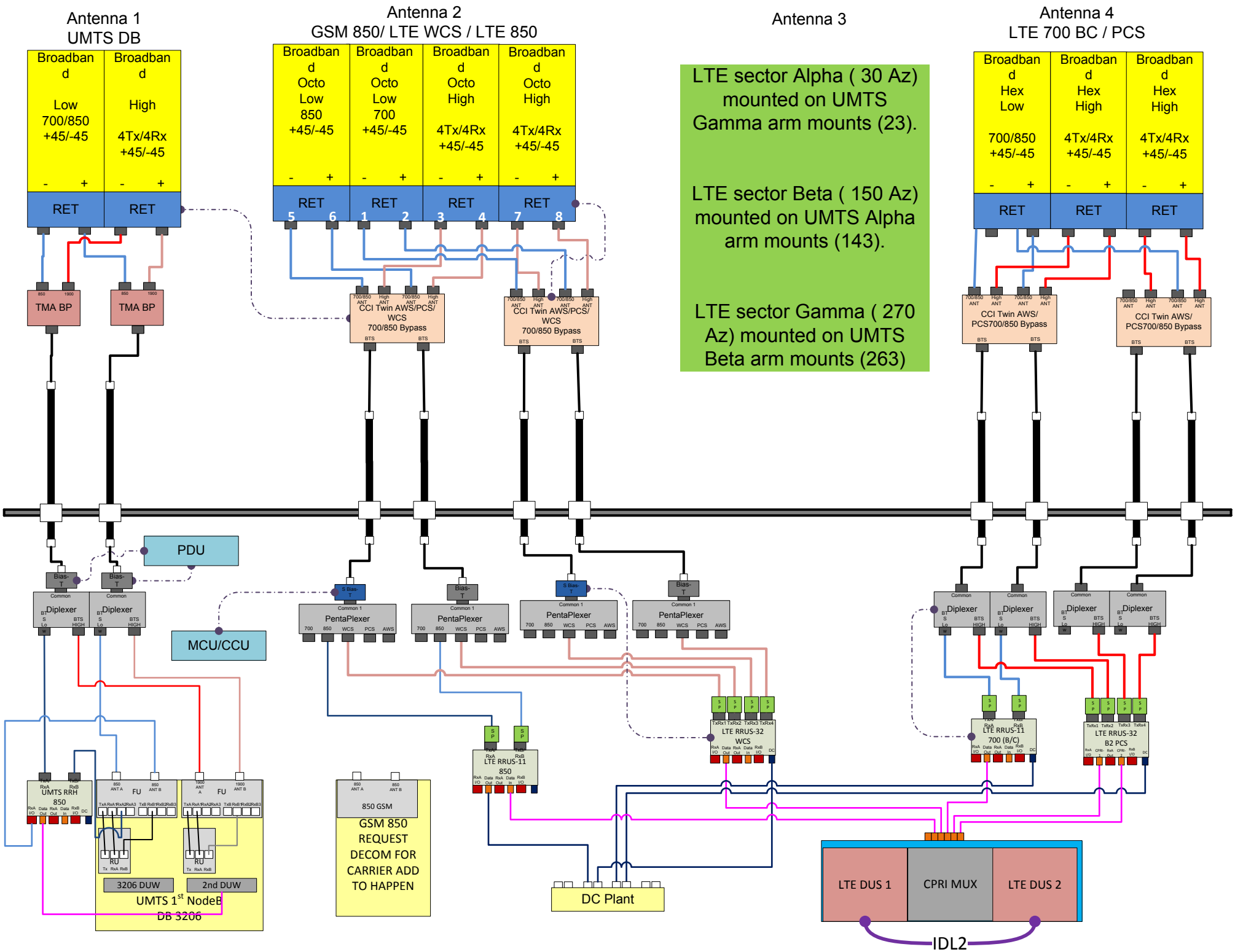


Diagram - Sector C | Diagram File Name - CT2044_A_B_C_LTEBWE_Rev1.vsd

Atoll Site Name - CT2044 | Location Name - SHELTON NU PWR MT | Market - CONNECTICUT | Market Cluster - NEW ENGLAND

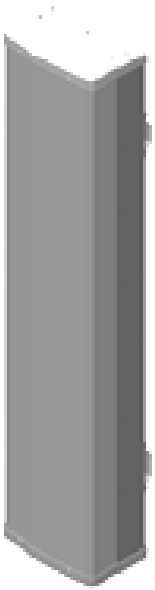
Comments:



WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
04/15/2016	Preliminary / In Progress	om636a	Preliminary / Submitted for Approval	AB014M	Promote	LTE Preliminary RFDS
06/06/2016	Preliminary / Submitted for Approval	AB014M	Preliminary / Approved	BG144B	Promote	

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6



The CCI Hexport Multi-Band Antenna Array is an industry first 6-port antenna with full WCS Band Coverage. With four high band ports and two low band ports, our hexport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2170 MHz and WCS 2300 MHz coverage in a single enclosure.

Hexport Multi-Band Antenna Array

Benefits

- **Includes WCS Band**
- **Reduces tower loading**
- **Frees up space for tower mounted E-nodes**
- **Single radome with six ports**
- **All Band design simplifies radio assignments**
- **Sharp elevation beam eases network planning**

Features

- High Band Ports include WCS Band
- Four High Band ports with two Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- 4x4 MIMO on High Band and 2x2 MIMO on Low Band
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count

ISO 9001:2008
Quality Management Systems
Système de Qualité
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HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6

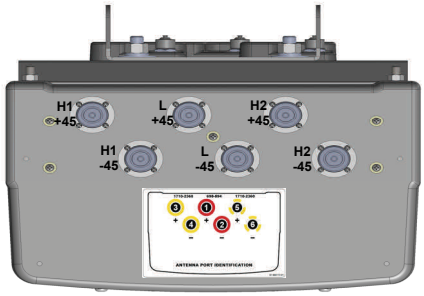
HPA-65R Multi-Band Antenna

Electrical Specifications

Frequency Range	2 X Low Band Ports which cover the full range from 698-894 MHz		4 X High Band Ports which cover the full range from 1710-2360 MHz			
	698-806 MHz	824-894 MHz	1850-1990 MHz	1710-1755/2110-2170 MHz		2305-2360 MHz
Gain	14.1 dBi	14.8 dBi	16.9 dBi	16.3 dBi	17.2 dBi	17.4 dBi
Azimuth Beamwidth (-3dB)	66°	65°	61°	66°	62°	57°
Elevation Beamwidth (-3dB)	12.5°	10.5°	5.7°	6.3°	5.1°	4.5°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -17 dB	< -19 dB	< -19 dB	< -18 dB	< -18 dB	< -17 dB
Front-to-Back Ratio @180°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Front-to-Back Ratio over ± 20°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross-Polar Discrimination (at Peak)	> 25 dB	> 20 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 17 dB	> 14 dB	> 17 dB	> 17 dB	> 17 dB	> 17 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 26 dB	> 25 dB	> 26 dB	> 26 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

Mechanical Specifications

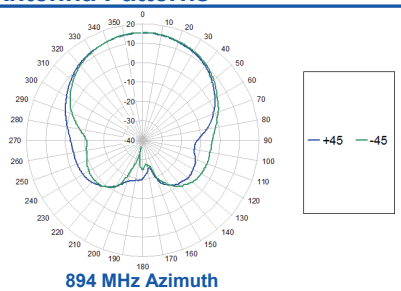
Dimensions (LxWxD)	72.0 x 14.8 x 9.0 inches (1828 x 376 x 229 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph (161 kph)
Side Wind Load	165 lbs (735 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.7 ft^2 (0.90 m^2)
Weight (without Mounting)	51 lbs (23 kg)
RET System Weight	5.0 lbs (2.3 kg)
Connector	6; 7-16 DIN female long neck
Mounting Pole	2-5 inches (5-12 cm)



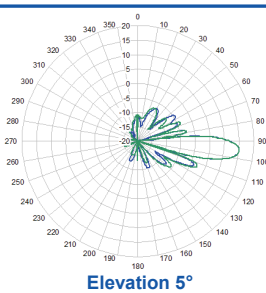
Bottom View

Rear View

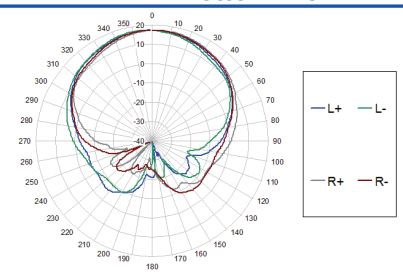
Antenna Patterns*



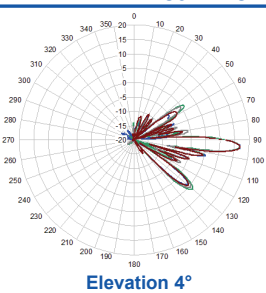
894 MHz Azimuth



Elevation 5°



1920 MHz Azimuth



Elevation 4°

*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.

TMA2093F00V1-1

AWS / 1900, Dual Band, Twin TMA with Lo Band bypass and AISG2.0

Designed to be deployed in co-located AWS, 1900 and low band (698-960) systems with wideband antennas the Kaelus TMA2093 provides internal duplexing in all three bands with gain in the high bands, thereby saving capital expenditure and tower leasing fees.

PRODUCT FEATURES

- Improved base station sensitivity through gain in the AWS and 1900 uplink bands
- AISG2.0 compatible, hardware & software configuration using AISG “personality” upload
- Excellent noise figure performance
- Internal duplexing of AWS and 1900MHz bands
- Internal duplexing of 698-960MHz signals to be passed to additional ANT ports

TECHNICAL SPECIFICATIONS

Downlink Path, Band 1	1900
Passband	1930 - 1990
Insertion Loss	0.7dB typ
Return Loss	18dB min
Max Average input power (W)	160
Max PEP Input Power (W)	2000
Intermodulation, 2 x 43dBm TX carriers (dBc)	-153dBc, (3rd order)
Uplink Path, Band 1	
Passband	1850 - 1910
Gain (dB)	12
Gain window	+/- 1dB max
Return Loss (Operating)	18dB min
Return Loss (Bypass)	12dB min
Noise Figure	1.4dB typ

Bypass Loss	2.7dB typ
Output IP3	30dBm typ
Maximum input power with no damage	+12dBm
Downlink Path, Band 2	AWS
Passband	2110 - 2170
Insertion Loss	0.4dB typ
Return Loss	18dB min
Max Average input power (W)	160
Max PEP Input Power (W)	2000
Intermodulation, 2 x 43dBm TX carriers (dBc)	-163dBc max, (7th order)
Uplink Path, Band 2	
Passband	1710 - 1770
Gain (dB)	12
Gain window	+/- 1dB max
Return Loss (dB Min, Operating)	18
Return Loss (dB Min Bypass)	12
Noise Figure	1.4dB typ
Bypass (Insertion) Loss	2.5dB typ
Output IP3	30dBm typ
Maximum input power with no damage	12dBm
Bypass Passband	698 - 960MHz
Insertion Loss	0.1dB typ
Return loss, all ports	18dB min
Continuous average power	120
Peak envelope power	2000
Intermodulation @ antenna port	-153dBc, (3rd order)

CURRENT ALARM MODE (DEFAULT MODE SELECTED ON THE ABSENCE OF AISG PACKETS)

DC Supply Voltage (VDC min)	7.5
DC Supply Voltage (VDC max)	30
Supply Current, Normal operation	150 +/- 15 mA per port

Supply Current, alarm mode	220 +/- 20 mA per port

AISG MODE OF OPERATION (AUTO SELECTED ON VALID AISG 2.0 FRAMES)

AISG Version	2
AISG Supply Current	300mA @ 7.5V, 85mA @ 30V typ
AISG Connector	IEC60130-9, 8-pin female
AISG Connector Current rating	< 4A peak, 2A continuous, pin 6
Field firmware upgradable	Yes

ENVIRONMENTAL

Temperature range	-40ºC to +65ºC | -40º to +149ºF
Environmental sealing	IP67
Lightning protection	RF port: +/- 5kA max (8/20us), AISG port: +/- 2kA max (8/20us) IEC61312-1
MTBF	>1,000,000 hours
Compliance	EMC:EN301 489, Ingress ETSI EN 300 019 class 4.1, RoHS

MECHANICAL

Connectors	DIN 7-16 (F) x 6 long neck, AISG (F) x 1
Dimensions, H x D x W	300 x 95 x 250mm | 11.8 x 3.7 x 9.8 in
Finish	Painted, light grey (RAL7035)
Weight	10.5kg | 23.1lbs
Mounting	Pole/wall bracket supplied with two metal clamps 45-178mm diameter poles

ELECTRICAL BLOCK DIAGRAM

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2044

Shelton NU PWR MT
17 Daybreak Ln
Shelton, CT 6484

January 19, 2017

Centerline Communications Project Number: 950006-023

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.99 %**

January 19, 2017

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2044 – Shelton NU PWR MT**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **17 Daybreak Ln, Shelton, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **17 Daybreak Ln, Shelton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
GSM	850 MHz	2	30
LTE	2300 MHz (WCS)	2	60
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	98
A	2	CCI OPA-65R-LCUU-H6	98
A	3	CCI HPA-65R-BUU-H6	98
B	1	Powerwave 7770	98
B	2	CCI OPA-65R-LCUU-H6	98
B	3	CCI HPA-65R-BUU-H6	98
C	1	Powerwave 7770	98
C	2	CCI OPA-65R-LCUU-H6	98
C	3	CCI HPA-65R-BUU-H6	98

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna A2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS)	12.45 / 15.45	4	180	5,263.78	2.58
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	3.23
						Sector A Composite MPE%	**6.99**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna B2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS)	12.45 / 15.45	4	180	5,263.78	2.58
Antenna B3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	3.23
						Sector B Composite MPE%	**6.99**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna C2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS)	12.45 / 15.45	4	180	5,263.78	2.58
Antenna C3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	3.23
						Sector C Composite MPE%	**6.99**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**6.99 %**
No Additional Carriers Per CSC Active Database	NA
Site Total MPE %:	**6.99 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	6.99 %
AT&T Sector B Total:	6.99 %
AT&T Sector C Total:	6.99 %
Site Total:	6.99 %

Table 5: Site MPE Summary

Per FCC OET 65, carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	98	3.52	850 MHz	567	0.62%
AT&T 1900 MHz (PCS) UMTS	2	656.33	98	5.58	1900 MHz (PCS)	1000	0.56%
AT&T 850 MHz GSM	2	527.38	98	4.48	850 MHz	567	0.79%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	98	17.88	2300 MHz (WCS)	1000	1.79%
AT&T 700 MHz LTE	2	940.05	98	7.99	700 MHz	467	1.71%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	98	15.22	1900 MHz (PCS)	1000	1.52%
						Total:	6.99%

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	6.99 %
Sector B:	6.99 %
Sector C:	6.99 %
AT&T Maximum Total (per sector):	6.99 %
Site Total:	6.99 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.99 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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