August 24, 2016

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas, swap of (3) TMAs, and addition of 3 TMAs and associated lines
Property Address:	2891 Nichols Avenue, Trumbull, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 95 foot Utility tower ("tower") at the above-referenced address, latitude 41.23288, longitude -73.1593. AT&T's facility consists of six (6) wireless telecommunications antennas at 101 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 101 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman of the Town of Trumbull and the Zoning Enforcement Officer of the Town of Trumbull. 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 101 foot level of the 95 foot Utility tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

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

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Centek Engineering dated August 1, 2016).

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

Sincerely,

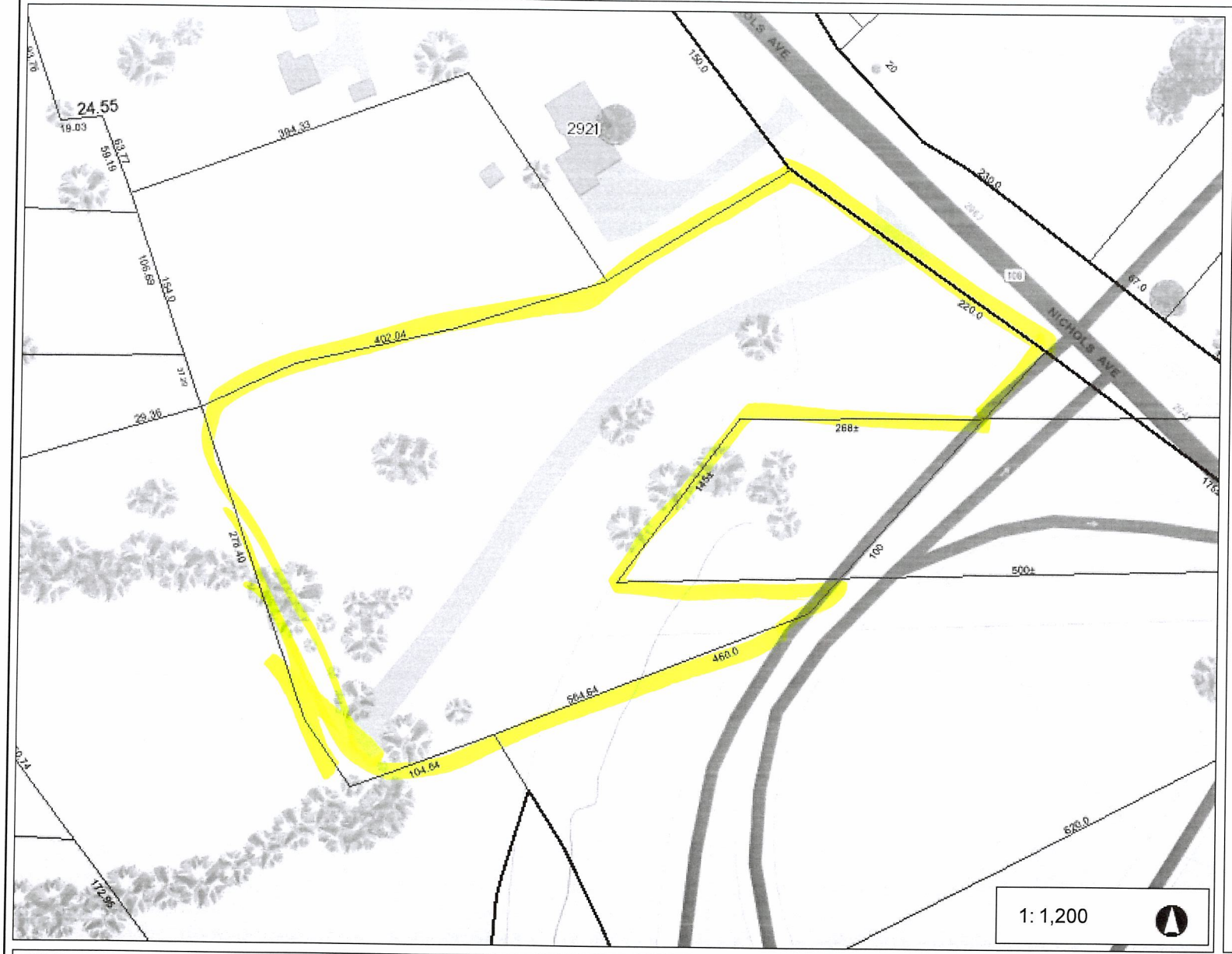
Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Timothy M. Herbst, First Selectman, Town of Trumbull
Douglas Wenz, Zoning Enforcement Officer, Town of Trumbull
Eversource Energy, c/o Robert Gray

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

Town of Trumbull

Map Title



Legend

- Building Address
- Property Lines
  - Property
  - ROW
  - Town
  - Water Feature
- Parcels
- Town Boundary

200.0 0 100.00 200.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

GBRC
Greater Bridgeport Regional Council

PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS, (1) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO REMAIN, (1) EXISTING ANTENNA PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REOMVED.
- AT&T RRUs: (1) NEW RRUs PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (3) EXISTING RRUs.
- AT&T CABLES: (2) COAX PER SECTOR ON POSITION #4, FOR A TOTAL OF (6) NEW COAX CABLES.
- AT&T TMAs: REPLACE EXISTING TMA, 1 PER SECTOR, 3 TOTAL
- AT&T DIPLEXER, REPLACE EXISTING PER SECTOR, 3 TOTAL

SITE ADDRESS:	2891 NICHOLS AVENUE TRUMBULL, CT 06611
LATITUDE:	41.2328811 41° 13' 58.37196"N
LONGITUDE:	-73.1592881 -73° 09' 33.43716"W
USID:	25871
TOWER OWNER:	CL&P STRUCTURE NO. 833
TYPE OF SITE:	TRANSMISSION LATTICE TOWER/OUTDOOR EQUIPMENT
POLL HEIGHT:	91'-0"±
RAD CENTER:	101'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

	DRAWING INDEX	REV.
T-1	TITLE SHEET	0
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A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

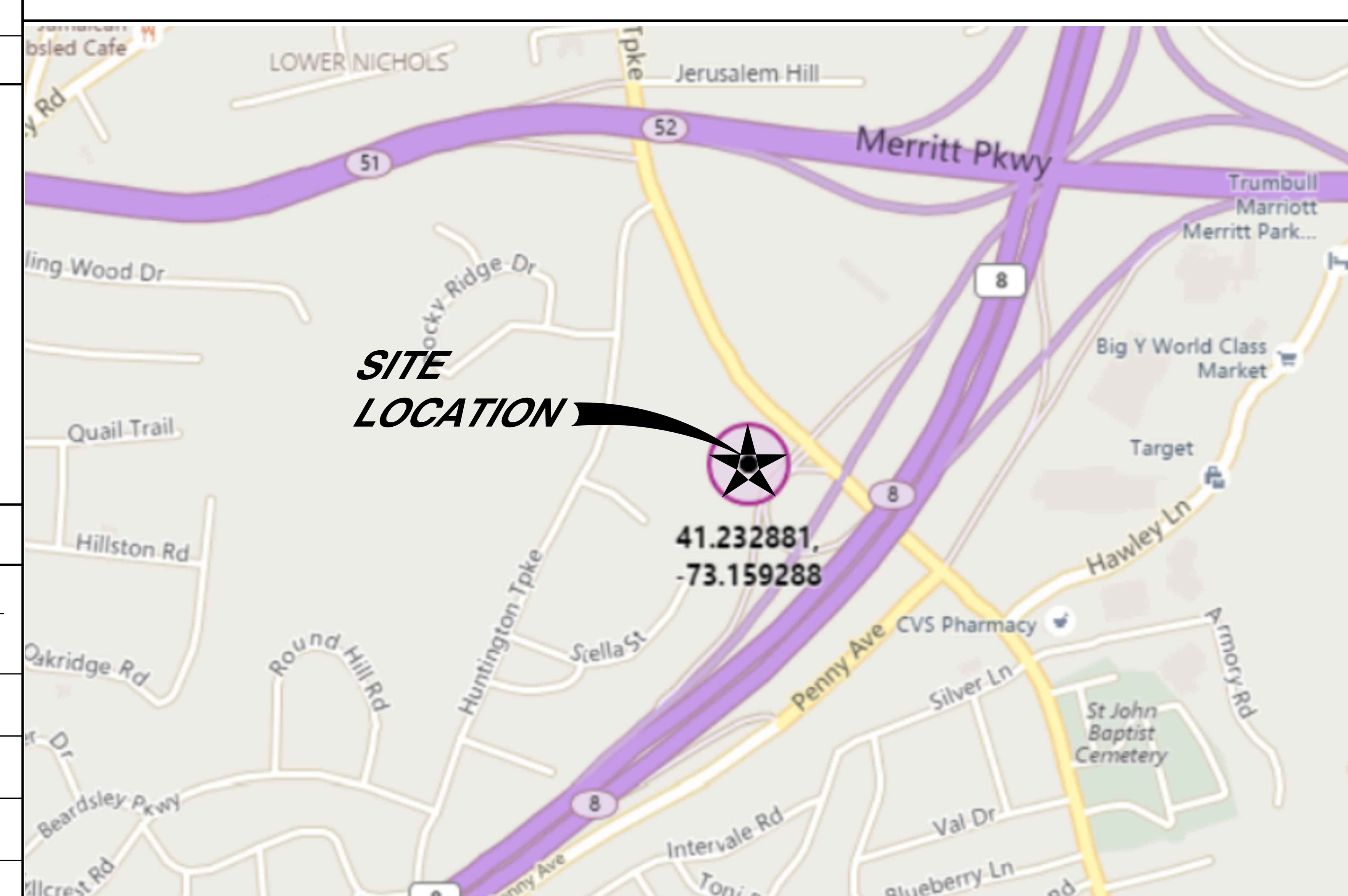
DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10092214
SITE NUMBER: CT5090
SITE NAME: TRUMBULL SE
EVERSOURCE STRUCTURE #: 833

VICINITY MAP

START GOING NE ON ENTERPRISE DR TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, TURN LEFT ONTO WEST ST, MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN, MERGE ONTO CT-15 S VIA EXIT 17, TAKE THE CT-8 S / CT-108 S EXIT, EXIT 53, TOWARD BRIDGEPORT, TAKE THE CT-108 EXIT TOWARD STRATFORD, TURN LEFT ONTO CT-108 / NICHOLS AVE, SITE WILL BE ON THE RIGHT.



PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:

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CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46, SUITE E39, MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:

COMPANY: AT&T MOBILITY – NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP-CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

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EMPIRE telecom
16 ESQUIRE ROAD, BILLERICA, MA 01821

SITE NUMBER: CT5090
SITE NAME: TRUMBULL SE
EVERSOURCE STRUCTURE #: 833
2891 NICHOLS AVENUE
TRUMBULL, CT 06611
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/17/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL: STATE OF CONNECTICUT – NICHOLAS D. BARILE – No. 28643 – LICENSED PROFESSIONAL ENGINEER
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15143-EMP	T-1	0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – EMPIRE TELECOM
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – AT&T MOBILITY
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
   - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

22. 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 AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 05/20/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5090
SITE NAME: TRUMBULL SE
EVERSOURCE STRUCTURE #: 833
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FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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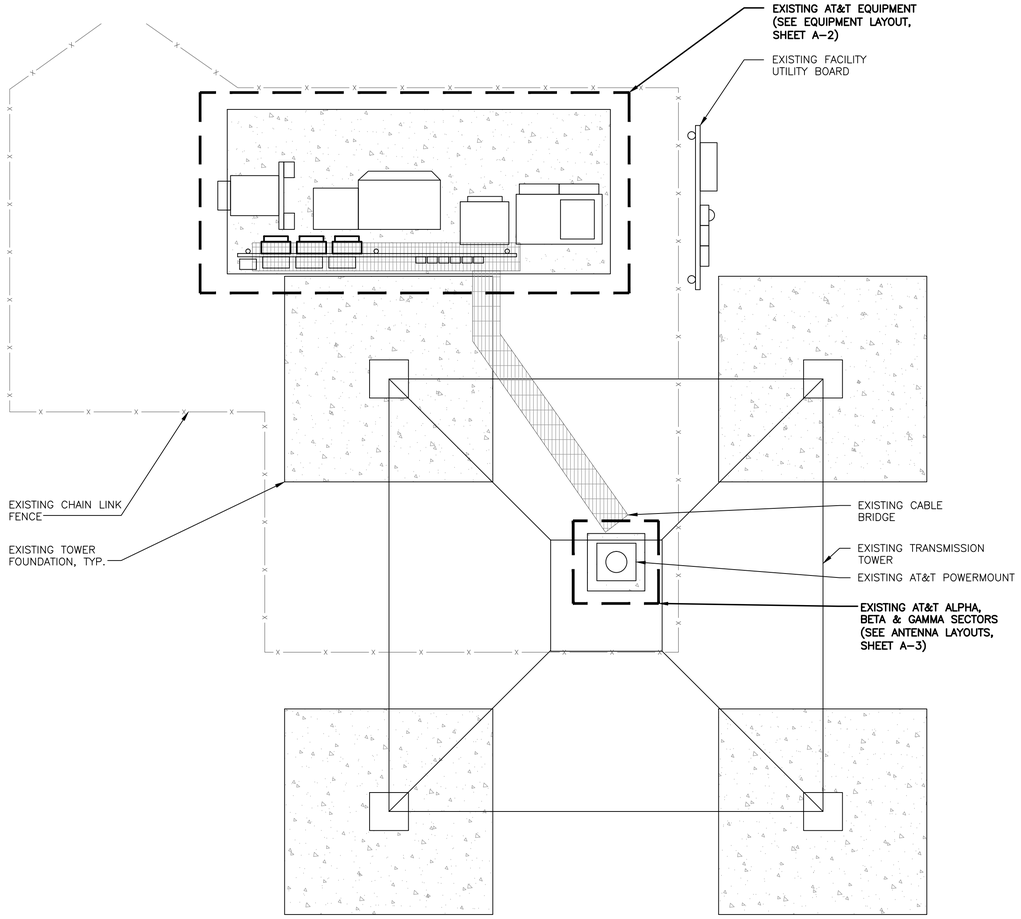
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
DOUGLAS G. BALL
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15143-EMP	GN-1	0



NORTH

COMPOUND LAYOUT

SCALE: 1/4" = 1'-0"

0 2 4 8

GRAPHIC SCALE: 1/4"=1'-0"

NOTE:
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 AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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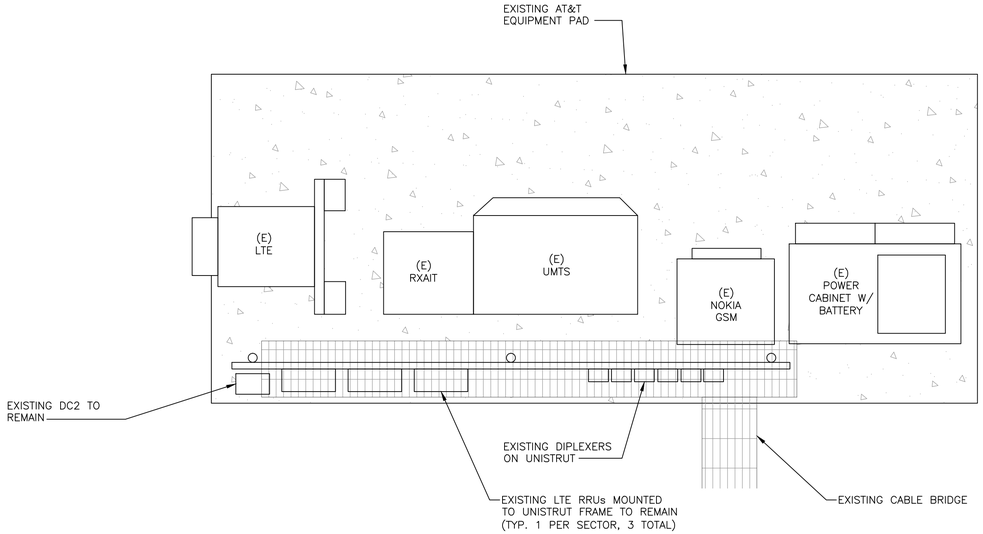
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

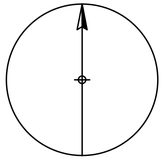
SEAL:
STATE OF CONNECTICUT
DOUGLAS D. BASILE
LICENSED PROFESSIONAL ENGINEER
PRINCIPAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15143-EMP	A-1	0



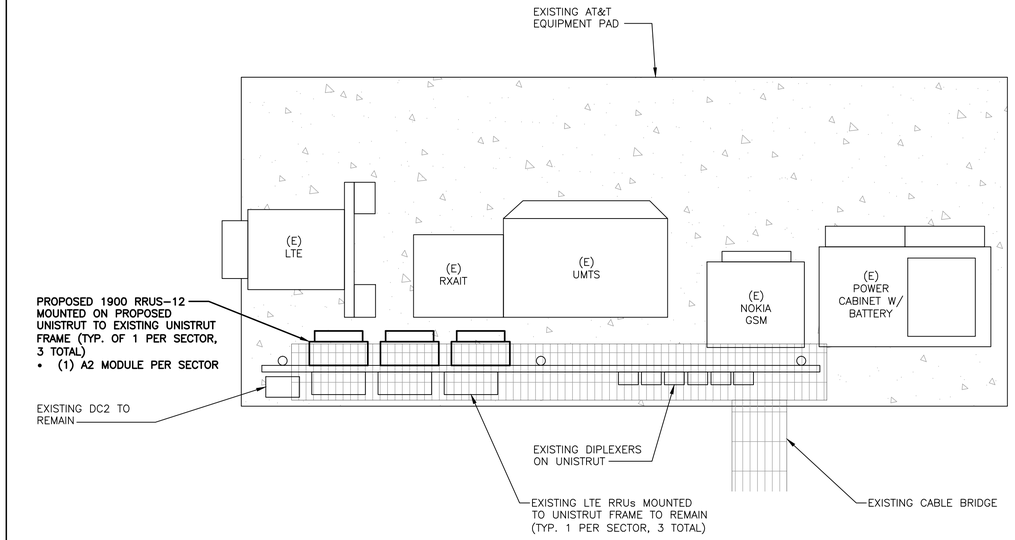


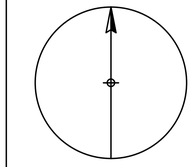
EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot





PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

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BILLERICA, MA 01821

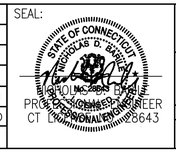
SITE NUMBER: CT5090
SITE NAME: TRUMBULL SE
EVERSOURCE STRUCTURE #: 833
2891 NICHOLS AVENUE
TRUMBULL, CT 06611
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/17/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:

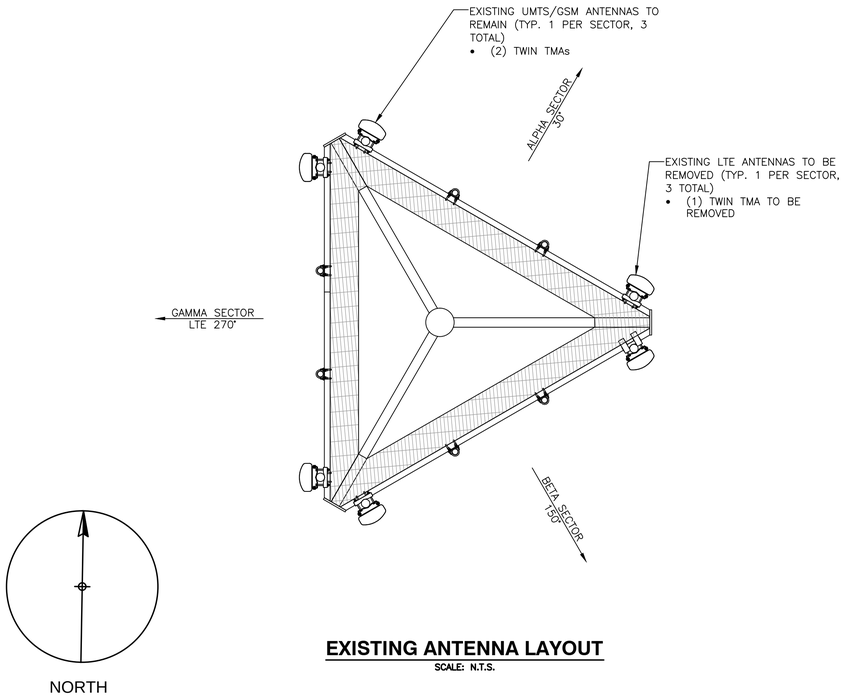


DOUGLAS D. BAILEY
PROFESSIONAL ENGINEER
CT LICENSE NO. 23643

AT&T

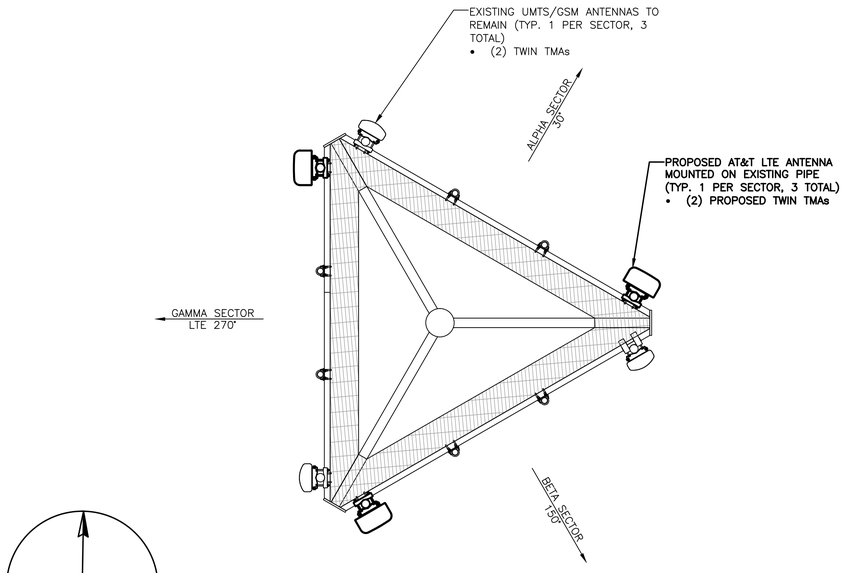
DRAWING TITLE:
EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15143-EMP	A-2	0



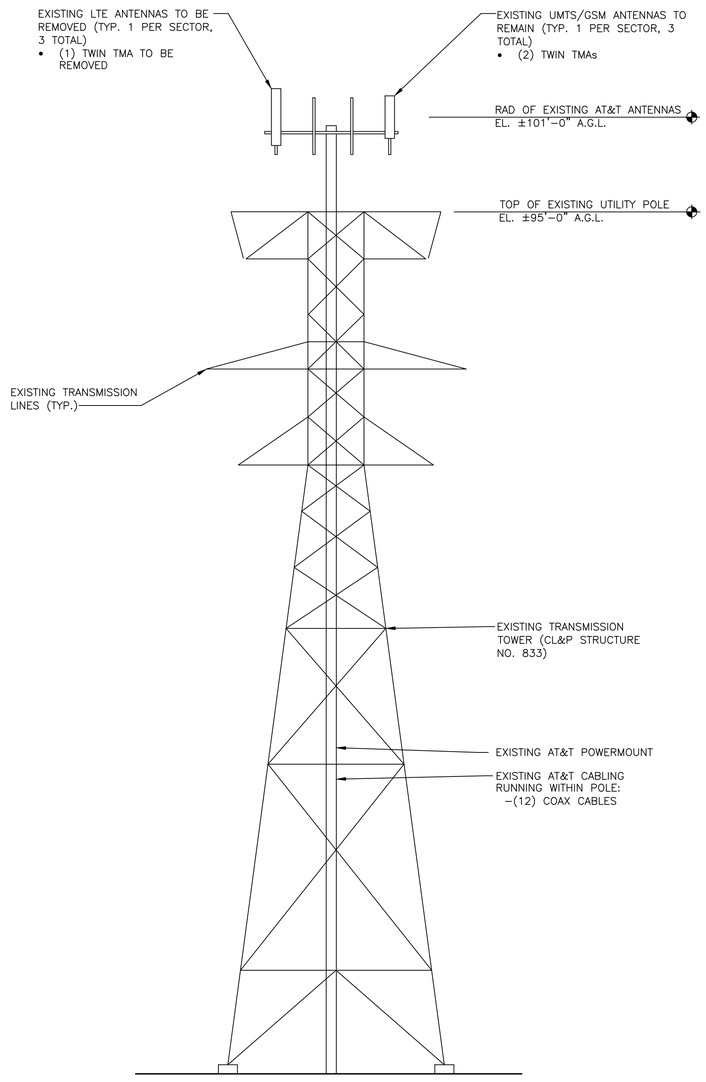
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS

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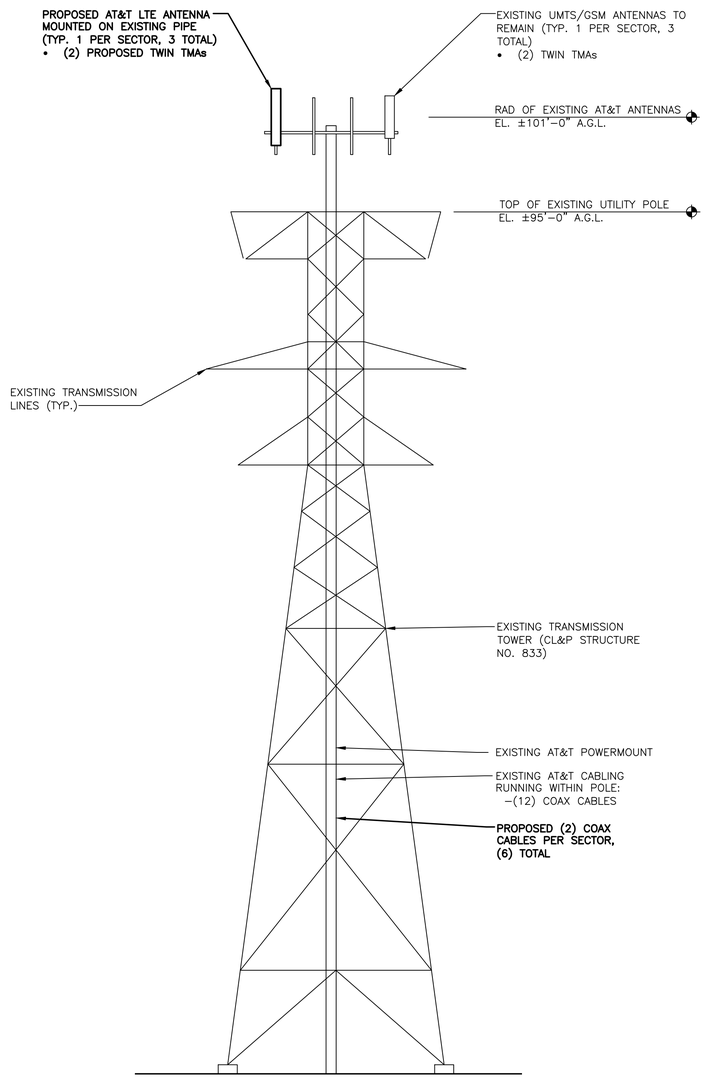

PROPOSED TOWER ELEVATION

SCALE: NTS

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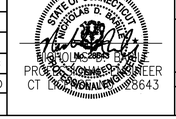
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:



AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
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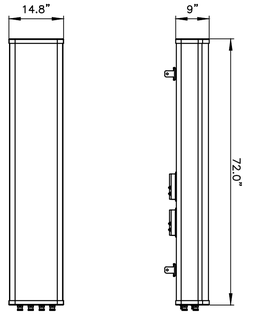


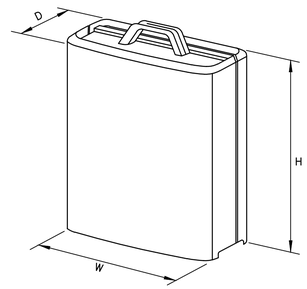
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H6
WEIGHT	57 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.

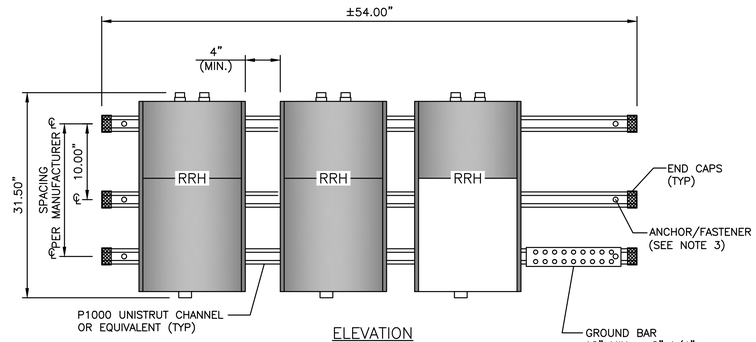


MODEL	L x W x H	WEIGHT
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.



ELEVATION

NOTES:

1. ALCATEL-LUCENT (ALU) VIA AT&T SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
3. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
   - WOOD STUDS – 1/4"ø LAG BOLT W/ 2" EMBEDMENT IN WOOD.
   - CONCRETE – 1/2"ø HILTI KWIK BOLT III W/ 2-1/4" EMBEDMENT OR EQUIVALENT.
   - THROUGH BOLT – 1/4"ø A36/A307 THREADED ROD W/ NUTS AND WASHERS.
   - MASONRY – 1/2"ø THREADED ROD WITH HILTI HY70 W/5" MINIMUM EMBEDMENT.

   ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
4. MOUNT RRH TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.
5. MOUNT FIBER AND POWER DISTRIBUTION BOX WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
6. NO PAINTING OF THE RRH OR SOLAR SHIELD ALLOWED.

RRU MOUNTING DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	–	–	–
	A3	–	–	–
	A4	POWERWAVE	P65-16-XLH-RR_716MHz_08DT	72"x12"x6"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	–	–	–
	B3	–	–	–
	B4	POWERWAVE	P65-16-XLH-RR_716MHz_08DT	72"x12"x6"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	–	–	–
	G3	–	–	–
	G4	POWERWAVE	P65-16-XLH-RR_716MHz_08DT	72"x12"x6"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	–	–	–
	A3	–	–	–
	A4	**CCI**	**OPA-65R-LCUU-H6**	**72"x14.8"x9"**
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	–	–	–
	B3	–	–	–
	B4	**CCI**	**OPA-65R-LCUU-H6**	**72"x14.8"x9"**
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	–	–	–
	G3	–	–	–
	G4	**CCI**	**OPA-65R-LCUU-H6**	**72"x14.8"x9"**

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x9.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–		
BETA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x9.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–	–	–
	–	–	–		
GAMMA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x9.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–	–	–
	–	–	–		

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FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
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SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

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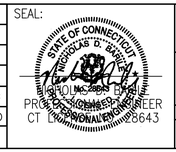

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV
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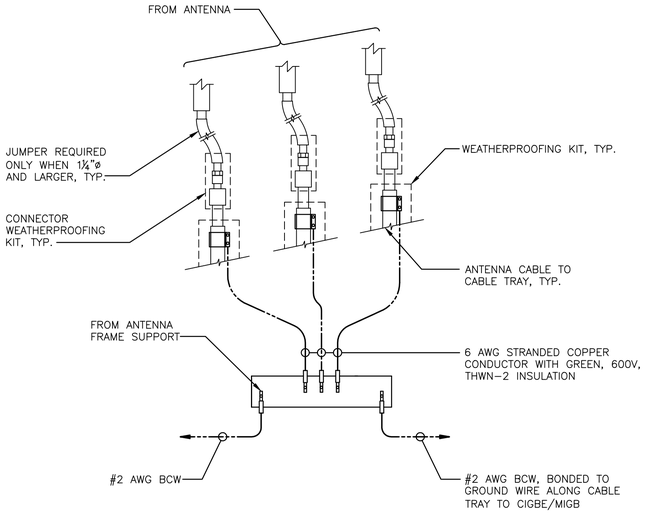
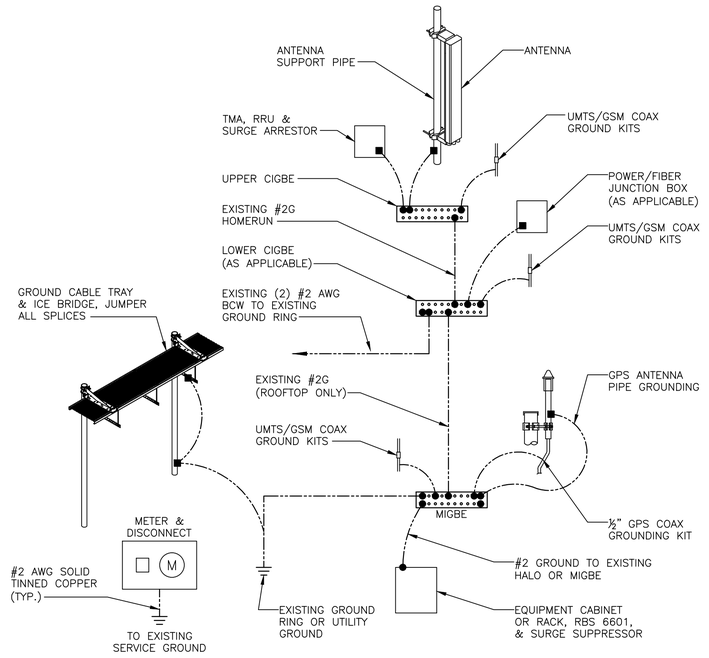


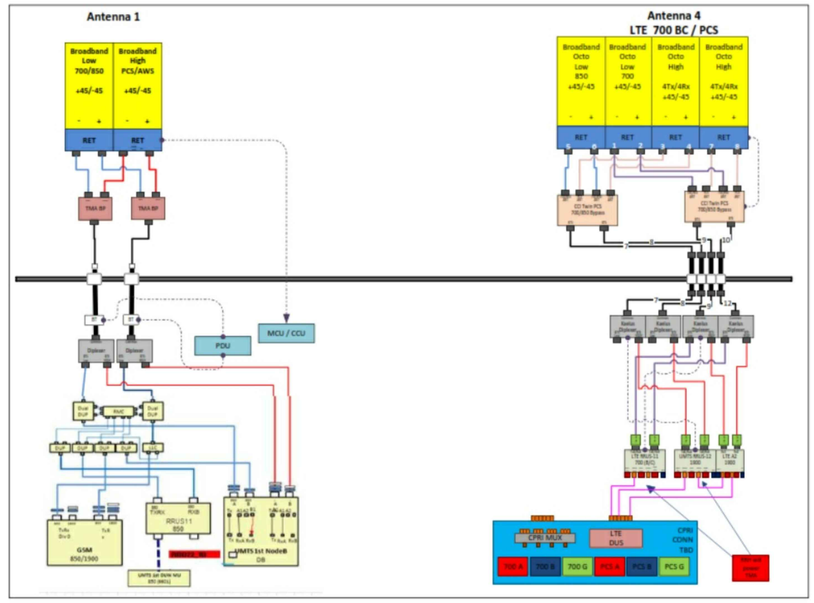
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



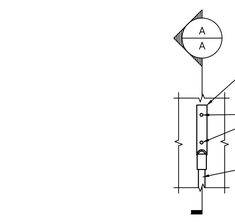
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

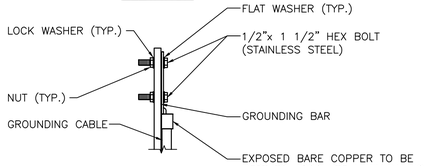


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



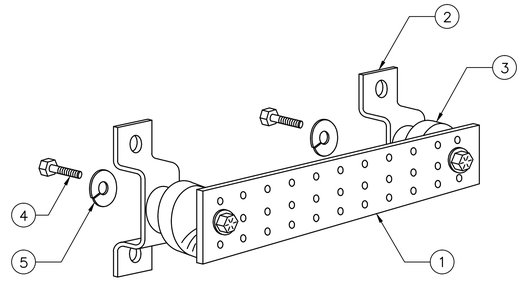
SECTION "A–A"

NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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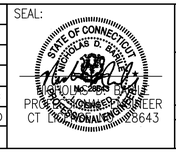


AT&T

DRAWING TITLE: GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15143–EMP	G–1	0

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

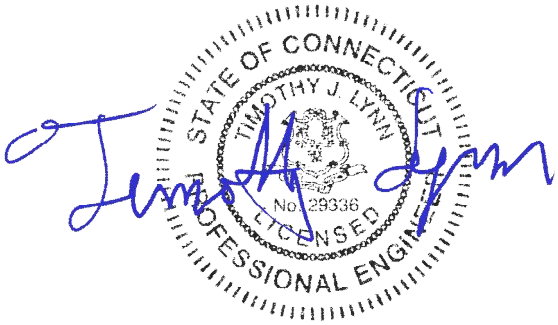
AT&T Site Ref: CT5090

Eversource Structure No. 833
91' Electric Transmission Lattice Tower

2891 Nichols Ave
Trumbull, CT

CENTEK Project No. 16002.004

~~Date: June 3, 2016~~
Rev 1: August 1, 2016



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

Table of Contents

Introduction

The purpose of this report is to analyze the existing antenna mast and 91' utility tower located at 2891 Nichols Ave in Trumbull, 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 and six (6) Powerwave LGP17201 TMAs mounted on a low profile platform with a RAD center elevation of 101-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running inside the antenna mast.
- AT&T (Existing to Remove):
  Antennas: Three (3) Powerwave P65-16-XHL-RR panel antennas and three (3) Powerwave TT19-08BP111-001 TMAs mounted on a low profile platform with a RAD center elevation of 101-ft above grade.
- **AT&T (Proposed):**
  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas and six (6) CCI DTMABP7819VG12A TMA's mounted on a low profile platform with a RAD center elevation of 101-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running exterior of the antenna mast.

Primary assumptions used in the analysis

- Allowable steel stresses are defined by AISC-ASD 9th edition for design of the antenna mast and antenna supporting elements.
- 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.

Analysis

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" Sch. 40 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/EIA 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 91-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.

Design Basis

Our analysis was performed in accordance with EIA-222-F-1996, 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)

- ANTENNA MAST ANALYSIS

  The antenna mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

  Load cases considered:

  Load Case 1:
  Wind Speed……... 85 mph [(2)]
  Radial Ice Thickness…….. 0”

  Load Case 2:
  Wind Pressure……. 75% of 85 mph wind pressure
  Radial Ice Thickness…….. 0.5”

  Note 2: Per NU Mast Design Criteria Exception 1.

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” Sch. 40 Pipe	Bending	56.0%	**PASS**
L2x2x3/16 Brace	Bending	47.0%	**PASS**
Connection	Shear	78.3%	**PASS**

- UTILITY TOWER

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

  A maximum usage of **97.43%** occurs in the utility tower under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure **with the reinforcement detailed in section 4 of this report** was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g38P	97.43%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 1-ft-8-in square tapering to 2-ft-4-in square x 5-ft-3-in long reinforced concrete piers and four (4) 5-ft square x 2-ft thick reinforced concrete pads. The foundation was reinforced with four (4) 12-ft square x 3-ft thick reinforced concrete mats per Tabas Associates drawing S-1 dated 2/8/10. The base of the tower is connected to the foundation by one (1) anchor stub angle per leg. Foundation information was obtained from Northeast Utilities drawing 01064-60003.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	6.11 kips	17.51 kips	28.90 kips
NESC Extreme Wind	11.10 kips	40.05 kips	47.85 kips

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

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Reinf. Conc. Pad & Pier	Uplift	1.0 FS (1)	1.86 FS (1)	**PASS**
	Overturning	1.0 FS (1)	1.55 FS (1)	**PASS**
	Bearing	9 ksf	6.72 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

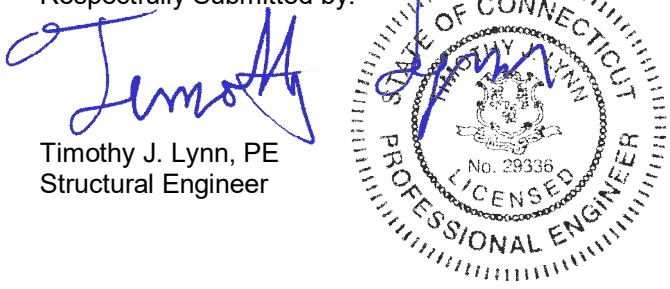
This analysis shows that the subject utility tower **with the reinforcement listed below and detailed in section 4 of this report is adequate** to support the proposed AT&T equipment upgrade.

- Replacement of the existing 5/8" ∅ A394 bolts with 5/8" ∅ A325 bolts at the horizontal to leg connection on the tower at 32-ft AGL will be required prior to the 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/EIA Standard 222 with two exceptions:

1. An 85 mph extreme wind speed shall be used for locations in all counties throughout the NU system.
2. The stress increase of TIA Section 3.1.1.1 is disallowed. The combined wind and ice condition shall consider ½" radial ice in combination with the wind load (0.75 Wi) as specified in TIA section 2.3.16.

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.

TITLE Nextel, Trumbull, CT.

STRUCT CL&P #833

06/28/2000

CONDUCTOR

	AHEAD		BACK	
	OPGW-120		OPGW-120	
	6-Groove 10/9 FOCAS		6-Groove 10/9 FOCAS	
DIAM =	0.738		0.738	
WEIGHT =	0.518		0.518	
TENSION (LBS)	AHEAD	6,000	BACK	6,000

SHIELD WIRE SIDE ONE

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

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	0	267	201	387	-9900	388
AHEAD	0	267	201	387	9900	388
TOTALS	**0.0**	**534**	**402**	**773**	**0**	777

Wire Ld

SHIELD WIRE

TITLE Nextel, Trumbull, CT. 06/28/2000

STRUCT CL&P #833

CONDUCTOR

	AHEAD		BACK	
	OPGW-120		OPGW-120	
	6-Groove 10/9 FOCAS		6-Groove 10/9 FOCAS	
DIAM =	0.738		0.738	
WEIGHT =	0.518		0.518	
TENSION (LBS)	AHEAD	4,419	BACK	4,419

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

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	0	267	201	378	-5082	120
AHEAD	0	267	201	378	5082	120
TOTALS	**0.0**	**534**	**402**	**755**	**0**	**239**

TITLE Nextel, Trumbull, CT. 06/28/2000

STRUCT CL&P #833

CONDUCTOR

	AHEAD	BACK
	11/32 CW	11/32 CW
	0.000	0.000
	7 #9 Cu Weld	7 #9 Cu Weld
DIAM =	0.343	0.343
WEIGHT =	0.257	0.257
TENSION (LBS)	AHEAD 3,600	BACK 3,600

SHIELD WIRE ONE SIDE

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

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	0	267	201	299	-5940	235
AHEAD	0	267	201	299	5940	235
TOTALS	**0.0**	**534**	**402**	**598**	**0**	**471**

5X 5X

WIRE

TITLE Nextel, Trumbull, CT. ~~SHIELD~~

STRUCT CL&P #833

06/28/2000

~~CONDUCTOR~~

	AHEAD		BACK	
	11/32 CW		11/32 CW	
	0.000		0.000	
	7 #9 Cu Weld		7 #9 Cu Weld	
DIAM =	0.343		0.343	
WEIGHT =	0.257		0.257	
TENSION (LBS)	AHEAD	2,115	BACK	2,115

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

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	0	267	201	176	-2432	59
AHEAD	0	267	201	176	2432	59
TOTALS	**0.0**	**534**	**402**	**351**	**0**	**119**

TITLE Nextel, Trumbull, CT.

06/28/2000

STRUCT CL&P #833

CONDUCTOR

	AHEAD		BACK	
	PARAKEET		PARAKEET	
	556.000		556.000	
	24/7 ACSR		24/7 ACSR	
DIAM =	0.914		0.914	
WEIGHT =	0.716		0.716	
TENSION (LBS)	AHEAD	6,000	BACK	6,000

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

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	0	267	201	426	-9900	481
AHEAD	0	267	201	426	9900	481
TOTALS	**0.0**	**534**	**402**	**852**	**0**	**962**

TITLE Nextel, Trumbull, CT. 06/28/2000

STRUCT CL&P #833

CONDUCTOR

	AHEAD	BACK
	PARAKEET	PARAKEET
	556.000	556.000
	24/7 ACSR	24/7 ACSR
DIAM =	0.914	0.914
WEIGHT =	0.716	0.716
TENSION (LBS)	AHEAD 4,640	BACK 4,640

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

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	0	267	201	468	-5336	166
AHEAD	0	267	201	468	5336	166
TOTALS	**0.0**	**534**	**402**	**935**	**0**	**331**

EVERSOURCE

TOWER REINFORCEMENT DESIGN

STRUCT. NO. 833
2891 NICHOLS AVE
TRUMBULL, CT 06611

VICINITY MAP

NORTH

PROJECT SUMMARY

SITE ADDRESS:	2891 NICHOLS AVE TRUMBULL, CT 06611
PROJECT COORDINATES:	LAT: 41°–13'–58.37"N LON: 73°–09'–33.44"W ELEV:±166' AMSL
STRUCT NO:	833
EVERSOURCE CONTACT:	ROBERT GRAY 860.665.3175
AT&T SITE REF.:	CT5090
AT&T CONTACT:	DAVE COOPER 978.608.8404
ANTENNA CL HEIGHT:	101'–0"
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CENTEK CONTACT:	CARLO F. CENTORE, PE 203.488.0580 ext. 122

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
N–1	DESIGN BASIS & GENERAL NOTES	0
N–2	STRUCTURAL STEEL NOTES	0
MI–1	MODIFICATION INSPECTION REQUIREMENTS	0
S–1	TOWER ELEVATION & FEEDLINE PLAN	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	8/1/16	TJL	CFC	ISSUED FOR CONSTRUCTION
0	6/3/16	TJL	CFC	ISSUED FOR EVERSOURCE REVIEW

PROFESSIONAL ENGINEER (SEAL)
STATE OF CONNECTICUT
TIMOTHY J. LASHEN
No. 23036
REGISTERED PROFESSIONAL ENGINEER

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(203) 488-8587 Fax
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Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
TOWER REINFORCEMENT DESIGN
CT5090
EVERSOURCE STRUCTURE 833
2891 NICHOLS AVE
TRUMBULL, CT 06611

DATE:	6/3/16
SCALE:	AS SHOWN
JOB NO.	16002.004

TITLE SHEET

SHEET NO.
T–1
Sheet No. 1 of 5

DESIGN BASIS

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

2. TIA/EIA-222-F-1996, ASCE MANUAL NO. 72 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2007 AND EVERSOURCE DESIGN CRITERIA.

3. DESIGN CRITERIA

   WIND LOAD: (MAST)
   BASIC WIND SPEED (V) =85 MPH (FASTEST MILE); BASED ON TIA/EIA-222F AND EVERSOURCE MAST DESIGN CRITERIA EXCEPTION 1.

   WIND LOAD: (UTILITY POLE & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3-SECOND GUST) BASED ON NESC C2-2007, SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS PREPARED BY CENTEK ENGINEERING, INC., FOR AT&T, DATED 6/3/16.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE ORIGINAL TOWER DESIGN DOCUMENTS PREPARED BY AMERICAN BRIDGE CO. ORDER NO. J6125, CIRCA 1949.

3. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE & SEQUENCE AND TO INSURE THE SAFETY OF THE TOWER STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, UNDERPINNING, TEMPORARY ANCHORS, GUYING, BARRICADES, ETC. AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY. MAINTAIN EXISTING SITE OPERATIONS AND COORDINATE WORK WITH TOWER OWNER.

4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.

5. 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 SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

6. 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. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.

7. MAST INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.

8. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH MAST INSTALLATION.

9. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

10. 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.

11. NO DRILLING WELDING OR TAPING IS PERMITTED ON CL&P OWNED EQUIPMENT.

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EVERSOURCE STRUCTURE 833

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DESIGN BASIS AND GENERAL NOTES

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STRUCTURAL STEEL

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

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL STEEL (TOWER REINF. SOLID ROUND BAR)--- ASTM A572_GR50 (50 KSI)
   D. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   E. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   F. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.
   E. BLIND BOLTS---AS1252 PROPERTY CLASS 8.8 (FU=120 KSI).

4. 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.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. 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.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. 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.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. 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.

16. ALL BOLTS SHALL BE INSTALLED PER THE REQUIREMENTS OF AISC 14TH EDITION & RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS".

17. ALL BOLTS SHALL BE INSTALLED AS SNUG-TIGHT CONNECTIONS UNLESS OTHERWISE INDICATED. CONNECTIONS SPECIFIED AS PRETENSIONED OR SLIP-CRITICAL SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT GIVEN IN TABLE J3.1 OF AISC 14TH EDITION.

18. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

19. LOAD INDICATOR WASHERS SHALL BE UTILIZED ON ALL PRETENSIONED OR SLIP-CRITICAL CONNECTIONS.

20. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

21. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

22. FABRICATE BEAMS WITH MILL CAMBER UP.

23. 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.

24. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

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STRUCTURAL STEEL NOTES

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MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	–	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
–	EOR APPROVED SHOP DRAWINGS	–	EARTHWORK: BACKFILL MATERIAL & COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
–	EOR APPROVED POST–INSTALLED ANCHOR MPII	–	REBAR & FORMWORK GEOMETRY VERIFICATION	X	PHOTOGRAPHS
–	FABRICATION INSPECTION	–	CONCRETE TESTING		
–	FABRICATOR CERTIFIED WELDER INSPECTION	X	STEEL INSPECTION		
X	MATERIAL CERTIFICATIONS	–	POST INSTALLED ANCHOR ROD VERIFICATION		
		–	BASE PLATE GROUT VERIFICATION		
		–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		X	ON–SITE COLD GALVANIZING VERIFICATION		
		X	CONTRACTOR AS–BUILT REDLINE DRAWINGS		

NOTES:
1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
3. "–" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
4. EOR – ENGINEER OF RECORD
4. MPII – "MANUFACTURER'S PRINTED INSTALLATION GUIDELINES"

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.

3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.

4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.

5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:

   – CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   – WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:

   – PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   – DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   – POST–CONSTRUCTION: FINAL CONDITION OF THE SITE

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MODIFICATION INSPECTION REQUIREMENTS

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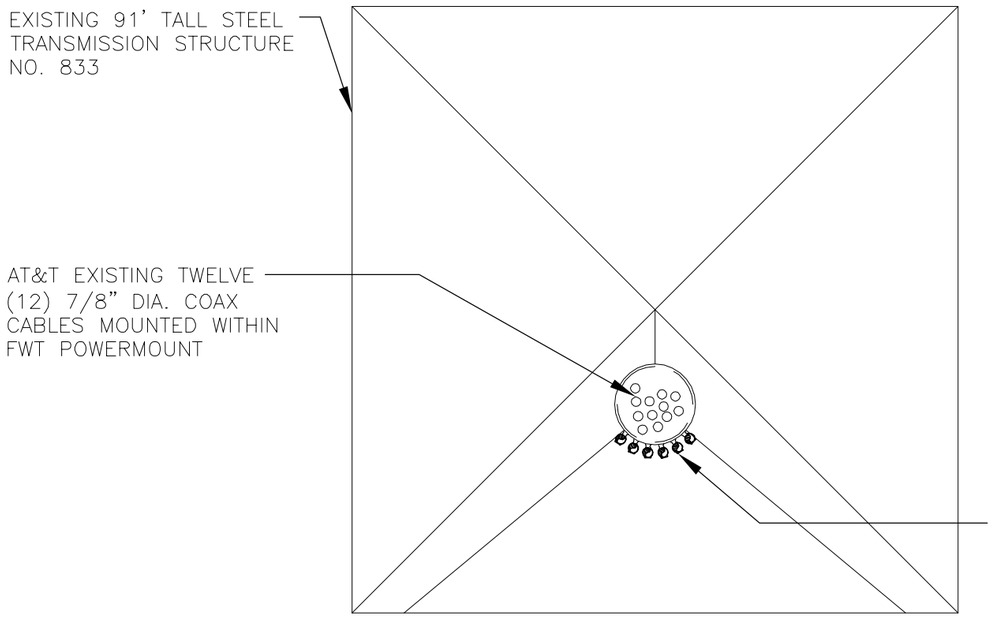
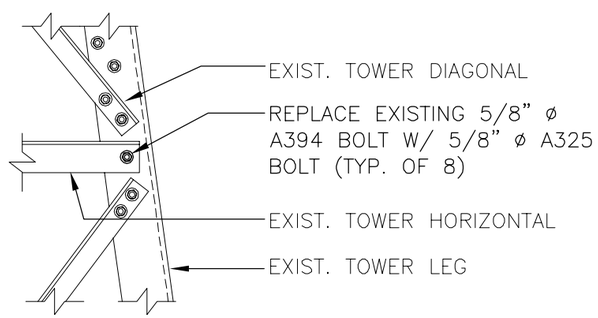


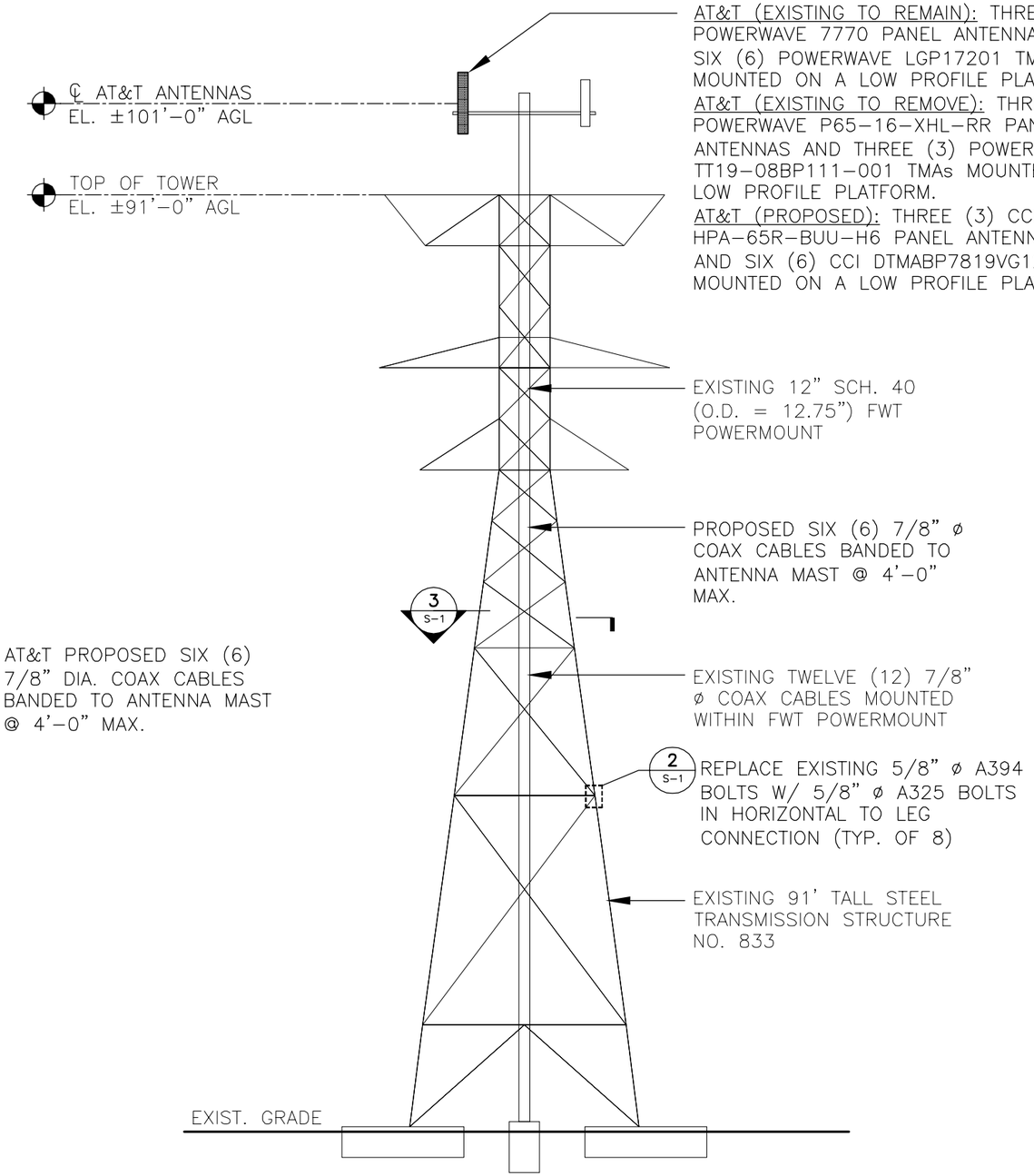
3 / S-1 FEEDLINE PLAN

SCALE: 1/2" = 1'-0"



2 / S-1 CONNECTION DETAIL (32' AGL)

SCALE: 1" = 1'-0"



1 / S-1 TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

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TOWER ELEVATION AND FEEDLINE PLAN

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA/EIA

Wind Speeds

Basic Wind Speed	$V := 85$	mph	(User Input per NU Mast Design Criteria Exception 1)
Basic Wind Speed with Ice	$V_i := 74$	mph	(User Input per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Powermount Section 1	$z_{pmnt1} := 96$	ft	(User Input)
Powermount Section 2	$z_{pmnt2} := 75$	ft	(User Input)
Powermount Section 3	$z_{pmnt3} := 45$	ft	(User Input)
Powermount Section 4	$z_{pmnt4} := 15$	ft	(User Input)
AT&T	$z_{att} := 101$	ft	(User Input)
Coax Cable	$z_{coax} := 50$	ft	(User Input)

Exposure Coefficients, kz

(per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1: $Kz_{pmnt1} := \left(\frac{z_{pmnt1}}{33}\right)^{\frac{2}{7}} = 1.357$

Powermount Section 2: $Kz_{pmnt2} := \left(\frac{z_{pmnt2}}{33}\right)^{\frac{2}{7}} = 1.264$

Powermount Section 3: $Kz_{pmnt3} := \left(\frac{z_{pmnt3}}{33}\right)^{\frac{2}{7}} = 1.093$

Powermount Section 4: $Kz_{pmnt4} := \left(\frac{z_{pmnt4}}{33}\right)^{\frac{2}{7}} = 0.798$

AT&T: $Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.377$

Coax Cable: $Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.126$

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Velocity Pressure without ice, qz (per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1	$qz_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V^2 = 25.095$
Powermount Section 2	$qz_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V^2 = 23.386$
Powermount Section 3	$qz_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V^2 = 20.21$
Powermount Section 4	$qz_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V^2 = 14.765$
AT&T	$qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 25.461$
Coax Cable	$qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 20.827$

Velocity Pressure with ice, qzICE (per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1	$qzICE_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V_i^2 = 19.02$
Powermount Section 2	$qzICE_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V_i^2 = 17.725$
Powermount Section 3	$qzICE_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V_i^2 = 15.318$
Powermount Section 4	$qzICE_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V_i^2 = 11.191$
AT&T	$qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 19.298$
Coax Cable	$qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 15.786$

TIA/EIA Common Factors:

Gust Response Factor =	$G_H := 1.69$		(User Input per TIA/EIA-222-F Section 2.3.4)
Gust Response Factor Multiplier =	$m := 1.25$		(User Input per TIA/EIA-222-F Section 2.3.4.4)
Radial Ice Thickness =	$Ir := 0.50$	in	(User Input per TIA/EIA-222-F Section 2.3.1)
Radial Ice Density =	$Id := 56.00$	pcf	(User Input)

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Development of Wind & Ice Load on Powermonut (per TIA/EIA-222-F-1996 Criteria)

Powermount Data: (12" Std. Pipe)

Powermount Shape =	Round		(User Input)
Powermount Diameter =	$D_{pmnt} := 12.75$	in	(User Input)
Powermount Length =	$L_{pmnt} := 102$	ft	(User Input)
Powermount Thickness =	$t_{pmnt} := 0.375$	in	(User Input)
Velocity Coefficient =	$C := \sqrt{Kz_{pmnt4}} \cdot V \cdot \frac{D_{pmnt}}{12} = 81$		
Powermount Force Coefficient =	$CF_{pmnt} = 0.59$		(per TIA/EIA-222-F Table 1)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Powermount Projected Surface Area =	$A_{pmnt} := \frac{D_{pmnt}}{12} = 1.063$	sf/ft		
Total Powermount Section 1 Wind Force =	$qz_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 27$	plf	**BLC 5**	
Total Powermount Section 2 Wind Force =	$qz_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 25$	plf	**BLC 5**	
Total Powermount Section 3 Wind Force =	$qz_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 21$	plf	**BLC 5**	
Total Powermount Section 4 Wind Force =	$qz_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 16$	plf	**BLC 5**	

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Powermount Projected Surface Area w/ Ice =	$AICE_{pmnt} := \frac{(D_{pmnt} + 2 \cdot Ir)}{12} = 1.146$	sf/ft		
Total Powermount Section 1 Wind Force w/ Ice =	$qzICE_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 22$	plf	**BLC 4**	
Total Powermount Section 2 Wind Force w/ Ice =	$qzICE_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 20$	plf	**BLC 4**	
Total Powermount Section 3 Wind Force w/ Ice =	$qzICE_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 18$	plf	**BLC 4**	
Total Powermount Section 4 Wind Force w/ Ice =	$qzICE_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 13$	plf	**BLC 4**	

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{pmnt} := \frac{\pi}{4}\left[(D_{pmnt} + Ir \cdot 2)^2 - D_{pmnt}^2\right] = 20.8$	sq in		
Weight of Ice on Powermount =	$W_{ICEpmnt} := Id \cdot \frac{Ai_{pmnt}}{144} = 8$	plf	**BLC 3**	

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Subject: Load Analysis of Antenna Mast on Tower # 833

Location: Trumbull, CT

Rev. 0: 6/2/16 Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.004

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

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)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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 =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 759$	lbs	**BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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 =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 639$	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 =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 98$	lbs	**BLC 3**

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Subject: Load Analysis of Antenna Mast on Tower # 833

Location: Trumbull, CT

Rev. 0: 6/2/16 Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.004

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

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)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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 =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1337$	lbs	**BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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 =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1097$	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 =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1944$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 63$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 189$	lbs	**BLC 3**

Development of Wind & Ice Load on TMAs (per TIA/EIA-222-F-1996 Criteria)

TMA Data: (AT&T)

TMA Model =	Powerwave LGP17201				
TMA Shape =	Flat		(User Input)		
TMA Height =	$L_{tma} := 13.9$	in	(User Input)		
TMA Width =	$W_{tma} := 14.4$	in	(User Input)		
TMA Thickness =	$T_{tma} := 3.7$	in	(User Input)		
TMA Weight =	$WT_{tma} := 31$	lbs	(User Input)		
Number of TMAs =	$N_{tma} := 6$		(User Input)		
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 1.0$				
TMA Force Coefficient =	$Ca_{tma} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)		

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 1.4$	sf		
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 8.3$	sf		
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 502$	lbs	**BLC 5**	

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.6$	sf		
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 9.6$	sf		
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 437$	lbs	**BLC 4**	

Gravity Load (without ice)

Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 186$	lbs	**BLC 2**	

Gravity Loads (ice only)

Volume of Each TMA =	$V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 741$	cu in		
Volume of Ice on Each TMA =	$V_{ice} := (L_{tma} + 1)(W_{tma} + 1) \cdot (T_{tma} + 1) - V_{tma} = 338$	cu in		
Weight of Ice on Each TMA =	$W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 11$	lbs		
Weight of Ice on All TMAs =	$W_{ICEtma} \cdot N_{tma} = 66$	lbs	**BLC 3**	

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Development of Wind & Ice Load on TMAs (per TIA/EIA-222-F-1996 Criteria)

TMA Data: (AT&T)

TMA Model =	CCI DTMABP7819VG12A TMA		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{tma} := 14.25$	in	(User Input)
TMA Width =	$W_{tma} := 11.46$	in	(User Input)
TMA Thickness =	$T_{tma} := 4.17$	in	(User Input)
TMA Weight =	$WT_{tma} := 20$	lbs	(User Input)
Number of TMAs =	$N_{tma} := 6$		(User Input)
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 1.2$		
TMA Force Coefficient =	$Ca_{tma} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 1.1$	sf	
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 6.8$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 410$	lbs	**BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 7.9$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 361$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 120$	lbs	**BLC 2**

Gravity Loads (ice only)

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

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Development of Wind & Ice Load on Platform (per TIA/EIA-222-F-1996 Criteria)

Platform Data: (AT&T)

Platform Model =	10' Low Profile Platform			
Platform Shape =	Flat		(User Input)	
Platform Area =	$A_{plt} := 10.58$	sq ft	(User Input)	
Platform Area w/ Ice =	$A_{ICE.plt} := 13.38$	sq ft	(User Input)	
Platform Weight =	$WT_{plt} := 2902$	lbs	(User Input)	
Platform Weight w/ Ice =	$WT_{ICE.plt} := 3953$	lbs	(User Input)	
Platform Force Coefficient =	$Ca_{plt} := 2.0$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force =	$F_{plt} := qz_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{plt} = 911$	lbs	**BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force w/ Ice =	$Fi_{plt} := qzICE_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{ICE.plt} = 873$	lbs	**BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Weight of Ice on Platform =	$WT_{ICE.plt} - WT_{plt} = 1051$	lbs	**BLC 3**

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Subject: Load Analysis of Antenna Mast on Tower # 833

Location: Trumbull, CT

Rev. 0: 6/2/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.004

Development of Wind & Ice Load on Coax Cables per TIA/EIA-222-F-96 Criteria

Coax Cable Data: (AT&T)

Coax Type 1 = HELIAX 7/8"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax1} := 1.11$ in (User Input)

Coax Cable Length = $L_{coax1} := 102$ ft (User Input)

Weight of Coax per foot = $Wt_{coax1} := 0.54$ plf (User Input)

Total Number of Coax = $N_{coax1} := 18$ (User Input)

No. of Coax Projecting Outside Face of Mast = $NP_{coax1} := 2$ (User Input)

Number of Coax Outside Mast = $NE_{coax1} := 6$ (User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax1} \cdot 12)}{D_{coax1}} = 1.1 \times 10^3$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$ TIA/EIA-222-F-96 Table 3

Wind Load (without ice) per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area = $A_{coax} := \frac{(NP_{coax1} D_{coax1})}{12} = 0.2$ ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 8$ plf **BLC 5**

Wind Load (with ice) per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax1} \cdot D_{coax1} + 2 \cdot Ir)}{12} = 0.3$ ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 9$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} = 10$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax1} := \frac{\pi}{4}\left[\left(D_{coax1} + 2 \cdot Ir\right)^2 - D_{coax1}^2\right] = 2.5$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(NE_{coax1} \cdot \frac{Ai_{coax1}}{144}\right) = 6$ plf **BLC 3**

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Development of Wind & Ice Load on Brace Member (per TIA/EIA-222-F-1996 Criteria)

Member Data: L2x2x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 2$ in (User Input)

Width = $W_{mem} := 2$ in (User Input)

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

Length = $L_{mem} := 34$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 17.0$

Member Force Coefficient = $Ca_{mem} = 1.73$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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

Total Member Wind Force = $F_{mem} := qz_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 12$ plf **BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.3$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 14$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[(H_{mem} + 2 \cdot Ir) + (W_{mem} - t_{mem})\right] \cdot (t_{mem} + 2 \cdot Ir) - \left[H_{mem} + (W_{mem} + t_{mem})\right] \cdot t_{mem} = 5 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 2$ plf **BLC 3**

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Development of Wind & Ice Load on Brace Member (per TIA/EIA-222-F-1996 Criteria)

Member Data: L3x3x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 3$ in (User Input)

Width = $W_{mem} := 3$ in (User Input)

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

Length = $L_{mem} := 106$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 35.3$

Member Force Coefficient = $Ca_{mem} = 2$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 17$ plf **BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.3$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 17$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 7 \text{ sq in}$$

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

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Subject: Load Analysis of Antenna Mast on Tower # 833

Location: Trumbull, CT

Rev. 0: 6/2/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.004

Development of Wind & Ice Load on Brace Member (per TIA/EIA-222-F-1996 Criteria)

Member Data: L5x5x3/8

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 5$ in (User Input)

Width = $W_{mem} := 5$ in (User Input)

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

Length = $L_{mem} := 180$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 36.0$

Member Force Coefficient = $Ca_{mem} = 2$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.4$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 21$ plf **BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.5$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 19$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[(H_{mem} + 2 \cdot Ir) + (W_{mem} - t_{mem})\right] \cdot (t_{mem} + 2 \cdot Ir) - \left[H_{mem} + (W_{mem} + t_{mem})\right] \cdot t_{mem} = 11 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 4$ plf **BLC 3**

CENTEK engineering, INC.	Subject:	**Analysis of TIA/EIA Wind and Ice Loads for Analysis of Anetnna Mast**
Consulting Engineers		**Tabulated Load Cases**
63-2 North Branford Road	Location:	**Trumbull, CT**
Branford, CT 06405		
Ph. 203-488-0580 / Fax. 203-488-8587	Date: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

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

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 Antenna Mast Load Combinations Table**

Location: **Trumbull, CT**

Date: 6/2/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	(X) TIA/EIA Wind + Ice		1		1	1	2	1	3	1	4	1		
2	(X) TIA/EIA Wind		1		1	1	2	1	5	1				
3	(Z) TIA/EIA Wind + Ice		1		1	1	2	1	3	1	6	1		
4	(Z) TIA/EIA Wind		1		1	1	2	1	7	1				

Footnotes:
(1) BLC = Basic Load Case

Global

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

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

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

Global, Continued

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

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Antenna Mast	101.5												Lateral
2	M6	L5x5x3/8	15.052												Lateral
3	M7	L5x5x3/8	15.052												Lateral
4	M8	L4x4x1/4	13.288												Lateral
5	M9	L4x4x1/4	13.288												Lateral
6	M10	L3x3x3/16	8.918												Lateral
7	M11	L3x3x3/16	8.918												Lateral
8	M12	L2x2x3/16	1.25												Lateral
9	M13	L2x2x3/16	2.795												Lateral
10	M14	L2x2x3/16	2.795												Lateral
11	M15	L2x2x3/16	1.25												Lateral
12	M16	L2x2x3/16	2.795												Lateral
13	M17	L2x2x3/16	2.795												Lateral
14	M18	L2x2x3/16	1.25												Lateral
15	M19	L2x2x3/16	2.795												Lateral
16	M20	L2x2x3/16	2.795												Lateral
17	M21	L2x2x3/16	1.25												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Mast	PIPE_12.0	Beam	Pipe	A500 Gr. C 50	Typical	13.7	262	262	523
2	L4x4x1/4	L4x4x4	Beam	Single An...	A36 Gr.36	Typical	1.93	3	3	.044
3	L5x5x3/8	L5x5x6	Beam	Single An...	A36 Gr.36	Typical	3.65	8.76	8.76	.183
4	L2x2x3/16	L2x2x3	Beam	Single An...	A36 Gr.36	Typical	.722	.271	.271	.009
5	L3x3x3/16	L3x3x3	Beam	Single An...	A36 Gr.36	Typical	1.09	.948	.948	.014
6	L2.5x2.5x3/16	L2.5x2.5x3	Beam	Single An...	A36 Gr.36	Typical	.901	.535	.535	.011
7	L2.5x2.5x1/4	L2.5x2.5x4	Beam	Single An...	A36 Gr.36	Typical	1.19	.692	.692	.026
8	6x3/4 PL	6"X3/4" PL	Beam	Single An...	A36 Gr.36	Typical	4.5	.211	13.5	.777

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N7			Antenna Mast	Beam	Pipe	A500 Gr. C 50	Typical
2	M6	N8	N2			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
3	M7	N9	N2			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
4	M8	N10	N2			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
5	M9	N11	N2			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
6	M10	N12	N3			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
7	M11	N13	N3			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
8	M12	N14	N3			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
9	M13	N15	N4			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
10	M14	N16	N4			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
11	M15	N17	N4			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
12	M16	N18	N5			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
13	M17	N19	N5			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
14	M18	N20	N5			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
15	M19	N21	N6			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
16	M20	N22	N6			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	M21	N23	N6			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From D...
1	N1	0	0	-1.25	0	
2	N2	0	10	-1.25	0	
3	N3	0	32	-1.25	0	
4	N4	0	64	-1.25	0	
5	N5	0	74	-1.25	0	
6	N6	0	91	-1.25	0	
7	N7	0	101.5	-1.25	0	
8	N8	10	10	10	0	
9	N9	-10	10	10	0	
10	N10	10	10	-10	0	
11	N11	-10	10	-10	0	
12	N12	6.9	32	-6.9	0	
13	N13	-6.9	32	-6.9	0	
14	N14	0	32	0	0	
15	N15	2.5	64	-2.5	0	
16	N16	-2.5	64	-2.5	0	
17	N17	0	64	0	0	
18	N18	2.5	74	-2.5	0	
19	N19	-2.5	74	-2.5	0	
20	N20	0	74	0	0	
21	N21	2.5	91	-2.5	0	
22	N22	-2.5	91	-2.5	0	
23	N23	0	91	0	0	
24	N24	0	20	-1.25	0	
25	N25	0	40	-1.25	0	
26	N26	0	60	-1.25	0	
27	N27	0	80	-1.25	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	N21	Reaction		Reaction				
9	N22	Reaction		Reaction				
10	N23	Reaction		Reaction				
11	N18	Reaction		Reaction				
12	N20	Reaction		Reaction				
13	N19	Reaction		Reaction				
14	N16	Reaction		Reaction				
15	N17	Reaction		Reaction				
16	N15	Reaction		Reaction				
17	N13	Reaction		Reaction				
18	N14	Reaction		Reaction				
19	N12	Reaction		Reaction				

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
20	N9	Reaction		Reaction				
21	N11	Reaction		Reaction				
22	N10	Reaction		Reaction				
23	N8	Reaction		Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.117	101
2	M1	Y	-.153	101
3	M1	Y	-.186	101
4	M1	Y	-.12	101
5	M1	Y	-2.902	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.098	101
2	M1	Y	-.189	101
3	M1	Y	-.066	101
4	M1	Y	-.059	101
5	M1	Y	-1.051	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.639	101
2	M1	X	1.097	101
3	M1	X	.437	101
4	M1	X	.361	101
5	M1	X	.873	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.759	101
2	M1	X	1.337	101
3	M1	X	.502	101
4	M1	X	.41	101
5	M1	X	.911	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.639	101
2	M1	Z	1.097	101
3	M1	Z	.437	101
4	M1	Z	.361	101
5	M1	Z	.873	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.759	101

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	Z	1.337	101
3	M1	Z	.502	101
4	M1	Z	.41	101
5	M1	Z	.911	101

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	-.01	-.01	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	-.008	-.008	0	0
2	M1	Y	-.006	-.006	0	0
3	M20	Y	-.002	-.002	0	0
4	M21	Y	-.002	-.002	0	0
5	M19	Y	-.002	-.002	0	0
6	M17	Y	-.002	-.002	0	0
7	M18	Y	-.002	-.002	0	0
8	M16	Y	-.002	-.002	0	0
9	M14	Y	-.002	-.002	0	0
10	M15	Y	-.002	-.002	0	0
11	M13	Y	-.002	-.002	0	0
12	M11	Y	-.003	-.003	0	0
13	M12	Y	-.003	-.003	0	0
14	M10	Y	-.003	-.003	0	0
15	M9	Y	-.004	-.004	0	0
16	M7	Y	-.004	-.004	0	0
17	M6	Y	-.004	-.004	0	0
18	M8	Y	-.004	-.004	0	0

Member Distributed Loads (BLC 4 : (x) TIA/EIA 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	.013	.013	0	30
2	M1	X	.018	.018	30	60
3	M1	X	.02	.02	60	90
4	M1	X	.022	.022	90	101.5
5	M1	X	.009	.009	0	0
6	M20	X	.014	.014	0	0
7	M21	X	.014	.014	0	0
8	M19	X	.014	.014	0	0
9	M17	X	.014	.014	0	0
10	M18	X	.014	.014	0	0
11	M16	X	.014	.014	0	0
12	M14	X	.014	.014	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
13	M15	X	.014	.014	0	0
14	M13	X	.014	.014	0	0
15	M11	X	.017	.017	0	0
16	M12	X	.017	.017	0	0
17	M10	X	.017	.017	0	0
18	M9	X	.019	.019	0	0
19	M7	X	.019	.019	0	0
20	M6	X	.019	.019	0	0
21	M8	X	.019	.019	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.016	.016	0	30
2	M1	X	.021	.021	30	60
3	M1	X	.025	.025	60	90
4	M1	X	.027	.027	90	101.5
5	M1	X	.008	.008	0	0
6	M20	X	.012	.012	0	0
7	M21	X	.012	.012	0	0
8	M19	X	.012	.012	0	0
9	M17	X	.012	.012	0	0
10	M18	X	.012	.012	0	0
11	M16	X	.012	.012	0	0
12	M14	X	.012	.012	0	0
13	M15	X	.012	.012	0	0
14	M13	X	.012	.012	0	0
15	M12	X	.012	.012	0	0
16	M11	X	.017	.017	0	0
17	M10	X	.017	.017	0	0
18	M7	X	.021	.021	0	0
19	M9	X	.021	.021	0	0
20	M6	X	.021	.021	0	0
21	M8	X	.021	.021	0	0

Member Distributed Loads (BLC 6 : (z) TIA/EIA 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	.013	.013	0	30
2	M1	Z	.018	.018	30	60
3	M1	Z	.02	.02	60	90
4	M1	Z	.022	.022	90	101.5
5	M1	Z	.009	.009	0	0
6	M20	Z	.014	.014	0	0
7	M19	Z	.014	.014	0	0
8	M17	Z	.014	.014	0	0
9	M16	Z	.014	.014	0	0
10	M14	Z	.014	.014	0	0
11	M13	Z	.014	.014	0	0
12	M11	Z	.017	.017	0	0
13	M10	Z	.017	.017	0	0
14	M9	Z	.019	.019	0	0
15	M7	Z	.019	.019	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
16	M6	Z	.019	.019	0	0
17	M8	Z	.019	.019	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.016	.016	0	30
2	M1	Z	.021	.021	30	60
3	M1	Z	.025	.025	60	90
4	M1	Z	.027	.027	90	101.5
5	M1	Z	.008	.008	0	0
6	M20	Z	.012	.012	0	0
7	M19	Z	.012	.012	0	0
8	M17	Z	.012	.012	0	0
9	M16	Z	.012	.012	0	0
10	M14	Z	.012	.012	0	0
11	M13	Z	.012	.012	0	0
12	M11	Z	.017	.017	0	0
13	M10	Z	.017	.017	0	0
14	M7	Z	.021	.021	0	0
15	M9	Z	.021	.021	0	0
16	M6	Z	.021	.021	0	0
17	M8	Z	.021	.021	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					5	1		
3	Weight of Ice Only	None					5	18		
4	(x) TIA/EIA Wind with Ice	None					5	21		
5	(x) TIA/EIA Wind	None					5	21		
6	(z) TIA/EIA Wind with Ice	None					5	17		
7	(z) TIA/EIA Wind	None					5	17		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	(x) TIA/EIA Wind + Ice	Yes			1	1	2	1	3	1	4	1										
2	(x) TIA/EIA Wind	Yes			1	1	2	1	5	1												
3	(z) TIA/EIA Wind + Ice	Yes			1	1	2	1	3	1	6	1										
4	(z) TIA/EIA Wind	Yes			1	1	2	1	7	1												

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
1	M1	1	max	13.102	1	.096	2	.169	1	-1.522	4	-.216	4	.225	2
2			min	9.893	2	.001	4	.043	4	-2.218	1	-.526	1	.007	4
3		2	max	10.535	1	0	4	.177	4	.233	2	-.042	4	.099	1
4			min	7.908	2	-.16	2	.014	1	-.012	3	-.18	1	0	4
5		3	max	8.616	1	0	3	.129	4	.144	1	.045	1	0	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
6			min	6.402	2	-.134	2	-.011	1	.099	4	-.828	4	-.916	2
7		4	max	6.763	1	0	3	2.91	4	.066	1	.018	1	0	3
8			min	4.931	2	-2.896	2	-.002	1	.031	4	-5.832	4	-5.613	2
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M6	1	max	.653	4	0	4	.118	3	0	1	0	1	0	1
12			min	.573	1	0	1	-.053	2	0	1	0	1	0	1
13		2	max	.594	4	-.047	2	.071	3	0	1	.174	4	.334	3
14			min	.526	1	-.062	1	.006	2	0	1	-.124	2	0	2
15		3	max	.535	4	-.093	2	.073	1	0	1	.083	4	.706	3
16			min	.478	1	-.124	1	.01	4	0	1	-.222	1	.282	2
17		4	max	.476	4	-.14	2	.127	1	0	1	-.271	4	1.115	3
18			min	.431	1	-.185	1	-.043	4	0	1	-.367	1	.845	2
19		5	max	.417	4	-.187	2	.183	2	0	1	-.301	2	2.097	1
20			min	.383	1	-.247	1	-.095	4	0	1	-1.067	3	1.1	4
21	M7	1	max	.628	4	0	3	-.024	3	0	1	0	1	0	1
22			min	-.495	2	0	2	-.053	2	0	1	0	1	0	1
23		2	max	.569	4	-.047	4	.023	3	0	1	-.084	3	.081	3
24			min	-.443	2	-.062	1	.006	2	0	1	-.124	2	0	2
25		3	max	.51	4	-.093	4	.073	1	0	1	-.197	4	.452	3
26			min	-.39	2	-.124	1	.062	4	0	1	-.222	1	.281	2
27		4	max	.451	4	-.14	2	.127	1	0	1	-.273	4	1.114	3
28			min	-.338	2	-.185	1	.115	4	0	1	-.367	1	.844	2
29		5	max	.392	4	-.187	4	.183	2	0	1	-.301	2	2.097	1
30			min	-.285	2	-.247	1	.166	3	0	1	-.563	3	1.657	4
31	M8	1	max	.378	2	0	3	.1	3	0	1	0	1	0	1
32			min	-.359	4	0	1	.086	2	0	1	0	1	0	1
33		2	max	.326	2	-.022	2	.052	3	0	1	.139	4	.22	3
34			min	-.313	4	-.035	1	.04	2	0	1	.123	2	.174	2
35		3	max	.273	2	-.044	2	.008	1	0	1	.103	4	.41	3
36			min	-.267	4	-.07	1	-.009	4	0	1	.066	1	.292	2
37		4	max	.221	2	-.065	2	-.034	1	0	1	-.108	4	.571	3
38			min	-.221	4	-.105	1	-.061	4	0	1	-.171	1	.353	2
39		5	max	.168	2	-.087	2	-.076	1	0	1	-.463	2	.731	1
40			min	-.175	4	-.14	1	-.114	4	0	1	-.616	3	.327	4
41	M9	1	max	-.351	3	0	3	.091	1	0	1	0	1	0	1
42			min	-.44	2	0	4	-.061	4	0	1	0	1	0	1
43		2	max	-.309	3	-.022	2	.049	1	0	1	.123	1	.205	1
44			min	-.387	2	-.035	1	-.009	4	0	1	-.108	4	-.057	4
45		3	max	-.268	3	-.044	2	.052	3	0	1	.087	2	.396	1
46			min	-.335	2	-.07	1	-.006	2	0	1	-.144	4	.06	4
47		4	max	-.226	3	-.065	2	.1	3	0	1	-.109	2	.571	1
48			min	-.282	2	-.105	1	-.052	2	0	1	-.172	3	.353	4
49		5	max	-.185	3	-.087	2	.149	4	0	1	0	4	1.149	3
50			min	-.23	2	-.14	1	-.098	2	0	1	-.589	1	.357	2
51	M10	1	max	.624	2	0	1	.055	3	0	1	0	1	0	1
52			min	-.18	3	0	3	.042	2	0	1	0	1	0	1
53		2	max	.595	2	-.008	2	.026	3	0	1	.052	3	.076	3
54			min	-.156	3	-.015	3	.018	2	0	1	.041	2	.054	2
55		3	max	.566	2	-.017	2	0	1	0	1	.039	4	.128	3
56			min	-.132	3	-.03	3	-.009	4	0	1	.027	1	.084	2
57		4	max	.536	2	-.025	2	-.024	1	0	1	-.029	2	.161	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
58			min	-.108	3	-.045	3	-.038	4	0	1	-.054	3	.086	4
59		5	max	.507	2	-.033	2	-.048	1	0	1	-.14	2	.186	1
60			min	-.084	3	-.06	3	-.067	4	0	1	-.211	3	.049	4
61	M11	1	max	-.119	3	0	4	.048	1	0	1	0	1	0	1
62			min	-.629	2	0	3	-.038	4	0	1	0	1	0	1
63		2	max	-.095	3	-.008	4	.024	1	0	1	.044	1	.068	1
64			min	-.6	2	-.015	3	-.009	4	0	1	-.044	4	-.031	4
65		3	max	-.071	3	-.017	4	.026	3	0	1	.032	2	.122	1
66			min	-.571	2	-.03	3	-.006	2	0	1	-.059	3	-.002	4
67		4	max	-.047	3	-.025	2	.055	3	0	1	-.029	2	.161	1
68			min	-.541	2	-.045	3	-.03	2	0	1	-.054	3	.086	4
69		5	max	-.023	3	-.033	4	.084	3	0	1	.025	4	.351	3
70			min	-.512	2	-.06	3	-.054	2	0	1	-.191	1	.069	2
71	M12	1	max	.799	4	0	1	-.023	4	0	1	0	1	0	1
72			min	.02	2	0	3	-.046	1	0	1	0	1	0	1
73		2	max	.799	4	0	4	-.023	4	0	1	-.005	4	-.005	4
74			min	.02	2	-.002	3	-.041	1	0	1	-.01	1	-.009	1
75		3	max	.799	4	-.002	4	-.023	4	0	1	-.01	4	-.01	4
76			min	.02	2	-.003	3	-.035	1	0	1	-.019	1	-.017	1
77		4	max	.799	4	-.002	4	-.022	2	0	1	-.016	4	-.014	4
78			min	.02	2	-.005	3	-.034	3	0	1	-.027	1	-.023	1
79		5	max	.799	4	-.003	4	-.018	2	0	1	-.022	4	-.019	4
80			min	.02	2	-.007	3	-.034	3	0	1	-.034	1	-.028	1
81	M13	1	max	1.267	2	0	3	.011	3	0	1	0	1	0	1
82			min	-.403	4	0	1	.005	2	0	1	0	1	0	1
83		2	max	1.259	2	-.002	4	.002	4	0	1	.002	4	.004	3
84			min	-.399	4	-.003	1	0	1	0	1	0	1	.002	2
85		3	max	1.252	2	-.003	4	-.002	2	0	1	0	4	.005	3
86			min	-.395	4	-.006	1	-.007	3	0	1	-.002	1	.003	2
87		4	max	1.244	2	-.005	4	-.006	2	0	1	-.005	2	.005	1
88			min	-.391	4	-.009	1	-.016	3	0	1	-.011	3	.001	4
89		5	max	1.237	2	-.007	4	-.01	2	0	1	-.012	2	.005	1
90			min	-.388	4	-.012	1	-.024	3	0	1	-.026	3	-.004	4
91	M14	1	max	-.337	3	0	2	.005	1	0	1	0	1	0	1
92			min	-1.262	2	0	4	-.017	3	0	1	0	1	0	1
93		2	max	-.333	3	-.002	2	.001	2	0	1	.001	2	.002	1
94			min	-1.254	2	-.003	1	-.008	3	0	1	-.007	3	-.005	3
95		3	max	-.329	3	-.003	2	0	4	0	1	0	2	.004	1
96			min	-1.247	2	-.006	1	-.003	1	0	1	-.011	3	-.005	4
97		4	max	-.324	3	-.005	2	.01	3	0	1	-.005	2	.005	1
98			min	-1.239	2	-.009	1	-.008	1	0	1	-.012	3	0	4
99		5	max	-.32	3	-.007	2	.018	3	0	1	-.005	4	.014	3
100			min	-1.232	2	-.012	1	-.012	1	0	1	-.019	1	.002	2
101	M15	1	max	1.93	4	0	3	-.018	4	0	1	0	1	0	1
102			min	-.017	1	0	2	-.036	1	0	1	0	1	0	1
103		2	max	1.93	4	0	4	-.018	4	0	1	-.004	4	-.004	4
104			min	-.017	1	-.001	1	-.031	1	0	1	-.008	1	-.007	1
105		3	max	1.93	4	-.002	4	-.018	4	0	1	-.008	4	-.008	4
106			min	-.017	1	-.003	1	-.027	3	0	1	-.015	1	-.013	1
107		4	max	1.93	4	-.002	4	-.016	2	0	1	-.013	4	-.011	4
108			min	-.017	1	-.004	1	-.027	3	0	1	-.021	1	-.018	1
109		5	max	1.93	4	-.003	4	-.012	2	0	1	-.017	4	-.015	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
110			min	-.017	1	-.006	1	-.027	3	0	1	-.027	3	-.022	3
111	M16	1	max	.692	4	0	1	.01	3	0	1	0	1	0	1
112			min	-2.289	2	0	3	.004	2	0	1	0	1	0	1
113		2	max	.696	4	-.002	2	0	3	0	1	.002	3	.003	3
114			min	-2.297	2	-.003	3	0	1	0	1	0	1	.002	2
115		3	max	.7	4	-.003	2	-.003	2	0	1	0	4	.004	3
116			min	-2.304	2	-.006	3	-.008	3	0	1	-.003	1	.002	2
117		4	max	.704	4	-.005	2	-.007	2	0	1	-.006	2	.004	1
118			min	-2.312	2	-.009	3	-.017	3	0	1	-.012	3	0	4
119		5	max	.707	4	-.007	2	-.011	2	0	1	-.013	2	.004	1
120			min	-2.319	2	-.012	3	-.025	3	0	1	-.028	3	-.007	4
121	M17	1	max	2.287	2	0	2	.005	1	0	1	0	1	0	1
122			min	.619	3	0	1	-.015	3	0	1	0	1	0	1
123		2	max	2.294	2	-.002	2	0	2	0	1	0	2	.002	1
124			min	.624	3	-.003	1	-.006	3	0	1	-.006	3	-.005	3
125		3	max	2.302	2	-.003	2	.003	4	0	1	-.001	2	.003	1
126			min	.628	3	-.006	1	-.004	1	0	1	-.009	3	-.003	4
127		4	max	2.309	2	-.005	2	.011	3	0	1	-.006	4	.004	3
128			min	.632	3	-.009	1	-.009	1	0	1	-.01	1	.002	2
129		5	max	2.317	2	-.007	2	.02	3	0	1	-.002	4	.017	3
130			min	.637	3	-.012	1	-.013	1	0	1	-.021	1	0	2
131	M18	1	max	.01	1	0	4	.002	2	0	1	0	1	0	1
132			min	-3.541	4	0	2	-.026	3	0	1	0	1	0	1
133		2	max	.01	1	0	4	.006	2	0	1	0	2	0	2
134			min	-3.541	4	-.001	3	-.026	3	0	1	-.006	3	-.006	3
135		3	max	.01	1	-.002	4	.01	2	0	1	.002	2	.003	2
136			min	-3.541	4	-.003	1	-.026	3	0	1	-.012	3	-.011	3
137		4	max	.01	1	-.002	4	.013	2	0	1	.004	2	.006	2
138			min	-3.541	4	-.004	1	-.026	3	0	1	-.018	3	-.016	3
139		5	max	.01	1	-.003	4	.017	2	0	1	.007	2	.01	2
140			min	-3.541	4	-.006	1	-.026	3	0	1	-.025	3	-.02	3
141	M19	1	max	4.306	2	0	2	.012	3	0	1	0	1	0	1
142			min	-1.327	4	0	1	.007	2	0	1	0	1	0	1
143		2	max	4.299	2	-.002	2	.004	4	0	1	.003	4	.005	3
144			min	-1.323	4	-.003	1	.002	1	0	1	.002	1	.003	2
145		3	max	4.291	2	-.003	2	0	2	0	1	.002	4	.006	3
146			min	-1.319	4	-.006	1	-.005	3	0	1	0	1	.005	2
147		4	max	4.284	2	-.005	2	-.005	2	0	1	-.002	2	.007	1
148			min	-1.315	4	-.009	1	-.014	3	0	1	-.008	3	.004	4
149		5	max	4.276	2	-.007	2	-.008	2	0	1	-.009	2	.008	1
150			min	-1.312	4	-.012	1	-.023	3	0	1	-.023	3	-.001	4
151	M20	1	max	-1.14	3	0	4	.007	1	0	1	0	1	0	1
152			min	-4.306	2	0	1	-.017	3	0	1	0	1	0	1
153		2	max	-1.135	3	-.002	4	.003	2	0	1	.002	2	.003	1
154			min	-4.299	2	-.003	1	-.008	3	0	1	-.007	3	-.006	3
155		3	max	-1.131	3	-.003	4	0	3	0	1	.001	2	.005	1
156			min	-4.291	2	-.006	1	-.002	1	0	1	-.011	3	-.006	4
157		4	max	-1.127	3	-.005	4	.009	3	0	1	-.002	2	.007	1
158			min	-4.284	2	-.009	1	-.006	1	0	1	-.013	3	-.002	4
159		5	max	-1.122	3	-.007	4	.018	3	0	1	-.006	4	.013	3
160			min	-4.276	2	-.012	1	-.011	1	0	1	-.016	1	.005	2
161	M21	1	max	6.555	4	0	4	-.016	4	0	1	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
162			min	-.002	1	0	1	-.053	1	0	1	0	1	0	1
163		2	max	6.555	4	0	4	-.016	4	0	1	-.004	4	-.003	4
164			min	-.002	1	-.001	1	-.049	1	0	1	-.011	1	-.011	1
165		3	max	6.555	4	-.002	4	-.016	4	0	1	-.007	4	-.007	4
166			min	-.002	1	-.003	1	-.045	1	0	1	-.022	1	-.021	1
167		4	max	6.555	4	-.002	4	-.016	4	0	1	-.011	4	-.01	4
168			min	-.002	1	-.004	1	-.04	1	0	1	-.032	1	-.03	1
169		5	max	6.555	4	-.003	4	-.016	4	0	1	-.016	4	-.013	4
170			min	-.002	1	-.006	1	-.036	1	0	1	-.042	1	-.037	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	.956	1	.014	2	.025	1	-.002	4	.066	2	-.063	4	.154	1
2			min	.722	2	0	4	.006	4	-.066	2	.002	4	-.154	1	.063	4
3		2	max	.769	1	0	4	.026	4	0	4	.029	1	-.012	4	.053	1
4			min	.577	2	-.023	2	.002	1	-.029	1	0	4	-.053	1	.012	4
5		3	max	.629	1	0	3	.019	4	.269	2	0	3	.013	1	.243	4
6			min	.467	2	-.019	2	-.002	1	0	3	-.269	2	-.243	4	-.013	1
7		4	max	.494	1	0	3	.425	4	1.645	2	0	3	.005	1	1.71	4
8			min	.36	2	-.423	2	0	1	0	3	-1.645	2	-1.71	4	-.005	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1
11	M6	1	max	.179	4	0	1	.076	3	0	1	0	1	0	1	0	1
12			min	.157	1	0	1	-.034	2	0	1	0	1	0	1	0	1
13		2	max	.163	4	-.03	2	.045	3	0	2	.976	3	1.016	4	.815	2
14			min	.144	1	-.04	1	.004	2	-.976	3	0	2	-.728	2	-1.137	4
15		3	max	.147	4	-.06	2	.047	1	-.823	2	2.062	3	.486	4	1.456	1
16			min	.131	1	-.079	1	.006	4	-2.062	3	.823	2	-1.3	1	-.544	4
17		4	max	.13	4	-.09	2	.081	1	-2.469	2	3.26	3	-1.589	4	2.402	1
18			min	.118	1	-.119	1	-.027	4	-3.26	3	2.469	2	-2.146	1	1.779	4
19		5	max	.114	4	-.12	2	.117	2	-3.214	4	6.13	1	-1.759	2	6.992	3
20			min	.105	1	-.158	1	-.061	4	-6.13	1	3.214	4	-6.246	3	1.969	2
21	M7	1	max	.172	4	0	1	-.016	3	0	1	0	1	0	1	0	1
22			min	-.136	2	0	1	-.034	2	0	1	0	1	0	1	0	1
23		2	max	.156	4	-.03	4	.015	3	0	2	.236	3	-.491	3	.815	2
24			min	-.121	2	-.04	1	.004	2	-.236	3	0	2	-.728	2	.549	3
25		3	max	.14	4	-.06	4	.047	1	-.823	2	1.321	3	-1.155	4	1.456	1
26			min	-.107	2	-.079	1	.04	4	-1.321	3	.823	2	-1.301	1	1.293	4
27		4	max	.124	4	-.09	2	.081	1	-2.468	2	3.256	3	-1.597	4	2.403	1
28			min	-.093	2	-.119	1	.073	4	-3.256	3	2.468	2	-2.146	1	1.788	4
29		5	max	.107	4	-.12	4	.117	2	-4.842	4	6.129	1	-1.76	2	3.692	3
30			min	-.078	2	-.158	1	.106	3	-6.129	1	4.842	4	-3.297	3	1.971	2
31	M8	1	max	.196	2	0	1	.12	3	0	1	0	1	0	1	0	1
32			min	-.186	4	0	1	.103	2	0	1	0	1	0	1	0	1
33		2	max	.169	2	-.026	2	.063	3	-1.189	2	1.499	3	1.953	4	-1.905	2
34			min	-.162	4	-.042	1	.048	2	-1.499	3	1.189	2	1.733	2	-2.147	4
35		3	max	.142	2	-.052	2	.009	1	-1.992	2	2.799	3	1.447	4	-1.021	1
36			min	-.138	4	-.084	1	-.011	4	-2.799	3	1.992	2	.929	1	-1.59	4
37		4	max	.114	2	-.079	2	-.041	1	-2.407	2	3.9	3	-1.52	4	2.652	1
38			min	-.115	4	-.126	1	-.074	4	-3.9	3	2.407	2	-2.413	1	1.671	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
39		5	max	.087	2	-.105	2	-.091	1	-2.232	4	4.989	1	-6.525	2	9.538	3
40			min	-.091	4	-.168	1	-.137	4	-4.989	1	2.232	4	-8.677	3	7.172	2
41	M9	1	max	-.182	3	0	1	.109	1	0	1	0	1	0	1	0	1
42			min	-.228	2	0	1	-.074	4	0	1	0	1	0	1	0	1
43		2	max	-.16	3	-.026	2	.059	1	.389	4	1.402	1	1.733	1	1.677	4
44			min	-.201	2	-.042	1	-.011	4	-1.402	1	-.389	4	-1.526	4	-1.905	1
45		3	max	-.139	3	-.052	2	.062	3	-.413	4	2.701	1	1.222	2	2.238	4
46			min	-.173	2	-.084	1	-.007	2	-2.701	1	.413	4	-2.036	4	-1.344	2
47		4	max	-.117	3	-.079	2	.119	3	-2.407	4	3.897	1	-1.53	2	2.656	3
48			min	-.146	2	-.126	1	-.062	2	-3.897	1	2.407	4	-2.417	3	1.682	2
49		5	max	-.096	3	-.105	2	.178	4	-2.436	2	7.843	3	-.01	4	9.117	1
50			min	-.119	2	-.168	1	-.117	2	-7.843	3	2.436	2	-8.294	1	.011	4
51	M10	1	max	.573	2	0	1	.118	3	0	1	0	1	0	1	0	1
52			min	-.165	3	0	1	.09	2	0	1	0	1	0	1	0	1
53		2	max	.546	2	-.018	2	.055	3	-.882	2	1.224	3	1.731	3	-1.524	2
54			min	-.143	3	-.032	3	.039	2	-1.224	3	.882	2	1.379	2	-1.913	3
55		3	max	.519	2	-.035	2	0	1	-1.362	2	2.081	3	1.289	4	-1.007	1
56			min	-.121	3	-.064	3	-.019	4	-2.081	3	1.362	2	.911	1	-1.424	4
57		4	max	.492	2	-.053	2	-.052	1	-1.401	4	2.611	1	-.95	2	1.972	3
58			min	-.099	3	-.096	3	-.081	4	-2.611	1	1.401	4	-1.785	3	1.049	2
59		5	max	.465	2	-.071	2	-.103	1	-.792	4	3.018	1	-4.658	2	7.77	3
60			min	-.077	3	-.128	3	-.144	4	-3.018	1	.792	4	-7.032	3	5.146	2
61	M11	1	max	-.109	3	0	1	.102	1	0	1	0	1	0	1	0	1
62			min	-.577	2	0	1	-.081	4	0	1	0	1	0	1	0	1
63		2	max	-.087	3	-.018	4	.05	1	.495	4	1.102	1	1.479	1	1.605	4
64			min	-.551	2	-.032	3	-.019	4	-1.102	1	-.495	4	-1.452	4	-1.634	1
65		3	max	-.065	3	-.035	4	.055	3	.03	4	1.972	1	1.062	2	2.156	3
66			min	-.524	2	-.064	3	-.012	2	-1.972	1	-.03	4	-1.951	3	-1.174	2
67		4	max	-.043	3	-.053	2	.117	3	-1.396	4	2.611	1	-.95	2	1.983	3
68			min	-.497	2	-.096	3	-.063	2	-2.611	1	1.396	4	-1.795	3	1.049	2
69		5	max	-.021	3	-.071	4	.18	3	-1.115	2	5.685	3	.827	4	7.034	1
70			min	-.47	2	-.128	1	-.114	2	-5.685	3	1.115	2	-6.366	1	-.914	4
71	M12	1	max	1.107	4	0	1	-.073	4	0	1	0	1	0	1	0	1
72			min	.027	2	0	1	-.147	1	0	1	0	1	0	1	0	1
73		2	max	1.107	4	-.002	4	-.073	4	.35	1	-.186	4	-.389	4	.85	1
74			min	.027	2	-.005	3	-.13	1	.186	4	-.35	1	-.736	1	.449	4
75		3	max	1.107	4	-.005	4	-.073	4	.643	1	-.367	4	-.791	4	1.63	1
76			min	.027	2	-.011	3	-.113	1	.367	4	-.643	1	-1.412	1	.914	4
77		4	max	1.107	4	-.007	4	-.071	2	.877	1	-.54	4	-1.206	4	2.341	1
78			min	.027	2	-.016	3	-.109	3	.54	4	-.877	1	-2.027	1	1.393	4
79		5	max	1.107	4	-.01	4	-.059	2	1.054	1	-.708	4	-1.634	4	2.982	1
80			min	.027	2	-.022	3	-.109	3	.708	4	-1.054	1	-2.583	1	1.887	4
81	M13	1	max	1.754	2	0	1	.034	3	0	1	0	1	0	1	0	1
82			min	-.558	4	0	1	.016	2	0	1	0	1	0	1	0	1
83		2	max	1.744	2	-.005	4	.006	4	-.075	2	.143	3	.181	4	-.067	1
84			min	-.552	4	-.01	1	.003	1	-.143	3	.075	2	.058	1	-.209	4
85		3	max	1.734	2	-.011	4	-.008	2	-.113	2	.182	3	.019	4	.189	1
86			min	-.547	4	-.02	1	-.022	3	-.182	3	.113	2	-.164	1	-.021	4
87		4	max	1.723	2	-.016	4	-.02	2	-.044	4	.189	1	-.348	2	.936	3
88			min	-.542	4	-.03	1	-.05	3	-.189	1	.044	4	-.811	3	.401	2
89		5	max	1.713	2	-.022	4	-.032	2	.155	4	.205	1	-.871	2	2.27	3
90			min	-.537	4	-.04	1	-.078	3	-.205	1	-.155	4	-1.966	3	1.006	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
91	M14	1	max	-.467	3	0	1	.017	1	0	1	0	1	0	1	0	1
92			min	-1.748	2	0	1	-.053	3	0	1	0	1	0	1	0	1
93		2	max	-.461	3	-.005	2	.004	2	.197	3	.086	1	.088	2	.594	3
94			min	-1.738	2	-.01	1	-.025	3	-.086	1	-.197	3	-.514	3	-.102	2
95		3	max	-.455	3	-.011	2	.003	4	.179	4	.149	1	-.027	2	.945	3
96			min	-1.727	2	-.02	1	-.011	1	-.149	1	-.179	4	-.819	3	.032	2
97		4	max	-.449	3	-.016	2	.031	3	.013	4	.189	1	-.347	2	1.054	3
98			min	-1.717	2	-.03	1	-.025	1	-.189	1	-.013	4	-.913	3	.401	2
99		5	max	-.443	3	-.022	2	.059	3	-.076	2	.526	3	-.371	4	1.666	1
100			min	-1.706	2	-.04	1	-.039	1	-.526	3	.076	2	-1.443	1	.428	4
101	M15	1	max	2.673	4	0	1	-.058	4	0	1	0	1	0	1	0	1
102			min	-.023	1	0	1	-.115	1	0	1	0	1	0	1	0	1
103		2	max	2.673	4	-.002	4	-.058	4	.272	1	-.146	4	-.308	4	.661	1
104			min	-.023	1	-.004	1	-.101	1	.146	4	-.272	1	-.573	1	.355	4
105		3	max	2.673	4	-.005	4	-.058	4	.497	1	-.286	4	-.628	4	1.265	1
106			min	-.023	1	-.009	1	-.087	3	.286	4	-.497	1	-1.096	1	.726	4
107		4	max	2.673	4	-.007	4	-.05	2	.674	1	-.419	4	-.962	4	1.812	1
108			min	-.023	1	-.013	1	-.087	3	.419	4	-.674	1	-1.569	1	1.11	4
109		5	max	2.673	4	-.01	4	-.038	2	.808	3	-.546	4	-1.308	4	2.313	3
110			min	-.023	1	-.018	1	-.087	3	.546	4	-.808	3	-2.003	3	1.51	4
111	M16	1	max	.959	4	0	1	.031	3	0	1	0	1	0	1	0	1
112			min	-3.171	2	0	1	.013	2	0	1	0	1	0	1	0	1
113		2	max	.964	4	-.005	2	.003	3	-.058	2	.126	3	.138	3	-.037	1
114			min	-3.181	2	-.01	3	0	1	-.126	3	.058	2	.032	1	-.159	3
115		3	max	.969	4	-.011	2	-.011	2	-.079	2	.147	3	-.07	4	.249	1
116			min	-3.192	2	-.02	3	-.025	3	-.147	3	.079	2	-.215	1	.081	4
117		4	max	.975	4	-.016	2	-.023	2	.022	4	.15	1	-.451	2	1.055	3
118			min	-3.202	2	-.03	3	-.053	3	-.15	1	-.022	4	-.914	3	.521	2
119		5	max	.98	4	-.022	2	-.035	2	.243	4	.154	1	-1.009	2	2.429	3
120			min	-3.212	2	-.04	3	-.081	3	-.154	1	-.243	4	-2.104	3	1.165	2
121	M17	1	max	3.167	2	0	1	.015	1	0	1	0	1	0	1	0	1
122			min	.858	3	0	1	-.048	3	0	1	0	1	0	1	0	1
123		2	max	3.178	2	-.005	2	.001	2	.169	3	.073	1	.053	2	.528	3
124			min	.864	3	-.01	1	-.02	3	-.073	1	-.169	3	-.457	3	-.062	2
125		3	max	3.188	2	-.011	2	.008	4	.119	4	.123	1	-.097	2	.813	3
126			min	.87	3	-.02	1	-.013	1	-.123	1	-.119	4	-.704	3	.112	2
127		4	max	3.198	2	-.016	2	.036	3	-.062	2	.151	3	-.421	4	.857	1
128			min	.876	3	-.03	1	-.027	1	-.151	3	.062	2	-.742	1	.486	4
129		5	max	3.209	2	-.022	2	.064	3	-.007	2	.639	3	-.13	4	1.788	1
130			min	.882	3	-.04	1	-.041	1	-.639	3	.007	2	-1.548	1	.15	4
131	M18	1	max	.013	1	0	1	.007	2	0	1	0	1	0	1	0	1
132			min	-4.905	4	0	1	-.082	3	0	1	0	1	0	1	0	1
133		2	max	.013	1	-.002	4	.019	2	.207	3	.036	2	.06	2	.509	3
134			min	-4.905	4	-.004	3	-.082	3	-.036	2	-.207	3	-.441	3	-.069	2
135		3	max	.013	1	-.005	4	.031	2	.402	3	.109	2	.169	2	1.046	3
136			min	-4.905	4	-.009	1	-.082	3	-.109	2	-.402	3	-.906	3	-.195	2
137		4	max	.013	1	-.007	4	.043	2	.586	3	.22	2	.328	2	1.609	3
138			min	-4.905	4	-.013	1	-.082	3	-.22	2	-.586	3	-1.393	3	-.379	2
139		5	max	.013	1	-.01	4	.055	2	.759	3	.367	2	.537	2	2.198	3
140			min	-4.905	4	-.018	1	-.082	3	-.367	2	-.759	3	-1.904	3	-.62	2
141	M19	1	max	5.965	2	0	1	.039	3	0	1	0	1	0	1	0	1
142			min	-1.837	4	0	1	.021	2	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
143		2	max	5.954	2	-.005	2	.011	4	-.103	2	.172	3	.24	4	-.132	1
144			min	-1.832	4	-.01	1	.008	1	-.172	3	.103	2	.115	1	-.277	4
145		3	max	5.944	2	-.011	2	-.003	2	-.169	2	.24	3	.136	4	.058	1
146			min	-1.827	4	-.02	1	-.017	3	-.24	3	.169	2	-.05	1	-.157	4
147		4	max	5.933	2	-.016	2	-.015	2	-.131	4	.273	1	-.179	2	.731	3
148			min	-1.822	4	-.03	1	-.045	3	-.273	1	.131	4	-.633	3	.207	2
149		5	max	5.923	2	-.022	2	-.027	2	.039	4	.317	1	-.647	2	1.997	3
150			min	-1.816	4	-.04	1	-.073	3	-.317	1	-.039	4	-1.729	3	.747	2
151	M20	1	max	-1.579	3	0	1	.022	1	0	1	0	1	0	1	0	1
152			min	-5.964	2	0	1	-.055	3	0	1	0	1	0	1	0	1
153		2	max	-1.573	3	-.005	4	.009	2	.206	3	.114	1	.144	2	.614	3
154			min	-5.954	2	-.01	1	-.027	3	-.114	1	-.206	3	-.532	3	-.166	2
155		3	max	-1.567	3	-.011	4	.001	3	.208	4	.205	1	.084	2	.986	3
156			min	-5.943	2	-.02	1	-.006	1	-.205	1	-.208	4	-.854	3	-.097	2
157		4	max	-1.561	3	-.016	4	.029	3	.057	4	.273	1	-.179	2	1.115	3
158			min	-5.933	2	-.03	1	-.02	1	-.273	1	-.057	4	-.966	3	.207	2
159		5	max	-1.554	3	-.022	4	.057	3	-.187	2	.491	3	-.49	4	1.405	1
160			min	-5.923	2	-.04	1	-.034	1	-.491	3	.187	2	-1.217	1	.566	4
161	M21	1	max	9.078	4	0	1	-.052	4	0	1	0	1	0	1	0	1
162			min	-.002	1	0	1	-.171	1	0	1	0	1	0	1	0	1
163		2	max	9.078	4	-.002	4	-.052	4	.416	1	-.13	4	-.276	4	.997	1
164			min	-.002	1	-.004	1	-.157	1	.13	4	-.416	1	-.864	1	.319	4
165		3	max	9.078	4	-.005	4	-.052	4	.785	1	-.255	4	-.565	4	1.938	1
166			min	-.002	1	-.009	1	-.143	1	.255	4	-.785	1	-1.678	1	.653	4
167		4	max	9.078	4	-.007	4	-.052	4	1.106	1	-.372	4	-.867	4	2.82	1
168			min	-.002	1	-.013	1	-.129	1	.372	4	-1.106	1	-2.442	1	1.001	4
169		5	max	9.078	4	-.01	4	-.052	4	1.38	1	-.484	4	-1.182	4	3.645	1
170			min	-.002	1	-.018	1	-.115	1	.484	4	-1.38	1	-3.157	1	1.364	4

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	-.001	4	13.102	1	.169	1	.526	1	-1.522	4	.225	2
2		min	-.096	2	9.893	2	.043	4	.216	4	-2.218	1	.007	4
3	N21	max	1.182	4	0	1	1.92	2	0	1	0	1	0	1
4		min	-3.855	2	0	1	-.603	4	0	1	0	1	0	1
5	N22	max	-1.012	3	0	1	-.525	3	0	1	0	1	0	1
6		min	-3.854	2	0	1	-1.92	2	0	1	0	1	0	1
7	N23	max	-.016	4	0	1	.002	1	0	1	0	1	0	1
8		min	-.053	1	0	1	-6.555	4	0	1	0	1	0	1
9	N18	max	2.046	2	0	1	.302	4	0	1	0	1	0	1
10		min	-.623	4	0	1	-1.028	2	0	1	0	1	0	1
11	N20	max	.002	2	0	1	3.541	4	0	1	0	1	0	1
12		min	-.026	3	0	1	-.01	1	0	1	0	1	0	1
13	N19	max	2.043	2	0	1	1.026	2	0	1	0	1	0	1
14		min	.561	3	0	1	.263	3	0	1	0	1	0	1
15	N16	max	-.294	3	0	1	-.166	3	0	1	0	1	0	1
16		min	-1.131	2	0	1	-.56	2	0	1	0	1	0	1
17	N17	max	-.018	4	0	1	.017	1	0	1	0	1	0	1
18		min	-.036	1	0	1	-1.93	4	0	1	0	1	0	1
19	N15	max	.356	4	0	1	.562	2	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
20		min	-1.135	2	0	1	-.189	4	0	1	0	1	0	1
21	N13	max	-.071	3	0	1	-.101	3	0	1	0	1	0	1
22		min	-.514	2	0	1	-.366	2	0	1	0	1	0	1
23	N14	max	-.023	4	0	1	-.02	2	0	1	0	1	0	1
24		min	-.046	1	0	1	-.799	4	0	1	0	1	0	1
25	N12	max	.105	3	0	1	.363	2	0	1	0	1	0	1
26		min	-.51	2	0	1	-.157	3	0	1	0	1	0	1
27	N9	max	.385	4	0	1	.335	2	0	1	0	1	0	1
28		min	-.369	2	0	1	-.498	4	0	1	0	1	0	1
29	N11	max	-.236	3	0	1	-.201	1	0	1	0	1	0	1
30		min	-.388	2	0	1	-.294	4	0	1	0	1	0	1
31	N10	max	.207	4	0	1	.184	2	0	1	0	1	0	1
32		min	-.342	2	0	1	-.309	4	0	1	0	1	0	1
33	N8	max	-.317	3	0	1	-.406	1	0	1	0	1	0	1
34		min	-.446	2	0	1	-.564	4	0	1	0	1	0	1
35	Totals:	max	0	3	13.102	1	0	1						
36		min	-8.656	2	9.893	2	-8.596	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
1	N1	max	0	2	0	2	0	4	0	4	0	1	0	4
2		min	0	4	0	1	0	1	0	1	0	4	0	2
3	N2	max	.001	2	-.003	2	.001	4	8.174e-5	3	5.475e-4	1	-4.496e-8	3
4		min	0	4	-.004	1	0	2	5.077e-5	2	3.756e-4	4	-2.731e-5	2
5	N3	max	.002	2	-.008	2	0	4	3.223e-5	4	5.448e-4	3	4.388e-7	3
6		min	0	3	-.011	1	0	2	-3.997e-5	1	2.632e-4	2	-6.789e-5	2
7	N4	max	.002	2	-.015	2	.001	4	1.33e-4	4	4.319e-4	3	-1.311e-7	4
8		min	0	3	-.02	1	0	1	3.657e-6	2	1.836e-4	2	-1.07e-4	2
9	N5	max	0	4	-.016	2	0	1	-1.192e-6	2	4.092e-4	3	7.28e-4	2
10		min	-.004	2	-.022	1	-.003	4	-7.231e-4	4	1.681e-4	2	2.904e-8	4
11	N6	max	.008	2	-.019	2	.005	4	3.72e-3	4	3.905e-4	3	-1.744e-8	4
12		min	0	3	-.025	1	0	1	-1.955e-7	1	1.445e-4	2	-3.756e-3	2
13	N7	max	.819	2	-.02	2	.811	4	7.562e-3	4	3.905e-4	3	-1.744e-8	4
14		min	0	3	-.027	1	0	1	-1.955e-7	1	1.445e-4	2	-7.598e-3	2
15	N8	max	0	2	-.596	4	0	4	4.507e-3	1	1.148e-3	4	-2.353e-3	4
16		min	0	3	-.792	1	0	1	2.723e-3	4	-7.248e-4	2	-3.977e-3	1
17	N9	max	0	2	-.592	2	0	4	4.508e-3	1	-4.595e-4	3	3.93e-3	1
18		min	0	4	-.792	3	0	2	3.504e-3	4	-7.263e-4	2	3.047e-3	4
19	N10	max	0	2	-.54	4	0	4	-1.937e-3	4	2.382e-3	3	-2.299e-3	4
20		min	0	4	-.872	1	0	2	-3.805e-3	1	2.089e-3	2	-4.442e-3	1
21	N11	max	0	2	-.541	2	0	4	-2.072e-3	2	2.146e-3	1	5.982e-3	3
22		min	0	3	-.867	3	0	1	-5.153e-3	3	-1.714e-3	4	2.398e-3	2
23	N12	max	0	2	-.214	4	0	3	-9.074e-4	4	1.835e-3	3	-1.147e-3	4
24		min	0	3	-.381	1	0	2	-2.223e-3	1	1.482e-3	2	-2.734e-3	1
25	N13	max	0	2	-.205	2	0	2	-1.015e-3	2	1.611e-3	1	4.124e-3	3
26		min	0	3	-.38	3	0	3	-3.357e-3	3	-1.526e-3	4	1.139e-3	2
27	N14	max	0	1	-.012	2	0	4	5.262e-4	1	-1.614e-4	4	4.388e-7	3
28		min	0	4	-.016	3	0	2	3.597e-4	4	-4.525e-4	1	-6.789e-5	2
29	N15	max	0	2	-.022	4	0	4	3.324e-6	4	7.313e-5	4	-2.594e-4	4
30		min	0	4	-.036	1	0	2	-2.172e-4	1	-7.634e-6	1	-5.304e-4	1

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
31	N16	max	0	2	-.019	2	0	2	-1.011e-4	4	4.278e-5	2	7.063e-4	3
32		min	0	3	-.035	3	0	3	-2.428e-4	3	-3.936e-4	3	1.147e-4	2
33	N17	max	0	1	-.018	2	0	4	5.134e-4	3	-1.311e-4	4	-1.311e-7	4
34		min	0	4	-.025	3	0	1	3.185e-4	2	-3.641e-4	1	-1.07e-4	2
35	N18	max	0	4	-.003	2	0	2	-1.397e-4	2	-7.523e-5	4	4.509e-4	2
36		min	0	2	-.048	3	0	4	-8.946e-4	3	-1.07e-4	1	-5.34e-4	3
37	N19	max	0	3	-.035	4	0	3	-1.398e-4	2	-7.683e-5	2	1.117e-3	1
38		min	0	2	-.055	1	0	2	-9.352e-4	3	-2.457e-4	3	3.723e-4	4
39	N20	max	0	3	-.008	4	0	1	9.124e-5	1	3.121e-4	2	7.28e-4	2
40		min	0	2	-.023	1	0	4	-4.743e-4	4	-1.881e-4	3	2.904e-8	4
41	N21	max	0	2	.03	4	0	4	3.637e-3	4	2.194e-4	4	-1.659e-4	4
42		min	0	4	-.136	2	0	2	-1.774e-4	1	1.115e-4	1	-3.889e-3	2
43	N22	max	0	2	.089	2	0	2	3.462e-3	4	1.704e-4	2	7.345e-4	3
44		min	0	3	.006	3	0	3	-1.774e-4	1	-4.874e-4	3	-3.623e-3	2
45	N23	max	0	1	-.025	2	0	4	3.957e-3	4	-1.177e-4	4	-1.744e-8	4
46		min	0	4	-.077	3	0	1	5.995e-4	2	-8.354e-4	2	-3.756e-3	2
47	N24	max	.004	2	-.005	2	.006	3	-9.437e-7	1	5.412e-4	3	7.769e-6	1
48		min	0	3	-.007	1	.003	2	-1.729e-5	4	3.324e-4	2	5.706e-7	4
49	N25	max	.015	2	-.01	2	.011	4	1.085e-4	4	5.166e-4	3	-9.162e-8	4
50		min	0	3	-.013	1	-.002	1	-9.354e-6	1	2.433e-4	2	-1.202e-4	2
51	N26	max	.003	1	-.014	2	0	3	1.085e-5	1	4.46e-4	3	8.187e-5	1
52		min	0	3	-.019	1	0	1	-5.701e-5	3	1.936e-4	2	-3.782e-7	3
53	N27	max	0	4	-.017	2	0	2	4.379e-8	1	4.026e-4	3	1.071e-3	2
54		min	-.083	2	-.023	1	-.082	4	-1.09e-3	4	1.598e-4	2	0	4

Envelope AISC ASD Steel Code Checks

	Me...	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Fa ...	Ft [...	Fb y-y [ksi]	Fb	...	AS...
1	M1	PIPE_1...	.560	90.927	1	.031	91.984		4	1.9..	30	33	33	1 .6	H1-1
2	M6	L5x5x6	.040	0	4	.011	15.052	y	1	4.45	21.6	- Code check b...			H1-1
3	M7	L5x5x6	.039	0	4	.011	15.052	y	1	4.45	21.6	- Code check b...			H1-1
4	M8	L4x4x4	.054	0	2	.012	13.288	y	1	3.6..	21.6	- Code check b...			H1-1
5	M9	L4x4x4	.011	0	2	.012	13.288	z	4	3.6..	21.6	- Code check b...			H2-1
6	M10	L3x3x3	.128	0	2	.010	8.918	z	4	4.4..	21.6	- Code check b...			H1-1
7	M11	L3x3x3	.027	0	2	.012	8.918	z	3	4.4..	21.6	- Code check b...			H2-1
8	M12	L2x2x3	.057	0	4	.010	0	z	1	19...	21.6	- Code check b...			H1-1
9	M13	L2x2x3	.120	0	2	.005	2.795	z	3	14...	21.6	- Code check b...			H1-1
10	M14	L2x2x3	.081	0	2	.004	2.795	z	3	14...	21.6	- Code check b...			H2-1
11	M15	L2x2x3	.138	0	4	.008	0	z	1	19...	21.6	- Code check b...			H1-1
12	M16	L2x2x3	.149	2.795	2	.006	2.795	z	3	14...	21.6	- Code check b...			H2-1
13	M17	L2x2x3	.219	2.795	2	.004	2.795	z	3	14...	21.6	- Code check b...			H1-1
14	M18	L2x2x3	.227	0	4	.006	.169	z	3	19...	21.6	- Code check b...			H2-1
15	M19	L2x2x3	.407	0	2	.005	2.795	z	3	14...	21.6	- Code check b...			H1-1
16	M20	L2x2x3	.276	0	2	.004	2.795	z	3	14...	21.6	- Code check b...			H2-1
17	M21	L2x2x3	.470	0	4	.012	0	z	1	19...	21.6	- Code check b...			H1-1

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.09	13.102	.169	.526	-2.218	.211
2	1	N21	-3.364	0	1.674	0	0	0
3	1	N22	-3.363	0	-1.674	0	0	0
4	1	N23	-.053	0	.002	0	0	0
5	1	N18	1.779	0	-.895	0	0	0
6	1	N20	-.01	0	-.01	0	0	0
7	1	N19	1.776	0	.893	0	0	0
8	1	N16	-1.008	0	-.498	0	0	0
9	1	N17	-.036	0	.017	0	0	0
10	1	N15	-1.014	0	.501	0	0	0
11	1	N13	-.486	0	-.336	0	0	0
12	1	N14	-.046	0	-.021	0	0	0
13	1	N12	-.482	0	.333	0	0	0
14	1	N9	-.312	0	.301	0	0	0
15	1	N11	-.367	0	-.201	0	0	0
16	1	N10	-.311	0	.152	0	0	0
17	1	N8	-.406	0	-.406	0	0	0
18	1	Totals:	-7.792	13.102	0			
19	1	COG (ft):	X: 0	Y: 67.287	Z: -1.16			

Joint Reactions

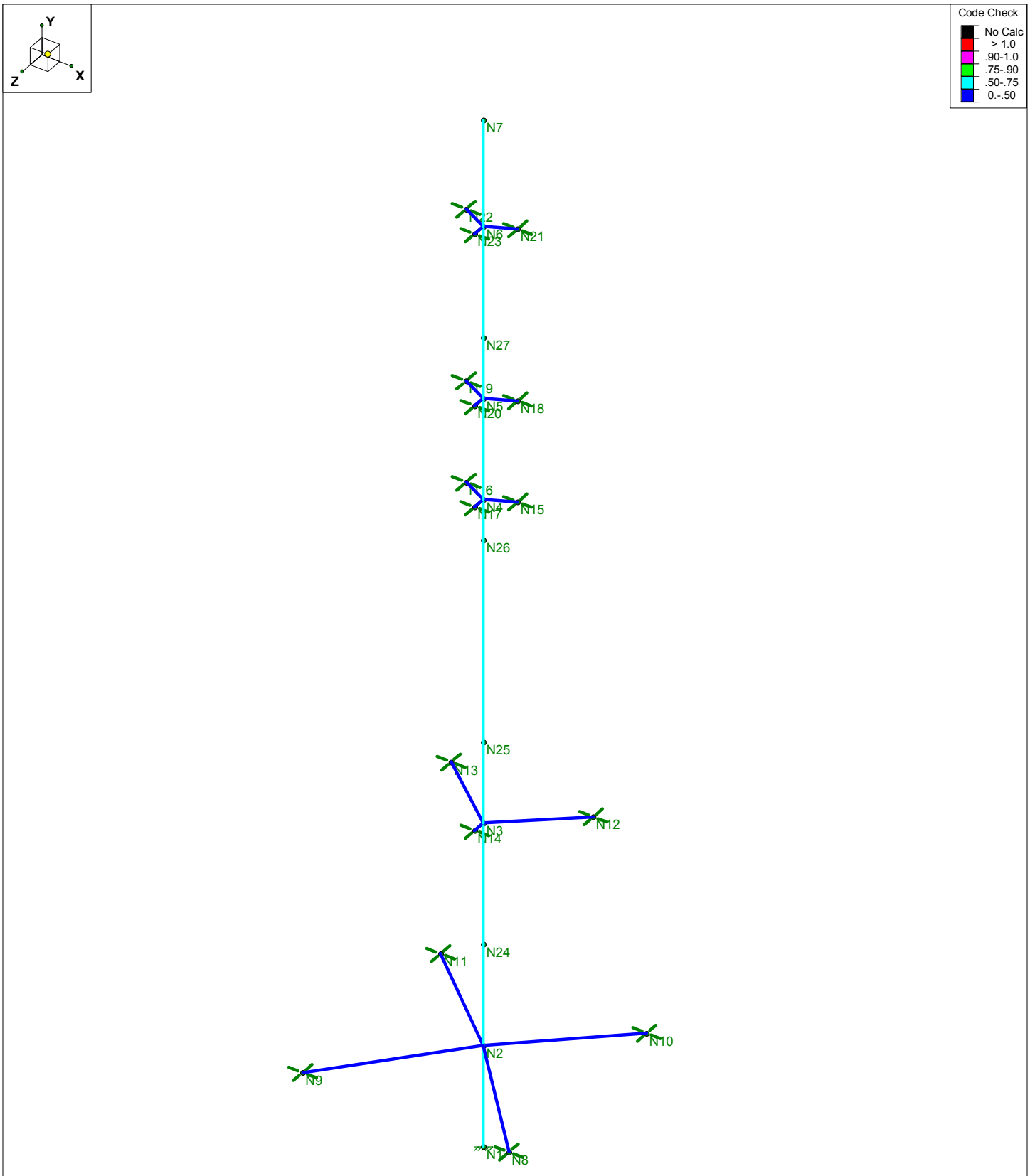
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.096	9.893	.143	.445	-1.58	.225
2	2	N21	-3.855	0	1.92	0	0	0
3	2	N22	-3.854	0	-1.92	0	0	0
4	2	N23	-.048	0	.001	0	0	0
5	2	N18	2.046	0	-1.028	0	0	0
6	2	N20	.002	0	-.007	0	0	0
7	2	N19	2.043	0	1.026	0	0	0
8	2	N16	-1.131	0	-.56	0	0	0
9	2	N17	-.027	0	.012	0	0	0
10	2	N15	-1.135	0	.562	0	0	0
11	2	N13	-.514	0	-.366	0	0	0
12	2	N14	-.033	0	-.02	0	0	0
13	2	N12	-.51	0	.363	0	0	0
14	2	N9	-.369	0	.335	0	0	0
15	2	N11	-.388	0	-.225	0	0	0
16	2	N10	-.342	0	.184	0	0	0
17	2	N8	-.446	0	-.422	0	0	0
18	2	Totals:	-8.656	9.893	0			
19	2	COG (ft):	X: 0	Y: 66.156	Z: -1.135			

Joint Reactions

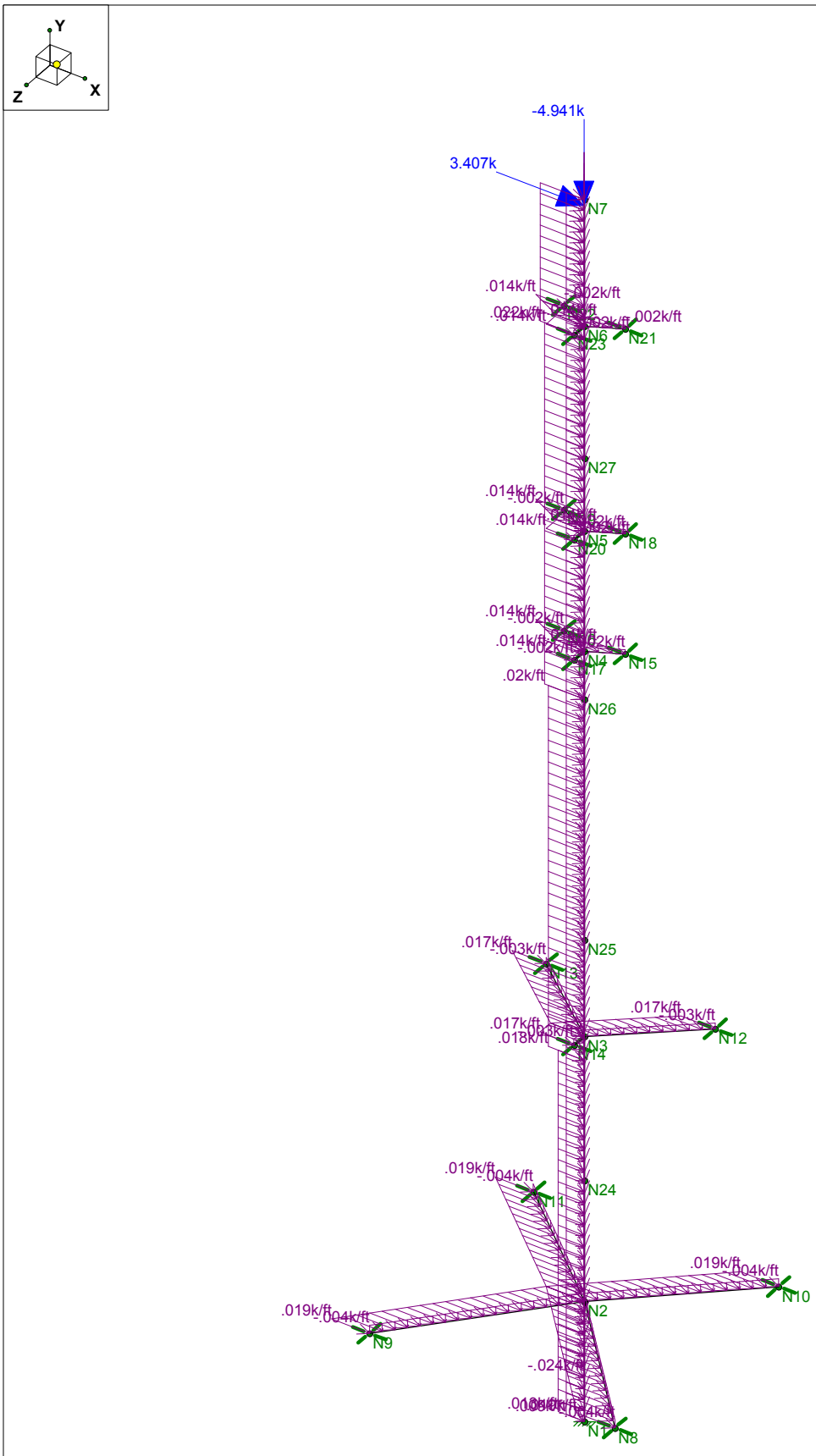
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	-.002	13.102	.075	.311	-2.18	.008
2	3	N21	1.036	0	-.532	0	0	0
3	3	N22	-1.012	0	-.525	0	0	0
4	3	N23	-.025	0	-5.718	0	0	0
5	3	N18	-.535	0	.257	0	0	0
6	3	N20	-.026	0	3.076	0	0	0
7	3	N19	.561	0	.263	0	0	0
8	3	N16	-.294	0	-.166	0	0	0
9	3	N17	-.027	0	-1.714	0	0	0
10	3	N15	.322	0	-.173	0	0	0
11	3	N13	-.071	0	-.101	0	0	0
12	3	N14	-.034	0	-.759	0	0	0
13	3	N12	.105	0	-.157	0	0	0
14	3	N9	.37	0	-.453	0	0	0
15	3	N11	-.236	0	-.263	0	0	0
16	3	N10	.185	0	-.294	0	0	0
17	3	N8	-.317	0	-.535	0	0	0
18	3	Totals:	0	13.102	-7.718			
19	3	COG (ft):	X: 0	Y: 67.287	Z: -1.16			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	-.001	9.893	.043	.216	-1.522	.007
2	4	N21	1.182	0	-.603	0	0	0
3	4	N22	-1.165	0	-.599	0	0	0
4	4	N23	-.016	0	-6.555	0	0	0
5	4	N18	-.623	0	.302	0	0	0
6	4	N20	-.017	0	3.541	0	0	0
7	4	N19	.64	0	.306	0	0	0
8	4	N16	-.337	0	-.184	0	0	0
9	4	N17	-.018	0	-1.93	0	0	0
10	4	N15	.356	0	-.189	0	0	0
11	4	N13	-.081	0	-.116	0	0	0
12	4	N14	-.023	0	-.799	0	0	0
13	4	N12	.103	0	-.149	0	0	0
14	4	N9	.385	0	-.498	0	0	0
15	4	N11	-.243	0	-.294	0	0	0
16	4	N10	.207	0	-.309	0	0	0
17	4	N8	-.348	0	-.564	0	0	0
18	4	Totals:	0	9.893	-8.596			
19	4	COG (ft):	X: 0	Y: 66.156	Z: -1.135			

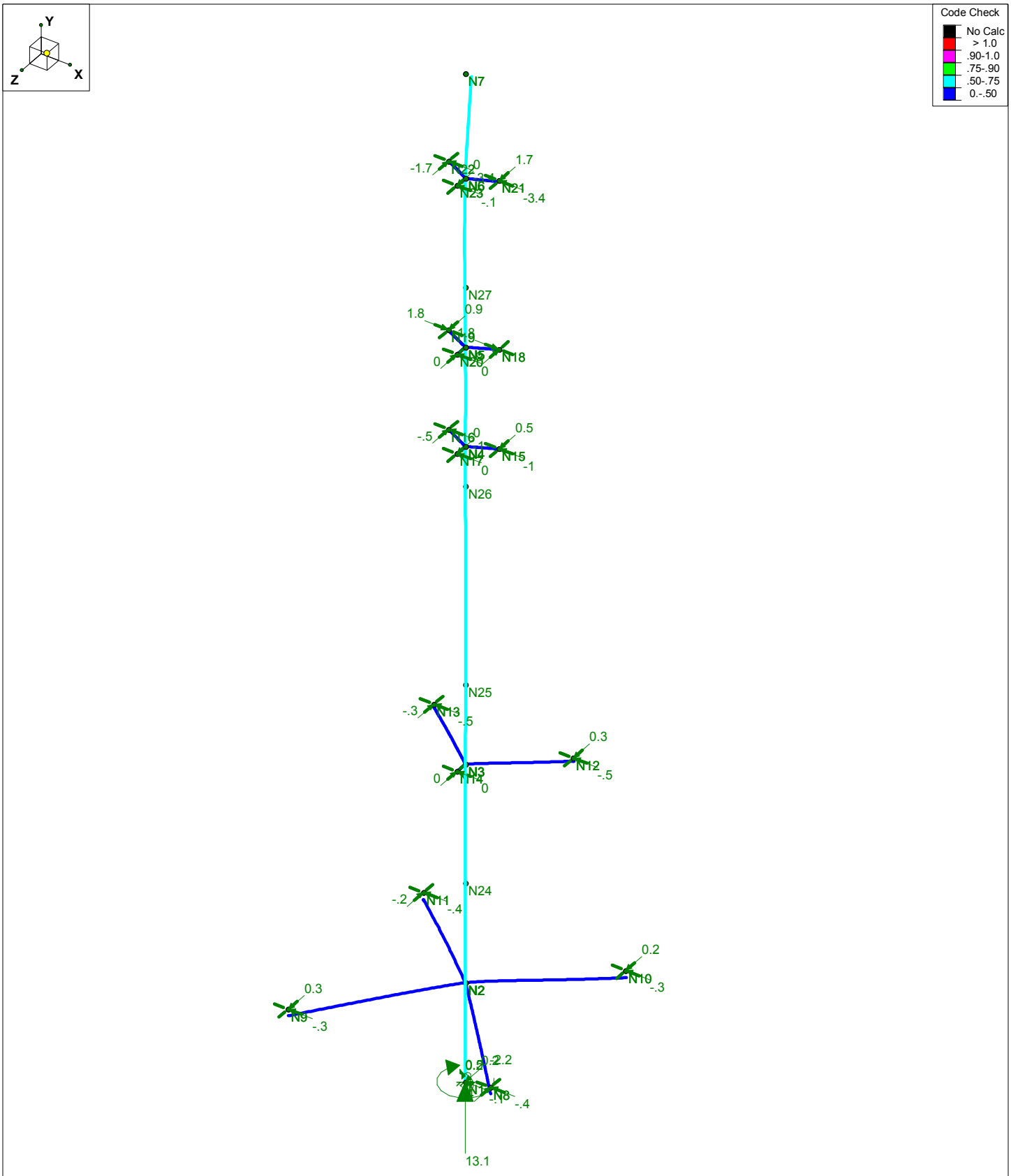


CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:51 AM
16002.004 - CT5090	Unity Check	EIA-TIA - Powermount.r3d

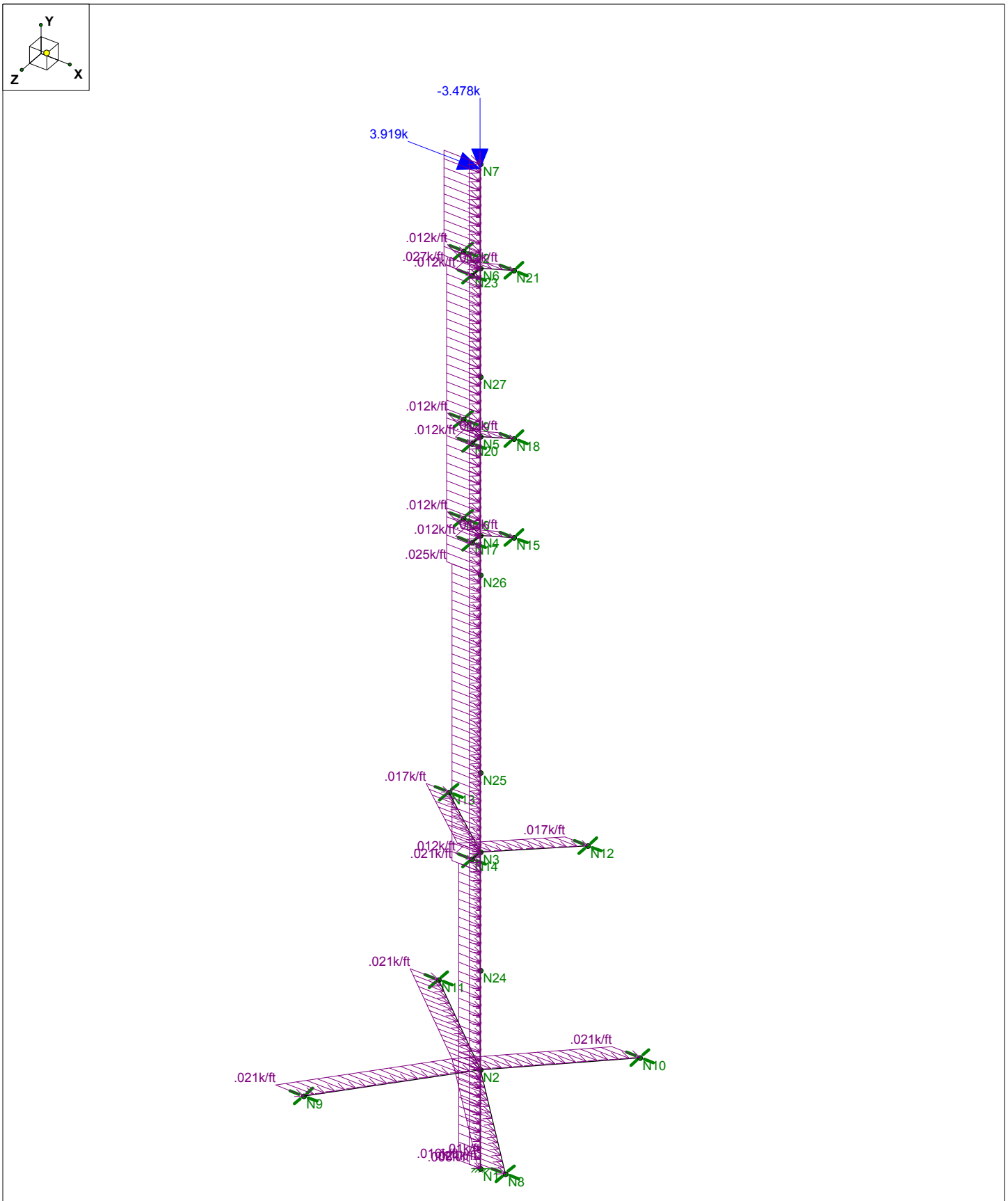


Loads: LC 1, (x) TIA/EIA Wind + Ice

CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:49 AM
16002.004 - CT5090	LC #1 Loads	EIA-TIA - Powermount.r3d

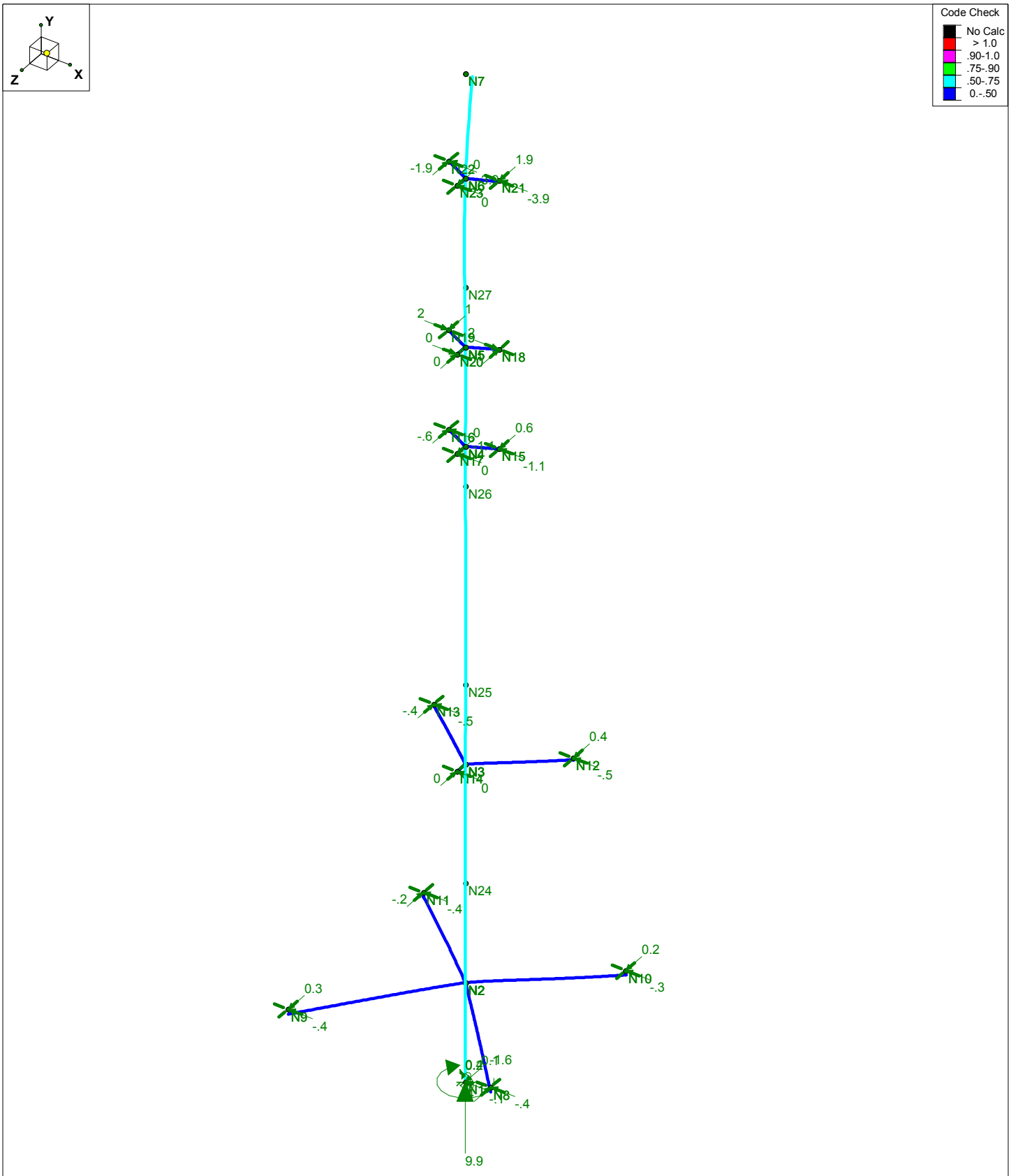


CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:52 AM
16002.004 - CT5090	LC #1 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

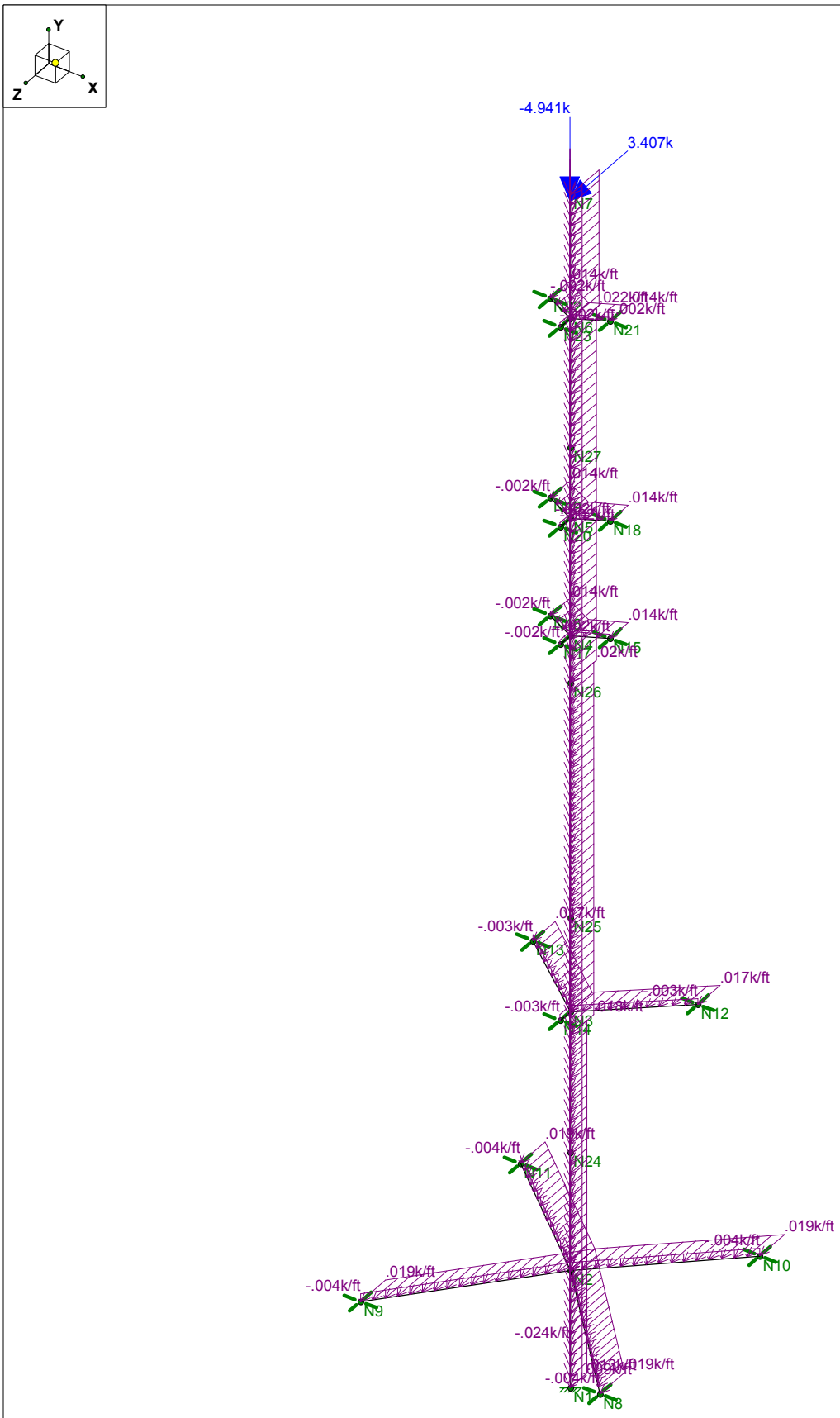


Loads: LC 2, (x) TIA/EIA Wind

CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:49 AM
16002.004 - CT5090	LC #2 Loads	EIA-TIA - Powermount.r3d

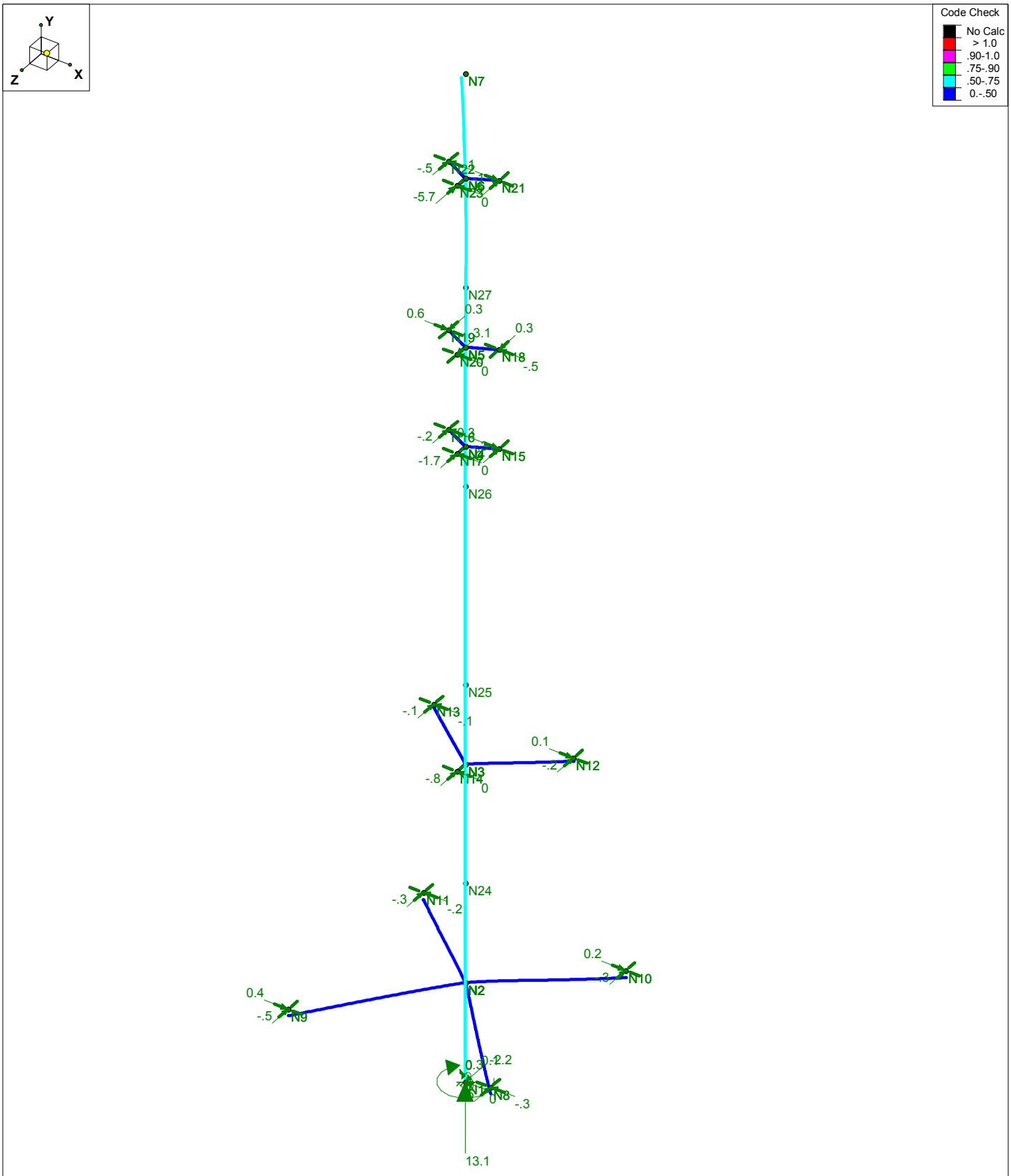


CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:53 AM
16002.004 - CT5090	LC #2 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

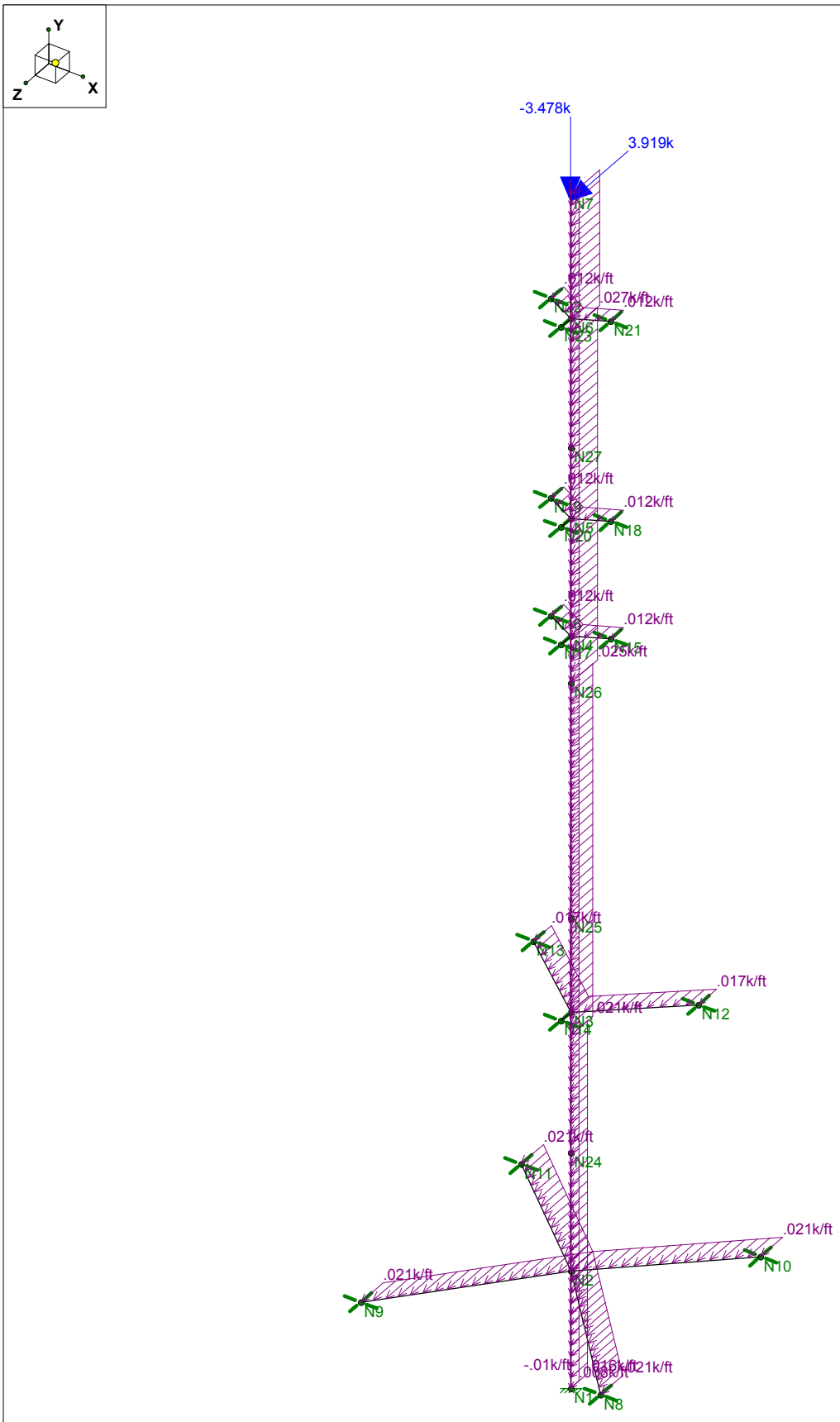


Loads: LC 3, (z) TIA/EIA Wind + Ice

CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:50 AM
16002.004 - CT5090	LC #3 Loads	EIA-TIA - Powermount.r3d

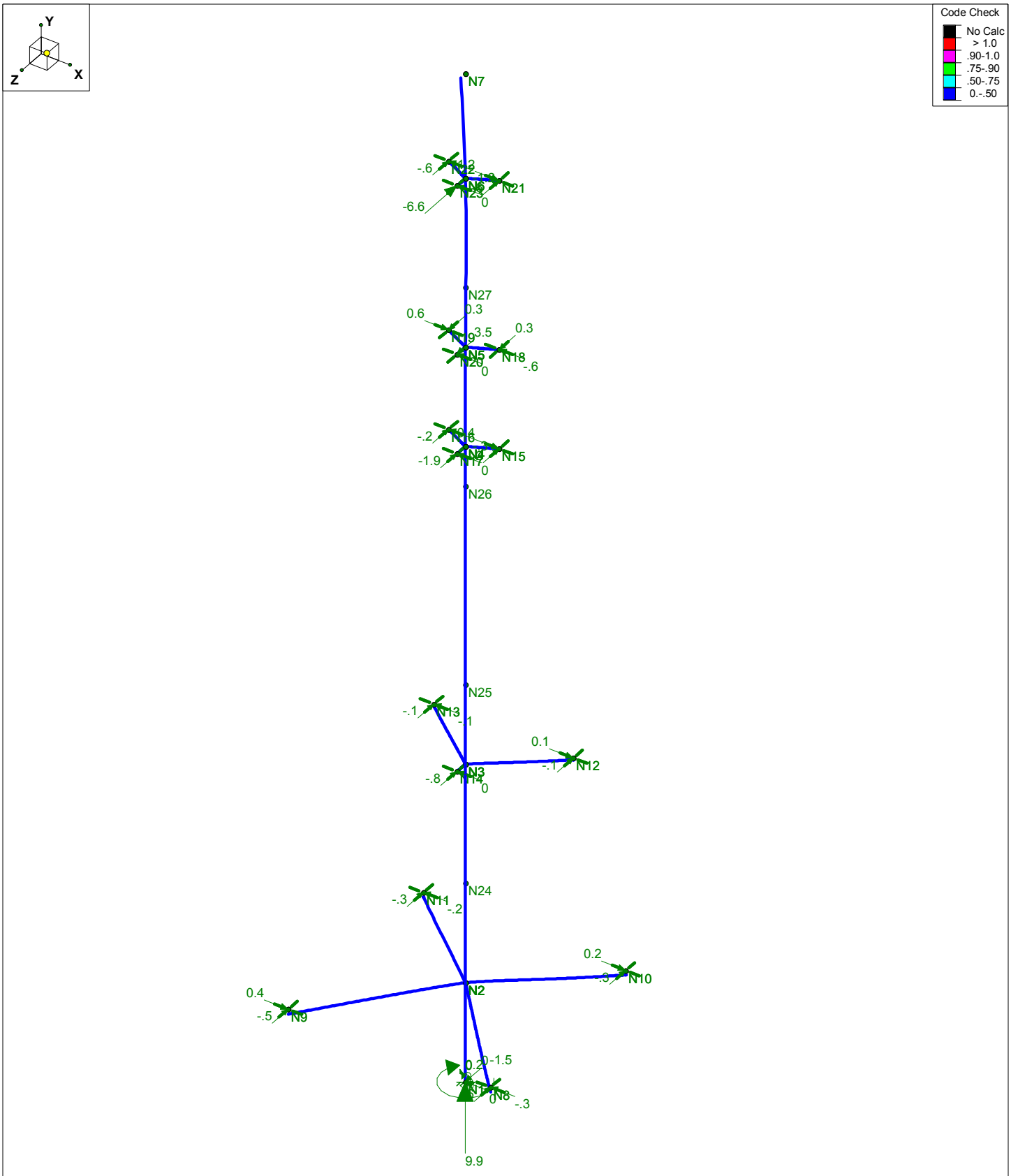


CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:54 AM
16002.004 - CT5090	LC #3 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d



Loads: LC 4, (z) TIA/EIA Wind

CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:50 AM
16002.004 - CT5090	LC #4 Loads	EIA-TIA - Powermount.r3d



CENTEK Engineering, INC.		
tjl, cfc	Tower # 833 - Antenna Mast	June 2, 2016 at 10:56 AM
16002.004 - CT5090	LC #4 Reactions and Deflected Shape	EIA-TIA - 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 # 833

Location: Trumbull, CT

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.004

Rev. 0: 6/2/16

Antenna Mast Connection to Tower:

Pipe Collar:

Reactions:

Horz = $Horz := 8 \cdot kips$ (User Input)

Bolt Data:

Bolt Type = ASTM A325 (User Input)

Bolt Diameter = $D := 0.625 \cdot in$ (User Input)

Number of Bolts = $N_b := 4$ (User Input)

Allowable Tensile Strength = $F_t := 13.8 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 8.3 \cdot kips$ (User Input)

Check Pipe Collar Bolts:

Tension Force = $f_t := \frac{Horz}{N_b} = 2 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 14.49 \cdot \%$

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

$Bolt\_Tension = "OK"$

Angle Brace:

Reactions:

Angle Brace Force = $Fab := 6.5 \cdot kips$ (User Input)

Bolt Data:

Bolt Type = ASTM A325 (User Input)

Bolt Diameter = $D := 0.625 \cdot in$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Allowable Tensile Strength = $F_t := 13.8 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 8.3 \cdot kips$ (User Input)

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 6.5 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 78.31 \cdot \%$

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

$Bolt\_Shear = "OK"$

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:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

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 := 102	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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.271$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.312$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.852$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.869$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.2$ psf (NESC 2007 Section 250.C.2)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

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 =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 862$	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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Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

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 =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1519$	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 TMA's

TMA Data: (AT&T)

TMA Model =	Powerwave LGP17201		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 13.9$	in	(User Input)
TMA Width =	$W_{TMA} := 14.4$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.7$	in	(User Input)
TMA Weight =	$WT_{TMA} := 31$	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 =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 1.4$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 8.3$	sf	
Total TMA Wind Force =	$F_{TMA1} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 571$	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 =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1.6$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 9.6$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA1} := p \cdot Cd_F \cdot A_{ICETMA} = 61$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA1} := (WT_{TMA} \cdot N_{TMA}) = 186$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 741$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 338$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 11$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA1} := W_{ICETMA} \cdot N_{TMA} = 66$	lbs	**BLC 3**

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

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

Wind Load (NESC Extreme Wind)

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

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 1.1$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 6.8$	sf	
Total TMA Wind Force =	$F_{TMA2} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 466$	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 =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 7.9$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA2} := p \cdot Cd_F \cdot A_{ICETMA} = 51$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA2} := (WT_{TMA} \cdot N_{TMA}) = 120$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 681$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 301$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA2} := W_{ICETMA} \cdot N_{TMA} = 59$	lbs	**BLC 3**

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Subject:	Load Analysis of Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

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 = $F_{mnt1} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 724$ 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 @ 101-ft AGL

NESC Heavy Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{TMA1} + Wt_{ice.TMA1} + Wt_{TMA2} + Wt_{ice.TMA2} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 7410$$

NESC Heavy Wind Trasnsverse =

$$\left(Fi_{ant1} + Fi_{ant2} + Fi_{TMA1} + Fi_{TMA2} + Fi_{mnt1}\right)\cdot 2.5 = 1102$$

NESC Extreme Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ant2} + Wt_{TMA1} + Wt_{TMA2} + Wt_{mnt1}\right) = 3478$$

NESC Extreme Wind Trasnsverse =

$$\left(F_{ant1} + F_{ant2} + F_{TMA1} + F_{TMA2} + F_{mnt1}\right) = 4142$$

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Subject:	Coax Cable on Antenna Mast on Tower # 833
Location:	Trumbull, CT
Rev. 0: 6/2/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.004

Coax Cable on Antenna Mast

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 5 \\ 13.5 \\ 13.5 \\ 21 \\ 27.25 \\ 21.25 \end{pmatrix} \cdot ft$ *(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 =	$N_{coax} := 18$	*(User Input)*	(12 Cables inside Powermount 6 outside)
Number of Projected Coax Cables Transverse =	$NP_{coax} := 2$	*(User Input)*	
Number of Coax Cables Outside Mast =	$NE_{coax} := 6$	*(User Input)*	
Extreme Wind Pressure =	$qz := 34.2 \cdot psf$	*(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 =	$W_{ice} := Ai_{coax} \cdot Id \cdot NE_{coax} = 5.901 \cdot plf$

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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 117 \\ 316 \\ 316 \\ 492 \\ 639 \\ 498 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 21 \\ 58 \\ 58 \\ 90 \\ 117 \\ 91 \end{pmatrix} lb$$

Extreme Vertical Load =

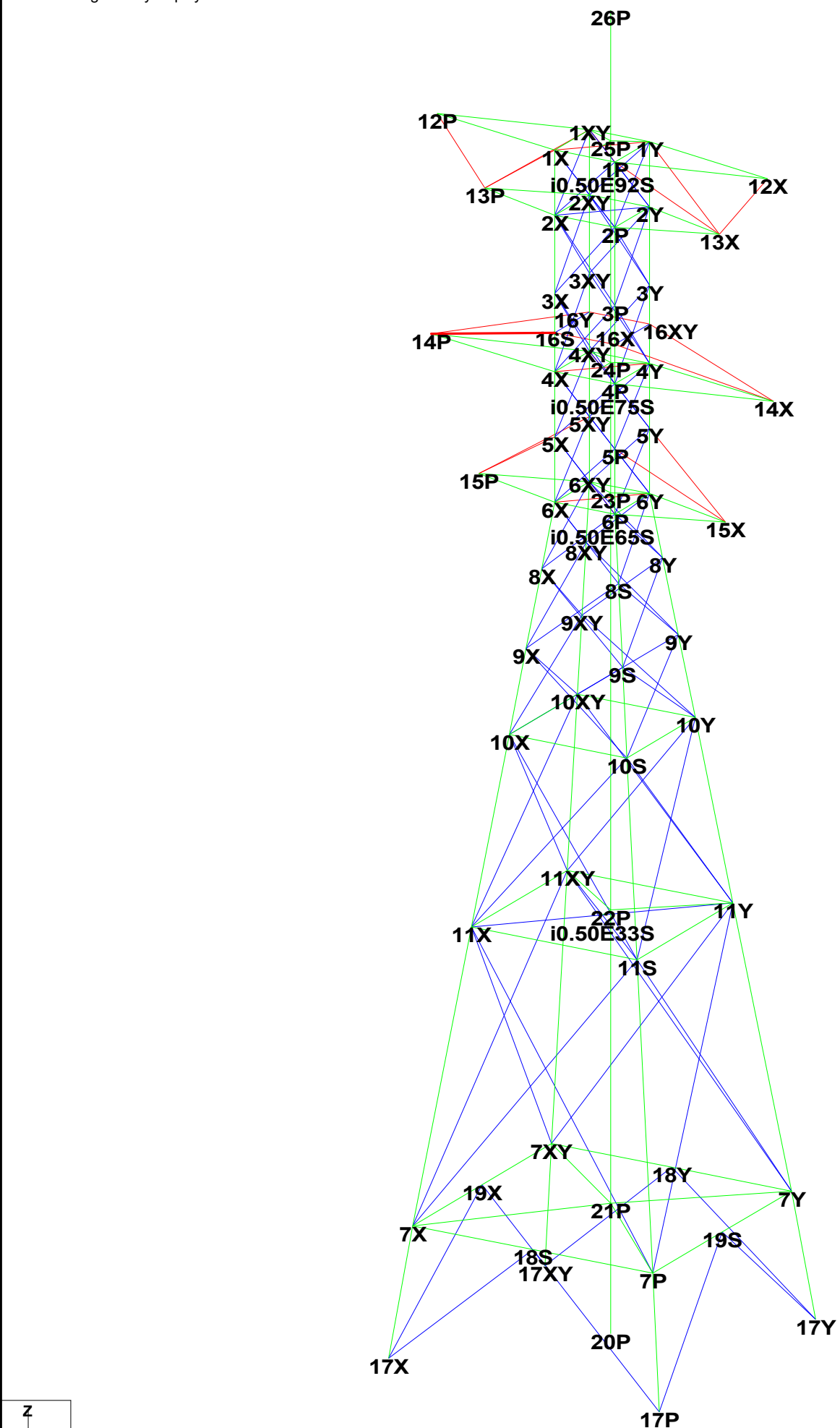
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

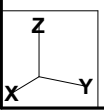
Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 49 \\ 131 \\ 131 \\ 204 \\ 265 \\ 207 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 51 \\ 137 \\ 137 \\ 213 \\ 276 \\ 215 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p # 833"
Tower Version 12.50, 10:20:44 AM Monday, August 01, 2016
Undeformed geometry displayed





Project Name : 16002.004 - Trumbull, CT
Project Notes: Structure # 833/ AT&T CT5090
Project File : J:\Jobs\1600200.WI\04_Trumbull South East - CT5090\04_Structural\Backup Documentation\Rev (1)\Calcs\PLS Tower\cl&p # 833.tow
Date run : 10:19:23 AM Monday, August 01, 2016
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block 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 "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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KL/R value of 234.00 exceeds maximum of 200.00 for member "g29P" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29X" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29XY" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29Y" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30P" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30X" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30XY" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30Y" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41P" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41X" ??
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69P" ??
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69X" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71P" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71X" ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 83 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\1600200.wi\04_trumbull south east - ct5090\04_structural\backup documentation\rev (1)\calcs\pls tower\cl&p # 833.lca

*** Analysis Results:

Maximum element usage is 97.43% for Angle "g38P" in load case "NESC Extreme"

Maximum insulator usage is 16.01% for Clamp "9" 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	17P	-3.73	-4.62	-28.69	5.94	-0.02	0.01	0.02	0.00	0.00
NESC Heavy	20P	-0.01	-0.25	-18.37	0.25	2.22	-0.03	2.22	0.03	0.00
NESC Heavy	17X	2.15	-3.13	17.18	3.80	-0.02	-0.01	0.02	0.07	0.00
NESC Heavy	17XY	-2.13	-3.38	17.51	3.99	-0.02	0.01	0.03	-0.12	0.00
NESC Heavy	17Y	3.72	-4.85	-28.90	6.11	-0.01	-0.01	0.02	0.00	0.00
NESC Extreme	17P	-6.24	-8.81	-47.61	10.79	-0.02	0.03	0.03	0.10	0.00
NESC Extreme	20P	0.01	-0.80	-7.41	0.80	5.04	0.14	5.04	-0.08	0.00
NESC Extreme	17X	4.96	-7.52	39.70	9.01	-0.03	-0.02	0.04	0.16	0.00
NESC Extreme	17XY	-4.95	-7.92	40.05	9.34	-0.05	0.02	0.06	-0.25	0.00
NESC Extreme	17Y	6.22	-9.19	-47.85	11.10	-0.02	-0.03	0.04	-0.15	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	17P	7P	g12X	29.285	0.999	1.009	0.116	1.002	-3.73	-4.62	-28.69
NESC Heavy	17X	7X	g12P	-17.567	0.959	0.966	0.013	0.966	2.15	-3.13	17.18
NESC Heavy	17XY	7XY	g12Y	-17.925	1.168	1.176	-0.080	1.173	-2.13	-3.38	17.51
NESC Heavy	17Y	7Y	g12XY	29.519	1.204	1.215	-0.073	1.213	3.72	-4.85	-28.90
NESC Extreme	17P	7P	g12X	48.742	2.791	2.817	0.241	2.806	-6.24	-8.81	-47.61
NESC Extreme	17X	7X	g12P	-40.636	2.502	2.521	0.046	2.520	4.96	-7.52	39.70
NESC Extreme	17XY	7XY	g12Y	-41.022	2.853	2.873	-0.097	2.872	-4.95	-7.92	40.05
NESC Extreme	17Y	7Y	g12XY	49.016	3.140	3.167	-0.190	3.162	6.22	-9.19	-47.85

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	101.500	47.000	55	180	0.00	9.82	289.644	0.00	9.82	568.644
2	47.000	0.000	25	62	9.82	22.52	764.206	9.82	22.52	764.206

*** 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 Strength	Max Usage Cont-rol	Max Use In Comp.	Comp. Control Member	Comp. Force	Comp. Control Load Case	L/R Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R KL/R	Length Comp.	Curve No.	Of Member	Bolts

Comp.

(ft)

				(ksi)	%		%		(kips)		(kips)	(kips)	(kips)									
LEG1	L4X4X1/4	SAE	4X4X0.25	33.0	58.98	Comp	58.98	g6X	-31.558	NESC Ext	53.509	109.200	168.750	1.000	1.000	1.000	75.47	75.47	5.000	1	12	
LEG2	L4X4X5/16	SAE	4X4X0.3125	33.0	66.97	Comp	66.97	g9X	-37.613	NESC Ext	56.161	91.000	175.781	1.000	1.000	1.000	100.46	100.46	6.622	1	10	
LEG3	L4X4X3/8	SAE	4X4X0.375	33.0	57.73	Comp	57.73	g10XY	-34.619	NESC Ext	59.963	91.000	210.937	0.500	0.500	0.500	112.48	112.48	14.772	1	10	
XBR1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	33.72	Comp	33.72	g13Y	-3.897	NESC Ext	11.559	18.200	21.094	0.750	0.500	0.500	123.69	122.85	7.071	5	2	
XBR2	L3X2X3/16	SAU	3X2X0.1875	33.0	35.67	Comp	35.67	g17Y	-6.163	NESC Ext	17.275	27.300	31.641	0.500	0.750	0.500	120.57	120.47	7.810	5	3	
XBR3	L2X2X3/16	SAE	2X2X0.1875	33.0	18.35	Cross	18.35	g24Y	-1.982	NESC Ext	10.802	18.200	21.094	0.779	1.000	0.559	147.90	137.16	7.604	6	2	
XBR4	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	14.70	Cross	14.70	g26X	-1.300	NESC Ext	8.840	18.200	21.094	0.563	1.000	0.563	188.20	161.94	9.410	6	2	
XBR5	L2.5x2.5x3/16	SAE	2.5X2.5X0.3125	36.0	88.24	Comp	88.24	g30Y	-6.734	NESC Ext	7.632	33.600	33.984	0.792	0.584	0.584	269.55	234.00	18.808	5	2	
HORZ1	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	75.84	Tens	52.56	g36X	-4.783	NESC Ext	10.506	9.100	10.547	1.000	0.500	0.500	148.55	148.55	9.817	4	1	
HORZ2	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	97.43	Tens	78.38	g38X	-11.022	NESC Ext	15.230	21.200	14.062	0.500	0.500	0.500	156.90	156.90	13.807	4	1	
ARM1	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	7.59	Comp	7.59	g44Y	-2.071	NESC Hea	28.509	27.300	42.187	1.000	0.500	0.500	97.38	108.69	7.669	3	3	
ARM2	L3.5X2.5X1/4	SAU	3.5X2.5X0.25	33.0	10.40	Comp	10.40	g46Y	-2.619	NESC Hea	25.189	27.300	42.187	1.000	0.500	0.500	132.50	127.69	12.013	6	3	
M1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	35.06	Comp	35.06	g53P	-2.033	NESC Ext	5.799	9.100	10.547	1.000	1.000	1.000	174.93	174.93	5.000	4	1	
M2	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	26.89	Tens	19.03	g54X	-1.732	NESC Ext	11.437	9.100	10.547	1.500	1.000	1.000	123.69	123.69	3.536	4	1	
M3	L2.5X2.5X3/16	SAE	2.5X2.5X0.1875	33.0	12.16	Comp	12.16	g58X	-1.106	NESC Hea	10.714	9.100	10.547	1.000	1.000	1.000	155.23	155.23	6.403	4	1	
M4	BAR 1.75X1/4	Bar	1-3/4x1/4	33.0	28.21	Tens	0.00	g62Y	0.000		2.174	9.100	14.062	1.000	1.000	1.000	240.00	240.00	5.000	4	1	
XBR6	L4x4x5/16	SAE	4X4X0.3125	36.0	86.02	Cross	86.02	g32Y	-12.818	NESC Ext	14.902	33.600	33.984	0.667	1.000	0.333	273.99	214.70	28.312	6	2	
LEG4	L4x4x5/16	SAE	4X4X0.3125	33.0	68.90	Comp	68.90	g12X	-45.232	NESC Ext	65.648	91.000	175.781	0.500	0.500	0.500	77.05	77.05	10.158	1	10	
XBR7	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	45.25	Comp	45.25	g33XY	-4.118	NESC Ext	14.836	9.100	14.062	1.000	0.500	0.500	166.68	166.68	15.112	4	1	
HORZ3	**L4x3x1/4**	**SAU**	**4X3X0.25**	**33.0**	**79.93**	**Tens**	**61.09**	**g40X**	**-5.559**	**NESC Ext**	**13.759**	**9.100**	**14.062**	**2.000**	**1.000**	**1.000**	**187.50**	**187.50**	**10.000**	**4**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g40P g40X g40XY g40Y ??**
Pwmnt	12" Std Pipe	Pwmnt	Pipe 12" Std.	50.0	2.84	Comp	2.84	g65P	-12.866	NESC Hea	452.775	0.000	0.000	1.000	1.000	1.000	87.47	87.47	32.000	1	0	
Brace2	L5x5x3/8	SAE	5X5X0.375	36.0	3.98	Comp	3.98	g70X	-0.669	NESC Ext	31.040	16.800	20.391	1.000	1.000	1.000	182.45	182.45	15.052	4	1	
Brace1	L4x4x1/4	SAE	4X4X0.25	36.0	7.43	Comp	7.43	g69X	-1.010	NESC Ext	13.803	16.800	13.594	1.000	1.000	1.000	200.57	200.57	13.288	4	1	
Brace3	L3x3x3/16	SAE	3X3X0.1875	36.0	7.89	Tens	2.28	g71X	-0.220	NESC Hea	9.665	16.800	10.195	1.000	1.000	1.000	179.66	179.66	8.923	4	1	
Brace4	**L2x2x3/16**	**SAE**	**2X2X0.1875**	**36.0**	**41.24**	**Tens**	**39.34**	**g81X**	**-4.011**	**NESC Ext**	**17.105**	**16.800**	**10.195**	**1.000**	**1.000**	**1.000**	**85.13**	**102.56**	**2.795**	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g76P g81P ??**
InBr	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	7.92	Tens	0.07	ig41P71X	-0.002	NESC Hea	3.080	9.100	10.547	1.000	1.000	1.000	274.38	274.38	9.763	4	1	

M5	L2x2x1/4	SAE	2X2X0.25	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
M2a	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	8.26	Comp	8.26	g83P	-0.479	NESC Hea	5.799	9.100	10.547	1.000	1.000	1.000	174.93	174.93	5.000	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	L4X4X1/4	SAE	4X4X0.25	33.0	58.98	Comp	56.65	g6P	28.526	NESC Ext	50.351	109.200	168.750	220.588	5.000	12	2.410	0.6875
LEG2	L4X4X5/16	SAE	4X4X0.3125	33.0	66.97	Comp	58.16	g8P	34.597	NESC Ext	59.490	0.000	0.000	0.000	6.113	0	2.780	0.6875
LEG3	L4X4X3/8	SAE	4X4X0.375	33.0	57.73	Comp	47.34	g10Y	31.188	NESC Ext	65.879	91.000	210.937	281.250	14.772	10	3.350	0.6875
XBR1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	33.72	Comp	25.79	g13XY	3.762	NESC Ext	14.585	18.200	21.094	16.406	7.071	2	1.000	0.6875
XBR2	L3X2X3/16	SAU	3X2X0.1875	33.0	35.67	Comp	26.63	g17XY	6.099	NESC Ext	22.901	27.300	31.641	24.609	7.810	3	1.000	0.6875
XBR3	L2X2X3/16	SAE	2X2X0.1875	33.0	18.35	Cross	15.74	g24XY	1.934	NESC Ext	17.258	18.200	21.094	12.287	7.604	2	1.000	0.6875
XBR4	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	14.70	Cross	8.18	g26P	1.341	NESC Ext	20.228	18.200	21.094	16.406	9.410	2	1.000	0.6875
XBR5	L2.5x2.5x3/16	SAE	2.5X2.5X0.3125	36.0	88.24	Comp	31.45	g30XY	6.040	NESC Ext	40.343	33.600	33.984	19.207	18.808	2	1.000	0.6875
HORZ1	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	75.84	Tens	75.84	g36P	5.213	NESC Ext	17.444	9.100	10.547	6.873	9.817	1	1.000	0.6875
HORZ2	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	97.43	Tens	97.43	g38P	12.179	NESC Ext	30.090	21.200	14.062	12.500	13.807	1	1.000	0.6875
ARM1	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	7.59	Comp	5.35	g43P	1.535	NESC Hea	28.698	0.000	0.000	0.000	5.000	0	2.000	0.6875
ARM2	L3.5X2.5X1/4	SAU	3.5X2.5X0.25	33.0	10.40	Comp	0.00	g47Y	0.000		32.559	0.000	0.000	0.000	5.000	0	2.000	0.6875
M1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	35.06	Comp	31.44	g53X	2.161	NESC Ext	14.585	9.100	10.547	6.873	5.000	1	1.000	0.6875
M2	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	26.89	Tens	26.89	g54P	1.848	NESC Ext	14.585	9.100	10.547	6.873	3.536	1	1.000	0.6875
M3	L2.5X2.5X3/16	SAE	2.5X2.5X0.1875	33.0	12.16	Comp	0.00	g58X	0.000		22.961	9.100	10.547	8.203	6.403	1	1.000	0.6875
M4	BAR 1.75X1/4	Bar	1-3/4x1/4	33.0	28.21	Tens	28.21	g60Y	2.225	NESC Hea	7.889	9.100	14.062	10.937	12.382	1	1.000	0.6875
XBR6	L4x4x5/16	SAE	4X4X0.3125	36.0	86.02	Cross	52.60	g32XY	10.829	NESC Ext	70.799	33.600	33.984	20.590	28.312	2	1.000	0.6875
LEG4	L4x4x5/16	SAE	4X4X0.3125	33.0	68.90	Comp	62.92	g12Y	38.860	NESC Ext	61.759	91.000	175.781	172.334	10.158	10	2.460	0.6875
XBR7	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	45.25	Comp	38.58	g33Y	3.511	NESC Ext	30.238	9.100	14.062	14.706	15.112	1	1.000	0.6875
HORZ3	**L4x3x1/4**	**SAU**	**4X3X0.25**	**33.0**	**79.93**	**Tens**	**79.93**	**g40P**	**7.274**	**NESC Ext**	**37.663**	**9.100**	**14.062**	**17.883**	**10.000**	**1**	**1.000**	**0.6875**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g40P

g40X g40XY g40Y ??

```
  Pwmnt    12" Std Pipe Pwmnt    Pipe 12" Std.     50.0  2.84  Comp  0.00    g68P   0.000          679.999    0.000    0.000    0.000 10.000     0
0.000        0
 Brace2        L5x5x3/8   SAE        5X5X0.375     36.0  3.98  Comp  2.02    g70P   0.340NESC Hea  108.611   16.800   20.391   27.187 15.052     1
1.000   0.6875
 Brace1        L4x4x1/4   SAE         4X4X0.25     36.0  7.43  Comp  3.22    g69P   0.437NESC Hea   57.287   16.800   13.594   18.125 13.288     1
1.000   0.6875
 Brace3       L3x3x3/16   SAE       3X3X0.1875     36.0  7.89  Tens  7.89    g71P   0.805NESC Hea   31.139   16.800   10.195   13.594  8.923     1
1.000   0.6875
 Brace4       L2x2x3/16   SAE       2X2X0.1875     36.0 41.24  Tens 41.24    g81P   4.205NESC Ext   18.827   16.800   10.195   13.594  2.795     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g76P
g81P  ??
   InBr     L2.5X2X3/16   SAU     2.5X2X0.1875     33.0  7.92  Tens  7.92    g41P   0.720NESC Hea   20.228    9.100   10.547    9.334  9.763     1
1.000   0.6875
     M5        L2x2x1/4   SAE         2X2X0.25     36.0  0.00        0.00           0.000            0.000    0.000    0.000    0.000  0.000     0
0.000        0
    M2a L1.75X1.75X3/16   SAE 1.75X1.75X0.1875     33.0  8.26  Comp  3.30    g55P   0.227NESC Ext   14.585    9.100   10.547    6.873  7.071     1
1.000   0.6875
```

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	55.71	g38P	Angle
NESC Extreme	97.43	g38P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	1.99	NESC Extreme	0.0
2	Clamp	2.33	NESC Heavy	0.0
3	Clamp	2.80	NESC Heavy	0.0
4	Clamp	2.71	NESC Heavy	0.0
5	Clamp	2.82	NESC Heavy	0.0
6	Clamp	2.76	NESC Heavy	0.0
7	Clamp	2.76	NESC Heavy	0.0
8	Clamp	2.70	NESC Heavy	0.0
9	Clamp	16.01	NESC Heavy	0.0
10	Clamp	2.86	NESC Heavy	0.0
11	Clamp	2.86	NESC Heavy	0.0
12	Clamp	4.55	NESC Heavy	0.0
13	Clamp	6.02	NESC Heavy	0.0
14	Clamp	4.58	NESC Heavy	0.0

```
*** Weight of structure (lbs):
    Weight of Angles*Section DLF:     16315.5
    Total:                            16315.5
```

*** End of Report

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

Project Name : 16002.004 - Trumbull, CT
Project Notes: Structure # 833/ AT&T CT5090
Project File : J:\Jobs\1600200.WI\04_Trumbull South East - CT5090\04_Structural\Backup Documentation\Rev (1)\Calcs\PLS Tower\cl&p # 833.tow
Date run     : 10:19:22 AM Monday, August 01, 2016
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block 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 "g6X" will not be checked for block 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 "g6XY" will not be checked for block 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 "g6Y" will not be checked for block 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 "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
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 "g11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
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and spacing distances will be checked. ??
Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
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 "g15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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and spacing distances will be checked. ??
Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

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and spacing distances will be checked. ??
Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g25P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g25X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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Member "g25XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g25Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g26P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g26X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g26XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g26Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g27P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g27X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g27XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g27Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g28P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g28X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g28XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g28Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29P" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29X" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29XY" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29Y" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30P" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30X" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30XY" ??
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30Y" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41P" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41X" ??
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69P" ??
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69X" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71P" ??
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71X" ??
Unusual number of fixed joints found: 5.  Towers normally have from between 1 and 4 fixed joints. ??
The model has 83 warnings.  ??
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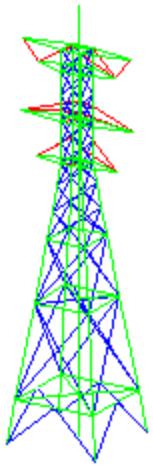

Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 100%
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
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	91.5	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	86.5	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	2.5	80.5	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2.5	2.5	74.5	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	69.5	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	64.5	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	10	10	10	Free	Free	Free	Free	Free	Free
12P	X-Symmetry	0	-13.75	91.5	Free	Free	Free	Free	Free	Free
13P	X-Symmetry	0	-9.75	86.5	Free	Free	Free	Free	Free	Free
14P	X-Symmetry	0	-14.25	74.5	Free	Free	Free	Free	Free	Free
15P	X-Symmetry	0	-10.25	64.5	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	11.26	11.26	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
20P	None	-1.25	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
21P	None	-1.25	0	10	Free	Free	Free	Free	Free	Free
22P	None	-1.25	0	32.5	Free	Free	Free	Free	Free	Free
23P	None	-1.25	0	64.5	Free	Free	Free	Free	Free	Free
24P	None	-1.25	0	74.5	Free	Free	Free	Free	Free	Free
25P	None	-1.25	0	91.5	Free	Free	Free	Free	Free	Free
26P	None	-1.25	0	101.5	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	-2.5	91.5	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	91.5	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	91.5	Free	Free	Free	Free	Free	Free

2X	X-GenXY	2.5	-2.5	86.5	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	86.5	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	86.5	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	80.5	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	80.5	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	80.5	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	74.5	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	74.5	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	74.5	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	69.5	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	69.5	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	69.5	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	64.5	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	64.5	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	64.5	Free	Free	Free	Free	Free	Free
7X	X-GenXY	10	-10	10	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-10	-10	10	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-10	10	10	Free	Free	Free	Free	Free	Free
12X	X-Gen	0	13.75	91.5	Free	Free	Free	Free	Free	Free
13X	X-Gen	0	9.75	86.5	Free	Free	Free	Free	Free	Free
14X	X-Gen	0	14.25	74.5	Free	Free	Free	Free	Free	Free
15X	X-Gen	0	10.25	64.5	Free	Free	Free	Free	Free	Free
17X	X-GenXY	11.26	-11.26	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
17XY	XY-GenXY	-11.26	-11.26	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
17Y	Y-GenXY	-11.26	11.26	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
8S	XY-Symmetry	6P	7P	0	59.5	Free	Free	Free	Free	Free	Free
9S	XY-Symmetry	6P	7P	0	53.5	Free	Free	Free	Free	Free	Free
10S	XY-Symmetry	6P	7P	0	47	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	6P	7P	0	32.5	Free	Free	Free	Free	Free	Free
16S	XY-Symmetry	3X	4X	0.5	0	Free	Free	Free	Free	Free	Free
18S	Y-Symmetry	7P	7X	0.5	0	Free	Free	Free	Free	Free	Free
19S	X-Symmetry	7P	7Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E33S	None	11X	11Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E65S	None	6X	6Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E75S	None	4X	4Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E92S	None	1X	1Y	0.5	0	Free	Free	Free	Free	Free	Free
8X	X-GenXY	6P	7P	0	59.5	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	6P	7P	0	59.5	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	6P	7P	0	59.5	Free	Free	Free	Free	Free	Free
9X	X-GenXY	6P	7P	0	53.5	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	6P	7P	0	53.5	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	6P	7P	0	53.5	Free	Free	Free	Free	Free	Free
10X	X-GenXY	6P	7P	0	47	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	6P	7P	0	47	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	6P	7P	0	47	Free	Free	Free	Free	Free	Free
11X	X-GenXY	6P	7P	0	32.5	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	6P	7P	0	32.5	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	6P	7P	0	32.5	Free	Free	Free	Free	Free	Free
16X	X-GenXY	3X	4X	0.5	0	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	3X	4X	0.5	0	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	3X	4X	0.5	0	Free	Free	Free	Free	Free	Free
18Y	Y-Gen	7P	7X	0.5	0	Free	Free	Free	Free	Free	Free

19X	X-Gen	7P	7Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 47 primary and 28 secondary joints for a total of 75 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A 36	2.9e+004	36	58	0	0	0	0	0	0
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)
5/8 A394	0.625	0.6875	9.1	1.125	1.5	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0
5/8 A490	0.625	0.6875	21.2	1.25	1.5	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A394	472
5/8 A325	48
5/8 A490	4

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	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	4X4X0.375	4	4	0.375	9.8	2.86	8.67	1.23	1.23	0.788	1	4	2	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	1	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.3125	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	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	1	1.75	0.875	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	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2X0.1875	3	2	0.1875	3.07	0.9	13.33	0.966	0.583	0.439	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
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	1-3/4x1/4	1.75	0	0.25	2	0.4375	7	0.875	0.875	0.25	1	2	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	L4X4X1/4	SAE	4X4X0.25	A7	Beam	Leg	None	0.000
LEG2	L4X4X5/16	SAE	4X4X0.3125	A7	Beam	Leg	None	0.000
LEG3	L4X4X3/8	SAE	4X4X0.375	A7	Beam	Leg	None	0.000
XBR1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBR2	L3X2X3/16	SAU	3X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBR3	L2X2X3/16	SAE	2X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBR4	L2.5X2X3/16	SAU	2.5X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBR5	L2.5x2.5x3/16	SAE	2.5X2.5X0.3125	A 36	Truss	Crossing Diagonal	None	0.000
HORZ1	L2.5X2X3/16	SAU	2.5X2X0.1875	A7	Beam	Other	None	0.000
HORZ2	L3X2.5X1/4	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
ARM1	L3X2.5X1/4	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
ARM2	L3.5X2.5X1/4	SAU	3.5X2.5X0.25	A7	Beam	Other	None	0.000
M1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	A7	Beam	Other	None	0.000
M2	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	A7	T-Only Beam	Other	None	0.000
M3	L2.5X2.5X3/16	SAE	2.5X2.5X0.1875	A7	T-Only Beam	Other	None	0.000
M4	BAR 1.75X1/4	Bar	1-3/4x1/4	A7	T-Only	Other	None	0.000
XBR6	L4x4x5/16	SAE	4X4X0.3125	A 36	Truss	Crossing Diagonal	None	0.000
LEG4	L4x4x5/16	SAE	4X4X0.3125	A7	Beam	Leg	None	0.000
XBR7	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A7	Truss	Other	None	0.000
HORZ3	L4x3x1/4	SAU	4X3X0.25	A7	Beam	Other	None	0.000
Pwmnt	12" Std Pipe	Pwmnt	Pipe 12" Std.	A500-50	Beam	Other	None	0.000
Brace2	L5x5x3/8	SAE	5X5X0.375	A 36	Beam	Other	None	0.000
Brace1	L4x4x1/4	SAE	4X4X0.25	A 36	Beam	Other	None	0.000
Brace3	L3x3x3/16	SAE	3X3X0.1875	A 36	Beam	Other	None	0.000
Brace4	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
InBr	L2.5X2X3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
M5	L2x2x1/4	SAE	2X2X0.25	A 36	Beam	Other	None	0.000
M2a	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	A7	Truss	Other	None	0.000

Aggregate Angle Information:

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

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	4X4X0.25	A7	108.00	144.00	712.80
SAE	4X4X0.3125	A7	111.94	149.26	917.94
SAE	4X4X0.375	A7	150.78	201.04	1477.61
SAE	1.75X1.75X0.1875	A7	163.14	95.16	345.85
SAU	3X2X0.1875	A7	238.10	198.42	730.97
SAE	2X2X0.1875	A7	60.84	40.56	148.44
SAU	2.5X2X0.1875	A7	242.20	181.65	666.04
SAE	2.5X2.5X0.3125	A 36	150.47	125.39	752.33
SAE	4X4X0.3125	A 36	226.50	302.00	1857.27
SAU	3.5X2.5X0.25	A7	178.95	178.95	876.85
SAU	3X2.5X0.25	A7	194.58	178.36	875.59
SAU	4X3X0.25	A7	80.00	93.33	464.00
SAE	2.5X2.5X0.1875	A7	12.81	10.67	39.32

Bar	1-3/4x1/4	A7	134.37	39.19	268.74
Pwmnt	Pipe 12" Std.	A500-50	101.50	418.69	5034.40
SAE	4X4X0.25	A 36	26.58	35.43	175.40
SAE	5X5X0.375	A 36	30.10	50.17	370.28
SAE	3X3X0.1875	A 36	17.85	17.85	66.21
SAE	2X2X0.1875	A 36	21.77	14.51	53.12

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

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	10X	1.000	3.200	3.200	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
2	17X	1.050	3.200	3.200	1.050	1.050	0.000	0.000	0.000	0.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Shear Spacing (in)	Tension Path Length (in)	Rest. Path Length (in)	Coef.
g1P	LEG1		XY-Symmetry	1X	2X	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
g1X	LEG1		X-GenXY	1P	2P	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
g1XY	LEG1		XY-GenXY	1Y	2Y	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
g1Y	LEG1		Y-GenXY	1XY	2XY	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
g2P	LEG1		XY-Symmetry	2X	3X	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g2X	LEG1		X-GenXY	2P	3P	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g2XY	LEG1		XY-GenXY	2Y	3Y	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g2Y	LEG1		Y-GenXY	2XY	3XY	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g3P	LEG1		XY-Symmetry	3X	16S	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g3X	LEG1		X-GenXY	3P	16X	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g3XY	LEG1		XY-GenXY	3Y	16XY	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g3Y	LEG1		Y-GenXY	3XY	16Y	1	4	1	1	1	5/8 A394	0	1	1	Both	0	0	0	0	0	0	0
g4P	LEG1		XY-Symmetry	16S	4X	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
g4X	LEG1		X-GenXY	16X	4P	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0

g4XY	LEG1	XY-GenXY	16XY	4Y	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0
0	0	0																		
g4Y	LEG1	Y-GenXY	16Y	4XY	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0
0	0	0																		
g5P	LEG1	XY-Symmetry	4X	5X	1	4	1	1	1	5/8	A394	0	2.75	1	Both	0	0	0	0	0
0	0	0																		
g5X	LEG1	X-GenXY	4P	5P	1	4	1	1	1	5/8	A394	0	2.75	1	Both	0	0	0	0	0
0	0	0																		
g5XY	LEG1	XY-GenXY	4Y	5Y	1	4	1	1	1	5/8	A394	0	2.75	1	Both	0	0	0	0	0
0	0	0																		
g5Y	LEG1	Y-GenXY	4XY	5XY	1	4	1	1	1	5/8	A394	0	2.75	1	Both	0	0	0	0	0
0	0	0																		
g6P	LEG1	XY-Symmetry	5X	6X	1	4	1	1	1	5/8	A394	12	2.41	1	Both	1.25	2.375	1.5	4	0
0	0	0																		
g6X	LEG1	X-GenXY	5P	6P	1	4	1	1	1	5/8	A394	12	2.41	1	Both	1.25	2.375	1.5	4	0
0	0	0																		
g6XY	LEG1	XY-GenXY	5Y	6Y	1	4	1	1	1	5/8	A394	12	2.41	1	Both	1.25	2.375	1.5	4	0
0	0	0																		
g6Y	LEG1	Y-GenXY	5XY	6XY	1	4	1	1	1	5/8	A394	12	2.41	1	Both	1.25	2.375	1.5	4	0
0	0	0																		
g7P	LEG2	XY-Symmetry	6X	8X	1	4	1	1	1	5/8	A394	0	2.99	1	Both	0	0	0	0	0
0	0	0																		
g7X	LEG2	X-GenXY	6P	8S	1	4	1	1	1	5/8	A394	0	2.99	1	Both	0	0	0	0	0
0	0	0																		
g7XY	LEG2	XY-GenXY	6Y	8Y	1	4	1	1	1	5/8	A394	0	2.99	1	Both	0	0	0	0	0
0	0	0																		
g7Y	LEG2	Y-GenXY	6XY	8XY	1	4	1	1	1	5/8	A394	0	2.99	1	Both	0	0	0	0	0
0	0	0																		
g8P	LEG2	XY-Symmetry	8X	9X	1	4	1	1	1	5/8	A394	0	2.78	1	Both	0	0	0	0	0
0	0	0																		
g8X	LEG2	X-GenXY	8S	9S	1	4	1	1	1	5/8	A394	0	2.78	1	Both	0	0	0	0	0
0	0	0																		
g8XY	LEG2	XY-GenXY	8Y	9Y	1	4	1	1	1	5/8	A394	0	2.78	1	Both	0	0	0	0	0
0	0	0																		
g8Y	LEG2	Y-GenXY	8XY	9XY	1	4	1	1	1	5/8	A394	0	2.78	1	Both	0	0	0	0	0
0	0	0																		
g9P	LEG2	XY-Symmetry	9X	10X	1	4	1	1	1	5/8	A394	10	2.02	1	Both	1.25	2.375	1.5	3.5	0
0	0	0																		
g9X	LEG2	X-GenXY	9S	10S	1	4	1	1	1	5/8	A394	10	2.02	1	Both	1.25	2.375	1.5	3.5	0
0	0	0																		
g9XY	LEG2	XY-GenXY	9Y	10Y	1	4	1	1	1	5/8	A394	10	2.02	1	Both	1.25	2.375	1.5	3.5	0
0	0	0																		
g9Y	LEG2	Y-GenXY	9XY	10XY	1	4	1	1	1	5/8	A394	10	2.02	1	Both	1.25	2.375	1.5	3.5	0
0	0	0																		
g10P	LEG3	XY-Symmetry	10X	11X	1	4	0.5	0.5	0.5	5/8	A394	10	3.35	1	Both	1.3125	2.375	1.5	3.5	0
0	0	0																		
g10X	LEG3	X-GenXY	10S	11S	1	4	0.5	0.5	0.5	5/8	A394	10	3.35	1	Both	1.3125	2.375	1.5	3.5	0
0	0	0																		
g10XY	LEG3	XY-GenXY	10Y	11Y	1	4	0.5	0.5	0.5	5/8	A394	10	3.35	1	Both	1.3125	2.375	1.5	3.5	0
0	0	0																		
g10Y	LEG3	Y-GenXY	10XY	11XY	1	4	0.5	0.5	0.5	5/8	A394	10	3.35	1	Both	1.3125	2.375	1.5	3.5	0
0	0	0																		
g11P	LEG3	XY-Symmetry	11X	7X	1	4	0.33	0.33	0.33	5/8	A394	10	3.03	1	Both	0.875	1.9375	1.5	3.75	0
0	0	0																		
g11X	LEG3	X-GenXY	11S	7P	1	4	0.33	0.33	0.33	5/8	A394	10	3.03	1	Both	0.875	1.9375	1.5	3.75	0
0	0	0																		
g11XY	LEG3	XY-GenXY	11Y	7Y	1	4	0.33	0.33	0.33	5/8	A394	10	3.03	1	Both	0.875	1.9375	1.5	3.75	0
0	0	0																		
g11Y	LEG3	Y-GenXY	11XY	7XY	1	4	0.33	0.33	0.33	5/8	A394	10	3.03	1	Both	0.875	1.9375	1.5		

3.75	0	0	0																						
g12P	LEG4		XY-Symmetry	7X	17X	1	4	0.5	0.5	0.5	5/8	A394	10	2.46	1	Both	0.9375	1.625	1.5						
4	0	0	0																						
g12X	LEG4		X-GenXY	7P	17P	1	4	0.5	0.5	0.5	5/8	A394	10	2.46	1	Both	0.9375	1.625	1.5						
4	0	0	0																						
g12XY	LEG4		XY-GenXY	7Y	17Y	1	4	0.5	0.5	0.5	5/8	A394	10	2.46	1	Both	0.9375	1.625	1.5						
4	0	0	0																						
g12Y	LEG4		Y-GenXY	7XY	17XY	1	4	0.5	0.5	0.5	5/8	A394	10	2.46	1	Both	0.9375	1.625	1.5						
4	0	0	0																						
g13P	XBR1		XY-Symmetry	1X	2P	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g13X	XBR1		X-GenXY	1P	2X	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g13XY	XBR1		XY-GenXY	1Y	2XY	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g13Y	XBR1		Y-GenXY	1XY	2Y	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g14P	XBR1		XY-Symmetry	1P	2Y	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g14X	XBR1		X-GenXY	1X	2XY	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g14XY	XBR1		XY-GenXY	1XY	2X	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g14Y	XBR1		Y-GenXY	1Y	2P	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Long only	1.0625	0	0.875						
2	0	0	0																						
g15P	XBR2		XY-Symmetry	2X	3P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g15X	XBR2		X-GenXY	2P	3X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g15XY	XBR2		XY-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g15Y	XBR2		Y-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g16P	XBR2		XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g16X	XBR2		X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g16XY	XBR2		XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g16Y	XBR2		Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g17P	XBR2		XY-Symmetry	3X	4P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g17X	XBR2		X-GenXY	3P	4X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g17XY	XBR2		XY-GenXY	3Y	4XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g17Y	XBR2		Y-GenXY	3XY	4Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g18P	XBR2		XY-Symmetry	3P	4Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g18X	XBR2		X-GenXY	3X	4XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g18XY	XBR2		XY-GenXY	3XY	4X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g18Y	XBR2		Y-GenXY	3Y	4P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
2.0625	0	0	0																						
g19P	XBR2		XY-Symmetry	4X	5P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875						
1.875	0	0	0																						

g19X	XBR2	X-GenXY	4P	5X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g19XY	XBR2	XY-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g19Y	XBR2	Y-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g20P	XBR2	XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g20X	XBR2	X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g20XY	XBR2	XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g20Y	XBR2	Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g21P	XBR2	XY-Symmetry	5X	6P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g21X	XBR2	X-GenXY	5P	6X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g21XY	XBR2	XY-GenXY	5Y	6XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g21Y	XBR2	Y-GenXY	5XY	6Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g22P	XBR2	XY-Symmetry	5P	6Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g22X	XBR2	X-GenXY	5X	6XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g22XY	XBR2	XY-GenXY	5XY	6X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g22Y	XBR2	Y-GenXY	5Y	6P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	2	0.875	1.875	0	0	0
g23P	XBR3	XY-Symmetry	6X	8S	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g23X	XBR3	X-GenXY	6P	8X	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g23XY	XBR3	XY-GenXY	6Y	8XY	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g23Y	XBR3	Y-GenXY	6XY	8Y	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g24P	XBR3	XY-Symmetry	6P	8Y	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g24X	XBR3	X-GenXY	6X	8XY	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g24XY	XBR3	XY-GenXY	6XY	8X	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g24Y	XBR3	Y-GenXY	6Y	8S	2	5	0.779	0.559	0.559	5/8	A394	2	1	1	Long only	1	0	0.875	1.375	0	0	0
g25P	XBR4	XY-Symmetry	8X	9S	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g25X	XBR4	X-GenXY	8S	9X	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g25XY	XBR4	XY-GenXY	8Y	9XY	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g25Y	XBR4	Y-GenXY	8XY	9Y	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g26P	XBR4	XY-Symmetry	8S	9Y	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g26X	XBR4	X-GenXY	8X	9XY	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875	1.8125	0	0	0
g26XY	XBR4	XY-GenXY	8XY	9X	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875				

1.8125	0	0	0																						
g26Y	XBR4		Y-GenXY	8Y	9S	2	5	0.563	0.781	0.563	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.8125	0	0	0																						
g27P	XBR4		XY-Symmetry	9X	10S	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g27X	XBR4		X-GenXY	9S	10X	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g27XY	XBR4		XY-GenXY	9Y	10XY	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g27Y	XBR4		Y-GenXY	9XY	10Y	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g28P	XBR4		XY-Symmetry	9S	10Y	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g28X	XBR4		X-GenXY	9X	10XY	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g28XY	XBR4		XY-GenXY	9XY	10X	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g28Y	XBR4		Y-GenXY	9Y	10S	2	5	0.55	0.775	0.55	5/8	A394	2	1	1	Long only	0.875	1.5625	0.875						
1.625	0	0	0																						
g29P	XBR5		XY-Symmetry	10X	11S	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g29X	XBR5		X-GenXY	10S	11X	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g29XY	XBR5		XY-GenXY	10Y	11XY	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g29Y	XBR5		Y-GenXY	10XY	11Y	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g30P	XBR5		XY-Symmetry	10S	11Y	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g30X	XBR5		X-GenXY	10X	11XY	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g30XY	XBR5		XY-GenXY	10XY	11X	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g30Y	XBR5		Y-GenXY	10Y	11S	2	5	0.792	0.584	0.584	5/8	A325	2	1	1	Long only	0.8125	0	0.875						
1.4375	0	0	0																						
g31P	XBR6		XY-Symmetry	11X	7P	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g31X	XBR6		X-GenXY	11S	7X	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g31XY	XBR6		XY-GenXY	11Y	7XY	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g31Y	XBR6		Y-GenXY	11XY	7Y	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g32P	XBR6		XY-Symmetry	11S	7Y	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g32X	XBR6		X-GenXY	11X	7XY	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g32XY	XBR6		XY-GenXY	11XY	7X	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g32Y	XBR6		Y-GenXY	11Y	7P	2	5	0.667	0.333	0.333	5/8	A325	2	1	1	Long only	0.875	0	0.875						
1.5	0	0	0																						
g33P	XBR7		XY-Symmetry	17X	18S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5						
0	0	0	0																						
g33X	XBR7		X-GenXY	17P	18S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5						
0	0	0	0																						
g33XY	XBR7		XY-GenXY	17Y	18Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5						
0	0	0	0																						
g33Y	XBR7		Y-GenXY	17XY	18Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5						
0	0	0	0																						

g34P	XBR7	XY-Symmetry	17P	19S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5	0	0	0
g34X	XBR7	X-GenXY	17X	19X	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5	0	0	0
g34XY	XBR7	XY-GenXY	17XY	19X	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5	0	0	0
g34Y	XBR7	Y-GenXY	17Y	19S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1	0	1.5	0	0	0
g35P	HORZ1	Y-Symmetry	10X	10S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	0.875	0	0	0
g35Y	HORZ1	Y-Gen	10XY	10Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	0.875	0	0	0
g36P	HORZ1	X-Symmetry	10S	10Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	0.875	0	0	0
g36X	HORZ1	X-Gen	10X	10XY	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	0.875	0	0	0
g37P	HORZ2	Y-Symmetry	11X	11S	3	4	1	0.5	0.5	5/8	A490	1	1	1	Short only	1.25	0	1	0	0	0
g37Y	HORZ2	Y-Gen	11XY	11Y	3	4	1	0.5	0.5	5/8	A490	1	1	1	Short only	1.25	0	1	0	0	0
g38P	HORZ2	X-Symmetry	11S	11Y	3	4	0.5	0.5	0.5	5/8	A490	1	1	1	Short only	1.25	0	1	0	0	0
g38X	HORZ2	X-Gen	11X	11XY	3	4	0.5	0.5	0.5	5/8	A490	1	1	1	Short only	1.25	0	1	0	0	0
g39P	HORZ3	XY-Symmetry	7X	18S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g39X	HORZ3	X-GenXY	7P	18S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g39XY	HORZ3	XY-GenXY	7Y	18Y	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g39Y	HORZ3	Y-GenXY	7XY	18Y	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g40P	HORZ3	XY-Symmetry	7P	19S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g40X	HORZ3	X-GenXY	7X	19X	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g40XY	HORZ3	XY-GenXY	7XY	19X	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g40Y	HORZ3	Y-GenXY	7Y	19S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1.5	0	0	0
g41P	InBr	X-Symmetry	11X	i0.50E33S	3	4	1	1	1	5/8	A394	1	1	1	Long only	0	0	0	0	0	0
g41X	InBr	X-Gen	11S	i0.50E33S	3	4	1	1	1	5/8	A394	1	1	1	Long only	0	0	0	0	0	0
g42P	ARM1	XY-Symmetry	12P	1X	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.25	0	1.5	4	0	0
g42X	ARM1	X-GenXY	12X	1P	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.25	0	1.5	4	0	0
g42XY	ARM1	XY-GenXY	12X	1Y	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.25	0	1.5	4	0	0
g42Y	ARM1	Y-GenXY	12P	1XY	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.25	0	1.5	4	0	0
g43P	ARM1	Y-Symmetry	1X	1P	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0	0	0	0
g43Y	ARM1	Y-Gen	1XY	1Y	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0	0	0	0
g44P	ARM1	XY-Symmetry	13P	2X	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.25	0	1.5	2.75	0	0
g44X	ARM1	X-GenXY	13X	2P	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.25	0	1.5			

2.75	0	0	0																							
	g44XY	ARM1		XY-GenXY	13X	2Y	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.25	0	1.5						
2.75	0	0	0																							
	g44Y	ARM1		Y-GenXY	13P	2XY	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.25	0	1.5						
2.75	0	0	0																							
	g45P	ARM1		Y-Symmetry	2X	2P	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g45Y	ARM1		Y-Gen	2XY	2Y	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g46P	ARM2		XY-Symmetry	14P	4X	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.75	0	1.5						
2	0	0	0																							
	g46X	ARM2		X-GenXY	14X	4P	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.75	0	1.5						
2	0	0	0																							
	g46XY	ARM2		XY-GenXY	14X	4Y	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.75	0	1.5						
2	0	0	0																							
	g46Y	ARM2		Y-GenXY	14P	4XY	3	6	1	0.5	0.5	5/8	A394	3	2	1	Long only	1.75	0	1.5						
2	0	0	0																							
	g47P	ARM2		Y-Symmetry	4X	4P	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g47Y	ARM2		Y-Gen	4XY	4Y	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g48P	ARM1		XY-Symmetry	15P	6X	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.5	0	1.5						
4	0	0	0																							
	g48X	ARM1		X-GenXY	15X	6P	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.5	0	1.5						
4	0	0	0																							
	g48XY	ARM1		XY-GenXY	15X	6Y	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.5	0	1.5						
4	0	0	0																							
	g48Y	ARM1		Y-GenXY	15P	6XY	3	6	1	0.5	0.5	5/8	A394	2	2	1	Long only	1.5	0	1.5						
4	0	0	0																							
	g49P	ARM1		Y-Symmetry	6X	6P	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g49Y	ARM1		Y-Gen	6XY	6Y	3	6	1	1	1	5/8	A394	0	2	1	Long only	0	0	0						
0	0	0	0																							
	g50P	M1		X-Symmetry	1P	1Y	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g50X	M1		X-Gen	1X	1XY	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g51P	M1		X-Symmetry	2P	2Y	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g51X	M1		X-Gen	2X	2XY	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g52P	M1		X-Symmetry	4P	4Y	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g52X	M1		X-Gen	4X	4XY	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g53P	M1		X-Symmetry	6P	6Y	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g53X	M1		X-Gen	6X	6XY	3	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g54P	M2		X-Symmetry	1X	i0.50E92S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g54X	M2		X-Gen	1P	i0.50E92S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g55P	M2a		X-Symmetry	2X	2Y	2	4	0.5	0.5	0.5	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g55X	M2a		X-Gen	2P	2XY	2	4	0.5	0.5	0.5	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							
	g56P	M2		X-Symmetry	4X	i0.50E75S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875						
0	0	0	0																							

	g56X	M2		X-Gen	4P	i0.50E75S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875	0	0	0
	g57P	M2		X-Symmetry	6X	i0.50E65S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875	0	0	0
	g57X	M2		X-Gen	6P	i0.50E65S	3	4	1.5	1	1	5/8	A394	1	1	1	Long only	0.875	0	0.875	0	0	0
	g58P	M3		X-Symmetry	12P	13P	3	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g58X	M3		X-Gen	12X	13X	3	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g59P	M4		XY-Symmetry	1X	13P	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g59X	M4		X-GenXY	1P	13X	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g59XY	M4		XY-GenXY	1Y	13X	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g59Y	M4		Y-GenXY	1XY	13P	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g60P	M4		XY-Symmetry	14P	16S	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g60X	M4		X-GenXY	14X	16X	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g60XY	M4		XY-GenXY	14X	16XY	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g60Y	M4		Y-GenXY	14P	16Y	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g61P	M4		XY-Symmetry	15P	5X	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g61X	M4		X-GenXY	15X	5P	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g61XY	M4		XY-GenXY	15X	5Y	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g61Y	M4		Y-GenXY	15P	5XY	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g62P	M4		Y-Symmetry	16S	16X	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g62Y	M4		Y-Gen	16Y	16XY	2	4	1	1	1	5/8	A394	1	1	1	Long only	1.25	0	0.875	0	0	0
	g63P	Pwmnt		None	20P	21P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g64P	Pwmnt		None	21P	22P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g65P	Pwmnt		None	22P	23P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g66P	Pwmnt		None	23P	24P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g67P	Pwmnt		None	24P	25P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g68P	Pwmnt		None	25P	26P	1	4	1	1	1			0	0	1		0	0	0	0	0	0
	g69P	Brace1		X-Symmetry	21P	7XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	1.5	0	1.5	0	0	0
	g69X	Brace1		X-Gen	21P	7Y	3	4	1	1	1	5/8	A325	1	1	1	Short only	1.5	0	1.5	0	0	0
	g70P	Brace2		X-Symmetry	21P	7X	3	4	1	1	1	5/8	A325	1	1	1	Short only	1.5	0	1.5	0	0	0
	g70X	Brace2		X-Gen	21P	7P	3	4	1	1	1	5/8	A325	1	1	1	Short only	1.5	0	1.5	0	0	0
	g71P	Brace3		X-Symmetry	22P	11XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	1.5	0	1.5			

0	0	0	0																						
	g71X	Brace3			X-Gen	22P	11Y	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	ig41P71P	InBr			X-Symmetry	i0.50E33S	11Y	3	4	1	1	1	5/8	A394	1	1	1	Long	only	0	0	0			
0	0	0	0																						
	ig41P71X	InBr			X-Gen	i0.50E33S	11XY	3	4	1	1	1	5/8	A394	1	1	1	Long	only	0	0	0			
0	0	0	0																						
	ig57P72P	M2			X-Symmetry	i0.50E65S	6Y	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	ig57P72X	M2			X-Gen	i0.50E65S	6XY	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	ig56P73P	M2			X-Symmetry	i0.50E75S	4Y	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	ig56P73X	M2			X-Gen	i0.50E75S	4XY	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	ig54P74P	M2			X-Symmetry	i0.50E92S	1Y	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	ig54P74X	M2			X-Gen	i0.50E92S	1XY	3	4	1.5	1	1	5/8	A394	1	1	1	Long	only	0.875	0	0.875			
0	0	0	0																						
	g76P	Brace4			None	i0.50E33S	22P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g77P	Brace4			X-Symmetry	23P	6XY	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g77X	Brace4			X-Gen	23P	6Y	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g78P	Brace4			None	i0.50E65S	23P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g79P	Brace4			X-Symmetry	24P	4XY	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g79X	Brace4			X-Gen	24P	4Y	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g80P	Brace4			None	i0.50E75S	24P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g81P	Brace4			X-Symmetry	25P	1XY	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g81X	Brace4			X-Gen	25P	1Y	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g82P	Brace4			None	i0.50E92S	25P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.5	0	1.5			
0	0	0	0																						
	g83P	M2a			X-Symmetry	16S	16Y	3	4	1	1	1	5/8	A394	1	1	1	Short	only	0.875	0	1			
0	0	0	0																						
	g83X	M2a			X-Gen	16X	16XY	3	4	1	1	1	5/8	A394	1	1	1	Short	only	0.875	0	1			
0	0	0	0																						

Member Capacities and Overrides:

Member Label	Group Label	Design Comp.	Comp. Control	Design Tension Control	Tension Face	L/r Length	L/r Comp.	Connection Capacity	Connection Capacity	Net Section Capacity	Rupture Tension Capacity	RTE End Dist.	RTE Edge Dist.	Override Comp. Capacity	Override Warnings or Errors
		Capacity	Criterion	Capacity	Criterion					Tension Capacity		Tension Capacity	Tension Capacity		
Unsup. (kips)	Criterion	(kips)	Criterion	Member ship (kips)		(ft)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	
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g1P	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g1X	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g1XY	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g1Y	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g2P	LEG1	48.884	L/r	58.348	Net Sect	91	6.00	48.884	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g2X	LEG1	48.884	L/r	58.348	Net Sect	91	6.00	48.884	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g2XY	LEG1	48.884	L/r	58.348	Net Sect	91	6.00	48.884	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g2Y	LEG1	48.884	L/r	58.348	Net Sect	91	6.00	48.884	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g3P	LEG1	60.236	L/r	58.348	Net Sect	45	3.00	60.236	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g3X	LEG1	60.236	L/r	58.348	Net Sect	45	3.00	60.236	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g3XY	LEG1	60.236	L/r	58.348	Net Sect	45	3.00	60.236	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g3Y	LEG1	60.236	L/r	58.348	Net Sect	45	3.00	60.236	0.000	0.000	58.348	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g4P	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g4X	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g4XY	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g4Y	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g5P	LEG1	53.509	L/r	48.422	Net Sect	75	5.00	53.509	0.000	0.000	48.422	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g5X	LEG1	53.509	L/r	48.422	Net Sect	75	5.00	53.509	0.000	0.000	48.422	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g5XY	LEG1	53.509	L/r	48.422	Net Sect	75	5.00	53.509	0.000	0.000	48.422	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g5Y	LEG1	53.509	L/r	48.422	Net Sect	75	5.00	53.509	0.000	0.000	48.422	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g6P	**LEG1**	**53.509**	**L/r**	**50.351**	**Net Sect**	**75**	**5.00**	**53.509**	**109.200**	**168.750**	**50.351**	**220.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
g6X	**LEG1**	**53.509**	**L/r**	**50.351**	**Net Sect**	**75**	**5.00**	**53.509**	**109.200**	**168.750**	**50.351**	**220.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
g6XY	**LEG1**	**53.509**	**L/r**	**50.351**	**Net Sect**	**75**	**5.00**	**53.509**	**109.200**	**168.750**	**50.351**	**220.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
g6Y	**LEG1**	**53.509**	**L/r**	**50.351**	**Net Sect**	**75**	**5.00**	**53.509**	**109.200**	**168.750**	**50.351**	**220.588**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Automatic**
g7P	LEG2	65.567	L/r	58.001	Net Sect	77	5.09	65.567	0.000	0.000	58.001	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g7X	LEG2	65.567	L/r	58.001	Net Sect	77	5.09	65.567	0.000	0.000	58.001	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g7XY	LEG2	65.567	L/r	58.001	Net Sect	77	5.09	65.567	0.000	0.000	58.001	0.000	0.000	0.000	0.000	0.000	0.000	Automatic

Member "g6P" will not be checked for block 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 "g6X" will not be checked for block 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 "g6XY" will not be checked for block 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 "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??

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0.000              0.000           Automatic
      g7Y   LEG2   65.567       L/r   58.001  Net Sect   77   5.09   65.567      0.000      0.000   58.001    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g8P   LEG2   59.569       L/r   59.490  Net Sect   93   6.11   59.569      0.000      0.000   59.490    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g8X   LEG2   59.569       L/r   59.490  Net Sect   93   6.11   59.569      0.000      0.000   59.490    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
     g8XY   LEG2   59.569       L/r   59.490  Net Sect   93   6.11   59.569      0.000      0.000   59.490    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g8Y   LEG2   59.569       L/r   59.490  Net Sect   93   6.11   59.569      0.000      0.000   59.490    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g9P   LEG2   56.161       L/r   64.878  Net Sect  100   6.62   56.161     91.000    175.781   64.878  229.779    0.000    0.000    0.000
0.000              0.000           Automatic   Member "g9P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
      g9X   LEG2   56.161       L/r   64.878  Net Sect  100   6.62   56.161     91.000    175.781   64.878  229.779    0.000    0.000    0.000
0.000              0.000           Automatic   Member "g9X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g9XY   LEG2   56.161       L/r   64.878  Net Sect  100   6.62   56.161     91.000    175.781   64.878  229.779    0.000    0.000    0.000
0.000              0.000           Automatic  Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
      g9Y   LEG2   56.161       L/r   64.878  Net Sect  100   6.62   56.161     91.000    175.781   64.878  229.779    0.000    0.000    0.000
0.000              0.000           Automatic   Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g10P   LEG3   59.963       L/r   65.879  Net Sect  112  14.77   59.963     91.000    210.937   65.879  281.250    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   LEG3   59.963       L/r   65.879  Net Sect  112  14.77   59.963     91.000    210.937   65.879  281.250    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   LEG3   59.963       L/r   65.879  Net Sect  112  14.77   59.963     91.000    210.937   65.879  281.250    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   LEG3   59.963       L/r   65.879  Net Sect  112  14.77   59.963     91.000    210.937   65.879  281.250    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   58.282       L/r   68.601  Net Sect  115  22.92   58.282     91.000    210.937   68.601  193.014    0.000    0.000    0.000
0.000              0.000           Automatic  Member "g11P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g11X   LEG3   58.282       L/r   68.601  Net Sect  115  22.92   58.282     91.000    210.937   68.601  193.014    0.000    0.000    0.000
0.000              0.000           Automatic  Member "g11X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g11XY   LEG3   58.282       L/r   68.601  Net Sect  115  22.92   58.282     91.000    210.937   68.601  193.014    0.000    0.000    0.000
0.000              0.000           Automatic Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g11Y   LEG3   58.282       L/r   68.601  Net Sect  115  22.92   58.282     91.000    210.937   68.601  193.014    0.000    0.000    0.000
0.000              0.000           Automatic  Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g12P   LEG4   65.648       L/r   61.759  Net Sect   77  10.16   65.648     91.000    175.781   61.759  172.334    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   LEG4   65.648       L/r   61.759  Net Sect   77  10.16   65.648     91.000    175.781   61.759  172.334    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   LEG4   65.648       L/r   61.759  Net Sect   77  10.16   65.648     91.000    175.781   61.759  172.334    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   LEG4   65.648       L/r   61.759  Net Sect   77  10.16   65.648     91.000    175.781   61.759  172.334    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	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g13X	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g13XY	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g13Y	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g14P	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g14X	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g14XY	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g14Y	XBR1	11.559	L/r	14.585	Net Sect	124	7.07	11.559	18.200	21.094	14.585	16.406	0.000	0.000	0.000
0.000		0.000		Automatic											
g15P	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g15P" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g15X	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g15X" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g15XY	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g15Y	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g16P	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g16P" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g16X	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g16X" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g16XY	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g16Y	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g17P	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g17P" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g17X	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g17X" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g17XY	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g17Y	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g18P	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g18P" will not be checked for block shear since more than one gage line exists (long edge**										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g18X	**XBR2**	**17.275**	**L/r**	**22.901**	**Net Sect**	**121**	**7.81**	**17.275**	**27.300**	**31.641**	**22.901**	**24.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g18X" will not be checked for block shear since more than one gage line exists (long edge**										

distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g18XY XBR2 17.275 L/r 22.901 Net Sect 121 7.81 17.275 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g18Y XBR2 17.275 L/r 22.901 Net Sect 121 7.81 17.275 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g19P XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g19P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g19X XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g19X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g19XY XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g19Y XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g20P XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g20P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g20X XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g20X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g20XY XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g20Y XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g21P XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g21P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g21X XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g21X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g21XY XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g21Y XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22P XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g22P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22X XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g22X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22XY XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g22Y XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 27.300 31.641 22.901 24.609 0.000 0.000 0.000
0.000 0.000 Automatic Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g23P XBR3 12.493 L/r 12.287 Rupture 129 7.60 12.493 18.200 21.094 17.258 12.287 0.000 0.000 0.000
0.000 0.000 Automatic
g23X XBR3 12.493 L/r 12.287 Rupture 129 7.60 12.493 18.200 21.094 17.258 12.287 0.000 0.000 0.000

```
0.000              0.000          Automatic
    g23XY   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
     g23Y   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
     g24P   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
     g24X   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
    g24XY   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
     g24Y   XBR3   12.493      L/r   12.287   Rupture  129   7.60   12.493     18.200     21.094   17.258   12.287    0.000    0.000    0.000
0.000              0.000          Automatic
     g25P   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g25P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g25X   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g25X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g25XY   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic Member "g25XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g25Y   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g25Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g26P   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g26P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g26X   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g26X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g26XY   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic Member "g26XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g26Y   XBR4   11.489      L/r   16.406   Rupture  149   9.41   11.489     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g26Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g27P   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g27P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g27X   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g27X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g27XY   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic Member "g27XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g27Y   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g27Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g28P   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g28P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g28X   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic  Member "g28X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g28XY   XBR4    9.124      L/r   16.406   Rupture  172  11.07    9.124     18.200     21.094   20.228   16.406    0.000    0.000    0.000
0.000              0.000          Automatic Member "g28XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
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g28Y	XBR4	9.124	L/r	16.406	Rupture	172	11.07	9.124	18.200	21.094	20.228	16.406	0.000	0.000	0.000
0.000	0.000	Automatic	Member "g28Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??												
g29P	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29P" ??															
g29X	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29X" ??															
g29XY	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29XY" ??															
g29Y	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g29Y" ??															
g30P	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30P" ??															
g30X	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30X" ??															
g30XY	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30XY" ??															
g30Y	XBR5	7.632	L/r	19.207	Rupture	270	18.81	7.632	33.600	33.984	40.343	19.207	0.000	0.000	0.000
0.000	0.000	Automatic													
KL/R value of 234.00 exceeds maximum of 200.00 for member "g30Y" ??															
g31P	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g31X	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g31XY	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g31Y	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g32P	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g32X	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g32XY	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g32Y	XBR6	24.380	L/r	20.590	Rupture	183	28.31	24.380	33.600	33.984	70.799	20.590	0.000	0.000	0.000
0.000	0.000	Automatic													
g33P	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g33X	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g33XY	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g33Y	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g34P	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g34X	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g34XY	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000
0.000	0.000	Automatic													
g34Y	XBR7	9.100	Shear	9.100	Shear	167	15.11	14.836	9.100	14.062	30.238	14.706	0.000	0.000	0.000

0.000		0.000		Automatic												
	g35P	HORZ1	9.100	Shear	6.873	Rupture	149	9.82	10.506	9.100	10.547	17.444	6.873	0.000	0.000	0.000
0.000		0.000		Automatic												
	g35Y	HORZ1	9.100	Shear	6.873	Rupture	149	9.82	10.506	9.100	10.547	17.444	6.873	0.000	0.000	0.000
0.000		0.000		Automatic												
	g36P	HORZ1	9.100	Shear	6.873	Rupture	149	9.82	10.506	9.100	10.547	17.444	6.873	0.000	0.000	0.000
0.000		0.000		Automatic												
	g36X	HORZ1	9.100	Shear	6.873	Rupture	149	9.82	10.506	9.100	10.547	17.444	6.873	0.000	0.000	0.000
0.000		0.000		Automatic												
	g37P	HORZ2	12.197	L/r	12.500	Rupture	175	13.81	12.197	21.200	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic												
	g37Y	HORZ2	12.197	L/r	12.500	Rupture	175	13.81	12.197	21.200	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic												
	g38P	HORZ2	14.062	Bearing	12.500	Rupture	157	13.81	15.230	21.200	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic												
	g38X	HORZ2	14.062	Bearing	12.500	Rupture	157	13.81	15.230	21.200	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic												
	g39P	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g39X	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g39XY	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g39Y	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g40P	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g40X	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g40XY	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g40Y	HORZ3	9.100	Shear	9.100	Shear	188	10.00	13.759	9.100	14.062	37.663	17.883	0.000	0.000	0.000
0.000		0.000		Automatic												
	g41P	**InBr**	**3.080**	**L/r**	**9.100**	**Shear**	**274**	**9.76**	**3.080**	**9.100**	**10.547**	**20.228**	**9.334**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**												
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41P" ??																
	g41X	**InBr**	**3.080**	**L/r**	**9.100**	**Shear**	**274**	**9.76**	**3.080**	**9.100**	**10.547**	**20.228**	**9.334**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**												
KL/R value of 274.38 exceeds maximum of 200.00 for member "g41X" ??																
	g42P	ARM1	18.200	Shear	18.200	Shear	146	11.52	20.212	18.200	28.125	28.698	36.765	0.000	0.000	0.000
0.000		0.000		Automatic												
	g42X	ARM1	18.200	Shear	18.200	Shear	146	11.52	20.212	18.200	28.125	28.698	36.765	0.000	0.000	0.000
0.000		0.000		Automatic												
	g42XY	ARM1	18.200	Shear	18.200	Shear	146	11.52	20.212	18.200	28.125	28.698	36.765	0.000	0.000	0.000
0.000		0.000		Automatic												
	g42Y	ARM1	18.200	Shear	18.200	Shear	146	11.52	20.212	18.200	28.125	28.698	36.765	0.000	0.000	0.000
0.000		0.000		Automatic												
	g43P	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g43Y	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g44P	ARM1	27.300	Shear	27.300	Shear	97	7.67	28.509	27.300	42.187	28.698	55.008	0.000	0.000	0.000
0.000		0.000		Automatic												
	g44X	ARM1	27.300	Shear	27.300	Shear	97	7.67	28.509	27.300	42.187	28.698	55.008	0.000	0.000	0.000
0.000		0.000		Automatic												
	g44XY	ARM1	27.300	Shear	27.300	Shear	97	7.67	28.509	27.300	42.187	28.698	55.008	0.000	0.000	0.000
0.000		0.000		Automatic												
	g44Y	ARM1	27.300	Shear	27.300	Shear	97	7.67	28.509	27.300	42.187	28.698	55.008	0.000	0.000	0.000
0.000		0.000		Automatic												

g45P	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g45Y	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g46P	ARM2	25.189	L/r	27.300	Shear	132	12.01	25.189	27.300	42.187	32.559	45.633	0.000	0.000	0.000	0.000	0.000	Automatic
g46X	ARM2	25.189	L/r	27.300	Shear	132	12.01	25.189	27.300	42.187	32.559	45.633	0.000	0.000	0.000	0.000	0.000	Automatic
g46XY	ARM2	25.189	L/r	27.300	Shear	132	12.01	25.189	27.300	42.187	32.559	45.633	0.000	0.000	0.000	0.000	0.000	Automatic
g46Y	ARM2	25.189	L/r	27.300	Shear	132	12.01	25.189	27.300	42.187	32.559	45.633	0.000	0.000	0.000	0.000	0.000	Automatic
g47P	ARM2	29.359	L/r	32.559	Net Sect	110	5.00	29.359	0.000	0.000	32.559	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g47Y	ARM2	29.359	L/r	32.559	Net Sect	110	5.00	29.359	0.000	0.000	32.559	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g48P	ARM1	18.200	Shear	18.200	Shear	103	8.14	27.682	18.200	28.125	28.698	37.500	0.000	0.000	0.000	0.000	0.000	Automatic
g48X	ARM1	18.200	Shear	18.200	Shear	103	8.14	27.682	18.200	28.125	28.698	37.500	0.000	0.000	0.000	0.000	0.000	Automatic
g48XY	ARM1	18.200	Shear	18.200	Shear	103	8.14	27.682	18.200	28.125	28.698	37.500	0.000	0.000	0.000	0.000	0.000	Automatic
g48Y	ARM1	18.200	Shear	18.200	Shear	103	8.14	27.682	18.200	28.125	28.698	37.500	0.000	0.000	0.000	0.000	0.000	Automatic
g49P	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g49Y	ARM1	26.226	L/r	28.698	Net Sect	114	5.00	26.226	0.000	0.000	28.698	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g50P	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g50X	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g51P	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g51X	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g52P	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g52X	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g53P	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g53X	M1	5.799	L/r	6.873	Rupture	175	5.00	5.799	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g54P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g54X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g55P	M2a	9.100	Shear	6.873	Rupture	124	7.07	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g55X	M2a	9.100	Shear	6.873	Rupture	124	7.07	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g56P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g56X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g57P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic
g57X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000	0.000	0.000	Automatic

0.000		0.000		Automatic												
g58P	M3	9.100	Shear	8.203	Rupture	155	6.40	10.714	9.100	10.547	22.961	8.203	0.000	0.000	0.000	
0.000		0.000		Automatic												
g58X	M3	9.100	Shear	8.203	Rupture	155	6.40	10.714	9.100	10.547	22.961	8.203	0.000	0.000	0.000	
0.000		0.000		Automatic												
g59P	M4	0.648	L/r	7.889	Net Sect	439	9.15	0.648	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g59X	M4	0.648	L/r	7.889	Net Sect	439	9.15	0.648	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g59XY	M4	0.648	L/r	7.889	Net Sect	439	9.15	0.648	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g59Y	M4	0.648	L/r	7.889	Net Sect	439	9.15	0.648	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g60P	M4	0.354	L/r	7.889	Net Sect	594	12.38	0.354	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g60X	M4	0.354	L/r	7.889	Net Sect	594	12.38	0.354	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g60XY	M4	0.354	L/r	7.889	Net Sect	594	12.38	0.354	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g60Y	M4	0.354	L/r	7.889	Net Sect	594	12.38	0.354	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g61P	M4	0.595	L/r	7.889	Net Sect	459	9.56	0.595	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g61X	M4	0.595	L/r	7.889	Net Sect	459	9.56	0.595	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g61XY	M4	0.595	L/r	7.889	Net Sect	459	9.56	0.595	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g61Y	M4	0.595	L/r	7.889	Net Sect	459	9.56	0.595	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g62P	M4	2.174	L/r	7.889	Net Sect	240	5.00	2.174	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g62Y	M4	2.174	L/r	7.889	Net Sect	240	5.00	2.174	9.100	14.062	7.889	10.937	0.000	0.000	0.000	
0.000		0.000		Automatic												
g63P	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												
g64P	Pwmnt	567.663	L/r	679.999	Net Sect	62	22.50	567.663	0.000	0.000	679.999	0.000	0.000	0.000	0.000	
0.000		0.000		Automatic												
g65P	Pwmnt	452.775	L/r	679.999	Net Sect	87	32.00	452.775	0.000	0.000	679.999	0.000	0.000	0.000	0.000	
0.000		0.000		Automatic												
g66P	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												
g67P	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												
g68P	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												
g69P	**Brace1**	**13.594**	**Bearing**	**13.594**	**Bearing**	**201**	**13.29**	**13.803**	**16.800**	**13.594**	**57.287**	**18.125**	**0.000**	**0.000**	**0.000**	
0.000		**0.000**		**Automatic**												
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69P" ??																
g69X	**Brace1**	**13.594**	**Bearing**	**13.594**	**Bearing**	**201**	**13.29**	**13.803**	**16.800**	**13.594**	**57.287**	**18.125**	**0.000**	**0.000**	**0.000**	
0.000		**0.000**		**Automatic**												
KL/R value of 200.57 exceeds maximum of 200.00 for member "g69X" ??																
g70P	Brace2	16.800	Shear	16.800	Shear	182	15.05	31.040	16.800	20.391	108.611	27.187	0.000	0.000	0.000	
0.000		0.000		Automatic												
g70X	Brace2	16.800	Shear	16.800	Shear	182	15.05	31.040	16.800	20.391	108.611	27.187	0.000	0.000	0.000	
0.000		0.000		Automatic												
g71P	Brace3	9.665	L/r	10.195	Bearing	180	8.92	9.665	16.800	10.195	31.139	13.594	0.000	0.000	0.000	
0.000		0.000		Automatic												
g71X	Brace3	9.665	L/r	10.195	Bearing	180	8.92	9.665	16.800	10.195	31.139	13.594	0.000	0.000	0.000	
0.000		0.000		Automatic												

ig41P71P	**InBr**	**3.080**	**L/r**	**9.100**	**Shear**	**274**	**9.76**	**3.080**	**9.100**	**10.547**	**20.228**	**9.334**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71P" ??															
ig41P71X	**InBr**	**3.080**	**L/r**	**9.100**	**Shear**	**274**	**9.76**	**3.080**	**9.100**	**10.547**	**20.228**	**9.334**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**											
KL/R value of 274.38 exceeds maximum of 200.00 for member "ig41P71X" ??															
ig57P72P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
ig57P72X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
ig56P73P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
ig56P73X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
ig54P74P	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
ig54P74X	M2	9.100	Shear	6.873	Rupture	124	3.54	11.437	9.100	10.547	14.585	6.873	0.000	0.000	0.000
0.000		0.000		Automatic											
g76P	Brace4	10.195	Bearing	10.195	Bearing	38	1.25	20.539	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g77P	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g77X	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g78P	Brace4	10.195	Bearing	10.195	Bearing	38	1.25	20.539	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g79P	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g79X	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g80P	Brace4	10.195	Bearing	10.195	Bearing	38	1.25	20.539	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g81P	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g81X	Brace4	10.195	Bearing	10.195	Bearing	85	2.80	17.105	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g82P	Brace4	10.195	Bearing	10.195	Bearing	38	1.25	20.539	16.800	10.195	18.827	13.594	0.000	0.000	0.000
0.000		0.000		Automatic											
g83P	M2a	5.799	L/r	7.717	Rupture	175	5.00	5.799	9.100	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g83X	M2a	5.799	L/r	7.717	Rupture	175	5.00	5.799	9.100	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											

The model contains 242 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	0.0869	4.661	3.039
2P	0.117	6.336	5.481
3P	0.0777	4.953	4.953
4P	0.123	7.193	5.480
5P	0.086	5.453	5.150
6P	0.116	6.011	5.094
7P	0.537	17.691	17.951
12P	0.0617	3.479	1.146

13P	0.0626	3.947	2.078
14P	0.0836	5.448	1.380
15P	0.0558	3.475	1.557
17P	0.116	5.346	5.346
20P	0.248	5.313	5.313
21P	1.08	24.766	24.870
22P	1.39	30.679	30.471
23P	1.05	22.729	22.625
24P	0.678	14.760	14.656
25P	0.678	14.760	14.656
26P	0.248	5.313	5.313
1X	0.0869	4.661	3.039
1XY	0.0903	4.869	3.143
1Y	0.0903	4.869	3.143
2X	0.117	6.336	5.481
2XY	0.117	6.336	5.481
2Y	0.117	6.336	5.481
3X	0.0777	4.953	4.953
3XY	0.0777	4.953	4.953
3Y	0.0777	4.953	4.953
4X	0.123	7.193	5.480
4XY	0.126	7.402	5.584
4Y	0.126	7.402	5.584
5X	0.086	5.453	5.150
5XY	0.086	5.453	5.150
5Y	0.086	5.453	5.150
6X	0.116	6.011	5.094
6XY	0.12	6.219	5.199
6Y	0.12	6.219	5.199
7X	0.537	17.691	17.951
7XY	0.488	17.274	17.066
7Y	0.488	17.274	17.066
12X	0.0617	3.479	1.146
13X	0.0626	3.947	2.078
14X	0.0836	5.448	1.380
15X	0.0558	3.475	1.557
17X	0.116	5.346	5.346
17XY	0.116	5.346	5.346
17Y	0.116	5.346	5.346
8S	0.0904	4.510	4.510
9S	0.109	5.544	5.544
10S	0.251	9.862	9.862
11S	0.586	20.618	20.618
16S	0.0425	2.427	1.690
18S	0.132	7.726	2.940
19S	0.132	2.940	7.726
i0.50E33S	0.0552	2.877	2.981
i0.50E65S	0.0165	0.729	0.833
i0.50E75S	0.0165	0.729	0.833
i0.50E92S	0.0165	0.729	0.833
8X	0.0904	4.510	4.510
8XY	0.0904	4.510	4.510
8Y	0.0904	4.510	4.510
9X	0.109	5.544	5.544
9XY	0.109	5.544	5.544
9Y	0.109	5.544	5.544
10X	0.251	9.862	9.862
10XY	0.251	9.862	9.862
10Y	0.251	9.862	9.862

11X	0.586	20.618	20.618
11XY	0.603	21.481	21.325
11Y	0.603	21.481	21.325
16X	0.0425	2.427	1.690
16XY	0.0425	2.427	1.690
16Y	0.0425	2.427	1.690
18Y	0.132	7.726	2.940
19X	0.132	2.940	7.726
Total	15.8	581.973	536.174

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)
1	6.186	280.846	235.256	137.849	111.115
2	9.647	301.127	300.918	145.607	145.607
Total	15.833	581.973	536.174	283.456	256.722

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	6.186	6.186	1098.415	1098.415
2	9.647	10.129	1296.324	1361.140
Total	15.833	16.316	2394.739	2459.555

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1X	91.500
1	2X	86.500
1	1P	91.500
1	2P	86.500
1	1Y	91.500
1	2Y	86.500
1	1XY	91.500
1	2XY	86.500
1	3X	80.500
1	3P	80.500
1	3Y	80.500
1	3XY	80.500
1	16S	77.500
1	16X	77.500
1	16XY	77.500
1	16Y	77.500
1	4X	74.500
1	4P	74.500
1	4Y	74.500
1	4XY	74.500
1	5X	69.500
1	5P	69.500
1	5Y	69.500

1	5XY	69.500
1	6X	64.500
1	6P	64.500
1	6Y	64.500
1	6XY	64.500
1	8X	59.500
1	8S	59.500
1	8Y	59.500
1	8XY	59.500
1	9X	53.500
1	9S	53.500
1	9Y	53.500
1	9XY	53.500
1	10X	47.000
1	10S	47.000
1	10Y	47.000
1	10XY	47.000
1	12P	91.500
1	12X	91.500
1	13P	86.500
1	13X	86.500
1	14P	74.500
1	14X	74.500
1	15P	64.500
1	15X	64.500
1	i0.50E92S	91.500
1	i0.50E75S	74.500
1	i0.50E65S	64.500
1	23P	64.500
1	24P	74.500
1	25P	91.500
1	26P	101.500
2	10X	47.000
2	11X	32.500
2	10S	47.000
2	11S	32.500
2	10Y	47.000
2	11Y	32.500
2	10XY	47.000
2	11XY	32.500
2	7X	10.000
2	7P	10.000
2	7Y	10.000
2	7XY	10.000
2	17X	0.000
2	17P	0.000
2	17Y	0.000
2	17XY	0.000
2	18S	10.000
2	18Y	10.000
2	19S	10.000
2	19X	10.000
2	i0.50E33S	32.500
2	20P	0.000
2	21P	10.000
2	22P	32.500
2	23P	64.500

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	101.500	47.000	55	180	0.00	9.82	289.644	0.00	9.82	568.644
2	47.000	0.000	25	62	9.82	22.52	764.206	9.82	22.52	764.206

*** Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	12P	C-EX1	No Limit
2	12X	C-EX1	No Limit
3	13P	C-EX1	No Limit
4	13X	C-EX1	No Limit
5	14P	C-EX1	No Limit
6	14X	C-EX1	No Limit
7	15P	C-EX1	No Limit
8	15X	C-EX1	No Limit
9	26P	C-EX1	No Limit
10	25P	C-EX1	No Limit
11	24P	C-EX1	No Limit
12	23P	C-EX1	No Limit
13	22P	C-EX1	No Limit
14	21P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1600200.wi\04_trumbull south east - ct5090\04_structural\backup documentation\rev (1)\calcs\pls tower\cl&p # 833.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)	101.50 (ft)	
Structure height	101.50 (ft)	
Structure height above ground	101.50 (ft)	
Tower Shape	Rectangular	

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles and 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	56.000	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
12P	471	598	0	Shield Wire (11/32 CW)
12X	777	773	0	Shield Wire (OPGW-120)
13P	962	852	0	Conductor (Parakeet)
13X	962	852	0	Conductor (Parakeet)
14P	962	852	0	Conductor (Parakeet)
14X	962	852	0	Conductor (Parakeet)
15P	962	852	0	Conductor (Parakeet)
15X	962	852	0	Conductor (Parakeet)
26P	7410	1102	0	Antennas
26P	117	21	0	Coax Cables
25P	316	58	0	Coax Cables
24P	316	58	0	Coax Cables
23P	492	90	0	Coax Cables
22P	639	117	0	Coax Cables
21P	498	91	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)
1	101.50	47.00	74.25	10.00	10.00	3.200	3555.7	0.00	3.200	0.0	0	9279
2	47.00	0.00	23.50	10.00	10.00	3.200	4659.4	0.00	3.200	0.0	0	15194

Point Loads for Load Case "NESC Extreme":

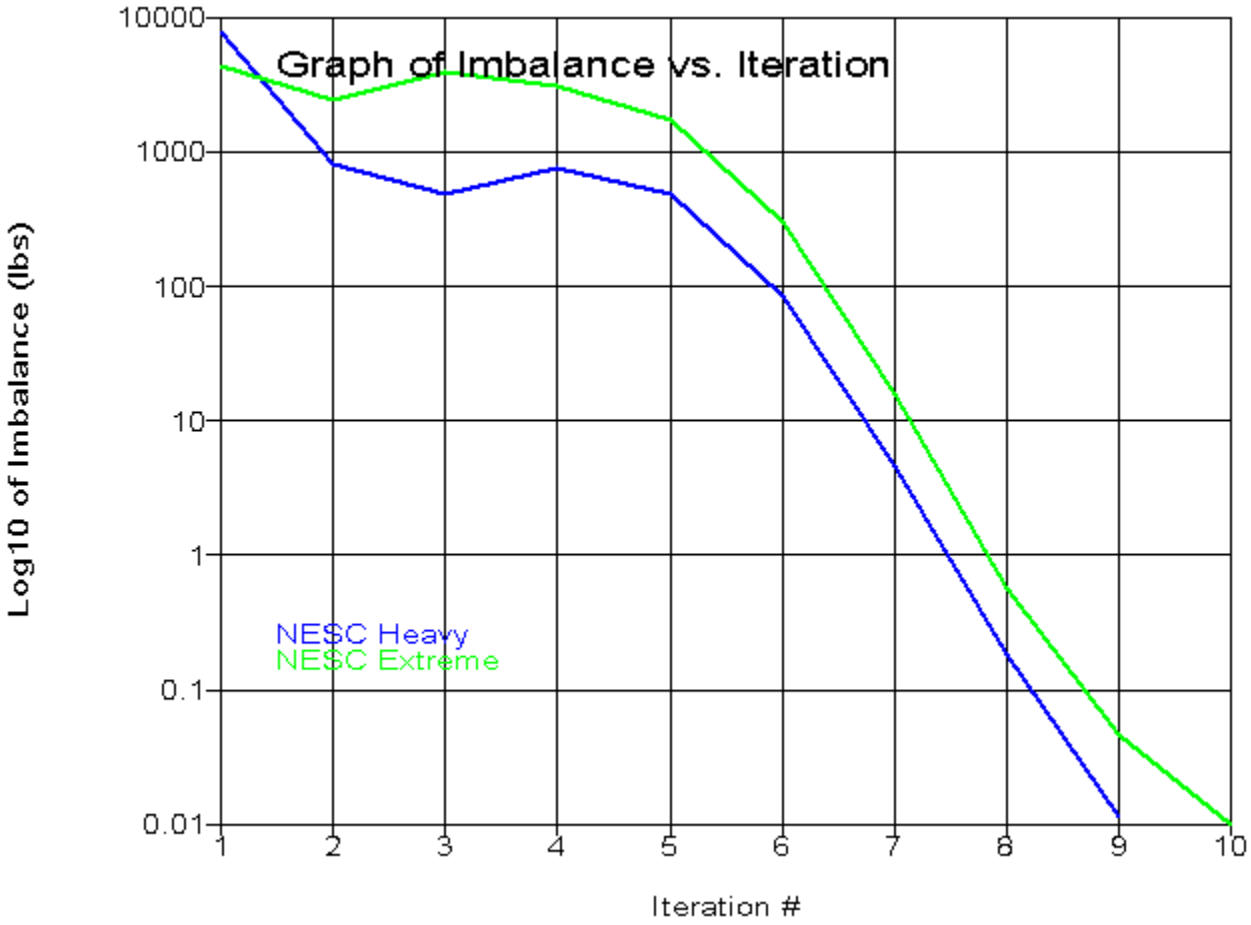
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
12X	119	351	0	Shield Wire (11/32 CW)
12P	239	755	0	Shield Wire (OPGW-120)
13P	331	935	0	Conductor (Parakeet)
13X	331	935	0	Conductor (Parakeet)
14P	331	935	0	Conductor (Parakeet)
14X	331	935	0	Conductor (Parakeet)
15P	331	935	0	Conductor (Parakeet)
15X	331	935	0	Conductor (Parakeet)
26P	3478	4142	0	Antennas
26P	49	51	0	Coax Cables
25P	131	137	0	Coax Cables
24P	131	137	0	Coax Cables
23P	204	213	0	Coax Cables
22P	265	276	0	Coax Cables
21P	207	215	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. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Face Angle Area (ft^2)	Tran Face Round Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Drag Coef	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Face Angle Area (ft^2)	Long Face Round Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Drag Coef	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	101.50	47.00	74.25	31.42	31.42	71.80	39.31	289.64	0.384	3.200	2.000	9690.7	0.00	98.54	39.31	568.64	0.242	3.200	2.000	0.0	0	6186
2	47.00	0.00	23.50	31.42	31.42	80.93	71.96	764.21	0.200	3.200	2.000	12660.1	0.00	80.93	71.96	764.21	0.200	3.200	2.000	0.0	0	10129

*** Analysis Results:

Maximum element usage is 97.43% for Angle "g38P" in load case "NESC Extreme"
Maximum insulator usage is 16.01% for Clamp "9" 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	g1P	3.59	1.893	0.000	0.358	1.893
LEG1	g1X	4.97	0.000	-2.659	-2.022	-2.659
LEG1	g1XY	5.03	0.000	-2.690	-2.041	-2.690
LEG1	g1Y	3.80	2.001	0.000	0.412	2.001

LEG1	g2P	14.31	8.350	0.000	3.324	8.350
LEG1	g2X	19.65	0.000	-9.606	-5.790	-9.606
LEG1	g2XY	20.76	0.000	-10.150	-5.988	-10.150
LEG1	g2Y	15.38	8.976	0.000	3.559	8.976
LEG1	g3P	25.36	14.795	0.000	6.461	14.795
LEG1	g3X	26.71	0.000	-16.086	-8.852	-16.086
LEG1	g3XY	28.05	0.000	-16.899	-9.128	-16.899
LEG1	g3Y	26.88	15.685	0.000	6.755	15.685
LEG1	g4P	27.48	14.475	0.000	5.863	14.475
LEG1	g4X	27.26	0.000	-16.418	-9.453	-16.418
LEG1	g4XY	28.58	0.000	-17.215	-9.726	-17.215
LEG1	g4Y	29.14	15.348	0.000	6.151	15.348
LEG1	g5P	47.66	23.080	0.000	9.849	23.080
LEG1	g5X	47.92	0.000	-25.644	-14.598	-25.644
LEG1	g5XY	48.90	0.000	-26.165	-14.793	-26.165
LEG1	g5Y	49.01	23.733	0.000	10.080	23.733
LEG1	g6P	56.65	28.526	0.000	12.533	28.526
LEG1	g6X	58.98	0.000	-31.558	-18.243	-31.558
LEG1	g6XY	58.62	0.000	-31.366	-18.217	-31.366
LEG1	g6Y	56.50	28.448	0.000	12.537	28.448
LEG2	g7P	56.34	32.678	0.000	15.172	32.678
LEG2	g7X	54.48	0.000	-35.722	-20.723	-35.722
LEG2	g7XY	53.78	0.000	-35.260	-20.599	-35.260
LEG2	g7Y	55.84	32.387	0.000	15.090	32.387
LEG2	g8P	58.16	34.597	0.000	16.321	34.597
LEG2	g8X	63.98	0.000	-38.112	-22.619	-38.112
LEG2	g8XY	63.52	0.000	-37.837	-22.511	-37.837
LEG2	g8Y	57.96	34.481	0.000	16.260	34.481
LEG2	g9P	52.47	34.042	0.000	16.270	34.042
LEG2	g9X	66.97	0.000	-37.613	-22.599	-37.613
LEG2	g9XY	66.76	0.000	-37.492	-22.517	-37.492
LEG2	g9Y	52.49	34.052	0.000	16.216	34.052
LEG3	g10P	47.14	31.053	0.000	15.023	31.053
LEG3	g10X	57.70	0.000	-34.601	-20.473	-34.601
LEG3	g10XY	57.73	0.000	-34.619	-20.405	-34.619
LEG3	g10Y	47.34	31.188	0.000	14.985	31.188
LEG3	g11P	43.16	29.611	0.000	13.947	29.611
LEG3	g11X	55.97	0.000	-32.619	-19.191	-32.619
LEG3	g11XY	56.02	0.000	-32.648	-19.226	-32.648
LEG3	g11Y	43.31	29.713	0.000	13.986	29.713
LEG4	g12P	62.87	38.827	0.000	16.827	38.827
LEG4	g12X	68.90	0.000	-45.232	-27.765	-45.232
LEG4	g12XY	68.78	0.000	-45.153	-27.806	-45.153
LEG4	g12Y	62.92	38.860	0.000	17.020	38.860
XBR1	g13P	25.50	0.000	-2.948	-1.657	-2.948
XBR1	g13X	19.28	2.813	0.000	1.393	2.813
XBR1	g13XY	25.79	3.762	0.000	1.725	3.762
XBR1	g13Y	33.72	0.000	-3.897	-2.009	-3.897
XBR1	g14P	2.22	0.000	-0.192	-0.192	-0.035
XBR1	g14X	0.50	0.000	-0.058	-0.026	-0.058
XBR1	g14XY	2.70	0.394	0.000	0.123	0.394
XBR1	g14Y	5.55	0.000	-0.479	-0.342	-0.479
XBR2	g15P	24.15	0.000	-4.172	-2.111	-4.172
XBR2	g15X	18.56	4.251	0.000	2.190	4.251
XBR2	g15XY	25.31	5.797	0.000	2.715	5.797
XBR2	g15Y	33.13	0.000	-5.724	-2.650	-5.724
XBR2	g16P	6.30	1.444	0.000	0.616	1.444
XBR2	g16X	11.32	0.000	-1.385	-0.567	-1.385
XBR2	g16XY	0.76	0.000	-0.093	-0.093	-0.044

XBR2	g16Y	0.59	0.136	0.000	0.136	0.091
XBR2	g17P	27.12	0.000	-4.685	-2.357	-4.685
XBR2	g17X	20.12	4.608	0.000	2.167	4.608
XBR2	g17XY	26.63	6.099	0.000	2.685	6.099
XBR2	g17Y	35.67	0.000	-6.163	-2.858	-6.163
XBR2	g18P	3.27	0.000	-0.400	-0.308	-0.400
XBR2	g18X	1.56	0.357	0.000	0.219	0.357
XBR2	g18XY	7.40	1.694	0.000	0.694	1.694
XBR2	g18Y	14.22	0.000	-1.741	-0.784	-1.741
XBR2	g19P	22.43	0.000	-4.259	-2.096	-4.259
XBR2	g19X	20.34	4.659	0.000	3.003	4.659
XBR2	g19XY	21.66	4.960	0.000	3.228	4.960
XBR2	g19Y	23.96	0.000	-4.549	-2.302	-4.549
XBR2	g20P	4.99	1.143	0.000	0.560	1.143
XBR2	g20X	8.16	0.000	-1.142	-0.665	-1.142
XBR2	g20XY	2.56	0.000	-0.358	-0.318	-0.358
XBR2	g20Y	1.61	0.368	0.000	0.217	0.368
XBR2	g21P	23.53	0.000	-4.468	-2.168	-4.468
XBR2	g21X	21.14	4.842	0.000	3.108	4.842
XBR2	g21XY	22.32	5.111	0.000	3.290	5.111
XBR2	g21Y	24.88	0.000	-4.723	-2.339	-4.723
XBR2	g22P	5.97	0.000	-0.835	-0.752	-0.835
XBR2	g22X	2.62	0.600	0.000	0.150	0.600
XBR2	g22XY	5.99	1.373	0.000	0.483	1.373
XBR2	g22Y	11.51	0.000	-1.610	-1.090	-1.610
XBR3	g23P	4.65	0.008	-0.502	-0.502	0.008
XBR3	g23X	2.21	0.039	-0.239	0.039	-0.239
XBR3	g23XY	6.02	0.739	0.000	0.533	0.739
XBR3	g23Y	7.87	0.000	-0.983	-0.983	-0.964
XBR3	g24P	10.79	0.000	-1.165	-0.628	-1.165
XBR3	g24X	8.93	1.097	0.000	0.519	1.097
XBR3	g24XY	15.74	1.934	0.000	0.998	1.934
XBR3	g24Y	18.35	0.000	-1.982	-1.097	-1.982
XBR4	g25P	1.79	0.000	-0.206	-0.206	-0.043
XBR4	g25X	1.83	0.300	0.000	0.300	0.081
XBR4	g25XY	5.13	0.842	0.000	0.677	0.842
XBR4	g25Y	7.11	0.000	-0.817	-0.596	-0.817
XBR4	g26P	8.18	1.341	0.000	0.729	1.341
XBR4	g26X	14.70	0.000	-1.300	-0.692	-1.300
XBR4	g26XY	7.41	0.000	-0.655	-0.322	-0.655
XBR4	g26Y	4.31	0.707	0.000	0.364	0.707
XBR4	g27P	4.47	0.000	-0.408	-0.408	-0.315
XBR4	g27X	1.19	0.195	0.000	0.135	0.195
XBR4	g27XY	4.77	0.783	0.000	0.431	0.783
XBR4	g27Y	9.78	0.000	-0.892	-0.694	-0.892
XBR4	g28P	7.05	0.000	-0.491	-0.268	-0.491
XBR4	g28X	2.47	0.405	0.000	0.184	0.405
XBR4	g28XY	5.47	0.897	0.000	0.466	0.897
XBR4	g28Y	13.99	0.000	-0.974	-0.545	-0.974
XBR5	g29P	20.85	0.000	-1.592	-1.059	-1.592
XBR5	g29X	3.96	0.760	-0.194	-0.194	0.760
XBR5	g29XY	6.99	1.342	0.000	0.090	1.342
XBR5	g29Y	28.35	0.000	-2.163	-1.350	-2.163
XBR5	g30P	81.99	0.000	-6.257	-3.746	-6.257
XBR5	g30X	28.91	5.553	0.000	2.599	5.553
XBR5	g30XY	31.45	6.040	0.000	2.879	6.040
XBR5	g30Y	88.24	0.000	-6.734	-4.021	-6.734
XBR6	g31P	14.24	0.000	-2.506	-2.122	-2.506
XBR6	g31X	6.39	1.315	-0.362	-0.362	1.315

XBR6	g31XY	8.28	1.704	-0.063	-0.063	1.704
XBR6	g31Y	16.42	0.000	-2.842	-2.447	-2.842
XBR6	g32P	82.91	0.000	-12.355	-7.315	-12.355
XBR6	g32X	50.34	10.365	0.000	4.890	10.365
XBR6	g32XY	52.60	10.829	0.000	5.092	10.829
XBR6	g32Y	86.02	0.000	-12.818	-7.532	-12.818
XBR7	g33P	32.69	2.975	0.000	1.243	2.975
XBR7	g33X	39.32	0.000	-3.578	-1.561	-3.578
XBR7	g33XY	45.25	0.000	-4.118	-1.878	-4.118
XBR7	g33Y	38.58	3.511	0.000	1.558	3.511
XBR7	g34P	5.09	0.000	-0.464	-0.217	-0.464
XBR7	g34X	1.43	0.000	-0.130	-0.045	-0.130
XBR7	g34XY	2.18	0.000	-0.199	-0.141	-0.199
XBR7	g34Y	4.30	0.000	-0.391	-0.154	-0.391
HORZ1	g35P	5.39	0.370	0.000	0.370	0.244
HORZ1	g35Y	5.37	0.369	0.000	0.369	0.236
HORZ1	g36P	75.84	5.213	0.000	3.084	5.213
HORZ1	g36X	52.56	0.000	-4.783	-2.292	-4.783
HORZ2	g37P	3.91	0.488	0.000	0.488	0.286
HORZ2	g37Y	3.63	0.454	0.000	0.454	0.235
HORZ2	g38P	97.43	12.179	0.000	6.964	12.179
HORZ2	g38X	78.38	0.000	-11.022	-5.596	-11.022
HORZ3	g39P	17.47	0.000	-1.589	-0.852	-1.589
HORZ3	g39X	30.62	2.786	0.000	1.237	2.786
HORZ3	g39XY	36.00	3.276	0.000	1.461	3.276
HORZ3	g39Y	20.90	0.000	-1.902	-1.100	-1.902
HORZ3	g40P	79.93	7.274	0.000	3.888	7.274
HORZ3	g40X	61.09	0.000	-5.559	-3.105	-5.559
HORZ3	g40XY	60.53	0.000	-5.508	-3.033	-5.508
HORZ3	g40Y	79.34	7.220	0.000	3.842	7.220
InBr	g41P	7.92	0.720	0.000	0.720	0.690
InBr	g41X	2.79	0.254	0.000	0.254	0.032
ARM1	g42P	1.87	0.000	-0.341	-0.096	-0.341
ARM1	g42X	4.16	0.758	0.000	0.758	0.372
ARM1	g42XY	4.14	0.753	0.000	0.753	0.357
ARM1	g42Y	1.82	0.000	-0.331	-0.092	-0.331
ARM1	g43P	5.35	1.535	0.000	1.535	0.538
ARM1	g43Y	4.98	1.428	0.000	1.428	0.500
ARM1	g44P	6.71	0.000	-1.833	-1.833	-0.991
ARM1	g44X	5.43	0.000	-1.481	-1.481	-0.340
ARM1	g44XY	4.60	0.327	-1.256	-1.256	0.327
ARM1	g44Y	7.59	0.000	-2.071	-2.071	-1.667
ARM1	g45P	5.82	0.000	-1.525	-1.525	-0.591
ARM1	g45Y	5.81	0.000	-1.524	-1.524	-0.603
ARM2	g46P	10.28	0.000	-2.589	-2.589	-1.400
ARM2	g46X	6.77	0.000	-1.705	-1.705	-0.311
ARM2	g46XY	6.70	0.000	-1.689	-1.689	-0.245
ARM2	g46Y	10.40	0.000	-2.619	-2.619	-1.476
ARM2	g47P	7.36	0.000	-2.160	-2.160	-0.857
ARM2	g47Y	6.88	0.000	-2.019	-2.019	-0.806
ARM1	g48P	7.18	0.000	-1.307	-1.307	-0.935
ARM1	g48X	2.18	0.237	-0.397	-0.397	0.237
ARM1	g48XY	2.07	0.257	-0.377	-0.377	0.257
ARM1	g48Y	7.41	0.000	-1.348	-1.348	-0.973
ARM1	g49P	4.62	0.000	-1.213	-1.213	-0.524
ARM1	g49Y	4.24	0.000	-1.111	-1.111	-0.474
M1	g50P	12.75	0.876	-0.239	-0.239	0.876
M1	g50X	21.53	0.000	-1.249	-0.847	-1.249
M1	g51P	6.85	0.471	-0.196	0.471	-0.196

M1	g51X	11.57	0.796	0.000	0.796	0.676
M1	g52P	7.30	0.502	-0.136	0.502	-0.136
M1	g52X	11.67	0.802	0.000	0.802	0.623
M1	g53P	35.06	0.000	-2.033	-0.845	-2.033
M1	g53X	31.44	2.161	0.000	1.386	2.161
M2	g54P	26.89	1.848	0.000	0.759	1.848
M2	g54X	19.03	0.000	-1.732	-0.439	-1.732
M2a	g55P	3.30	0.227	0.000	0.050	0.227
M2a	g55X	2.96	0.000	-0.270	-0.138	-0.270
M2	g56P	11.37	0.000	-1.035	-0.448	-1.035
M2	g56X	12.16	0.836	-0.013	-0.013	0.836
M2	g57P	9.38	0.645	0.000	0.210	0.645
M2	g57X	9.88	0.000	-0.899	-0.646	-0.899
M3	g58P	7.89	0.000	-0.718	-0.718	-0.442
M3	g58X	12.16	0.000	-1.106	-1.106	-0.289
M4	g59P	16.74	1.321	0.000	1.321	0.308
M4	g59X	23.69	1.869	0.000	1.869	0.992
M4	g59XY	20.30	1.601	0.000	1.601	0.200
M4	g59Y	20.30	1.602	0.000	1.602	1.105
M4	g60P	27.84	2.196	0.000	2.196	0.858
M4	g60X	28.01	2.209	0.000	2.209	0.907
M4	g60XY	27.79	2.192	0.000	2.192	0.841
M4	g60Y	28.21	2.225	0.000	2.225	0.931
M4	g61P	12.37	0.976	0.000	0.976	0.410
M4	g61X	12.61	0.995	0.000	0.995	0.410
M4	g61XY	12.28	0.969	0.000	0.969	0.383
M4	g61Y	12.99	1.025	0.000	1.025	0.456
M4	g62P	25.19	1.987	0.000	1.987	0.808
M4	g62Y	25.31	1.997	0.000	1.997	0.817
Pwmnt	g63P	2.73	0.000	-17.984	-17.984	-7.009
Pwmnt	g64P	2.78	0.000	-15.774	-15.774	-6.379
Pwmnt	g65P	2.84	0.000	-12.866	-12.866	-5.305
Pwmnt	g66P	1.63	0.000	-10.690	-10.690	-4.439
Pwmnt	g67P	1.51	0.000	-9.296	-9.296	-4.051
Pwmnt	g68P	1.20	0.000	-7.890	-7.890	-3.570
Brace1	g69P	3.22	0.437	-0.269	0.437	-0.269
Brace1	g69X	7.43	0.000	-1.010	-0.096	-1.010
Brace2	g70P	2.76	0.340	-0.464	0.340	-0.464
Brace2	g70X	3.98	0.000	-0.669	-0.025	-0.669
Brace3	g71P	7.89	0.805	0.000	0.805	0.453
Brace3	g71X	2.28	0.000	-0.220	-0.220	-0.016
InBr	ig41P71P	5.03	0.458	0.000	0.458	0.157
InBr	ig41P71X	1.90	0.173	-0.002	-0.002	0.173
M2	ig57P72P	7.63	0.524	0.000	0.322	0.524
M2	ig57P72X	6.74	0.000	-0.614	-0.445	-0.614
M2	ig56P73P	11.05	0.000	-1.005	-0.221	-1.005
M2	ig56P73X	14.19	0.976	0.000	0.188	0.976
M2	ig54P74P	22.11	1.519	0.000	0.545	1.519
M2	ig54P74X	16.64	0.000	-1.514	-0.547	-1.514
Brace4	g76P	3.60	0.367	0.000	0.367	0.279
Brace4	g77P	15.27	1.557	0.000	0.661	1.557
Brace4	g77X	17.61	0.000	-1.795	-1.167	-1.795
Brace4	g78P	2.17	0.000	-0.221	-0.221	-0.116
Brace4	g79P	24.80	0.000	-2.529	-0.890	-2.529
Brace4	g79X	21.93	2.236	0.000	0.186	2.236
Brace4	g80P	2.97	0.000	-0.303	-0.303	-0.120
Brace4	g81P	41.24	4.205	0.000	1.696	4.205
Brace4	g81X	39.34	0.000	-4.011	-1.169	-4.011
Brace4	g82P	2.23	0.227	0.000	0.227	0.078

M2a	g83P	8.26	0.000	-0.479	-0.479	-0.307
M2a	g83X	6.04	0.000	-0.350	-0.350	-0.035

*** 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	0.0007223	0.1753	-0.01482	-0.2601	0.0014	-0.0147	2.501	2.675	91.49
2P	0.0008006	0.1526	-0.01459	-0.2569	-0.0086	-0.0134	2.501	2.653	86.49
3P	0.001499	0.1267	-0.01392	-0.2377	0.0124	-0.0115	2.501	2.627	80.49
4P	0.0005761	0.1015	-0.01289	-0.2321	-0.0140	-0.0093	2.501	2.602	74.49
5P	0.001788	0.08334	-0.01156	-0.2020	0.0067	-0.0068	2.502	2.583	69.49
6P	0.000176	0.06634	-0.00991	-0.1701	0.0004	-0.0042	2.5	2.566	64.49
7P	0.000807	0.0009323	-0.003897	-0.0135	0.0085	-0.0022	10	10	9.996
12P	-0.00409	0.1761	0.05422	-0.2434	-0.0032	-0.0204	-0.00409	-13.57	91.55
13P	-0.002508	0.154	0.0369	-0.2335	-0.0004	-0.0171	-0.002508	-9.596	86.54
14P	-0.002172	0.103	0.04012	-0.1401	-0.0010	-0.0077	-0.002172	-14.15	74.54
15P	-0.001347	0.06728	0.02717	-0.1755	-0.0010	-0.0091	-0.001347	-10.18	64.53
17P	0	0	0	0.0000	0.0000	0.0000	11.26	11.26	0
20P	0	0	0	0.0000	0.0000	0.0000	-1.25	0	0
21P	6.136e-006	0.001839	-0.0004562	-0.0195	-0.0001	-0.0004	-1.25	0.001839	10
22P	-8.349e-005	0.01531	-0.00136	-0.0457	0.0003	-0.0029	-1.25	0.01531	32.5
23P	7.31e-005	0.0671	-0.002446	-0.1759	0.0003	-0.0076	-1.25	0.0671	64.5
24P	0.0001097	0.1021	-0.002778	-0.2123	0.0001	-0.0085	-1.25	0.1021	74.5
25P	8.995e-005	0.1767	-0.003343	-0.3325	-0.0001	-0.0100	-1.25	0.1767	91.5
26P	7.843e-005	0.2434	-0.003765	-0.4056	-0.0001	-0.0100	-1.25	0.2434	101.5
1X	-0.0006286	0.1752	0.006938	-0.2513	-0.0039	-0.0160	2.499	-2.325	91.51
1XY	-0.0003929	0.1767	0.006991	-0.2485	-0.0002	-0.0123	-2.5	-2.323	91.51
1Y	0.0007889	0.1769	-0.01485	-0.2612	0.0007	-0.0153	-2.499	2.677	91.49
2X	-0.0004169	0.1529	0.006956	-0.2530	0.0041	-0.0151	2.5	-2.347	86.51
2XY	-0.0006379	0.1542	0.007005	-0.2562	-0.0030	-0.0133	-2.501	-2.346	86.51
2Y	0.0006699	0.1539	-0.01462	-0.2591	0.0087	-0.0151	-2.499	2.654	86.49
3X	-0.001174	0.1262	0.00666	-0.2499	-0.0060	-0.0125	2.499	-2.374	80.51
3XY	0.0002371	0.1272	0.006686	-0.2543	0.0034	-0.0125	-2.5	-2.373	80.51
3Y	-0.0002286	0.1277	-0.01392	-0.2424	-0.0094	-0.0122	-2.5	2.628	80.49
4X	-0.0002634	0.1018	0.006053	-0.2177	0.0074	-0.0101	2.5	-2.398	74.51
4XY	-0.0004865	0.1026	0.006049	-0.2164	-0.0091	-0.0116	-2.5	-2.397	74.51
4Y	0.0004367	0.1023	-0.01286	-0.2326	0.0147	-0.0095	-2.5	2.602	74.49
5X	-0.001483	0.08235	0.005216	-0.2088	-0.0034	-0.0097	2.499	-2.418	69.51
5XY	0.0008883	0.08308	0.005191	-0.2095	0.0016	-0.0081	-2.499	-2.417	69.51
5Y	-0.0009816	0.08407	-0.01152	-0.2019	-0.0040	-0.0082	-2.501	2.584	69.49
6X	-1.843e-005	0.06652	0.004127	-0.1605	-0.0024	-0.0093	2.5	-2.433	64.5
6XY	-0.0004038	0.06724	0.004102	-0.1600	-0.0008	-0.0046	-2.5	-2.433	64.5
6Y	0.000411	0.06708	-0.009868	-0.1709	0.0020	-0.0070	-2.5	2.567	64.49
7X	-0.0008036	0.0008551	0.002285	-0.0032	-0.0244	-0.0701	9.999	-9.999	10
7XY	0.0007413	0.001059	0.002296	-0.0015	0.0325	0.1146	-9.999	-9.999	10
7Y	-0.0007672	0.001132	-0.003883	-0.0151	-0.0089	-0.0037	-10	10	9.996
12X	0.004302	0.1762	-0.06978	-0.2806	0.0024	-0.0199	0.004302	13.93	91.43
13X	0.002712	0.1529	-0.05066	-0.2883	0.0010	-0.0170	0.002712	9.903	86.45
14X	0.002333	0.1012	-0.07416	-0.3294	0.0002	-0.0086	0.002333	14.35	74.43
15X	0.001442	0.06661	-0.03866	-0.2325	0.0004	-0.0099	0.001442	10.32	64.46
17X	0	0	0	0.0000	0.0000	0.0000	11.26	-11.26	0
17XY	0	0	0	0.0000	0.0000	0.0000	-11.26	-11.26	0
17Y	0	0	0	0.0000	0.0000	0.0000	-11.26	11.26	0
8S	0.00143	0.05372	-0.009912	-0.1261	-0.0125	-0.0027	3.19	3.242	59.49
9S	0.0008717	0.04105	-0.009696	-0.1064	0.0056	-0.0009	4.015	4.055	53.49
10S	0.0007597	0.03035	-0.008986	-0.0793	-0.0043	-0.0023	4.909	4.939	46.99

11S	0.001327	0.01394	-0.007442	-0.0488	-0.0034	-0.0030	6.905	6.918	32.49
16S	-0.0004775	0.1135	0.006343	-0.2321	-0.0134	-0.0112	2.5	-2.386	77.51
18S	-0.00106	0.0006808	-0.0002206	-0.0224	-0.0080	0.0111	9.999	0.0006808	10
19S	1.511e-005	-0.003265	-0.0005133	-0.0143	0.0002	0.0006	1.511e-005	9.997	9.999
i0.50E33S	-6.167e-005	0.01518	-0.002416	-0.0457	0.0715	-0.0071	-6.167e-005	0.01518	32.5
i0.50E65S	5.959e-005	0.06665	-0.002622	-0.1634	0.0083	-0.0173	5.959e-005	0.06665	64.5
i0.50E75S	9.131e-005	0.102	-0.003009	-0.2189	0.0096	-0.0056	9.131e-005	0.102	74.5
i0.50E92S	0.0001036	0.1761	-0.003402	-0.2694	0.0115	-0.0291	0.0001036	0.1761	91.5
8X	-0.001104	0.05338	0.004671	-0.1323	0.0094	-0.0114	3.187	-3.135	59.5
8XY	0.0007917	0.05404	0.004647	-0.1355	-0.0120	0.0006	-3.187	-3.134	59.5
8Y	-0.0009812	0.05437	-0.009873	-0.1286	0.0152	-0.0060	-3.189	3.242	59.49
9X	-0.0005913	0.04093	0.005008	-0.1023	-0.0064	-0.0102	4.013	-3.973	53.51
9XY	0.0003652	0.04151	0.004988	-0.1039	0.0046	0.0023	-4.013	-3.972	53.5
9Y	-0.0005369	0.04163	-0.00966	-0.1079	-0.0039	-0.0053	-4.014	4.055	53.49
10X	-0.0005514	0.0302	0.004922	-0.0797	0.0020	-0.0139	4.908	-4.878	47
10XY	0.0004064	0.03069	0.004908	-0.0810	-0.0032	0.0093	-4.908	-4.878	47
10Y	-0.0005293	0.03084	-0.008956	-0.0803	0.0055	-0.0012	-4.909	4.939	46.99
11X	-0.001056	0.01377	0.004397	-0.0460	0.0013	-0.0244	6.903	-6.89	32.5
11XY	0.0009776	0.01415	0.004397	-0.0457	-0.0010	0.0249	-6.903	-6.89	32.5
11Y	-0.001203	0.01431	-0.007426	-0.0496	0.0032	0.0049	-6.905	6.918	32.49
16X	0.0005034	0.1143	-0.01342	-0.2431	0.0134	-0.0105	2.501	2.614	77.49
16XY	0.0006009	0.115	-0.01341	-0.2450	-0.0109	-0.0108	-2.499	2.615	77.49
16Y	-0.0003441	0.1143	0.006354	-0.2349	0.0116	-0.0121	-2.5	-2.386	77.51
18Y	-0.001117	0.0008345	5.298e-005	-0.0224	0.0118	-0.0212	-10	0.0008345	10
19X	-2.335e-005	0.05423	-0.007033	-0.0034	-0.0020	-0.0120	-2.335e-005	-9.946	9.993

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 %
17P	-3.73	0.0	-4.62	0.0	0.0	-28.69	0.0	0.0	29.30	0.0	-0.02	0.0	0.0	0.0	0.0	0.00	0.0	0.0
20P	-0.01	0.0	-0.25	0.0	0.0	-18.37	0.0	0.0	18.38	0.0	2.22	0.0	-0.0	0.0	0.0	0.03	0.0	0.0
17X	2.15	0.0	-3.13	0.0	0.0	17.18	0.0	0.0	17.59	0.0	-0.02	0.0	-0.0	0.0	0.0	0.07	0.0	0.0
17XY	-2.13	0.0	-3.38	0.0	0.0	17.51	0.0	0.0	17.96	0.0	-0.02	0.0	0.0	0.0	0.0	-0.12	0.0	0.0
17Y	3.72	0.0	-4.85	0.0	0.0	-28.90	0.0	0.0	29.54	0.0	-0.01	0.0	-0.0	0.0	0.0	0.00	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	-0.1303	0.0000	0.0000	0.1303	0.0007	0.1753	-0.0148
2P	0.0000	0.0000	-0.1749	0.0000	0.0000	0.1749	0.0008	0.1526	-0.0146
3P	0.0000	0.0000	-0.1165	0.0000	0.0000	0.1165	0.0015	0.1267	-0.0139
4P	0.0000	0.0000	-0.1842	-0.0000	0.0000	0.1842	0.0006	0.1015	-0.0129
5P	0.0000	0.0000	-0.1290	-0.0000	0.0000	0.1290	0.0018	0.0833	-0.0116
6P	0.0000	0.0000	-0.1744	0.0000	0.0000	0.1744	0.0002	0.0663	-0.0099
7P	0.0000	0.0000	-0.8453	0.0000	0.0000	0.8453	0.0008	0.0009	-0.0039
12P	0.0000	0.6347	-0.5635	-0.0000	-0.6347	0.5635	-0.0041	0.1761	0.0542
13P	0.0000	0.9185	-1.0560	-0.0000	-0.9185	1.0560	-0.0025	0.1540	0.0369
14P	0.0000	0.8962	-1.0874	-0.0000	-0.8962	1.0874	-0.0022	0.1030	0.0401
15P	0.0000	0.9018	-1.0456	-0.0000	-0.9018	1.0456	-0.0013	0.0673	0.0272
17P	0.0000	0.0000	-0.1822	3.7315	4.6175	-28.5120	0.0000	0.0000	0.0000
20P	0.0000	0.1700	-0.3906	0.0082	0.0827	-17.9840	0.0000	0.0000	0.0000
21P	0.0000	0.6435	-2.1972	-0.0000	-0.6435	2.1972	0.0000	0.0018	-0.0005

22P	0.0000	1.0435	-2.8223	-0.0000	-1.0435	2.8223	-0.0001	0.0153	-0.0014
23P	0.0000	0.8040	-2.1264	-0.0000	-0.8040	2.1264	0.0001	0.0671	-0.0024
24P	0.0000	0.5170	-1.3329	0.0000	-0.5170	1.3329	0.0001	0.1021	-0.0028
25P	0.0000	0.5170	-1.3329	-0.0000	-0.5170	1.3329	0.0001	0.1767	-0.0033
26P	0.0000	1.2930	-7.8990	0.0000	-1.2930	7.8990	0.0001	0.2434	-0.0038
1X	0.0000	0.0681	-0.1303	0.0000	-0.0681	0.1303	-0.0006	0.1752	0.0069
1XY	0.0000	0.0681	-0.1354	-0.0000	-0.0681	0.1354	-0.0004	0.1767	0.0070
1Y	0.0000	0.0000	-0.1354	-0.0000	0.0000	0.1354	0.0008	0.1769	-0.0149
2X	0.0000	0.1164	-0.1749	-0.0000	-0.1164	0.1749	-0.0004	0.1529	0.0070
2XY	0.0000	0.1164	-0.1749	0.0000	-0.1164	0.1749	-0.0006	0.1542	0.0070
2Y	0.0000	0.0000	-0.1749	-0.0000	0.0000	0.1749	0.0007	0.1539	-0.0146
3X	0.0000	0.1105	-0.1165	0.0000	-0.1105	0.1165	-0.0012	0.1262	0.0067
3XY	0.0000	0.1105	-0.1165	0.0000	-0.1105	0.1165	0.0002	0.1272	0.0067
3Y	0.0000	0.0000	-0.1165	0.0000	0.0000	0.1165	-0.0002	0.1277	-0.0139
4X	0.0000	0.1139	-0.1842	-0.0000	-0.1139	0.1842	-0.0003	0.1018	0.0061
4XY	0.0000	0.1139	-0.1893	-0.0000	-0.1139	0.1893	-0.0005	0.1026	0.0060
4Y	0.0000	0.0000	-0.1893	-0.0000	0.0000	0.1893	0.0004	0.1023	-0.0129
5X	0.0000	0.1248	-0.1290	-0.0000	-0.1248	0.1290	-0.0015	0.0823	0.0052
5XY	0.0000	0.1248	-0.1290	0.0000	-0.1248	0.1290	0.0009	0.0831	0.0052
5Y	0.0000	0.0000	-0.1290	0.0000	0.0000	0.1290	-0.0010	0.0841	-0.0115
6X	0.0000	0.1121	-0.1744	-0.0000	-0.1121	0.1744	-0.0000	0.0665	0.0041
6XY	0.0000	0.1121	-0.1795	-0.0000	-0.1121	0.1795	-0.0004	0.0672	0.0041
6Y	0.0000	0.0000	-0.1795	-0.0000	0.0000	0.1795	0.0004	0.0671	-0.0099
7X	0.0000	0.3783	-0.8453	0.0000	-0.3783	0.8453	-0.0008	0.0009	0.0023
7XY	0.0000	0.3783	-0.7686	-0.0000	-0.3783	0.7686	0.0007	0.0011	0.0023
7Y	0.0000	0.0000	-0.7686	-0.0000	0.0000	0.7686	-0.0008	0.0011	-0.0039
12X	0.0000	0.7730	-0.8695	0.0000	-0.7730	0.8695	0.0043	0.1762	-0.0698
13X	0.0000	0.8520	-1.0560	0.0000	-0.8520	1.0560	0.0027	0.1529	-0.0507
14X	0.0000	0.8520	-1.0874	0.0000	-0.8520	1.0874	0.0023	0.1012	-0.0742
15X	0.0000	0.8520	-1.0456	0.0000	-0.8520	1.0456	0.0014	0.0666	-0.0387
17X	0.0000	0.1240	-0.1822	-2.1514	3.0062	17.3606	0.0000	0.0000	0.0000
17XY	0.0000	0.1240	-0.1822	2.1272	3.2557	17.6957	0.0000	0.0000	0.0000
17Y	0.0000	0.0000	-0.1822	-3.7154	4.8546	-28.7221	0.0000	0.0000	0.0000
8S	0.0000	0.0000	-0.1356	-0.0000	0.0000	0.1356	0.0014	0.0537	-0.0099
9S	0.0000	0.0000	-0.1628	0.0000	0.0000	0.1628	0.0009	0.0411	-0.0097
10S	0.0000	0.0000	-0.3890	0.0000	0.0000	0.3890	0.0008	0.0303	-0.0090
11S	0.0000	0.0000	-0.9237	0.0000	0.0000	0.9237	0.0013	0.0139	-0.0074
16S	0.0000	0.0541	-0.0637	0.0000	-0.0541	0.0637	-0.0005	0.1135	0.0063
18S	0.0000	0.0000	-0.2080	0.0000	0.0000	0.2080	-0.0011	0.0007	-0.0002
19S	0.0000	0.0000	-0.2080	-0.0000	0.0000	0.2080	0.0000	-0.0033	-0.0005
i0.50E33S	0.0000	0.0000	-0.0870	0.0000	0.0000	0.0870	-0.0001	0.0152	-0.0024
i0.50E65S	0.0000	0.0000	-0.0248	0.0000	0.0000	0.0248	0.0001	0.0666	-0.0026
i0.50E75S	0.0000	0.0000	-0.0248	0.0000	0.0000	0.0248	0.0001	0.1020	-0.0030
i0.50E92S	0.0000	0.0000	-0.0248	0.0000	0.0000	0.0248	0.0001	0.1761	-0.0034
8X	0.0000	0.1107	-0.1356	-0.0000	-0.1107	0.1356	-0.0011	0.0534	0.0047
8XY	0.0000	0.1107	-0.1356	0.0000	-0.1107	0.1356	0.0008	0.0540	0.0046
8Y	0.0000	0.0000	-0.1356	0.0000	0.0000	0.1356	-0.0010	0.0544	-0.0099
9X	0.0000	0.1353	-0.1628	-0.0000	-0.1353	0.1628	-0.0006	0.0409	0.0050
9XY	0.0000	0.1353	-0.1628	0.0000	-0.1353	0.1628	0.0004	0.0415	0.0050
9Y	0.0000	0.0000	-0.1628	-0.0000	0.0000	0.1628	-0.0005	0.0416	-0.0097
10X	0.0000	0.2449	-0.3890	0.0000	-0.2449	0.3890	-0.0006	0.0302	0.0049
10XY	0.0000	0.2449	-0.3890	-0.0000	-0.2449	0.3890	0.0004	0.0307	0.0049
10Y	0.0000	0.0000	-0.3890	-0.0000	0.0000	0.3890	-0.0005	0.0308	-0.0090
11X	0.0000	0.4669	-0.9237	-0.0000	-0.4669	0.9237	-0.0011	0.0138	0.0044
11XY	0.0000	0.4669	-0.9497	0.0000	-0.4669	0.9497	0.0010	0.0141	0.0044
11Y	0.0000	0.0000	-0.9497	-0.0000	0.0000	0.9497	-0.0012	0.0143	-0.0074
16X	0.0000	0.0000	-0.0637	0.0000	0.0000	0.0637	0.0005	0.1143	-0.0134
16XY	0.0000	0.0000	-0.0637	0.0000	0.0000	0.0637	0.0006	0.1150	-0.0134
16Y	0.0000	0.0541	-0.0637	0.0000	-0.0541	0.0637	-0.0003	0.1143	0.0064

18Y	0.0000	0.0000	-0.2080	-0.0000	0.0000	0.2080	-0.0011	0.0008	0.0001
19X	0.0000	0.2472	-0.2080	-0.0000	-0.2472	0.2080	-0.0000	0.0542	-0.0070

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)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	Alternate Unsupported L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
g14P	g14Y	Long only	-0.19	-0.34	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Long only	-0.34	-0.19	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g16X	g16XY	Long only	-0.57	-0.09	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-0.09	-0.57	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g18P	g18Y	Long only	-0.31	-0.78	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g18Y	g18P	Long only	-0.78	-0.31	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g20X	g20XY	Long only	-0.67	-0.32	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g20XY	g20X	Long only	-0.32	-0.67	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22P	g22Y	Long only	-0.75	-1.09	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22Y	g22P	Long only	-1.09	-0.75	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g23P	g23X	Long only	-0.50	0.04	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g24P	g24Y	Long only	-0.63	-1.10	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g24Y	g24P	Long only	-1.10	-0.63	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g26X	g26XY	Long only	-0.69	-0.32	11.49	0.563	0.781	0.563	148.89	142.05	5	8.84	1.000	188.20	161.94	6
g26XY	g26X	Long only	-0.32	-0.69	11.49	0.563	0.781	0.563	148.89	142.05	5	8.84	1.000	188.20	161.94	6
g28P	g28Y	Long only	-0.27	-0.55	9.12	0.550	0.775	0.550	171.66	159.41	5	6.97	1.000	221.50	182.42	6
g28Y	g28P	Long only	-0.55	-0.27	9.12	0.550	0.775	0.550	171.66	159.41	5	6.97	1.000	221.50	182.42	6
g31P	g31X	Long only	-2.12	-0.36	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g31X	g31P	Long only	-0.36	-2.12	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g31XY	g31Y	Long only	-0.06	-2.45	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g31Y	g31XY	Long only	-2.45	-0.06	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g32P	g32Y	Long only	-7.31	-7.53	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g32Y	g32P	Long only	-7.53	-7.31	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	0.849	50.00	50.00	1.70
2	1.163	50.00	50.00	2.33
3	1.400	50.00	50.00	2.80
4	1.357	50.00	50.00	2.71
5	1.409	50.00	50.00	2.82
6	1.381	50.00	50.00	2.76
7	1.381	50.00	50.00	2.76
8	1.349	50.00	50.00	2.70
9	8.004	50.00	50.00	16.01
10	1.430	50.00	50.00	2.86
11	1.430	50.00	50.00	2.86
12	2.273	50.00	50.00	4.55
13	3.009	50.00	50.00	6.02
14	2.289	50.00	50.00	4.58

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	0.001851	0.331	-0.02388	-0.4901	0.0064	-0.0348	2.502	2.831	91.48
2P	0.00165	0.2879	-0.02346	-0.4893	-0.0136	-0.0315	2.502	2.788	86.48
3P	0.00306	0.2378	-0.02223	-0.4557	0.0211	-0.0257	2.503	2.738	80.48
4P	0.001043	0.1903	-0.0203	-0.4359	-0.0229	-0.0192	2.501	2.69	74.48
5P	0.003429	0.155	-0.0179	-0.3834	0.0111	-0.0154	2.503	2.655	69.48
6P	0.0002793	0.124	-0.015	-0.3103	0.0030	-0.0115	2.5	2.624	64.49
7P	0.001287	0.002156	-0.006271	-0.0134	0.0364	-0.0976	10	10	9.994
12P	-0.00944	0.3334	0.1135	-0.4920	-0.0092	-0.0484	-0.00944	-13.42	91.61
13P	-0.0056	0.2902	0.07935	-0.4840	-0.0012	-0.0393	-0.0056	-9.46	86.58
14P	-0.003766	0.1919	0.1034	-0.4237	-0.0020	-0.0116	-0.003766	-14.06	74.6
15P	-0.002433	0.1252	0.05876	-0.3724	-0.0023	-0.0167	-0.002433	-10.12	64.56
17P	0	0	0	0.0000	0.0000	0.0000	11.26	11.26	0
20P	0	0	0	0.0000	0.0000	0.0000	-1.25	0	0
21P	-8.724e-005	0.003849	-0.0001785	-0.0385	-0.0007	0.0012	-1.25	0.003849	10
22P	-4.576e-005	0.02864	-0.0005561	-0.0825	0.0022	-0.0036	-1.25	0.02864	32.5
23P	0.0001069	0.1253	-0.001132	-0.3348	0.0001	-0.0134	-1.25	0.1253	64.5
24P	0.0001778	0.1908	-0.00146	-0.3821	0.0004	-0.0152	-1.25	0.1908	74.5
25P	0.0003199	0.3348	-0.002244	-0.7391	0.0006	-0.0194	-1.25	0.3348	91.5
26P	0.0004858	0.492	-0.003571	-0.9793	0.0006	-0.0194	-1.25	0.492	101.5
1X	-0.001245	0.3311	0.01774	-0.4859	-0.0047	-0.0351	2.499	-2.169	91.52
1XY	-0.0008963	0.3348	0.01789	-0.4789	-0.0067	-0.0291	-2.501	-2.165	91.52
1Y	0.001609	0.3347	-0.02399	-0.4924	0.0007	-0.0304	-2.498	2.835	91.48
2X	-0.001032	0.2881	0.01775	-0.4885	0.0109	-0.0317	2.499	-2.212	86.52
2XY	-0.001219	0.2911	0.0179	-0.4975	-0.0079	-0.0312	-2.501	-2.209	86.52
2Y	0.001705	0.2908	-0.02355	-0.4963	0.0130	-0.0316	-2.498	2.791	86.48
3X	-0.002519	0.2377	0.01707	-0.4600	-0.0175	-0.0255	2.497	-2.262	80.52
3XY	0.000555	0.2397	0.01716	-0.4735	0.0101	-0.0269	-2.499	-2.26	80.52
3Y	-0.0002391	0.2398	-0.02226	-0.4697	-0.0131	-0.0267	-2.5	2.74	80.48
4X	-0.000655	0.1905	0.0157	-0.4313	0.0191	-0.0198	2.499	-2.309	74.52
4XY	-0.0008281	0.1918	0.0157	-0.4286	-0.0225	-0.0223	-2.501	-2.308	74.52
4Y	0.001081	0.1915	-0.02024	-0.4366	0.0245	-0.0222	-2.499	2.692	74.48
5X	-0.003029	0.1547	0.01378	-0.3856	-0.0090	-0.0167	2.497	-2.345	69.51
5XY	0.00188	0.1559	0.01372	-0.3863	0.0045	-0.0163	-2.498	-2.344	69.51
5Y	-0.001791	0.1563	-0.01779	-0.3823	-0.0049	-0.0170	-2.502	2.656	69.48
6X	-8.23e-005	0.1241	0.01134	-0.3068	-0.0037	-0.0137	2.5	-2.376	64.51
6XY	-0.0006831	0.1254	0.01129	-0.3051	-0.0026	-0.0103	-2.501	-2.375	64.51
6Y	0.0008449	0.1253	-0.01491	-0.3123	0.0017	-0.0119	-2.499	2.625	64.49
7X	-0.001895	0.001918	0.005275	-0.0068	-0.0549	-0.1555	9.998	-9.998	10.01
7XY	0.001847	0.002243	0.005245	-0.0041	0.0731	0.2501	-9.998	-9.998	10.01
7Y	-0.001244	0.002518	-0.00622	-0.0123	-0.0460	0.1497	-10	10	9.994
12X	0.01008	0.3325	-0.1226	-0.5050	0.0071	-0.0484	0.01008	14.08	91.38
13X	0.006148	0.2891	-0.08751	-0.5059	0.0027	-0.0394	0.006148	10.04	86.41
14X	0.004093	0.1904	-0.1189	-0.4995	0.0006	-0.0118	0.004093	14.44	74.38
15X	0.002616	0.1246	-0.06489	-0.3966	0.0008	-0.0169	0.002616	10.37	64.44
17X	0	0	0	0.0000	0.0000	0.0000	11.26	-11.26	0
17XY	0	0	0	0.0000	0.0000	0.0000	-11.26	-11.26	0
17Y	0	0	0	0.0000	0.0000	0.0000	-11.26	11.26	0
8S	0.002557	0.1004	-0.01522	-0.2357	-0.0214	-0.0113	3.191	3.288	59.48
9S	0.001466	0.07716	-0.01511	-0.1931	0.0119	-0.0094	4.015	4.091	53.48
10S	0.001341	0.0574	-0.01417	-0.1471	-0.0066	-0.0147	4.91	4.966	46.99

11S	0.002366	0.02652	-0.01197	-0.0890	-0.0037	-0.0284	6.906	6.93	32.49
16S	-0.0008656	0.214	0.01638	-0.4527	-0.0274	-0.0224	2.499	-2.286	77.52
18S	-0.005297	0.001591	-0.0008338	-0.0445	-0.0092	0.0495	9.995	0.001591	9.999
19S	1.759e-005	0.06608	0.007871	-0.0108	0.0026	-0.0146	1.759e-005	10.07	10.01
i0.50E33S	-3.86e-005	0.02891	-0.005486	-0.0824	0.3335	0.0204	-3.86e-005	0.02891	32.49
i0.50E65S	9.946e-005	0.1245	-0.001743	-0.3079	0.0294	-0.0308	9.946e-005	0.1245	64.5
i0.50E75S	0.0001703	0.191	-0.002221	-0.4099	0.0290	0.0014	0.0001703	0.191	74.5
i0.50E92S	0.0003235	0.3331	-0.002012	-0.5432	0.0409	-0.0727	0.0003235	0.3331	91.5
8X	-0.002255	0.1002	0.01195	-0.2384	0.0201	-0.0165	3.186	-3.088	59.51
8XY	0.001661	0.1014	0.01192	-0.2449	-0.0242	-0.0020	-3.186	-3.087	59.51
8Y	-0.001688	0.1015	-0.01515	-0.2412	0.0265	-0.0068	-3.19	3.29	59.48
9X	-0.001262	0.07712	0.01221	-0.1910	-0.0117	-0.0160	4.012	-3.937	53.51
9XY	0.000783	0.07807	0.01221	-0.1943	0.0087	0.0025	-4.013	-3.936	53.51
9Y	-0.0007914	0.07811	-0.01506	-0.1966	-0.0088	-0.0035	-4.015	4.092	53.48
10X	-0.001183	0.05733	0.01167	-0.1470	0.0045	-0.0236	4.907	-4.851	47.01
10XY	0.0008158	0.05806	0.01168	-0.1498	-0.0063	0.0160	-4.907	-4.85	47.01
10Y	-0.000837	0.05813	-0.01414	-0.1496	0.0088	0.0076	-4.909	4.966	46.99
11X	-0.002128	0.02643	0.01019	-0.0865	0.0038	-0.0466	6.902	-6.877	32.51
11XY	0.001878	0.02691	0.0102	-0.0853	-0.0033	0.0476	-6.902	-6.877	32.51
11Y	-0.00206	0.02697	-0.01195	-0.0895	0.0028	0.0308	-6.906	6.931	32.49
16X	0.001174	0.2142	-0.02128	-0.4580	0.0285	-0.0227	2.501	2.714	77.48
16XY	0.001184	0.2155	-0.02126	-0.4647	-0.0220	-0.0242	-2.499	2.716	77.48
16Y	-0.00078	0.2154	0.01643	-0.4605	0.0221	-0.0249	-2.501	-2.285	77.52
18Y	0.003486	0.001853	-0.0006058	-0.0451	0.0134	-0.0866	-9.997	0.001853	9.999
19X	-1.66e-005	0.122	-0.01622	-0.0110	-0.0047	-0.0250	-1.66e-005	-9.878	9.984

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 %
17P	-6.24	0.0	-8.81	0.0	0.0	-47.61	0.0	0.0	48.82	0.0	-0.02	0.0	0.0	0.0	0.0	0.10	0.0	0.0
20P	0.01	0.0	-0.80	0.0	0.0	-7.41	0.0	0.0	7.46	0.0	5.04	0.0	0.1	0.0	0.0	-0.08	0.0	0.0
17X	4.96	0.0	-7.52	0.0	0.0	39.70	0.0	0.0	40.71	0.0	-0.03	0.0	-0.0	0.0	0.0	0.16	0.0	0.0
17XY	-4.95	0.0	-7.92	0.0	0.0	40.05	0.0	0.0	41.12	0.0	-0.05	0.0	0.0	0.0	0.0	-0.25	0.0	0.0
17Y	6.22	0.0	-9.19	0.0	0.0	-47.85	0.0	0.0	49.12	0.0	-0.02	0.0	-0.0	0.0	0.0	-0.15	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	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0019	0.3310	-0.0239
2P	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0016	0.2879	-0.0235
3P	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0031	0.2378	-0.0222
4P	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0010	0.1903	-0.0203
5P	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0034	0.1550	-0.0179
6P	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0003	0.1240	-0.0150
7P	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	0.0013	0.0022	-0.0063
12P	0.0000	0.9312	-0.3515	-0.0000	-0.9312	0.3515	-0.0094	0.3334	0.1135
13P	0.0000	1.1112	-0.4435	-0.0000	-1.1112	0.4435	-0.0056	0.2902	0.0794
14P	0.0000	1.1112	-0.4435	-0.0000	-1.1112	0.4435	-0.0038	0.1919	0.1034
15P	0.0000	1.1112	-0.4435	-0.0000	-1.1112	0.4435	-0.0024	0.1252	0.0588
17P	0.0000	0.5064	-0.4052	6.2399	8.2994	-47.2086	0.0000	0.0000	0.0000
20P	0.0000	0.5064	-0.4052	-0.0138	0.2950	-7.0096	0.0000	0.0000	0.0000
21P	0.0000	0.7214	-0.6122	-0.0000	-0.7214	0.6122	-0.0001	0.0038	-0.0002

22P	0.0000	0.7824	-0.6702	-0.0000	-0.7824	0.6702	-0.0000	0.0286	-0.0006
23P	0.0000	0.8956	-0.7216	-0.0000	-0.8956	0.7216	0.0001	0.1253	-0.0011
24P	0.0000	0.3132	-0.2435	0.0000	-0.3132	0.2435	0.0002	0.1908	-0.0015
25P	0.0000	0.3132	-0.2435	-0.0000	-0.3132	0.2435	0.0003	0.3348	-0.0022
26P	0.0000	4.3692	-3.6395	0.0000	-4.3692	3.6395	0.0005	0.4920	-0.0036
1X	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0012	0.3311	0.0177
1XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0009	0.3348	0.0179
1Y	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0016	0.3347	-0.0240
2X	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0010	0.2881	0.0178
2XY	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0012	0.2911	0.0179
2Y	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0017	0.2908	-0.0236
3X	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0025	0.2377	0.0171
3XY	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0006	0.2397	0.0172
3Y	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0002	0.2398	-0.0223
4X	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0007	0.1905	0.0157
4XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0008	0.1918	0.0157
4Y	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0011	0.1915	-0.0202
5X	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0030	0.1547	0.0138
5XY	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0019	0.1559	0.0137
5Y	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0018	0.1563	-0.0178
6X	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0001	0.1241	0.0113
6XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0007	0.1254	0.0113
6Y	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0008	0.1253	-0.0149
7X	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	-0.0019	0.0019	0.0053
7XY	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	0.0018	0.0022	0.0052
7Y	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	-0.0012	0.0025	-0.0062
12X	0.0000	0.5272	-0.2315	0.0000	-0.5272	0.2315	0.0101	0.3325	-0.1226
13X	0.0000	1.1112	-0.4435	-0.0000	-1.1112	0.4435	0.0061	0.2891	-0.0875
14X	0.0000	1.1112	-0.4435	0.0000	-1.1112	0.4435	0.0041	0.1904	-0.1189
15X	0.0000	1.1112	-0.4435	0.0000	-1.1112	0.4435	0.0026	0.1246	-0.0649
17X	0.0000	0.5064	-0.4052	-4.9568	7.0164	40.1089	0.0000	0.0000	0.0000
17XY	0.0000	0.5064	-0.4052	4.9491	7.4112	40.4518	0.0000	0.0000	0.0000
17Y	0.0000	0.5064	-0.4052	-6.2185	8.6838	-47.4413	0.0000	0.0000	0.0000
8S	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0026	0.1004	-0.0152
9S	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0015	0.0772	-0.0151
10S	0.0000	0.6826	-0.5176	0.0000	-0.6826	0.5176	0.0013	0.0574	-0.0142
11S	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	0.0024	0.0265	-0.0120
16S	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0009	0.2140	0.0164
18S	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	-0.0053	0.0016	-0.0008
19S	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	0.0000	0.0661	0.0079
i0.50E33S	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	-0.0000	0.0289	-0.0055
i0.50E65S	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0001	0.1245	-0.0017
i0.50E75S	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0002	0.1910	-0.0022
i0.50E92S	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0003	0.3331	-0.0020
8X	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0023	0.1002	0.0119
8XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0017	0.1014	0.0119
8Y	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0017	0.1015	-0.0151
9X	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0013	0.0771	0.0122
9XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0008	0.0781	0.0122
9Y	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	-0.0008	0.0781	-0.0151
10X	0.0000	0.6826	-0.5176	0.0000	-0.6826	0.5176	-0.0012	0.0573	0.0117
10XY	0.0000	0.6826	-0.5176	-0.0000	-0.6826	0.5176	0.0008	0.0581	0.0117
10Y	0.0000	0.6826	-0.5176	-0.0000	-0.6826	0.5176	-0.0008	0.0581	-0.0141
11X	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	-0.0021	0.0264	0.0102
11XY	0.0000	0.5064	-0.4052	0.0000	-0.5064	0.4052	0.0019	0.0269	0.0102
11Y	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	-0.0021	0.0270	-0.0119
16X	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	0.0012	0.2142	-0.0213
16XY	0.0000	0.1762	-0.1125	-0.0000	-0.1762	0.1125	0.0012	0.2155	-0.0213
16Y	0.0000	0.1762	-0.1125	0.0000	-0.1762	0.1125	-0.0008	0.2154	0.0164

18Y	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	0.0035	0.0019	-0.0006
19X	0.0000	0.5064	-0.4052	-0.0000	-0.5064	0.4052	-0.0000	0.1220	-0.0162

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)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	Alternate Unsupported L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
g14P	g14Y	Long only	-0.04	-0.48	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Long only	-0.48	-0.04	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g16X	g16XY	Long only	-1.39	-0.04	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-0.04	-1.39	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g18P	g18Y	Long only	-0.40	-1.74	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g18Y	g18P	Long only	-1.74	-0.40	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g20X	g20XY	Long only	-1.14	-0.36	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g20XY	g20X	Long only	-0.36	-1.14	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22P	g22Y	Long only	-0.83	-1.61	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22Y	g22P	Long only	-1.61	-0.83	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g23X	g23P	Long only	-0.24	0.01	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g24P	g24Y	Long only	-1.17	-1.98	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g24Y	g24P	Long only	-1.98	-1.17	12.49	0.779	0.559	0.559	129.47	127.26	5	10.80	1.000	147.90	137.16	6
g26X	g26XY	Long only	-1.30	-0.66	11.49	0.563	0.781	0.563	148.89	142.05	5	8.84	1.000	188.20	161.94	6
g26XY	g26X	Long only	-0.66	-1.30	11.49	0.563	0.781	0.563	148.89	142.05	5	8.84	1.000	188.20	161.94	6
g28P	g28Y	Long only	-0.49	-0.97	9.12	0.550	0.775	0.550	171.66	159.41	5	6.97	1.000	221.50	182.42	6
g28Y	g28P	Long only	-0.97	-0.49	9.12	0.550	0.775	0.550	171.66	159.41	5	6.97	1.000	221.50	182.42	6
g32P	g32Y	Long only	-12.36	-12.82	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	6
g32Y	g32P	Long only	-12.82	-12.36	24.38	0.667	0.333	0.333	182.75	167.86	5	14.90	1.000	273.99	214.70	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 %
1	0.995	50.00	50.00	1.99
2	0.576	50.00	50.00	1.15
3	1.196	50.00	50.00	2.39
4	1.196	50.00	50.00	2.39
5	1.196	50.00	50.00	2.39
6	1.196	50.00	50.00	2.39
7	1.196	50.00	50.00	2.39
8	1.196	50.00	50.00	2.39
9	5.686	50.00	50.00	11.37
10	0.397	50.00	50.00	0.79
11	0.397	50.00	50.00	0.79
12	1.150	50.00	50.00	2.30
13	1.030	50.00	50.00	2.06
14	0.946	50.00	50.00	1.89

*** 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 Comp.	KL/R No. Of Member	Length Bolts Comp.	Curve (ft)
LEG1	L4X4X1/4	SAE	4X4X0.25	33.0	58.98	Comp	58.98	g6X	-31.558	NESC Ext	53.509	109.200	168.750	1.000	1.000	1.000	75.47	75.47	5.000	1 12
LEG2	L4X4X5/16	SAE	4X4X0.3125	33.0	66.97	Comp	66.97	g9X	-37.613	NESC Ext	56.161	91.000	175.781	1.000	1.000	1.000	100.46	100.46	6.622	1 10
LEG3	L4X4X3/8	SAE	4X4X0.375	33.0	57.73	Comp	57.73	g10XY	-34.619	NESC Ext	59.963	91.000	210.937	0.500	0.500	0.500	112.48	112.48	14.772	1 10
XBR1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	33.72	Comp	33.72	g13Y	-3.897	NESC Ext	11.559	18.200	21.094	0.750	0.500	0.500	123.69	122.85	7.071	5 2
XBR2	L3X2X3/16	SAU	3X2X0.1875	33.0	35.67	Comp	35.67	g17Y	-6.163	NESC Ext	17.275	27.300	31.641	0.500	0.750	0.500	120.57	120.47	7.810	5 3
XBR3	L2X2X3/16	SAE	2X2X0.1875	33.0	18.35	Cross	18.35	g24Y	-1.982	NESC Ext	10.802	18.200	21.094	0.779	1.000	0.559	147.90	137.16	7.604	6 2
XBR4	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	14.70	Cross	14.70	g26X	-1.300	NESC Ext	8.840	18.200	21.094	0.563	1.000	0.563	188.20	161.94	9.410	6 2
XBR5	L2.5x2.5x3/16	SAE	2.5X2.5X0.3125	36.0	88.24	Comp	88.24	g30Y	-6.734	NESC Ext	7.632	33.600	33.984	0.792	0.584	0.584	269.55	234.00	18.808	5 2
HORZ1	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	75.84	Tens	52.56	g36X	-4.783	NESC Ext	10.506	9.100	10.547	1.000	0.500	0.500	148.55	148.55	9.817	4 1
HORZ2	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	97.43	Tens	78.38	g38X	-11.022	NESC Ext	15.230	21.200	14.062	0.500	0.500	0.500	156.90	156.90	13.807	4 1
ARM1	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	7.59	Comp	7.59	g44Y	-2.071	NESC Hea	28.509	27.300	42.187	1.000	0.500	0.500	97.38	108.69	7.669	3 3
ARM2	L3.5X2.5X1/4	SAU	3.5X2.5X0.25	33.0	10.40	Comp	10.40	g46Y	-2.619	NESC Hea	25.189	27.300	42.187	1.000	0.500	0.500	132.50	127.69	12.013	6 3
M1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	35.06	Comp	35.06	g53P	-2.033	NESC Ext	5.799	9.100	10.547	1.000	1.000	1.000	174.93	174.93	5.000	4 1
M2	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	26.89	Tens	19.03	g54X	-1.732	NESC Ext	11.437	9.100	10.547	1.500	1.000	1.000	123.69	123.69	3.536	4 1
M3	L2.5X2.5X3/16	SAE	2.5X2.5X0.1875	33.0	12.16	Comp	12.16	g58X	-1.106	NESC Hea	10.714	9.100	10.547	1.000	1.000	1.000	155.23	155.23	6.403	4 1
M4	BAR 1.75X1/4	Bar	1-3/4x1/4	33.0	28.21	Tens	0.00	g62Y	0.000		2.174	9.100	14.062	1.000	1.000	1.000	240.00	240.00	5.000	4 1
XBR6	L4x4x5/16	SAE	4X4X0.3125	36.0	86.02	Cross	86.02	g32Y	-12.818	NESC Ext	14.902	33.600	33.984	0.667	1.000	0.333	273.99	214.70	28.312	6 2
LEG4	L4x4x5/16	SAE	4X4X0.3125	33.0	68.90	Comp	68.90	g12X	-45.232	NESC Ext	65.648	91.000	175.781	0.500	0.500	0.500	77.05	77.05	10.158	1 10
XBR7	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	45.25	Comp	45.25	g33XY	-4.118	NESC Ext	14.836	9.100	14.062	1.000	0.500	0.500	166.68			

166.68 15.112 4 1
HORZ3 L4x3x1/4 SAU 4X3X0.25 33.0 79.93 Tens 61.09 g40X -5.559NESC Ext 13.759 9.100 14.062 2.000 1.000 1.000 187.50 187.50 10.000 4 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g40P g40X g40XY g40Y ??
Pwmnt 12" Std Pipe Pwmnt Pipe 12" Std. 50.0 2.84 Comp 2.84 g65P -12.866NESC Hea 452.775 0.000 0.000 1.000 1.000 1.000 87.47 87.47 32.000 1 0
Brace2 L5x5x3/8 SAE 5X5X0.375 36.0 3.98 Comp 3.98 g70X -0.669NESC Ext 31.040 16.800 20.391 1.000 1.000 1.000 182.45 182.45 15.052 4 1
Brace1 L4x4x1/4 SAE 4X4X0.25 36.0 7.43 Comp 7.43 g69X -1.010NESC Ext 13.803 16.800 13.594 1.000 1.000 1.000 200.57 200.57 13.288 4 1
Brace3 L3x3x3/16 SAE 3X3X0.1875 36.0 7.89 Tens 2.28 g71X -0.220NESC Hea 9.665 16.800 10.195 1.000 1.000 1.000 179.66 179.66 8.923 4 1
Brace4 L2x2x3/16 SAE 2X2X0.1875 36.0 41.24 Tens 39.34 g81X -4.011NESC Ext 17.105 16.800 10.195 1.000 1.000 1.000 85.13 102.56 2.795 3 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g76P g81P ??
InBr L2.5X2X3/16 SAU 2.5X2X0.1875 33.0 7.92 Tens 0.07 ig41P71X -0.002NESC Hea 3.080 9.100 10.547 1.000 1.000 1.000 274.38 274.38 9.763 4 1
M5 L2x2x1/4 SAE 2X2X0.25 36.0 0.00 0.00 0.000 0.000 0.000 0.000 0.000 0.000 0.00 0.00 0.000 0 0
M2a L1.75X1.75X3/16 SAE 1.75X1.75X0.1875 33.0 8.26 Comp 8.26 g83P -0.479NESC Hea 5.799 9.100 10.547 1.000 1.000 1.000 174.93 174.93 5.000 4 1

Group Summary (Tension Portion):

Group No.	Group Label	Angle Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use %	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	Hole Diameter (in)
LEG1	L4X4X1/4	SAE	4X4X0.25	33.0	58.98	Comp	56.65	g6P	28.526NESC Ext	50.351	109.200	168.750	220.588	5.000	12	2.410	0.6875	
LEG2	L4X4X5/16	SAE	4X4X0.3125	33.0	66.97	Comp	58.16	g8P	34.597NESC Ext	59.490	0.000	0.000	0.000	6.113	0	2.780	0.6875	
LEG3	L4X4X3/8	SAE	4X4X0.375	33.0	57.73	Comp	47.34	g10Y	31.188NESC Ext	65.879	91.000	210.937	281.250	14.772	10	3.350	0.6875	
XBR1	L1.75X1.75X3/16	SAE	1.75X1.75X0.1875	33.0	33.72	Comp	25.79	g13XY	3.762NESC Ext	14.585	18.200	21.094	16.406	7.071	2	1.000	0.6875	
XBR2	L3X2X3/16	SAU	3X2X0.1875	33.0	35.67	Comp	26.63	g17XY	6.099NESC Ext	22.901	27.300	31.641	24.609	7.810	3	1.000	0.6875	
XBR3	L2X2X3/16	SAE	2X2X0.1875	33.0	18.35	Cross	15.74	g24XY	1.934NESC Ext	17.258	18.200	21.094	12.287	7.604	2	1.000	0.6875	
XBR4	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	14.70	Cross	8.18	g26P	1.341NESC Ext	20.228	18.200	21.094	16.406	9.410	2	1.000	0.6875	
XBR5	L2.5x2.5x3/16	SAE	2.5X2.5X0.3125	36.0	88.24	Comp	31.45	g30XY	6.040NESC Ext	40.343	33.600	33.984	19.207	18.808	2	1.000	0.6875	
HORZ1	L2.5X2X3/16	SAU	2.5X2X0.1875	33.0	75.84	Tens	75.84	g36P	5.213NESC Ext	17.444	9.100	10.547	6.873	9.817	1	1.000	0.6875	
HORZ2	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	97.43	Tens	97.43	g38P	12.179NESC Ext	30.090	21.200	14.062	12.500	13.807	1	1.000	0.6875	
ARM1	L3X2.5X1/4	SAU	3X2.5X0.25	33.0	7.59	Comp	5.35	g43P	1.535NESC Hea	28.698	0.000	0.000	0.000	5.000	0	2.000	0.6875	
ARM2	L3.5X2.5X1/4	SAU	3.5X2.5X0.25	33.0	10.40	Comp	0.00	g47Y	0.000	32.559	0.000	0.000	0.000	5.000	0			

2.000 0.6875
M1 L1.75X1.75X3/16 SAE 1.75X1.75X0.1875 33.0 35.06 Comp 31.44 g53X 2.161NESC Ext 14.585 9.100 10.547 6.873 5.000 1
1.000 0.6875
M2 L1.75X1.75X3/16 SAE 1.75X1.75X0.1875 33.0 26.89 Tens 26.89 g54P 1.848NESC Ext 14.585 9.100 10.547 6.873 3.536 1
1.000 0.6875
M3 L2.5X2.5X3/16 SAE 2.5X2.5X0.1875 33.0 12.16 Comp 0.00 g58X 0.000 22.961 9.100 10.547 8.203 6.403 1
1.000 0.6875
M4 BAR 1.75X1/4 Bar 1-3/4x1/4 33.0 28.21 Tens 28.21 g60Y 2.225NESC Hea 7.889 9.100 14.062 10.937 12.382 1
1.000 0.6875
XBR6 L4x4x5/16 SAE 4X4X0.3125 36.0 86.02 Cross 52.60 g32XY 10.829NESC Ext 70.799 33.600 33.984 20.590 28.312 2
1.000 0.6875
LEG4 L4x4x5/16 SAE 4X4X0.3125 33.0 68.90 Comp 62.92 g12Y 38.860NESC Ext 61.759 91.000 175.781 172.334 10.158 10
2.460 0.6875
XBR7 L3.5x2.5x1/4 SAU 3.5X2.5X0.25 33.0 45.25 Comp 38.58 g33Y 3.511NESC Ext 30.238 9.100 14.062 14.706 15.112 1
1.000 0.6875
HORZ3 L4x3x1/4 SAU 4X3X0.25 33.0 79.93 Tens 79.93 g40P 7.274NESC Ext 37.663 9.100 14.062 17.883 10.000 1
1.000 0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g40P g40X g40XY g40Y ??
Pwmnt 12" Std Pipe Pwmnt Pipe 12" Std. 50.0 2.84 Comp 0.00 g68P 0.000 679.999 0.000 0.000 0.000 10.000 0
0.000 0
Brace2 L5x5x3/8 SAE 5X5X0.375 36.0 3.98 Comp 2.02 g70P 0.340NESC Hea 108.611 16.800 20.391 27.187 15.052 1
1.000 0.6875
Brace1 L4x4x1/4 SAE 4X4X0.25 36.0 7.43 Comp 3.22 g69P 0.437NESC Hea 57.287 16.800 13.594 18.125 13.288 1
1.000 0.6875
Brace3 L3x3x3/16 SAE 3X3X0.1875 36.0 7.89 Tens 7.89 g71P 0.805NESC Hea 31.139 16.800 10.195 13.594 8.923 1
1.000 0.6875
Brace4 L2x2x3/16 SAE 2X2X0.1875 36.0 41.24 Tens 41.24 g81P 4.205NESC Ext 18.827 16.800 10.195 13.594 2.795 1
1.000 0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g76P g81P ??
InBr L2.5X2X3/16 SAU 2.5X2X0.1875 33.0 7.92 Tens 7.92 g41P 0.720NESC Hea 20.228 9.100 10.547 9.334 9.763 1
1.000 0.6875
M5 L2x2x1/4 SAE 2X2X0.25 36.0 0.00 0.00 0.000 0.000 0.000 0.000 0.000 0
0.000 0
M2a L1.75X1.75X3/16 SAE 1.75X1.75X0.1875 33.0 8.26 Comp 3.30 g55P 0.227NESC Ext 14.585 9.100 10.547 6.873 7.071 1
1.000 0.6875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	55.71	g38P	Angle
NESC Extreme	97.43	g38P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	1.99	NESC Extreme	0.0
2	Clamp	2.33	NESC Heavy	0.0
3	Clamp	2.80	NESC Heavy	0.0

4	Clamp	2.71	NESC Heavy	0.0
5	Clamp	2.82	NESC Heavy	0.0
6	Clamp	2.76	NESC Heavy	0.0
7	Clamp	2.76	NESC Heavy	0.0
8	Clamp	2.70	NESC Heavy	0.0
9	Clamp	16.01	NESC Heavy	0.0
10	Clamp	2.86	NESC Heavy	0.0
11	Clamp	2.86	NESC Heavy	0.0
12	Clamp	4.55	NESC Heavy	0.0
13	Clamp	6.02	NESC Heavy	0.0
14	Clamp	4.58	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	1	Clamp	12P	0.000	0.635	0.564	0.849
NESC Heavy	2	Clamp	12X	0.000	0.773	0.870	1.163
NESC Heavy	3	Clamp	13P	0.000	0.918	1.056	1.400
NESC Heavy	4	Clamp	13X	0.000	0.852	1.056	1.357
NESC Heavy	5	Clamp	14P	0.000	0.896	1.087	1.409
NESC Heavy	6	Clamp	14X	0.000	0.852	1.087	1.381
NESC Heavy	7	Clamp	15P	0.000	0.902	1.046	1.381
NESC Heavy	8	Clamp	15X	0.000	0.852	1.046	1.349
NESC Heavy	9	Clamp	26P	0.000	1.293	7.899	8.004
NESC Heavy	10	Clamp	25P	0.000	0.517	1.333	1.430
NESC Heavy	11	Clamp	24P	0.000	0.517	1.333	1.430
NESC Heavy	12	Clamp	23P	0.000	0.804	2.126	2.273
NESC Heavy	13	Clamp	22P	0.000	1.043	2.822	3.009
NESC Heavy	14	Clamp	21P	0.000	0.643	2.197	2.289
NESC Extreme	1	Clamp	12P	0.000	0.931	0.351	0.995
NESC Extreme	2	Clamp	12X	0.000	0.527	0.231	0.576
NESC Extreme	3	Clamp	13P	0.000	1.111	0.443	1.196
NESC Extreme	4	Clamp	13X	0.000	1.111	0.443	1.196
NESC Extreme	5	Clamp	14P	0.000	1.111	0.443	1.196
NESC Extreme	6	Clamp	14X	0.000	1.111	0.443	1.196
NESC Extreme	7	Clamp	15P	0.000	1.111	0.443	1.196
NESC Extreme	8	Clamp	15X	0.000	1.111	0.443	1.196
NESC Extreme	9	Clamp	26P	0.000	4.369	3.639	5.686
NESC Extreme	10	Clamp	25P	0.000	0.313	0.243	0.397
NESC Extreme	11	Clamp	24P	0.000	0.313	0.243	0.397
NESC Extreme	12	Clamp	23P	0.000	0.896	0.722	1.150
NESC Extreme	13	Clamp	22P	0.000	0.782	0.670	1.030
NESC Extreme	14	Clamp	21P	0.000	0.721	0.612	0.946

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	8.020	0.000	16.808	648.036	-12.235	-1.921
NESC Extreme	11.887	0.000	6.809	994.424	-5.581	-6.464

*** Weight of structure (lbs):
    Weight of Angles*Section DLF: 16315.5
    Total: 16315.5

*** End of Report

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

Subject:	Foundation Analysis Tower # 833
Location:	Trumbull, CT
Rev. 1: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

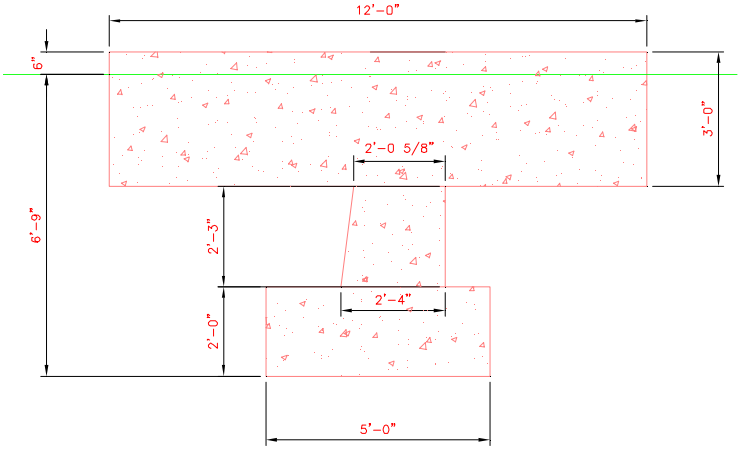
Shear =	Shear := 11.1·1.1·kips = 12.2·kips	(User Input)
Compression =	Comp := 47.85·1.1·kips = 52.6·kips	(User Input)
Uplift =	Uplift := 40.05·1.1·kips = 44.1·kips	(User Input)

Foundation Properties:

Pier Height =	$P_H := 2.25 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2.05 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 2.33 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 5 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2.0 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 12 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 3 \cdot ft$	(User Input)
Depth Below Grade =	H := 6.75·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 =	$BC_{soil} := 9000 \cdot psf$	(User Input)
Coefficient of Friction =	$\mu := 0.45$	(User Input)



Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 50 \cdot ft^3$

Volume of the Concrete Mat = $V_{mat} := Mat_w^2 \cdot Mat_t = 432 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{P_H}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2} \right) = 10.806 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{mat} + V_{pier} = 493 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 25 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\psi) \cdot \left(H + P_P - Pd_t - Mat_t \right) + Pd_w \right]^2 = 57.731 ft^2$

Volume of Soil = $V_{Soil} := \left[\frac{(P_H)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2} \right) \right] - V_{pier} = 79.735 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 73.9 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{Soil} \cdot \gamma s = 8 \cdot kips$

Total Mass = $Total_{mass} := Mass_{Conc} + Mass_{Soil} = 81.894 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Total_{mass}}{Uplift} = 1.86$

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

Uplift_Check = "OK"

Check Sliding:

Sliding Resistance = $S_R := \mu \cdot \left(Mass_{Conc} \right) = 33.264 \cdot kips$

$Sliding\_Check := if\left(Shear \leq S_R, "OK", "No Good" \right)$

Sliding_Check = "OK"

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Subject:	Foundation Analysis Tower # 833
Location:	Trumbull, CT
Rev. 1: 6/2/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.004

Check Bearing:

Cross Sectional Area of Pad = $A_{pad} := Pd_w^{\,2} = 25\,ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 21\cdot ft^3$

Mass of Pad and Pier = $Mass_{pad.pier} := (V_{pad} + V_{pier})\cdot \gamma c = 9.1\cdot kips$

$$Bearing := \frac{Comp + Mass_{pad.pier}}{A_{pad}} + \frac{Shear\cdot(H + P_P)}{S_{pad}} = 6.72\cdot ksf$$

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

Bearing_Check = "OK"

Check Overturning:

Overturning Moment = $OM := Uplift\cdot\frac{Mat_w}{2} + Shear\cdot(P_H + Pd_t) = 316.2\cdot k\cdot ft$

Resisting Moment = $RM := Total_{mass}\cdot\frac{Mat_w}{2} = 491.4\cdot k\cdot ft$

$$ActualFS := \frac{RM}{OM} = 1.55$$

$$Overturning\_Check := if\left(\frac{RM}{OM} \ge F_S, "OK", "No\ Good"\right)$$

Overturning_Check = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT5090	DATE:	11/28/2012	RF DESIGN ENG:	RADU ALECSANDRU	RF PERF ENG:	TBD
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	(860)965-6685	RF PERF PHONE:	TBD
REVISION:	Final	RF MANAGER:	CAMERON SYME	RF DESIGN EMAIL:	RA9161@ATT.COM	RF PERF EMAIL:	
INITIATIVE /PROJECT:	LTE 2C 1900. Bronze Standard.					TRIDENT:	
						GSM FREQUENCY:	850
						UMTS FREQUENCY:	850, 1900
						LTE FREQUENCY:	700, 1900

RFDS PROGRAM TYPE:	2016 LTE Next Carrier		
RFDS TECHNOLOGY:	LTE 2C		
State:	Final		
Status:	Approved		
RFDS ID:	849364		
RFDS Version:	2.00		
Created By:	cb6561		
Date Created:	9/16/2015 10:21:45 AM		
Date Updated:	11/17/2015 4:16:59 PM		
Updated By:	mm093q		
I-PLAN JOB # 1:	NER-RCTB-12-04600	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 2C
I-PLAN JOB # 2:		IPLAN PRD GRP || SUB GRP #2:	
I-PLAN JOB # 3:		IPLAN PRD GRP || SUB GRP #3:	
I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:	

Section 2 - LOCATION INFORMATION

USID:	25871	FA LOCATION CODE:	10092214	LOCATION NAME:	TRUMBULL SOUTH EAST
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	2891 NICHOLS AVENUE	CITY:	TRUMBULL	STATE:	CT
ZIP CODE:	06611	COUNTY:	FAIRFIELD	MSA / RSA:	
LATITUDE (D-M-S):	41d 13m 58.37196s	LONGITUDE (D-M-S):	-73d -9m -33.43716s	LAT (DEC. DEG.):	41.2328811

DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:

TRUMBULL / NICHOLS (LATTICE POWER POLE)
5090
MERRITT PARKWAY NORTH. GET OFF EXIT 51 NICHOLS ROAD (RT108) MAKE LEFT AT END OF RAMP. FOLLOW TO 2ND LIGHT JUST BEFORE LIGHT YOU WILL SEE A YELLOW FIRE HYDRANT ON YOUR RIGHT, TAKE RIGHT INTO DIRT ROAD TO POWER POLE OUR SITE IS AT THE BASE OF THE LATTICE TOWER. SITE IS LOCATED AT THE INTERSECTION OF RT 8 AND NICHOLS ROAD. DEMARC IS OUTSIDE THE GATE IN A GRAY BOX.
ADDRESS: NICHOLS AVE, TRUMBULL, CONNECTICUT 06606
ACCESS: 24/7 (8899) (6664)
CONTACT: UNITED ILLUMINATING

SECURITY: NONE IF GATE COMBOS DONT WORK CALL PETER 2036736710 HE WILL COME OUT AND LET YOU IN

POWER COMPANY: UNITED ILLUMINATING (800) 722-5584
METER#: 014000494
APPLETON PLUG: VR20312-S39
POLICE/FIRE: (203-261-3665)
CIRCUITS:
GSM
HCGS 738264 ET-108
HCGS 738580 ET-103
UMTS
#1 HCGS730411 AID=168-16
#2 HCGS730413 AID=168-15

ORACLE PTN # 1:	2051A03JIM	PACE JOB # 1:	MRCTB016763
ORACLE PTN # 2:		PACE JOB # 2:	
ORACLE PTN # 3:		PACE JOB # 3:	
ORACLE PTN # 4:		PACE JOB # 4:	
SEARCH RING NAME:			
SEARCH RING ID:		CASPR INITIATIVE # 1:	3rd Carrier|Site Overlay|UMTS
BTA:		CASPR INITIATIVE # 2:	2nd Carrier|Site Overlay|UMTS
LONG (DEC. DEG.):	-73.1592881	CASPR INITIATIVE # 3:	Site Overlay|LTE
BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE # 4:	ETTCS|Transport|Site Mod
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 - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	No	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):	0	STRUCTURE TYPE:	UTILITY
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):		FCC ASR NUMBER:	0
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	101.00		
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:	
MARKET LOCATION 850 MHz Band:	On-Air
MARKET LOCATION 1900 MHz Band:	
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	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR B	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR C	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0				
SECTOR B	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0				
SECTOR C	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID:	171775		172634	222830	401758				360132			
CTS COMMON ID:	321G5090		CTU5090	CTV5090	CTU4090				CTL05090			
BTA/TID:	321G		321V	321U	321W				321L			
4-DIGIT SITE ID:	5090		9090	5090	04090				5090			
COW OR TOY?:	No		No	No	No				No			
CELL SITE TYPE:												
SITE TYPE:												
BTS LOCATION ID:												
ORIGINATING CO:												
CELLULAR NETWORK:												
OPS DISTRICT:			CT SOUTH-WEST									
RF DISTRICT:												
OPS ZONE:												
RF ZONE:												
BASE STATION TYPE:												
EQUIPMENT NAME:	TRUMBELL SOUTH EAST		TRUMBELL SOUTH EAST	TRUMBULL SOUTH EAST	TRUMBELL SOUTH EAST				TRUMBULL SOUTH EAST			
DISASTER PRIORITY:												

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID:	171775		172634	222830	401758				360132			
CTS COMMON ID:	321G5090		CTU5090	CTV5090	CTU4090				CTL05090			
BTA/TID:	321G		321V	321U	321W				321L			
4-DIGIT SITE ID:	5090		9090	5090	04090				5090			
COW OR TOY?:	No		No	No	No				No			
CELL SITE TYPE:	SECTORIZED		SECTORIZED	SECTORIZED	SECTORIZED				SECTORIZED			
SITE TYPE:	MACRO-CONVENTIONAL		MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL				MACRO-CONVENTIONAL			
BTS LOCATION ID:	GROUND		GROUND	GROUND	GROUND				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			
RF DISTRICT:	NPO Triage		NPO Triage	NPO Triage	NPO Triage				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			
RF ZONE:	Hotseat		Hotseat	Hotseat	Hotseat				Hotseat			
BASE STATION TYPE:	BASE		BASE	OVERLAY	OVERLAY				BASE			
EQUIPMENT NAME:	TRUMBELL SOUTH EAST		TRUMBELL SOUTH EAST	TRUMBULL SOUTH EAST	TRUMBELL SOUTH EAST				TRUMBULL SOUTH EAST			
DISASTER PRIORITY:	3		1	1	0				3			

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID									FF01			
LAC	05012		05991	05991	05991							
RAC												
EQUIPMENT VENDOR												
EQUIPMENT TYPE												
LOCATION												
CABINET LOCATION												
MARKET STATE CODE												
AGPS	Yes		Yes	Yes	Yes				Yes			
NODE B NUMBER									5090			
PARENT NAME	BRPTCTBSC03		BRPTCT04CR0R05	BRPTCT04CR0R05	BRPTCT04CR0R05				FF01			

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID	BRPTCTBSC03		BRPTCT04CR0R05	BRPTCT04CR0R05	BRPTCT04CR0R05				FF01			
LAC	05012		05991	05991	05991							
RAC												
EQUIPMENT VENDOR	NOKIA		ERICSSON	ERICSSON	ERICSSON				ERICSSON			
EQUIPMENT TYPE	ULTRASITE		3106 OUTDOOR	3106 OUTDOOR	6601 MAIN UNIT UMTS				6601 INDOOR MU			
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT			
AGPS	Yes		Yes	Yes	Yes				Yes			
NODE B NUMBER									5090			
PARENT NAME	BRIDGEPORT BSC 03		BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC5							

Section 8 - RBS INDIVIDUAL INFORMATION - 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		
RBS ID:	171775				222830	172634	401758										360132							
CELL ID/BCF:	321G5090				CTU5090	CTU5090	CTU4090										CTL05090							
CTS COMMON ID:	321G5090				CTV5090	CTU5090	CTU4090										CTL05090							
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID:																								
CELL ID/BCF:																								
CTS COMMON ID:																								

Section 8 - RBS INDIVIDUAL INFORMATION - final

	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		
RBS ID:	171775				222830	172634	401758										360132		360132					
CELL ID/BCF:	321G5090				CTU5090	CTU5090	CTU4090										CTL05090		CTL05090					
CTS COMMON ID:	321G5090				CTV5090	CTU5090	CTU4090										CTL05090		CTL05090					
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID:																								
CELL ID/BCF:																								
CTS COMMON ID:																								

Section 9 - SOFT SECTOR ID - 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		
USEID (excluding Hard Sector)	25871.850.25G.1				25871.850.3G.1	25871.1900.3G.1	25871.850.3G.2										25871.700.4G.1							
SECTOR A SOFT SECTOR ID	321G50901				CTV50901	CTU50907	CTV4090A										CTL05090_7A_1							
SECTOR B	321G50902				CTV50902	CTU50908	CTV4090B										CTL05090_7B_1							
SECTOR C	321G50903				CTV50903	CTU50909	CTV4090C										CTL05090_7C_1							
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		
USEID (excluding Hard Sector)																								
SECTOR A SOFT SECTOR ID																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR ID - final

	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		
USEID (excluding Hard Sector)	25871.850.25G.1				25871.850.3G.1	25871.1900.3G.1	25871.850.3G.2										25871.700.4G.1		25871.1900.4G.111					
SECTOR A SOFT SECTOR ID	321G50901				CTV50901	CTU50907	CTV4090A										CTL05090_7A_1		CTL05090_9A_1					
SECTOR B	321G50902				CTV50902	CTU50908	CTV4090B										CTL05090_7B_1		CTL05090_9B_1					
SECTOR C	321G50903				CTV50903	CTU50909	CTV4090C										CTL05090_7C_1		CTL05090_9C_1					
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		
USEID (excluding Hard Sector)																								
SECTOR A SOFT SECTOR ID																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - 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		
USEID (excluding Hard Sector)	25871.850.25G.1				25871.850.3G.1	25871.1900.3G.1	25871.850.3G.2										25871.700.4G.1							
SECTOR A CELL NUMBER																	15							
SECTOR B																	16							
SECTOR C																	17							
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		
USEID (excluding Hard Sector)																								
SECTOR A CELL NUMBER																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - final

	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		
USEID (excluding Hard Sector)	25871.850.25G.1				25871.850.3G.1	25871.1900.3G.1	25871.850.3G.2										25871.700.4G.1		25871.1900.4G.111					
SECTOR A CELL NUMBER																	15		8					
SECTOR B																	16		9					
SECTOR C																	17		10					
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		
USEID (excluding Hard Sector)																								
SECTOR A CELL NUMBER																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 10 - CID/SAC - 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								
SECTOR A CID/SAC	50901				50901	50907	40901																	
SECTOR B	50902				50902	50908	40902																	
SECTOR C	50903				50903	50909	40903																	
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 10 - CID/SAC - final

	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								
SECTOR A CID/SAC	50901				50901	50907	40901																	
SECTOR B	50902				50902	50908	40902																	
SECTOR C	50903				50903	50909	40903																	
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	1				1			1	1								1							
SECTOR B	2				1			1	1								1							
SECTOR C	2				1			1	1								1							
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	1				1			1	1								1							
SECTOR B	2				1			1	1								1							
SECTOR C	2				1			1	1								1							
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						P65-16-XLH-RR							
ANTENNA VENDOR	Powerwave						Powerwave							
ANTENNA SIZE (H x W x D)	55X11X5						72.0X12.0X6.0							
ANTENNA WEIGHT	35						64							
AZIMUTH	30						30							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070						LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)						Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)	1	LGP 18104 (Full Dual Band TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		25871.A.850.3G.1	CTV50901			UMTS 850	7770.00.850.01	13.5		1	None	Andrew 7/8 (850)	135								
	PORT 2		25871.A.850.3G.2	CTV5090A			UMTS 850	7770.00.850.01	13.5		1	Bottom	Andrew 7/8 (850)	135								
	PORT 3		25871.A.1900.3G.1	CTU50907			UMTS 1900	7770.00.1900.00	15.5		0	None	Andrew 7/8 (1900)	135								
	PORT 5		25871.A.850.25G.1	321G50901			GSM 850	7770.00.850.01	13.5		1	None	Andrew 7/8 (850)	135	RxAIT 850	1	LLC 850					
ANTENNA POSITION 4	PORT 1		25871.A.700.4G.1	CTL05090_7A_1	CTL05090_7A_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14		2	BOTTOM	ANDREW 7/8"	135								

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						P65-16-XLH-RR							
ANTENNA VENDOR	Powerwave						Powerwave							
ANTENNA SIZE (H x W x D)	55X11X5						72.0X12.0X6.0							
ANTENNA WEIGHT	35						64							
AZIMUTH	150						150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)						Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)	1	LGP 18104 (Full Dual Band TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		25871.B.850.3G.1	CTV50902			UMTS 850	7770.00.850.00	13.5		0	None	Andrew 7/8 (850)	135								
	PORT 2		25871.B.850.3G.2	CTV5090B			UMTS 850	7770.00.850.00	13.5		0	Bottom	Andrew 7/8 (850)	135								
	PORT 3		25871.B.1900.3G.1	CTU50908			UMTS 1900	7770.00.1900.00	15.5		0	None	Andrew 7/8 (1900)	135								
	PORT 5		25871.B.850.25G.1	321G50902			GSM 850	7770.00.850.00	13.5		0	None	Andrew 7/8 (850)	135	RxAIT 850	2	LLC 850					
ANTENNA POSITION 4	PORT 1		25871.B.700.4G.1	CTL05090_7B_1	CTL05090_7B_1		LTE 700	P65-16-XLH-RR_716MHz_06DT	14		2	BOTTOM	ANDREW 7/8"	135								

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						P65-16-XLH-RR							
ANTENNA VENDOR	Powerwave						Powerwave							
ANTENNA SIZE (H x W x D)	55X11X5						72.0X12.0X6.0							
ANTENNA WEIGHT	35						64							
AZIMUTH	260						270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						2							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)						Pwav TT19-08BP111-001 Twin 1900 w/ 850BP (1900)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)	1	LGP 18104 (Full Dual Band TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1														
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		25871.C.850.3G.1	CTV50903			UMTS 850	7770.00.850.01	13.5		1	None	Andrew 7/8 (850)	135								
	PORT 2		25871.C.850.3G.2	CTV5090C			UMTS 850	7770.00.850.01	13.5		1	Bottom	Andrew 7/8 (850)	135								
	PORT 3		25871.C.1900.3G.1	CTU50909			UMTS 1900	7770.00.1900.00	15.5		0	None	Andrew 7/8 (1900)	135								
	PORT 5		25871.C.850.25G.1	321G50903			GSM 850	7770.00.850.01	13.5		1	None	Andrew 7/8 (850)	135	RxAIT 850	2	LLC 850					
ANTENNA POSITION 4	PORT 1		25871.C.700.4G.1	CTL05090_7C_1	CTL05090_7C_1		LTE 700	P65-16-XLH-RR_716MHz_08DT	14		2	BOTTOM	ANDREW 7/8"	135								

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				50.7			
AZIMUTH				30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				101			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				2			
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)				4 Andrew APTDC-BDFDM-DBW			
DIPLEXER (QTY/MODEL)				2 Kaelus DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				2 DTMABP7819VG12A (Twin 700/850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//						
Local Market Note2							
Local Market Note3							

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3			CTL05090_9A_1	CTL05090_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	30	4	BOTTOM	ANDREW 7/8"			0						

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				50.7			
AZIMUTH				150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				101			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				2			
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)				4	Andrew APTDC-BDFDM-DBW		
DIPLEXER (QTY/MODEL)				2	Kaelus DBC2055F1V1-2		
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				2	DTMABP7819VG12A (Twin 700/850 Bypass)		
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1	RRUS-11		
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1	RRUS-12+RRUS-A2		
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//						
Local Market Note2							
Local Market Note3							

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3			CTL05090_9B_1	CTL05090_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_03DT	17	150	3	BOTTOM	ANDREW 7/8"			0						

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							50.7							
AZIMUTH							270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)							101							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT							0							
FEEDER AMOUNT							2							
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)							4	Andrew APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)							2	Kaelus DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)							2	DTMABP7819VG12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//													
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3			CTL05090_9C_1	CTL05090_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	260	4	BOTTOM	ANDREW 7/8"			0						

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						HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave						CCI Products							
ANTENNA SIZE (H x W x D)	55X11X5						72X14.8X9							
ANTENNA WEIGHT	35						50.7							
AZIMUTH	30						30							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT	103						104							
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						4							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							6	Andrew APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	Kaelus DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070						LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)					2	DTMABP7819VG12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)	1	LGP 18104 (Full Dual Band TMA)												
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//													
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	25871.A.850.3G.1	25871.A.850.3G.1	CTV50901	CTV50901		UMTS 850	7770.00.850.01	13.5	30	1	None	Andrew 7/8 (850)	135		0				272.9	1	
	PORT 2	25871.A.850.3G.1,25871.A.850.3G.2	25871.A.850.3G.2	CTV5090A	CTV50901		UMTS 850	7770.00.850.01	13.5	30	1	Bottom	Andrew 7/8 (850)	135		0				272.9	2	
	PORT 3	25871.A.1900.3G.1	25871.A.1900.3G.1	CTU50907	CTU50907		UMTS 1900	7770.00.1900.00	15.5	30	0	None	Andrew 7/8 (850)	135		0				286.42	1	
	PORT 5	25871.A.850.25G.1	25871.A.850.25G.1	321G50901	321G50901		GSM 850	7770.00.850.01	13.5	30	1	None	Andrew 7/8 (850)	135	RxAIT 850	1	LLC 850			272.9	1	
ANTENNA POSITION 4	PORT 1	25871.A.700.4G.1	25871.A.700.4G.1	CTL05090_7A_1	CTL05090_7A_1		LTE 700	HPA-65R-BUU-H6_719MHz_06DT	14.08	30	2	BOTTOM	ANDREW 7/8"	135		0				827.9421	7	
	PORT 3	25871.A.1900.4G.111	25871.A.1900.4G.1	CTL05090_9A_1	CTL05090_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	30	4	BOTTOM	ANDREW 7/8"	135		0				3258.367	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						HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave						CCI Products							
ANTENNA SIZE (H x W x D)	55X11X5						72X14.8X9							
ANTENNA WEIGHT	35						50.7							
AZIMUTH	150						150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT	103						104							
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						4							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							6	Andrew APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	Kaelus DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)					2	DTMABP7819VG12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//													
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	25871.B.850.3G.1	25871.B.850.3G.1	CTV50902	CTV50902		UMTS 850	7770.00.850.00	13.5	150	0	None	Andrew 7/8 (850)	135		0				272.9	9	
	PORT 2	25871.B.850.3G.1,25871.B.850.3G.2	25871.B.850.3G.2	CTV5090B	CTV50902		UMTS 850	7770.00.850.00	13.5	150	0	Bottom	Andrew 7/8 (850)	135		0				272.9	10	
	PORT 3	25871.B.1900.3G.1	25871.B.1900.3G.1	CTU50908	CTU50908		UMTS 1900	7770.00.1900.00	15.5	150	0	None	Andrew 7/8 (850)	135		0				286.42	9	
	PORT 5	25871.B.850.25G.1	25871.B.850.25G.1	321G50902	321G50902		GSM 850	7770.00.850.00	13.5	150	0	None	Andrew 7/8 (850)	135	RxAIT 850	2	LLC 850			272.9	9	
ANTENNA POSITION 4	PORT 1	25871.B.700.4G.1	25871.B.700.4G.1	CTL05090_7B_1	CTL05090_7B_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	150	2	BOTTOM	ANDREW 7/8	135		0				827.9421	15	
	PORT 3	25871.B.1900.4G.111	25871.B.1900.4G.1	CTL05090_9B_1	CTL05090_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_03DT	17	150	3	BOTTOM	ANDREW 7/8	135		0				3258.367	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						HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave						CCI Products							
ANTENNA SIZE (H x W x D)	55X11X5						72X14.8X9							
ANTENNA WEIGHT	35						50.7							
AZIMUTH	260						270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	101						101							
ANTENNA TIP HEIGHT	103						104							
MECHANICAL DOWNTILT	0						0							
FEEDER AMOUNT	2						4							
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020						Internal						
SURGE ARRESTOR (QTY/MODEL)							6	Andrew APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	Kaelus DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave / LGP 17201 (Full Dual Band)					2	DTMABP7819VG12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	Replace existing LTE 700 ANT on POS 4 with 1 Hex 6' all 3 sectors // Add LTE 1900 RRUS12+A2 Bottom // Replace existing TMA with 700/850 Bypass TMA // Replace existing Diplexer with 2 Kaelus twin diplexer Add 2 Coax per sector // DUL to DUS upgrade//													
Local Market Note2														
Local Market Note3														

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)	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	25871.C.850.3G.1	25871.C.850.3G.1	CTV50903	CTV50903		UMTS 850	7770.00.850.01	13.5	260	1	None	Andrew 7/8 (850)	135		0				272.9	17	
	PORT 2	25871.C.850.3G.1,25871.C.850.3G.2	25871.C.850.3G.2	CTV5090C	CTV50903		UMTS 850	7770.00.850.01	13.5	260	1	Bottom	Andrew 7/8 (850)	135		0				272.9	18	
	PORT 3	25871.C.1900.3G.1	25871.C.1900.3G.1	CTU50909	CTU50909		UMTS 1900	7770.00.1900.00	15.5	260	0	None	Andrew 7/8 (850)	135		0				286.42	17	
	PORT 5	25871.C.850.25G.1	25871.C.850.25G.1	321G50903	321G50903		GSM 850	7770.00.850.01	13.5	260	1	None	Andrew 7/8 (850)	135	RxAIT 850	2	LLC 850			272.9	17	
ANTENNA POSITION 4	PORT 1	25871.C.700.4G.1	25871.C.700.4G.1	CTL05090_7C_1	CTL05090_7C_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	270	2	BOTTOM	ANDREW 7/8	135		0				827.9421	23	
	PORT 3	25871.C.1900.4G.111	25871.C.1900.4G.1	CTL05090_9C_1	CTL05090_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	270	4	BOTTOM	ANDREW 7/8	135		0				3258.367	23	

Diagram - Sector	A	Diagram File Name - CT5090_A_B_C_LTE2C_BrStd_Rev3.vsd					
Atoll Site Name -	CT5090	Location Name -	TRUMBULL SOUTH EAST	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

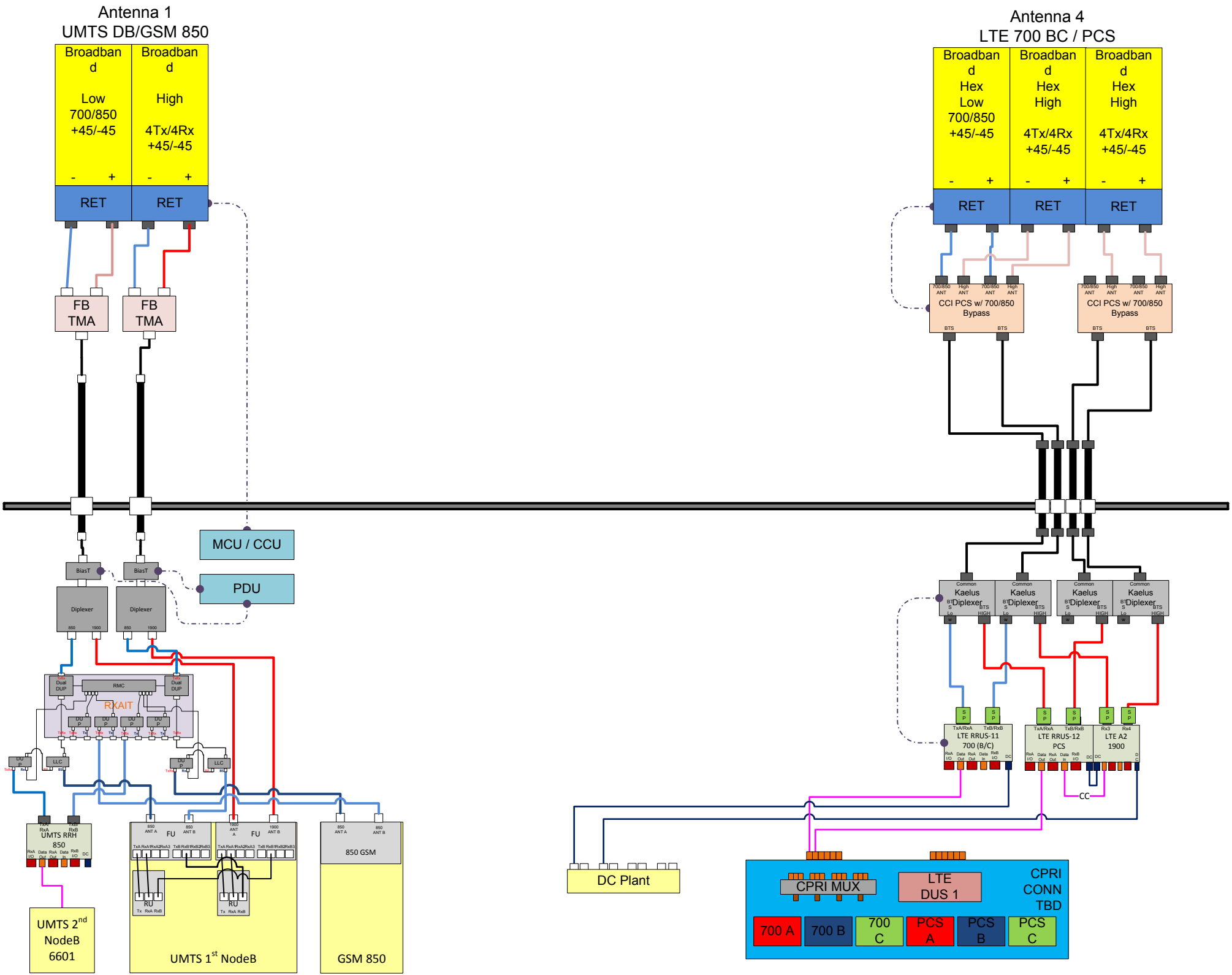

Diagram - Sector	B	Diagram File Name - CT5090_A_B_C_LTE2C_BrStd_Rev3.vsd					
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Comments:							

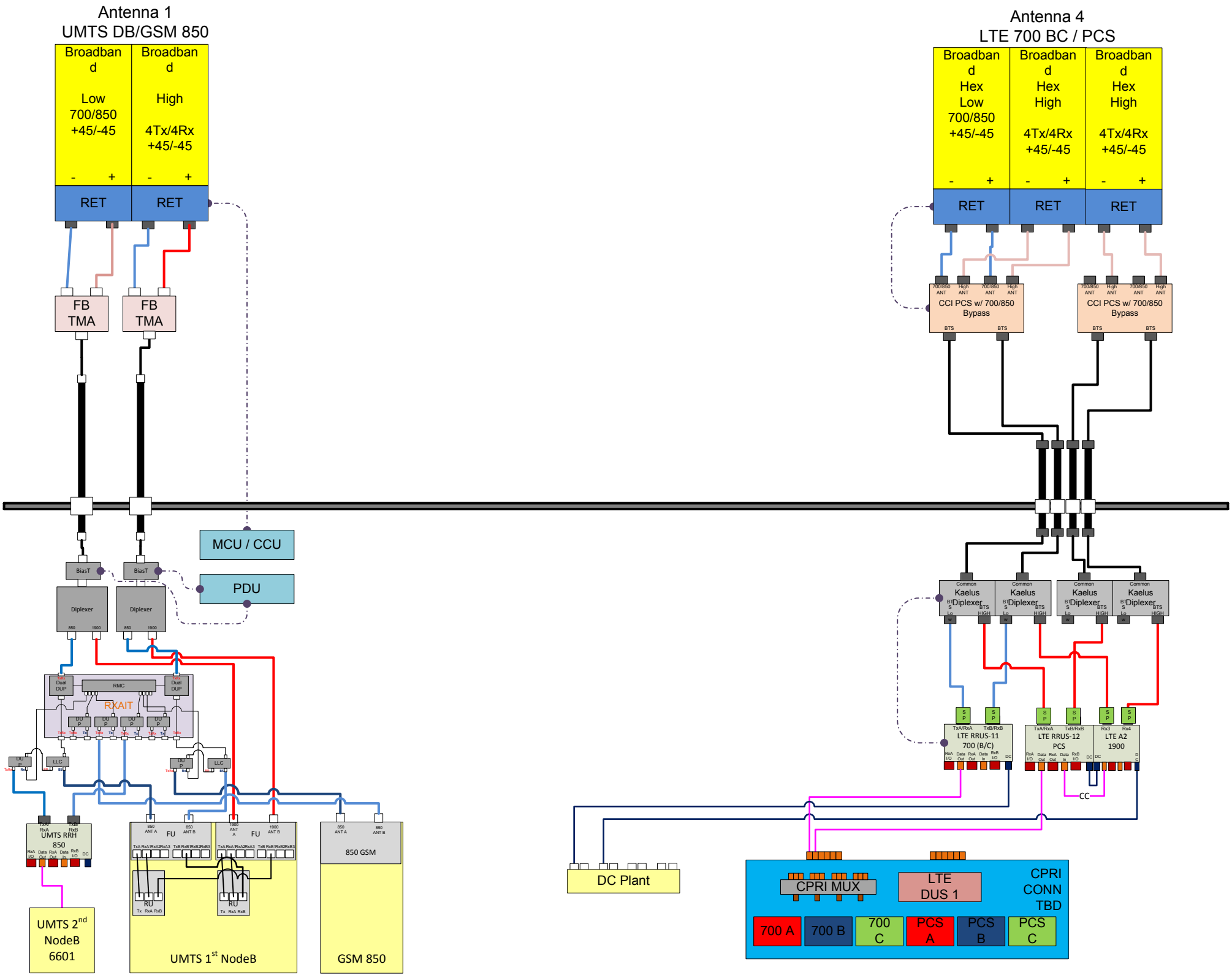
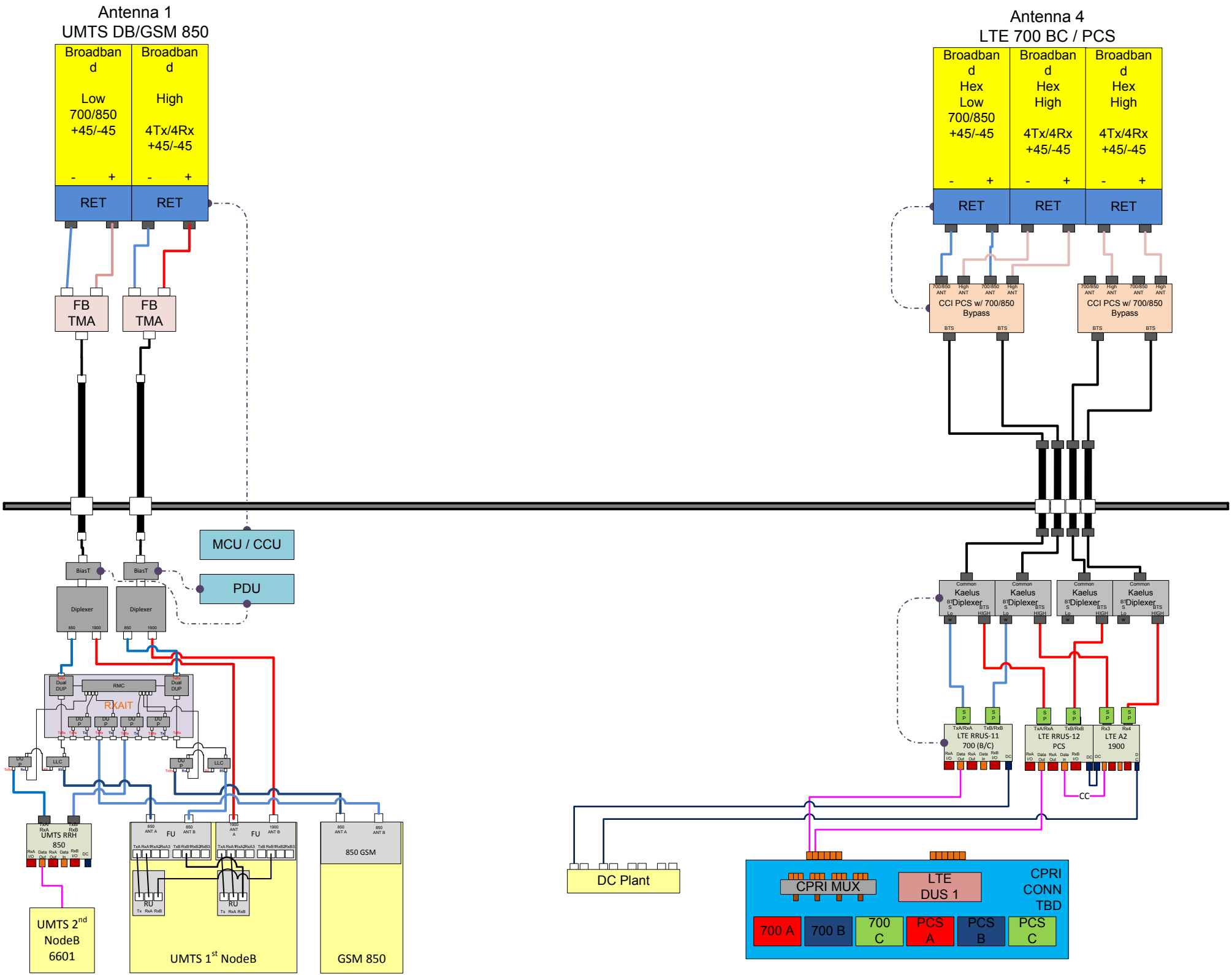


Diagram - Sector	C	Diagram File Name - CT5090_A_B_C_LTE2C_BrStd_Rev3.vsd					
Atoll Site Name -	CT5090	Location Name -	TRUMBULL SOUTH EAST	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

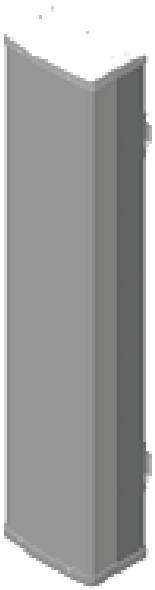


NOTES			
Date Time (Central)	Version	ATTUID	Note
11/9/2015 10:47:56 AM	2.00	om636a	Corrected the RFDS to show LTE 1900 RRUS-12 Bottom

WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
09/16/2015	Preliminary / In Progress	cb6561	Preliminary / Submitted for Approval	NA515M	Promote	
09/30/2015	Preliminary / Submitted for Approval	NA515M	Preliminary / Approved	BG144B	Promote	
10/22/2015	Preliminary / Approved	BG144B	Preliminary / Modification Recommended	OM636A	Demote	1900 RRUS-32 needs to be added
11/09/2015	Preliminary / Modification Recommended	OM636A	Preliminary / Submitted for Approval	NA515M	Promote	LTE Preliminary RFDS
11/10/2015	Preliminary / Submitted for Approval	NA515M	Preliminary / Modification Recommended	om636a	Demote	
11/10/2015	Preliminary / Modification Recommended	om636a	Preliminary / Submitted for Approval	NA515M	Promote	LTE Preliminary RFDS
11/11/2015	Preliminary / Submitted for Approval	NA515M	Preliminary / Approved	BG144B	Promote	
11/17/2015	Preliminary / Approved	BG144B	Final / RF Approval	om636a	Promote	
11/18/2015	Final / RF Approval	om636a	Final / RF Approval	MM093Q	Re-Assign	
11/18/2015	Final / RF Approval	MM093Q	Final / Approved	BG144B	Promote	LTE FINAL RFDS

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
www.ca.sgs.com

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6

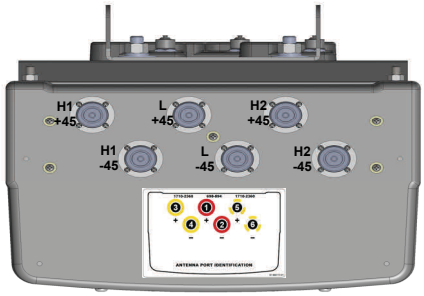
HPA-65R Multi-Band Antenna

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

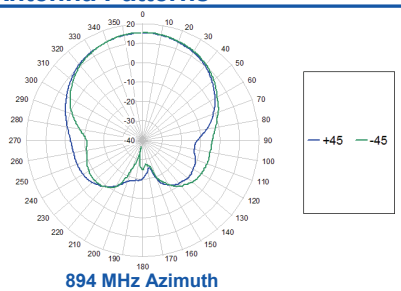
Dimensions (LxWxD)	72.0 x 14.8 x 9.0 inches (1828 x 376 x 229 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph (161 kph)
Side Wind Load	165 lbs (735 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.7 ft^2 (0.90 m^2)
Weight (without Mounting)	51 lbs (23 kg)
RET System Weight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



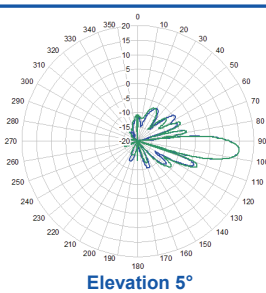
Bottom View

Rear View

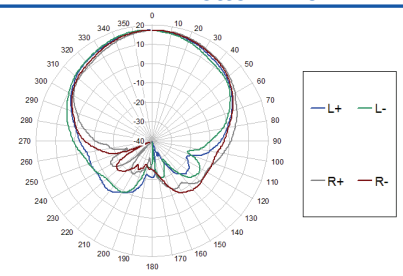
Antenna Patterns*



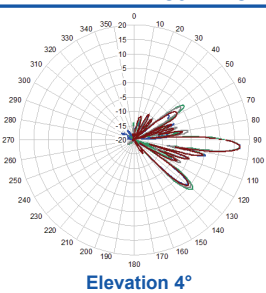
894 MHz Azimuth



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.

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

AT&T Existing Facility

Site ID: CT5090

Trumbull SE
2891 Nichols Avenue
Trumbull, CT 06611

July 7, 2016

EBI Project Number: 6216003130

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	4.72 %

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EBI Consulting
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July 7, 2016

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

Emissions Analysis for Site: **CT5090 – Trumbull SE**

EBI Consulting was directed to analyze the proposed AT&T facility located at **2891 Nichols Avenue, Trumbull, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **2891 Nichols Avenue, Trumbull, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Powerwave 7770 and the CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **101 feet** above ground level (AGL) for **Sector A**, **101 feet** above ground level (AGL) for **Sector B** and **101 feet** above ground level (AGL) for Sector C.

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

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**101 feet**	Height (AGL):	**101 feet**	Height (AGL):	**101 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	2,969.12	ERP (W):	2,969.12	ERP (W):	2,969.12
Antenna A1 MPE%	**1.69 %**	Antenna B1 MPE%	**1.69 %**	Antenna C1 MPE%	**1.69 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	**101 feet**	Height (AGL):	**101 feet**	Height (AGL):	**101 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A2 MPE%	**3.03 %**	Antenna B2 MPE%	**3.03 %**	Antenna C2 MPE%	**3.03 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**4.72 %**
No Additional Carriers	NA
Site Total MPE %:	**4.72 %**

AT&T Sector A Total:	4.72 %
AT&T Sector B Total:	4.72 %
AT&T Sector C Total:	4.72 %
Site Total:	4.72 %

AT&T _ Max Values Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	101	3.30	850 MHz	567	0.58 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	101	5.23	1900 MHz (PCS)	1000	0.52 %
AT&T 850 MHz GSM	2	414.12	101	3.30	850 MHz	567	0.58 %
AT&T 700 MHz LTE	2	940.05	101	7.49	700 MHz	467	1.60 %
AT&T 1900 MHz (PCS) LTE	2	1,791.23	101	14.27	1900 MHz (PCS)	1000	1.43 %
						Total:	**4.72 %**

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.72 %
Sector B:	4.72 %
Sector C:	4.72 %
AT&T Maximum Total (per sector):	4.72 %
Site Total:	4.72 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.72 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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