EMPIRE telecom

June 30, 2016

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas and addition of radios and associated lines
Property Address:	155 Harvest Ridge Road, Stratford, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 124 foot Lattice tower ("tower") at the above-referenced address, latitude 41.2379919, longitude -73.1223881. AT&T's facility consists of nine (9) wireless telecommunications antennas at 126 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 and adding (3) remote radios and associated lines. The centerline height of said antennas is and will remain at 126 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of the Town of Stratford and the Planning and Zoning Administrator of the Town of Stratford. 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 126 foot level of the 124 foot Lattice 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 January 26, 2016).

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

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable John Harkins, Mayor, Town of Stratford
Jay Habansky, Planning and Zoning Administrator, Town of Stratford
Eversource Energy, c/o Robert Gray

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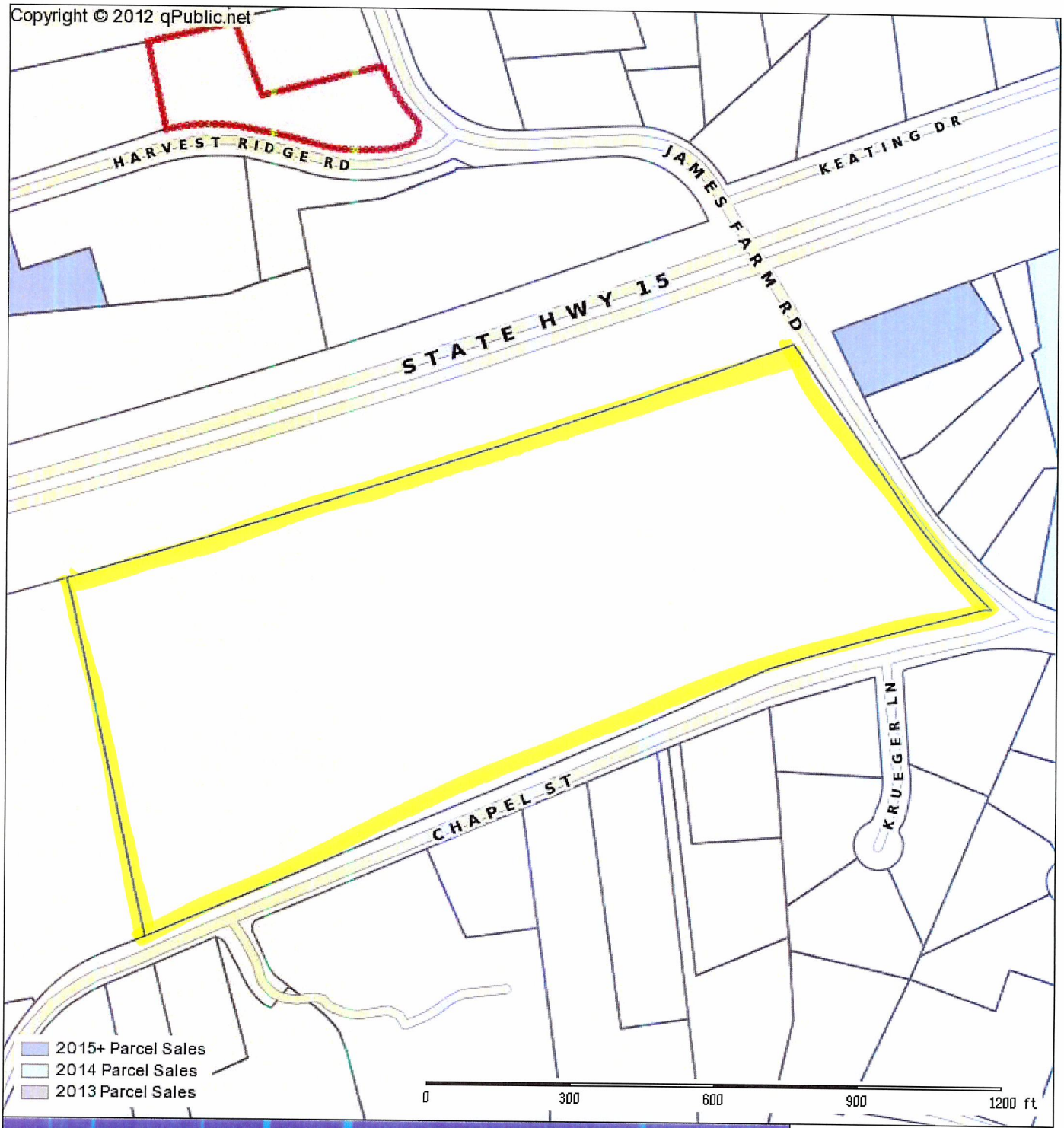

Town of Stratford

Parcel: 7302 Acres: 1.88999

Name:	TOWN OF STRATFORD	Land Value:	121300
Site:	HARVEST RIDGE RD	Improvement Value:	0
Sale:	$0 on 2001-04-16 Reason=QC Qual=U	Accessory Value:	0
Mail:	2725 MAIN ST STRATFORD, CT 06615-5892	Total Value:	121300

The Town of Stratford makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll.
Date printed: 06/30/16 : 08:49:11

TOWN OF STRATFORD

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Owner and Parcel Information

Owner Name	TOWN OF STRATFORD VACANT LAND	**Today's Date**	June 30, 2016
Mailing Address	2725 MAIN ST	**Account #**	0711440
	STRATFORD, CT 06615-5892		
Location Address	HARVEST RIDGE RD	**Census Tract**	0813
Map / Block / Lot	50 /18 / 3 / 4/ Dev Lot:	**Acreage**	1.89
Use Class / Description	924 Mun Lnd Res	**Parcel Map**	Show Parcel Map Owner List By Radius

Current Appraised Value Information

Building Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
$ 0	$ 0	$ 121,300		$ 121,300	$ 121,300	$ 84,910

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	0	0	$ 84,910	$ 84,910
2015	0	0	$ 84,910	$ 84,910
2014	0	0	$ 84,910	$ 84,910

Land Information

Use	Class	Zoning	Area	Value
Mun Lnd Res	E	RS-2	1 AC	$ 102,600
Mun Lnd Res	E	RS-2	0.89 AC	$ 18,700

Building Information

No Building Information available for this parcel.

Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
No Out Building/Misc Information available for this parcel.				

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
04/16/2001		1706/0078	Unqualified	QC	Vacant	TOWN OF STRATFORD VACANT LAND
00/00/0000		0651/0023	Unqualified	QC	Vacant	BARGAS SEVEN ASSOC LTD PARTN

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
No Permit Information available for this parcel.								

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PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR, FOR A TOTAL (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 RELOCATED. (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (3) EXISTING RRUs.

SITE ADDRESS:	155 HARVEST RIDGE ROAD STRATFORD, CT 06614
LATITUDE:	41.2379919 41° 14' 16.77084"N
LONGITUDE:	−73.1223881 −73° 07' 20.59716"W
USID:	60376
TOWER OWNER:	AT&T MOBILITY
TYPE OF SITE:	UTILITY/INDOOR EQUIPMENT
MONOPOLE HEIGHT:	124'−0"±
RAD CENTER:	126'−0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T−1	TITLE SHEET	0
GN−1	GROUNDING & GENERAL NOTES	0
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.

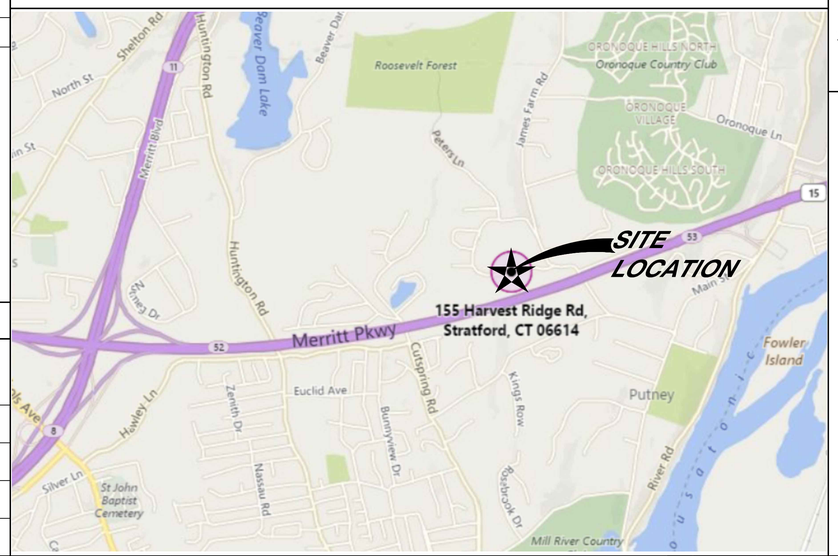
DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035240
SITE NUMBER: CT2043
SITE NAME: STRATFORD NU
EVERSOURCE STRUCTURE#: 1321

VICINITY MAP

FROM ROCKY HILL, CT: DEPART ENTERPRISE DR TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITOL BLVD, TURN LEFT ONTO WEST ST, TAKE RAMP LEFT FOR I−91 S, AT EXIT 17, TAKE RAMP RIGHT FOR SR−15 S/WILBUR CROSS PKWY TOWARD E. MAIN ST, AT EXIT 53, TAKE RAMP RIGHT FOR SR−110 S. TOWARD STRATFORD, TURN LEFT ONTO SR−110 / MAIN ST, BEAR RIGHT ONTO MAIN ST, TURN RIGHT ONTO CHAPEL ST, ARRIVE AT ACCESS DRIVE OFF OF CHAPEL STREET ON 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:
COMPANY: EMPIRE TELECOM
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ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
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

COM−EX Consultants
115 ROUTE 46
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FAX: 862.209.4301

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BILLERICA, MA 01821

SITE NUMBER: CT2043
SITE NAME: STRATFORD NU
155 HARVEST RIDGE ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	06/23/16	ISSUED AS FINAL	KCD	NDB	NDB

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

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · 23643 · PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15120−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 03/24/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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SUITE E39
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PHONE: 862.209.4300
FAX: 862.209.4301

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16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2043
SITE NAME: STRATFORD NU

155 HARVEST RIDGE ROAD
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FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	06/23/16	ISSUED AS FINAL	KCD	NDB	NDB

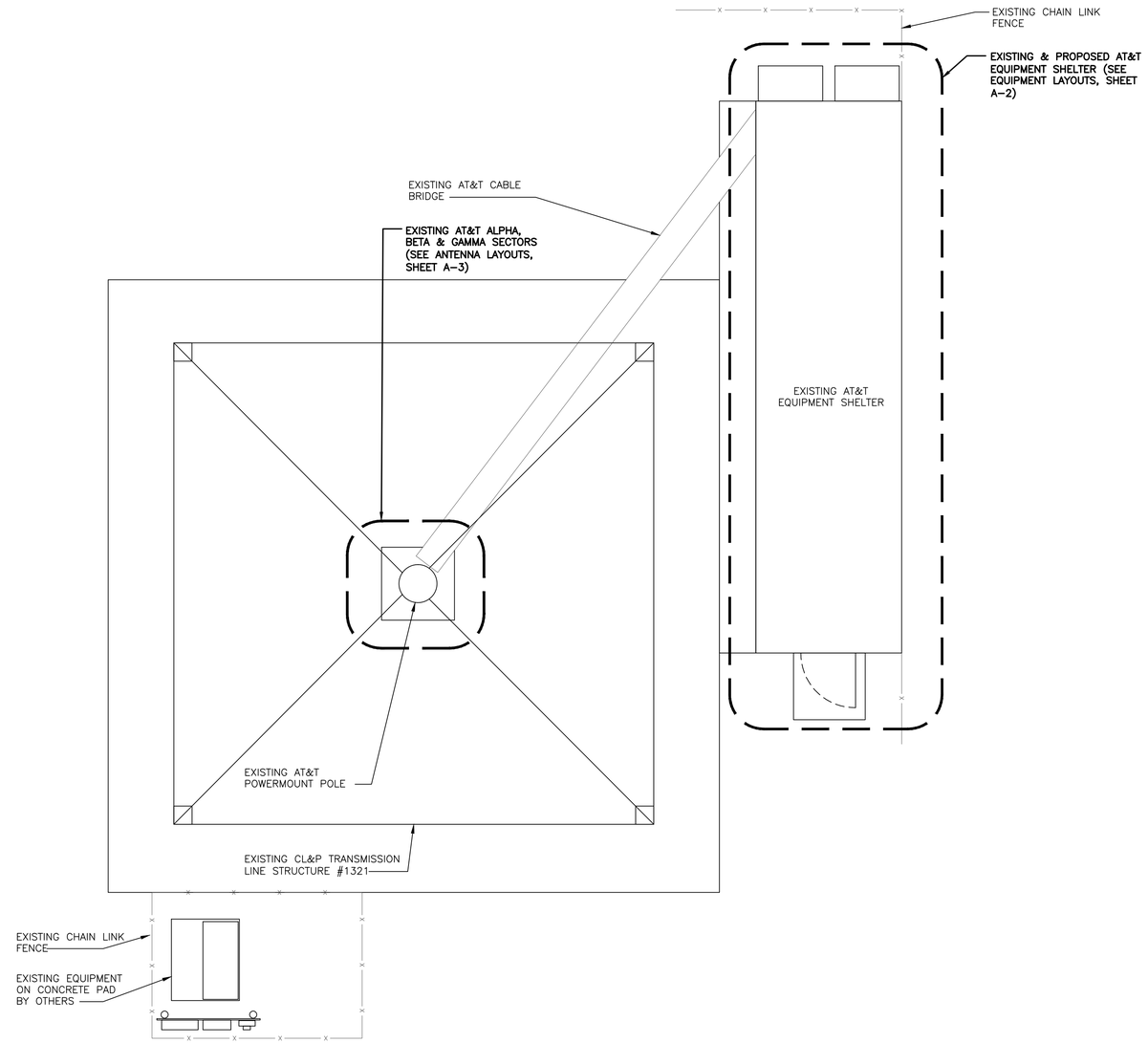
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

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
15120-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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SITE NUMBER: CT2043
SITE NAME: STRATFORD NU

155 HARVEST RIDGE ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	06/23/16	ISSUED AS FINAL	KCD	NDB	NDB

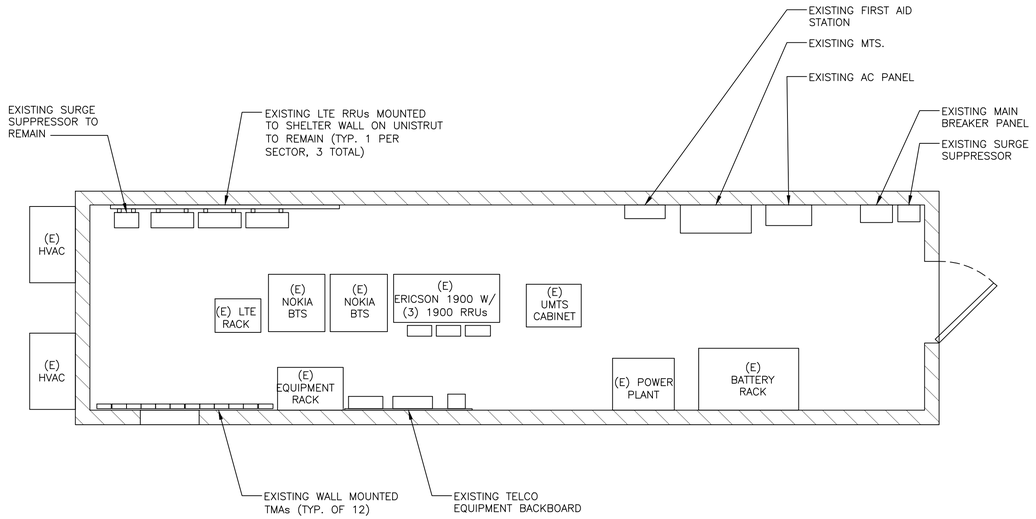
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
DOUGLAS B. REPETTI
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15120-EMP	A-1	0



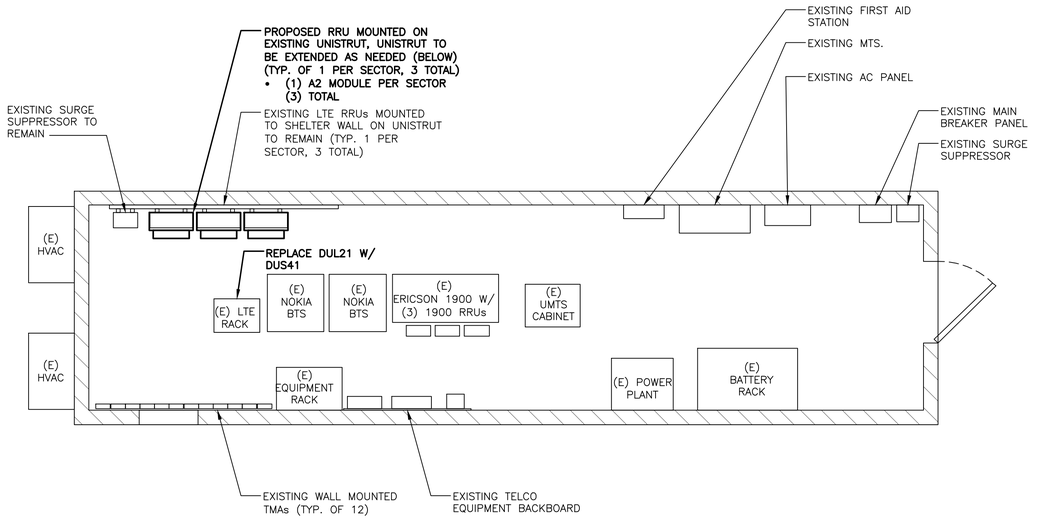
NORTH

EXISTING EQUIPMENT LAYOUT

SCALE: 3/8" = 1'-0"

0 1'-4" 2'-8" 5'-4"

GRAPHIC SCALE: 3/8"=1'-0"



NORTH

PROPOSED EQUIPMENT LAYOUT

SCALE: 3/8" = 1'-0"

0 1'-4" 2'-8" 5'-4"

GRAPHIC SCALE: 3/8"=1'-0"

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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2043
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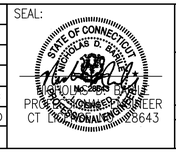
0	06/23/16	ISSUED AS FINAL	KCD	NDB	NDB

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

SEAL:



AT&T

DRAWING TITLE: EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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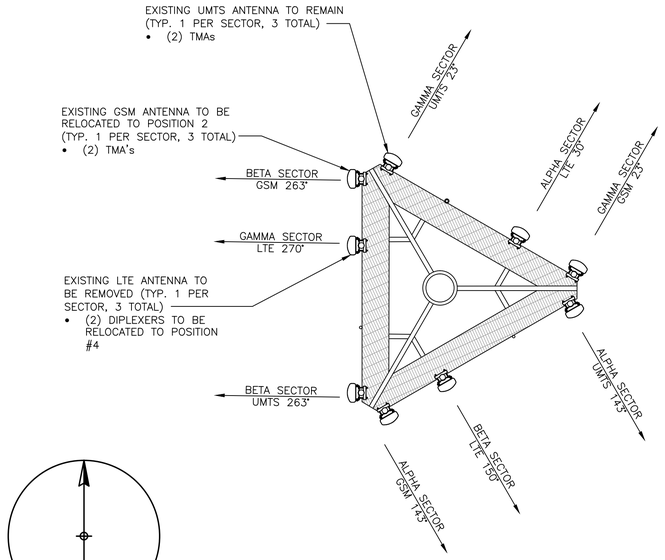
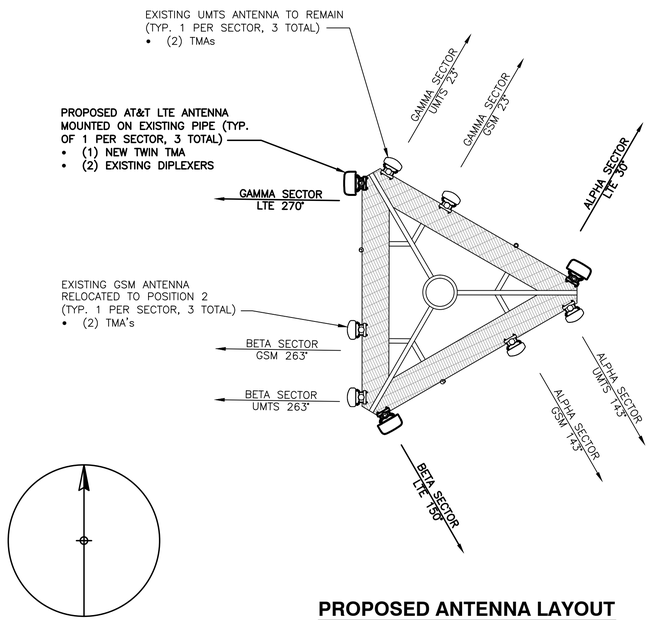


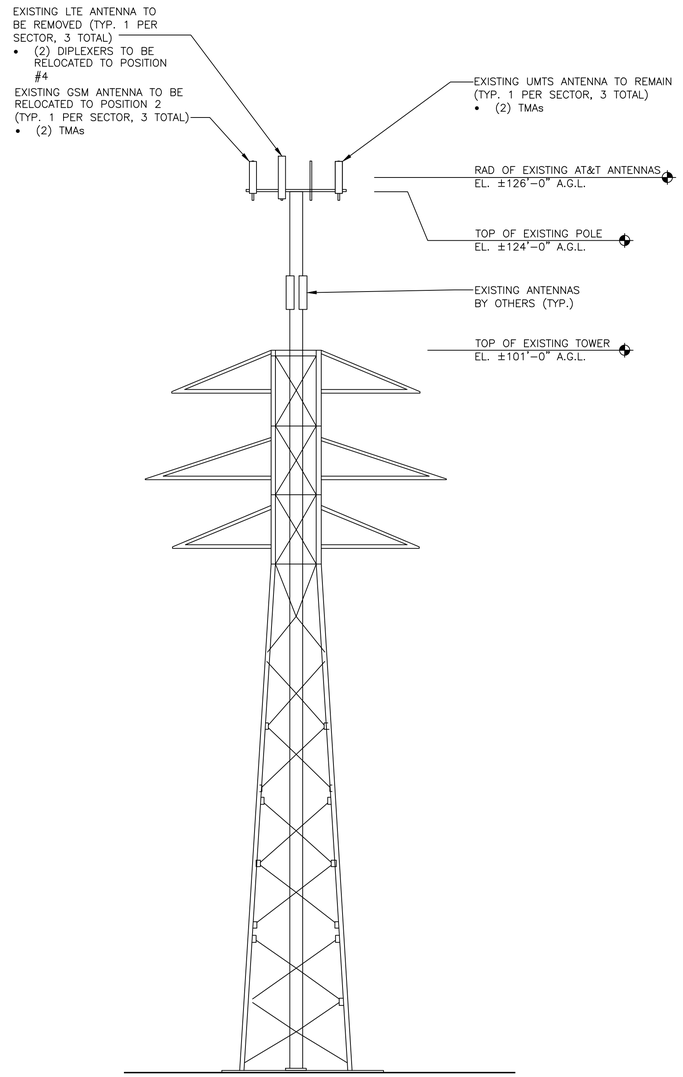
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



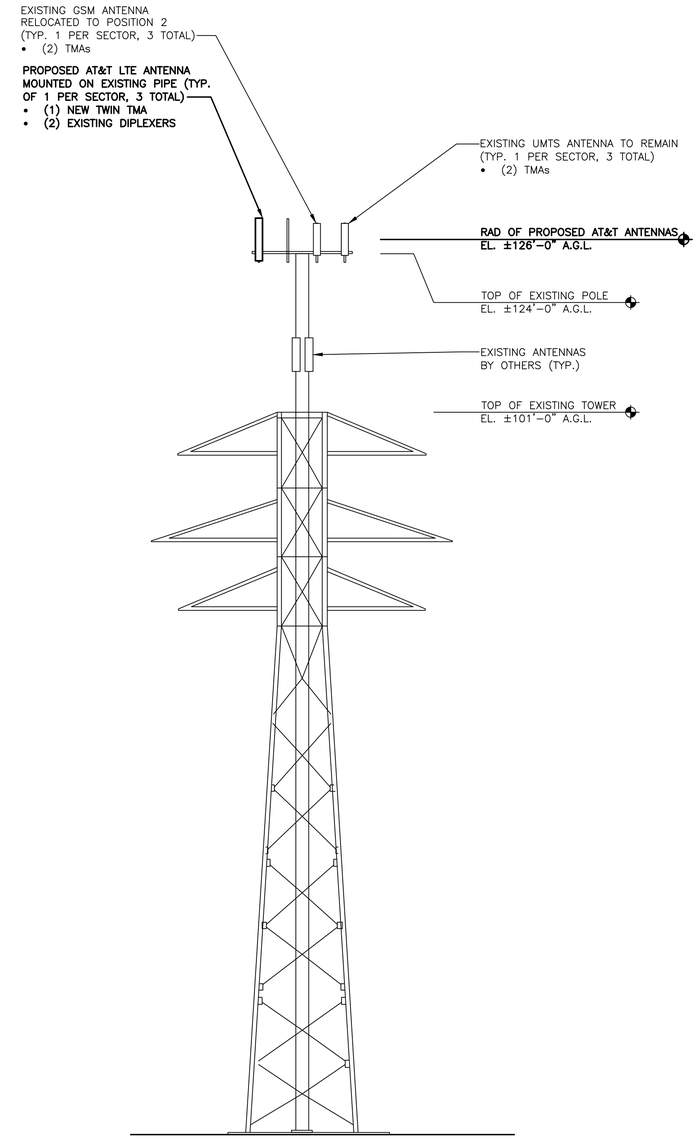
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARBA
No. 23843
PROFESSIONAL ENGINEER
CT

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
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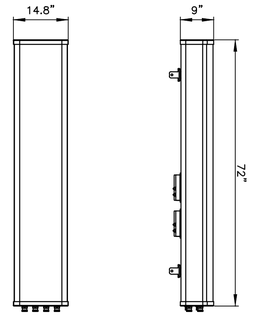
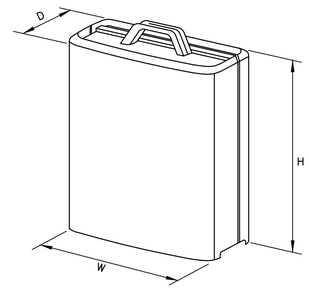


MANUFACTURER	CCI
MODEL	OPA-65R-BUU-H6
WEIGHT	50.7 LBS

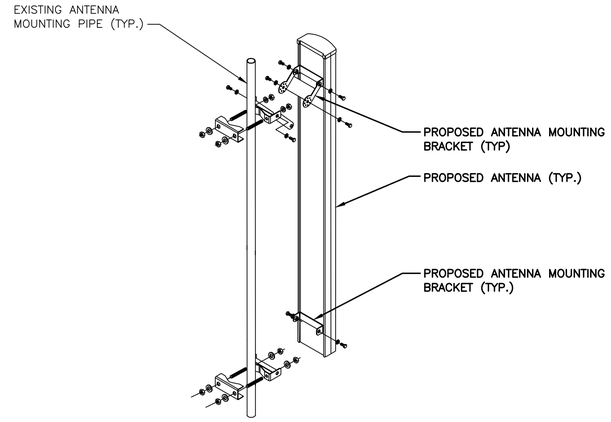
LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4"x18.5"x7.5"	58 LBS
A2 MODULE	16.4" X 15.2" X 3.4"	22 LBS

*DENOTES EXISTING.

RRUS DETAIL
SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.00	55"x11"x5"
	A2	–	–	–
	A3	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
	A4	POWERWAVE	7770.00.850.00	55"x11"x5"
BETA	B1	POWERWAVE	7770.00.850.00	55"x11"x5"
	B2	–	–	–
	B3	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
	B4	POWERWAVE	7770.00.850.00	55"x11"x5"
GAMMA	G1	POWERWAVE	7770.00.850.00	55"x11"x5"
	G2	–	–	–
	G3	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
	G4	POWERWAVE	7770.00.850.00	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.00	55"x11"x5"
	A2	POWERWAVE	7770.00.850.00	55"x11"x5"
	A3	–	–	–
	A4	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
BETA	B1	POWERWAVE	7770.00.850.00	55"x11"x5"
	B2	POWERWAVE	7770.00.850.00	55"x11"x5"
	B3	–	–	–
	B4	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
GAMMA	G1	POWERWAVE	7770.00.850.00	55"x11"x5"
	G2	POWERWAVE	7770.00.850.00	55"x11"x5"
	G3	–	–	–
	G4	**CCI**	**HPA-65R-BUU-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"**	**A2 MODULE**	**16.4"X15.2"X3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–		
BETA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x9.5"**	**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"**	**A2 MODULE**	**16.4"X15.2"X3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–		

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FRAMINGHAM, MA 01701

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0	06/23/16	ISSUED AS FINAL	KCD	NDB	NDB

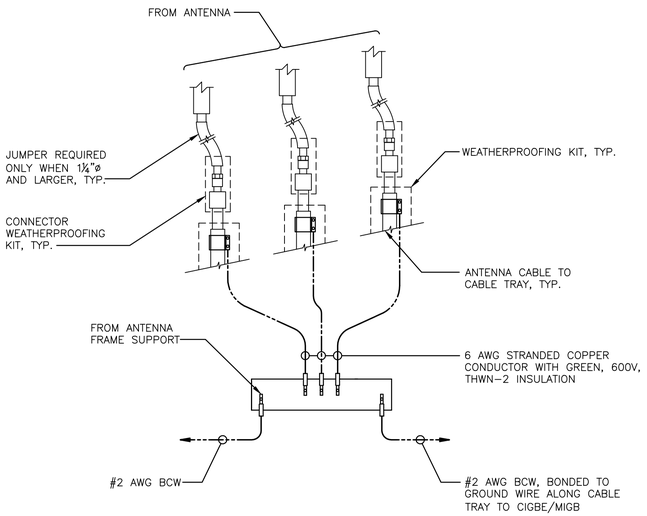
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTELT
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

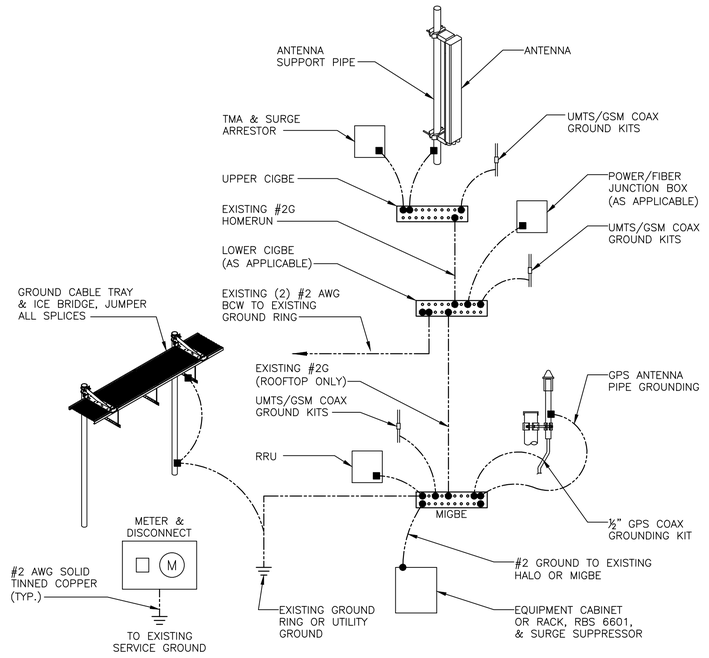
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15120-EMP	A-4	0



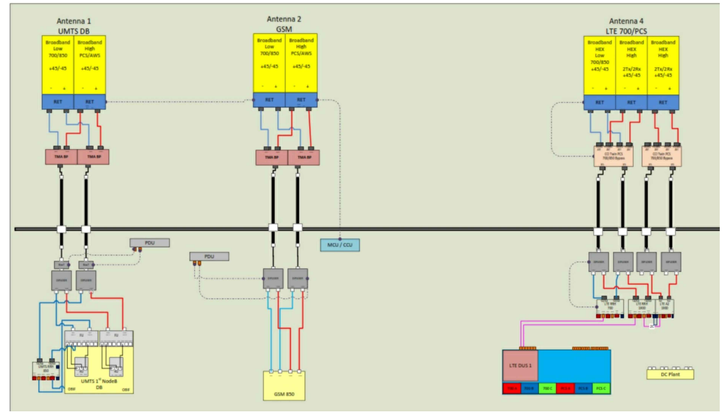
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



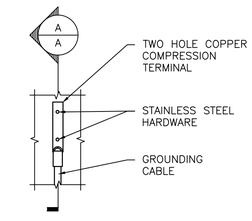
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

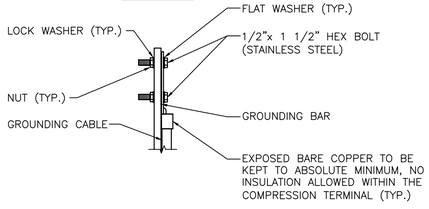


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



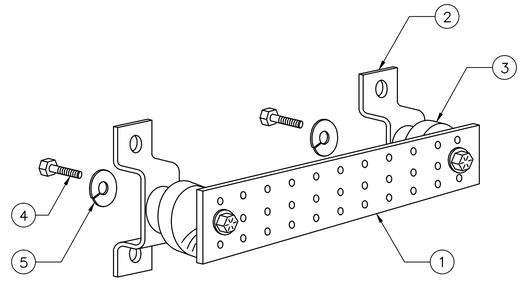
SECTION "A–A"

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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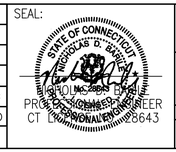


AT&T

DRAWING TITLE:
GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15120–EMP	G–1	0

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

AT&T Site Ref: CT2043

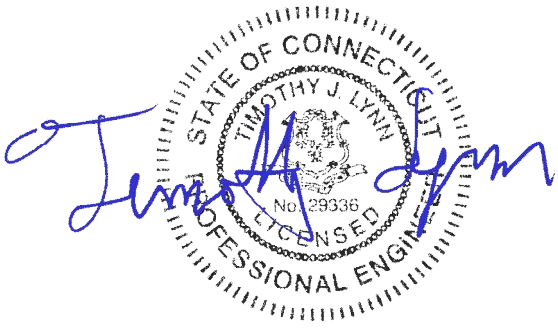
Eversource Structure No. 1321

101' Electric Transmission Lattice Tower

670 Chapel Street
Stratford, CT

CENTEK Project No. 16002.001

Date: January 26, 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 101' utility tower located at 670 Chapel Street in Stratford, CT for the proposed antenna and equipment upgrade by AT&T.

The existing and proposed loads consist of the following:

- T-MOBILE (Existing to Remain):
  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas mounted the existing antenna mast with a RAD center elevation of 109-ft above grade.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables and six (6) 3/8" ∅ RET cables running on the outside of the tower as indicated in section 4 of this report
- AT&T (Existing to Remain):
  Antennas: Six (6) Powerwave 7770 panel antennas, twelve (12) Powerwave LGP214 TMA's and three (3) CCI DTMABP7819VG12A TMA's mounted on a low profile platform with a RAD center elevation of 125-ft above grade.
  Coax Cables: Eighteen (18) 1-1/4" ∅ coax cables running on the inside of the existing antenna mast.
- AT&T (Existing to Remove):
  Antennas: Three (3) Powerwave P65-16-XHL-RR panel antennas mounted on a low profile platform with a RAD center elevation of 125-ft above grade.
- **AT&T (Proposed):**
  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas mounted on a low profile platform with a RAD center elevation of 125-ft above grade.
  Coax Cables: Six (6) 1-1/4" ∅ coax cables running on the exterior of the existing 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 HSS18"x0.375" pipe conforming to ASTM A500 Grade B (Fy = 42ksi) connected at six 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 101-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
HSS 18” x 0.375” Pipe	Bending	75.2%	**PASS**
L2.5x2.5x3/16 Brace	Bending	88.6%	**PASS**
Connection	Shear	95.8%	**PASS**

- UTILITY TOWER

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

  A maximum usage of **96.71%** occurs in the utility tower under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g37X	96.71%	**PASS**

- FOUNDATION AND ANCHORS

  The existing foundation consists of four (4) 2-ft square tapering to 5-ft square x 5-ft-8” long reinforced concrete piers and four (4) 8-ft square x 2-ft thick reinforced concrete pads with a 33-ft-6in square x 3-ft-6-in thick concrete mat flush with the top of the piers. The base of the tower is connected to the foundation by four (4) 1-1/4” ∅ ASTM A36 anchor bolts per leg. Foundation information was obtained from NUSCO drawing # 01021-60001 and construction drawings prepared by Centek engineering project no. 10021.CO3 dated 10/6/2010 marked rev 2.

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	10.55 kips	32.58 kips	54.75 kips
NESC Extreme Wind	22.22 kips	78.63 kips	96.76 kips

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

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	89.7%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Required FS (1)	Proposed Loading FS (2)	Result
Reinf. Conc. Pad & Pier w/ Mat	Uplift	1.0	2.0	**PASS**
	Bearing Pressure	4 ksf	1.1 ksf	**PASS**

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

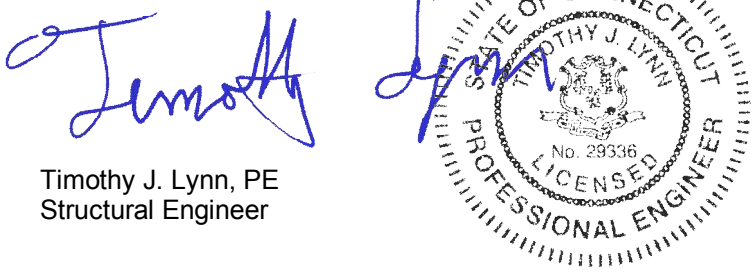
C o n c l u s i o n

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

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

G E N E R A L D E S C R I P T I O N O F S T R U C T U R A L A N A L Y S I S P R O G R A M ~ P L S - T O W E R

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.

Northeast Utilities System

Job :		Page	of
Description: T-Mobile	Spec. Number	Sheet	of
	Computed by	Date	7/27/10
	Checked by	Date	

INPUT DATA

TOWER ID: 1321

Structure Height (ft) : 101

Wind Zone : Central CT (green)

Wind Speed : 90.5711047 mph

Tower Type : (●) Suspension ( ) Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

	BACK	AHEAD
NAME =	*3/8 CW*	*3/8 CW*
DESCRIPTION =	3/8	3/8
STRANDING =	7 #8 Cu Weld	7 #8 Cu Weld
DIAMETER =	0.385 in	0.385 in
WEIGHT =	0.324 lb/ft	0.324 lb/ft

Conductor Properties:

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

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,800	7,000	3,800	7,000
EXTREME WIND =	3,038	7,356	3,061	8,027
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,280	2,733	1,073	2,736

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	1	AHEAD:	1	**2**
WIND SPAN (ft) =	BACK:	402	AHEAD:	402	**804**
WEIGHT SPAN (ft) =	BACK:	489	AHEAD:	489	**978**

Northeast Utilities System

Job :		Page	of
Description: T-Mobile	Spec. Number	Sheet	of
	Computed by	Date	7/27/10
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1321

Wind Span =	804	ft	
Weight Span =	978	ft	
Total Angle =	2	degrees	

Broken Wire Span = AHEAD SPAN

Type of Insulator Attachment = SUSPENSION

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,147 lb	0 lb	1,282 lb	573 lb	6,269 lb	641 lb
Conductor =	1,785 lb	0 lb	2,739 lb	893 lb	11,548 lb	1,369 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	705 lb	26 lb	364 lb
Conductor =	1,917 lb	772 lb	1,007 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	364 lb
Conductor =	#VALUE!	#VALUE!	1,007 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	2,001 lb
Conductor =	#VALUE!	#VALUE!	3,384 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	855 lb
Conductor =	#VALUE!	#VALUE!	1,826 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	41 lb	207 lb	317 lb
Conductor =	95 lb	3 lb	875 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	62 lb	310 lb	475 lb
Conductor =	143 lb	4 lb	1,313 lb

Northeast Utilities System

Job :		Page	of
Description: T-Mobile	Spec. Number	Sheet	of
	Computed by	Date	7/27/10
	Checked by	Date	

INPUT DATA

TOWER ID: 1321

Structure Height (ft) : 101

Wind Zone : Central CT (green)

Wind Speed : 90.5711047 mph

Tower Type : (●) Suspension ( ) Strain

Extreme Wind Model : PCS Addition

Shield Wire Properties:

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

Conductor Properties:

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

Insulator Weight = 0 lbs

Broken Wire Side = AHEAD SPAN

Horizontal Line Tensions:

	BACK		AHEAD	
	Shield	Conductor	Shield	Conductor
NESC HEAVY =	3,600	7,000	3,600	7,000
EXTREME WIND =	2,846	7,356	2,838	8,027
LONG. WIND =	na	na	na	na
250D COMBINED =	na	na	na	na
NESC W/O OLF =	na	na	na	na
60 DEG F NO WIND =	1,094	2,733	783	2,736

Line Geometry:

					SUM
LINE ANGLE (deg) =	BACK:	1	AHEAD:	1	**2**
WIND SPAN (ft) =	BACK:	402	AHEAD:	402	**804**
WEIGHT SPAN (ft) =	BACK:	489	AHEAD:	489	**978**

Northeast Utilities System

Job :		Spec. Number	Page of
Description: T-Mobile		Computed by	Sheet of
		Checked by	Date 7/27/10
			Date

WIRE LOADING AT ATTACHMENTS

TOWER ID: 1321

Wind Span =	804 ft	Broken Wire Span =	AHEAD SPAN
Weight Span =	978 ft	Type of Insulator Attachment =	SUSPENSION
Total Angle =	2 degrees		

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	1,135 lb	0 lb	1,191 lb	568 lb	5,939 lb	596 lb
Conductor =	1,785 lb	0 lb	2,739 lb	893 lb	11,548 lb	1,369 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	697 lb	9 lb	294 lb
Conductor =	1,917 lb	772 lb	1,007 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	294 lb
Conductor =	#VALUE!	#VALUE!	1,007 lb

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

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,940 lb
Conductor =	#VALUE!	#VALUE!	3,384 lb

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

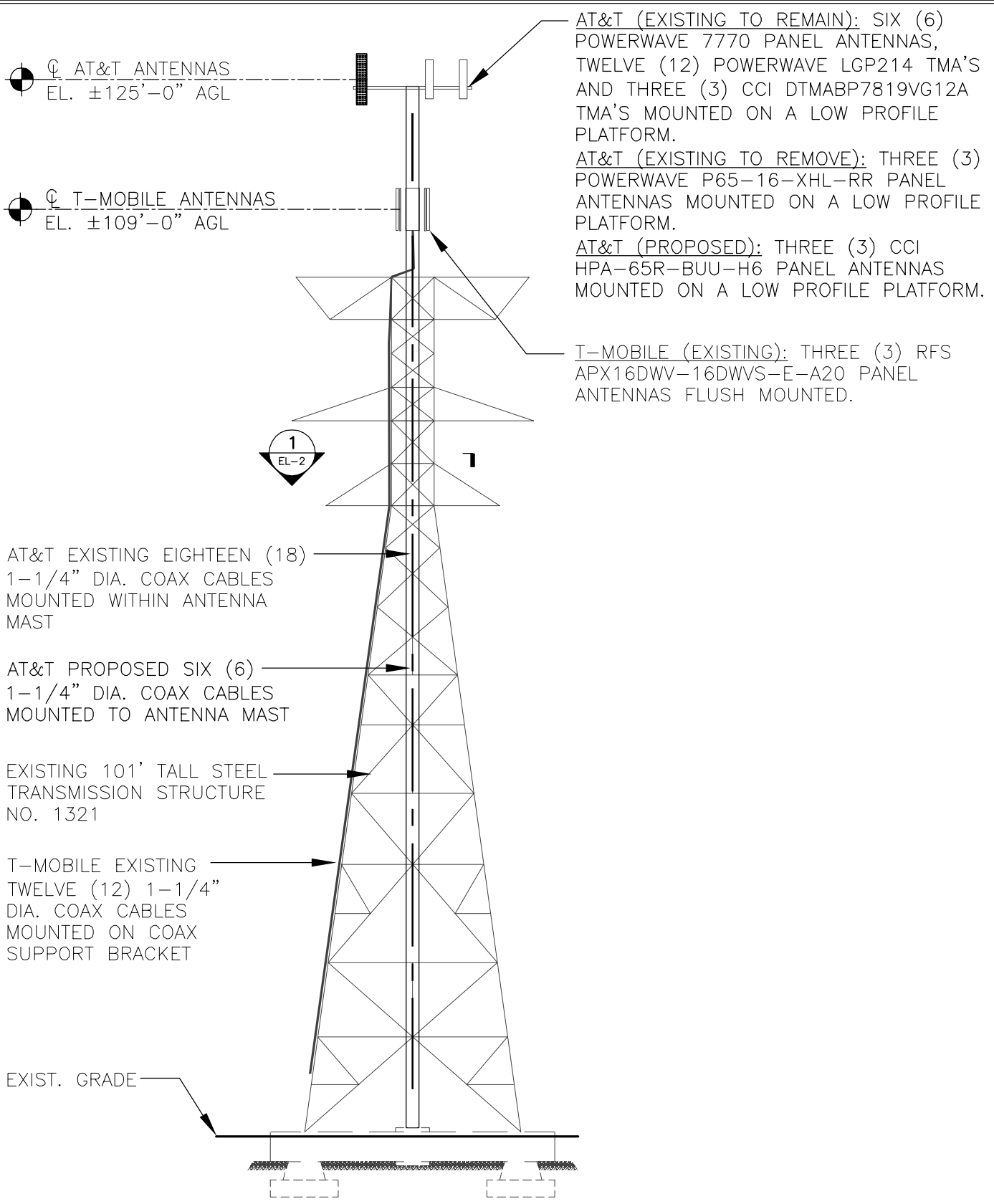
	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	794 lb
Conductor =	#VALUE!	#VALUE!	1,826 lb

6. 60 Deg. F, No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	33 lb	311 lb	256 lb
Conductor =	95 lb	3 lb	875 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	49 lb	466 lb	384 lb
Conductor =	143 lb	4 lb	1,313 lb



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EL-1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	1/26/16	ISSUED FOR REVIEW

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

CT2043
EVERSOURCE 1321

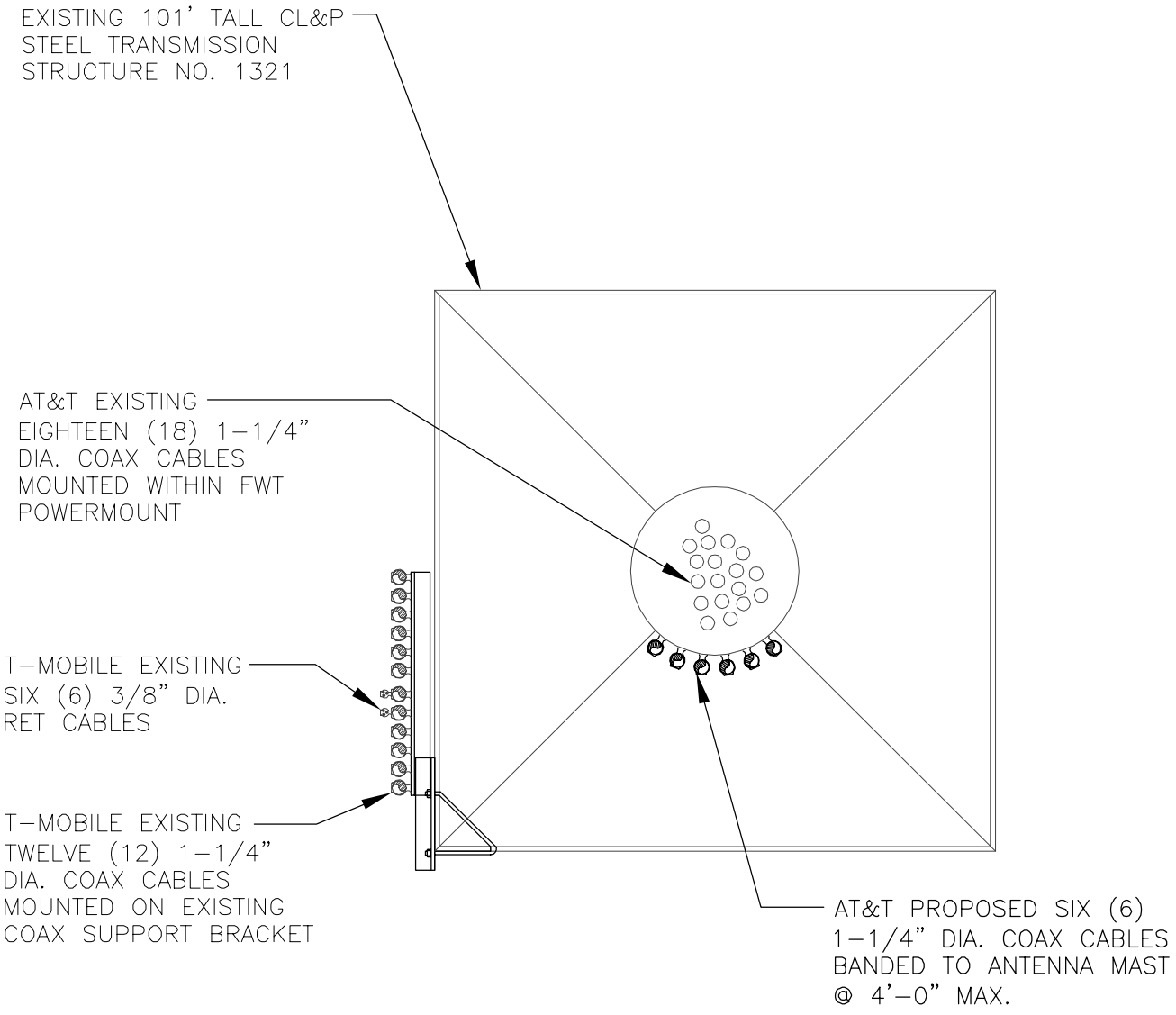
670 CHAPEL STREET
STRATFORD, CT 06614

PROJECT NO:	16002.001
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	1/26/16

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 2



1 / EL-2 COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	1/26/16	ISSUED FOR REVIEW

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CT2043
EVERSOURCE 1321

670 CHAPEL STREET
STRATFORD, CT 06614

PROJECT NO:	16002.001
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	1/26/16

FEEDLINE PLAN

EL-2

DWG. 2 OF 2

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Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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	$z_{pmnt1} := 105$	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	$z_{att} := 125$	ft	(User Input)
T-Mobile	$z_{tm} := 109$	ft	(User Input)
Coax Cable	$z_{coax} := 105$	ft	(User Input)

Exposure Coefficients, kz

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

Powermount Section 1: $Kz_{pmnt1} := \left(\frac{z_{pmnt1}}{33}\right)^{\frac{2}{7}} = 1.392$

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: $Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.463$

T-Mobile: $Kz_{tm} := \left(\frac{z_{tm}}{33}\right)^{\frac{2}{7}} = 1.407$

Coax Cable: $Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.392$

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

Powermount Section 1	$qz_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V^2 = 25.745$
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	$qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 27.06$
T-Mobile	$qz_{tm} := 0.00256 \cdot Kz_{tm} \cdot V^2 = 26.022$
Coax Cable	$qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 25.745$

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

Powermount Section 1	$qzICE_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V_i^2 = 19.513$
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	$qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 20.51$
T-Mobile	$qzICE_{tm} := 0.00256 \cdot Kz_{tm} \cdot V_i^2 = 19.723$
Coax Cable	$qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 19.513$

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: (HSS 18 x 0.375)

Powermount Shape =	Round		(User Input)
Powermount Diameter =	$D_{pmnt} := 18$	in	(User Input)
Powermount Length =	$L_{pmnt} := 124$	ft	(User Input)
Powermount Thickness =	$t_{pmnt} := 0.375$	in	(User Input)
Velocity Coefficient =	$C := \sqrt{Kz_{pmnt4}} \cdot V \cdot \frac{D_{pmnt}}{12} = 114$		
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 =	$A_{pmnt} := \frac{D_{pmnt}}{12} = 1.5$	sf/ft		
Total Powermount Section 1 Wind Force =	$qz_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 39$	plf	**BLC 5**	
Total Powermount Section 2 Wind Force =	$qz_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 35$	plf	**BLC 5**	
Total Powermount Section 3 Wind Force =	$qz_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 30$	plf	**BLC 5**	
Total Powermount Section 4 Wind Force =	$qz_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 22$	plf	**BLC 5**	

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

Powermount Projected Surface Area w/ Ice =	$AICE_{pmnt} := \frac{(D_{pmnt} + 2 \cdot Ir)}{12} = 1.583$	sf/ft		
Total Powermount Section 1 Wind Force w/ Ice =	$qzICE_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 31$	plf	**BLC 4**	
Total Powermount Section 2 Wind Force w/ Ice =	$qzICE_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 28$	plf	**BLC 4**	
Total Powermount Section 3 Wind Force w/ Ice =	$qzICE_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 24$	plf	**BLC 4**	
Total Powermount Section 4 Wind Force w/ Ice =	$qzICE_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 18$	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 =	$Ai_{pmnt} := \frac{\pi}{4}\left[(D_{pmnt} + Ir \cdot 2)^2 - D_{pmnt}^2\right] = 29.1$	sq in		
Weight of Ice on Powermount =	$W_{ICEpmnt} := Id \cdot \frac{Ai_{pmnt}}{144} = 11$	plf	**BLC 3**	

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Subject: Load Analysis of Antenna Mast on Tower # 1321

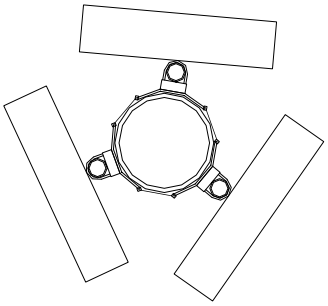
Location: Stratford, CT

Rev. 0: 1/25/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.001

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

Antenna Data: (T-Mobile)



Antenna Model =	RFS APX 16DWV-16DWVS-E-A20			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)	
Antenna Width =	$W_{ant} := 13.0$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 40.7$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$			
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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{tm} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 932$	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 =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{tm} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 774$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 122$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 99$	lbs	**BLC 3**

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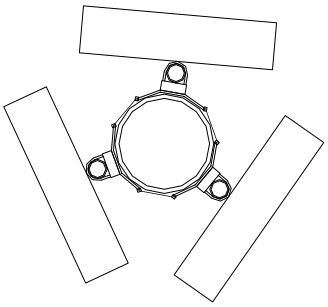
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

Mount Data: (T-Mobile)

Mount Type: Microflect Tri-Sector Chain Mount w/ 3 Pipes



Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 66$	in	(User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)
Tri Sector Chain Mount Weight =	$W_{tsc.mnt} := 101$	lbs	(User Input)
Mount Aspect Ratio =	$Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 28$		
Mount Force Coefficient =	$Ca_{mnt} = 1.2$		(per TIA/EIA-222-F Table 3)

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area =	$A_{mnt} := 0.0$	sf	
Total Mount Wind Force =	$F_{mnt} := qz_{tm} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 0$	lbs	**BLC 5**

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

Assumes Mount is Shielded by Antenna

Mount Projected Surface Area w/ Ice =	$A_{ICEmnt} := 0.0$	sf	
Total Mount Wind Force =	$Fi_{mnt} := qzICE_{tm} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 0$	lbs	**BLC 4**

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

Weight Each Pipe Mount =	$WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$	lbs	
Weight of All Mounts =	$WT_{mnt} \cdot N_{mnt} + W_{tsc.mnt} = 161$	lbs	**BLC 2**

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

Volume of Each Pipe =	$V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 292$	cu in	
Volume of Ice on Each Pipe =	$V_{ice} := \left[\frac{\pi}{4} \cdot \left[(D_{mnt} + 1)^2\right] \cdot (L_{mnt} + 1)\right] - V_{mnt} = 307$	cu in	
Weight of Ice each mount (incl, hardware) =	$W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs	
Weight of Ice on All Mounts =	$W_{ICEmnt} \cdot N_{mnt} + 5 = 35$	lbs	**BLC 3**

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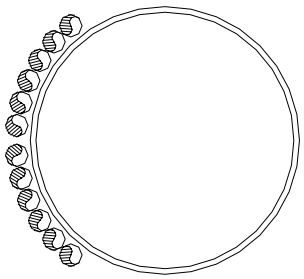
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

Coax Cable Data: (T-Mobile)

Coax Type 1 = HELIAX 1-1/4"

Shape = Round (User Input)



Coax Outside Diameter = $D_{coax1} := 1.55$ in (User Input)

Coax Cable Length = $L_{coax1} := 8$ ft (User Input)

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf (User Input)

Total Number of Coax = $N_{coax1} := 12$ (User Input)

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

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax1} \cdot 12)}{D_{coax1}} = 61.9$

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 = $A_{coax} := \frac{(NP_{coax1} D_{coax1})}{12} = 0.3$ ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 13$ 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 = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 14$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} := Wt_{coax1} \cdot N_{coax1} = 8$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax1} := \frac{\pi}{4}\left[\left(D_{coax1} + 2 \cdot Ir\right)^2 - D_{coax1}^2\right] = 3.2$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(N_{coax1} \cdot \frac{Ai_{coax1}}{144}\right) = 15$ plf **BLC 3**

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Subject: Load Analysis of Antenna Mast on Tower # 1321

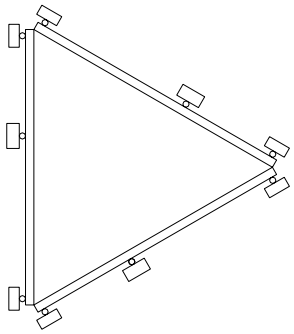
Location: Stratford, CT

Rev. 0: 1/25/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.001

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 =	$N_{ant} := 6$		(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 =	$A_{ant} := SA_{ant} \cdot N_{ant} = 25.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1614$	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 =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1359$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 234$	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 =	$W_{ICEant} \cdot N_{ant} = 196$	lbs	**BLC 3**

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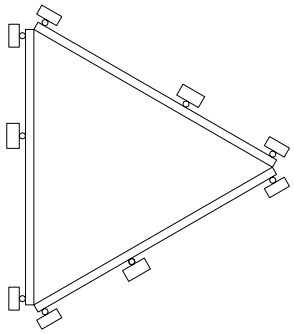
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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 =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1421$	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 =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1166$	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**

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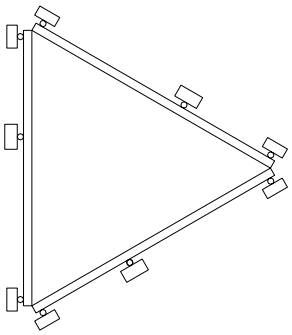
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

TMA Data: (AT&T)



TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{tma} := 9.2$	in	(User Input)
TMA Width =	$W_{tma} := 14.4$	in	(User Input)
TMA Thickness =	$T_{tma} := 2.6$	in	(User Input)
TMA Weight =	$WT_{tma} := 14.1$	lbs	(User Input)
Number of TMAs =	$N_{tma} := 12$		(User Input)
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 0.6$		
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 =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 11$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 707$	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 =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 13.1$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 635$	lbs	**BLC 4**

Gravity Load (without ice)

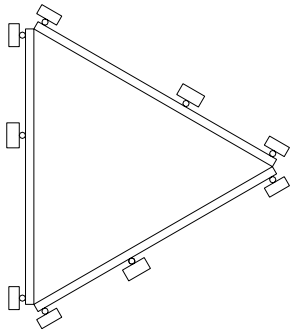
Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 169$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each TMA =	$V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{tma} + 1)(W_{tma} + 1) \cdot (T_{tma} + 1) - V_{tma} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMAs =	$W_{ICEtma} \cdot N_{tma} = 86$	lbs	**BLC 3**

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 =	$N_{tma} := 3$		(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 =	$A_{tma} := SA_{tma} \cdot N_{tma} = 3.4$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 218$	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 =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 4$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 192$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMAs =	$WT_{tma} \cdot N_{tma} = 60$	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 =	$W_{ICEtma} \cdot N_{tma} = 29$	lbs	**BLC 3**

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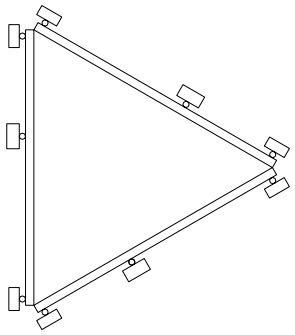
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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 = $F_{plt} := qz_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{plt} = 968$ lbs **BLC 5**

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

Total Platform Wind Force w/ Ice = $Fi_{plt} := qzICE_{att} \cdot G_H \cdot Ca_{plt} \cdot A_{ICE.plt} = 928$ 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 # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

Coax Cable Data: (AT&T)

Coax Type 1 = HELIAX 1-1/4"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax1} := 1.55$ in (User Input)

Coax Cable Length = $L_{coax1} := 124$ ft (User Input)

Weight of Coax per foot = $Wt_{coax1} := 0.66$ plf (User Input)

Total Number of Coax = $N_{coax1} := 24$ (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, $Ar_{coax} := \frac{(L_{coax1} \cdot 12)}{D_{coax1}} = 960$

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 = $A_{coax} := \frac{(NP_{coax1} D_{coax1})}{12} = 0.3$ ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 13$ 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 = $Fi_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 14$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax1} \cdot N_{coax1} = 16$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax1} := \frac{\pi}{4}\left[\left(D_{coax1} + 2 \cdot Ir\right)^2 - D_{coax1}^2\right] = 3.2$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(NE_{coax1} \cdot \frac{Ai_{coax1}}{144}\right) = 8$ plf **BLC 3**

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Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

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

Antenna Shape = Flat (User Input)

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

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

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

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

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

Member Force Coefficient = $Ca_{mem} = 1.73$ (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 = $F_{mem} := qz_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 16$ 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 = $Fi_{mem} := qzICE_{pmnt1} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 17$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 6 \text{ sq in}$$

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 # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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

Member Data: L3.5x3.5x1/4

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 3.5$ in (User Input)

Width = $W_{mem} := 3.5$ in (User Input)

Thickness = $t_{mem} := 0.25$ in (User Input)

Length = $L_{mem} := 123$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 35.1$

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 = $F_{mem} := qz_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 20$ plf **BLC 5**

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

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.4$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt3} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 19$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 8 \text{ sq in}$$

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

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Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

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 = $L_{mem} := 168$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 33.6$

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**			
Consulting Engineers		**Anetnna Mast**			
63-2 North Branford Road		**Tabulated Load Cases**			
Branford, CT 06405	Location:	**Stratford, CT**			
Ph. 203-488-0580 / Fax. 203-488-8587	Date: 1/26/16	Prepared by: T.J.L.	Checked by: C.F.C.	Job No. 16002.001	

Load Case	Description
1	Self Weight (Antenna Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	TIA/EIA Wind with Ice
5	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: **Stratford, CT**

Date: 1/26/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	TIA/EIA Wind + Ice		1		1	1	2	1	3	1	4	1		
2	TIA/EIA Wind		1		1	1	2	1	5	1				

Footnotes:
(1) BLC = Basic Load Case

Global

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

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

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

Global, Continued

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

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Powermount	124												Lateral
2	M2	L2.5x2.5x3/16	3.536												Lateral
3	M3	L2.5x2.5x3/16	3.536												Lateral
4	M4	L2.5x2.5x3/16	3.536												Lateral
5	M5	L2.5x2.5x3/16	3.536												Lateral
6	M6	L2.5x2.5x3/16	3.536												Lateral
7	M7	L2.5x2.5x3/16	3.536												Lateral
8	M8	L2.5x2.5x3/16	3.536												Lateral
9	M9	L2.5x2.5x3/16	3.536												Lateral
10	M10	L2.5x2.5x3/16	3.536												Lateral
11	M11	L2.5x2.5x3/16	3.536												Lateral
12	M12	L2.5x2.5x3/16	3.536												Lateral
13	M13	L2.5x2.5x3/16	3.536												Lateral
14	M14	L2.5x2.5x3/16	3.536												Lateral
15	M15	L2.5x2.5x3/16	3.536												Lateral
16	M16	L2.5x2.5x3/16	3.536												Lateral
17	M17	L2.5x2.5x3/16	3.536												Lateral
18	M18	L3.5x3.5x1/4	10.253												Lateral
19	M19	L3.5x3.5x1/4	10.253												Lateral
20	M20	L3.5x3.5x1/4	10.253												Lateral
21	M21	L3.5x3.5x1/4	10.253												Lateral
22	M22	L5x5x3/8	14.142												Lateral
23	M23	L5x5x3/8	14.142												Lateral
24	M24	L5x5x3/8	14.142												Lateral
25	M25	L5x5x3/8	14.142												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	HSS18x0.375	Beam	Pipe	A500 Gr.42	Typical	19.4	754	754	1510
2	L2.5x2.5x3/16	L2.5x2.5x3	Beam	Single An...	A36 Gr.36	Typical	.901	.535	.535	.011
3	L3.5x3.5x1/4	L3.5x3.5x4	Beam	Single An...	A36 Gr.36	Typical	1.7	2	2	.039
4	L5x5x3/8	L5x5x6	Beam	Single An...	A36 Gr.36	Typical	3.65	8.76	8.76	.183

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N8			Powermount	Beam	Pipe	A500 Gr.42	Typical
2	M2	N7	N32			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N7	N31			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N7	N30			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N7	N29			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N6	N28			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N6	N27			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N6	N26			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N6	N25			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N5	N24			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N5	N23			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N5	N22			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N5	N21			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N4	N20			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
15	M15	N4	N19			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N4	N18			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N4	N17			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N3	N16			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N3	N15			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N3	N14			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N3	N13			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
22	M22	N2	N12			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
23	M23	N2	N11			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N2	N10			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N2	N9			L5x5x3/8	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	0	0	
2	N2	0	20	0	0	
3	N3	0	40	0	0	
4	N4	0	74	0	0	
5	N5	0	84	0	0	
6	N6	0	96	0	0	
7	N7	0	101	0	0	
8	N8	0	124	0	0	
9	N9	10	20	10	0	
10	N10	10	20	-10	0	
11	N11	-10	20	10	0	
12	N12	-10	20	-10	0	
13	N13	7.25	40	7.25	0	
14	N14	7.25	40	-7.25	0	
15	N15	-7.25	40	7.25	0	
16	N16	-7.25	40	-7.25	0	
17	N17	2.5	74	2.5	0	
18	N18	2.5	74	-2.5	0	
19	N19	-2.5	74	2.5	0	
20	N20	-2.5	74	-2.5	0	
21	N21	2.5	84	2.5	0	
22	N22	2.5	84	-2.5	0	
23	N23	-2.5	84	2.5	0	
24	N24	-2.5	84	-2.5	0	
25	N25	2.5	96	2.5	0	
26	N26	2.5	96	-2.5	0	
27	N27	-2.5	96	2.5	0	
28	N28	-2.5	96	-2.5	0	
29	N29	2.5	101	2.5	0	
30	N30	2.5	101	-2.5	0	
31	N31	-2.5	101	2.5	0	
32	N32	-2.5	101	-2.5	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N2							
3	N3							
4	N4							
5	N5							
6	N6							
7	N7							
8	N8							
9	N9	Reaction	Reaction	Reaction				
10	N10	Reaction	Reaction	Reaction				
11	N11	Reaction	Reaction	Reaction				
12	N12	Reaction	Reaction	Reaction				
13	N13	Reaction	Reaction	Reaction				
14	N14	Reaction	Reaction	Reaction				
15	N15	Reaction	Reaction	Reaction				
16	N16	Reaction	Reaction	Reaction				
17	N17	Reaction	Reaction	Reaction				
18	N18	Reaction	Reaction	Reaction				
19	N19	Reaction	Reaction	Reaction				
20	N20	Reaction	Reaction	Reaction				
21	N21	Reaction	Reaction	Reaction				
22	N22	Reaction	Reaction	Reaction				
23	N23	Reaction	Reaction	Reaction				
24	N24	Reaction	Reaction	Reaction				
25	N25	Reaction	Reaction	Reaction				
26	N26	Reaction	Reaction	Reaction				
27	N27	Reaction	Reaction	Reaction				
28	N28	Reaction	Reaction	Reaction				
29	N29	Reaction	Reaction	Reaction				
30	N30	Reaction	Reaction	Reaction				
31	N31	Reaction	Reaction	Reaction				
32	N32	Reaction	Reaction	Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.122	109
2	M1	Y	-.161	109
3	M1	Y	-.234	124
4	M1	Y	-.153	124
5	M1	Y	-.169	124
6	M1	Y	-.06	124
7	M1	Y	-2.902	124

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.099	109
2	M1	Y	-.035	109
3	M1	Y	-.196	124
4	M1	Y	-.189	124

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
5	M1	Y	-.086	124
6	M1	Y	-.029	124
7	M1	Y	-1.051	124

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.774	109
2	M1	X	1.359	124
3	M1	X	1.166	124
4	M1	X	.635	124
5	M1	X	.192	124
6	M1	X	.928	124

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.932	109
2	M1	X	1.614	124
3	M1	X	1.421	124
4	M1	X	.707	124
5	M1	X	.218	124
6	M1	X	.968	124

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	-.008	-.008	101	109
2	M1	Y	-.016	-.016	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.011	-.011	0	0
2	M1	Y	-.015	-.015	101	109
3	M1	Y	-.008	-.008	0	0
4	M2	Y	-.002	-.002	0	0
5	M3	Y	-.002	-.002	0	0
6	M5	Y	-.002	-.002	0	0
7	M4	Y	-.002	-.002	0	0
8	M6	Y	-.002	-.002	0	0
9	M7	Y	-.002	-.002	0	0
10	M9	Y	-.002	-.002	0	0
11	M8	Y	-.002	-.002	0	0
12	M10	Y	-.002	-.002	0	0
13	M11	Y	-.002	-.002	0	0
14	M13	Y	-.002	-.002	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
15	M12	Y	-.002	-.002	0	0
16	M14	Y	-.002	-.002	0	0
17	M15	Y	-.002	-.002	0	0
18	M17	Y	-.002	-.002	0	0
19	M16	Y	-.002	-.002	0	0
20	M18	Y	-.003	-.003	0	0
21	M19	Y	-.003	-.003	0	0
22	M21	Y	-.003	-.003	0	0
23	M20	Y	-.003	-.003	0	0
24	M22	Y	-.004	-.004	0	0
25	M23	Y	-.004	-.004	0	0
26	M25	Y	-.004	-.004	0	0
27	M24	Y	-.004	-.004	0	0

Member Distributed Loads (BLC 4 : TIA/EIA Wind w/ Ice)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.031	.031	90	124
2	M1	X	.028	.028	60	90
3	M1	X	.024	.024	30	60
4	M1	X	.018	.018	0	30
5	M1	X	.014	.014	101	109
6	M1	X	.014	.014	0	0
7	M2	X	.017	.017	0	0
8	M4	X	.017	.017	0	0
9	M3	X	.017	.017	0	0
10	M5	X	.017	.017	0	0
11	M6	X	.017	.017	0	0
12	M8	X	.017	.017	0	0
13	M7	X	.017	.017	0	0
14	M9	X	.017	.017	0	0
15	M10	X	.017	.017	0	0
16	M12	X	.017	.017	0	0
17	M11	X	.017	.017	0	0
18	M13	X	.017	.017	0	0
19	M14	X	.017	.017	0	0
20	M16	X	.017	.017	0	0
21	M15	X	.017	.017	0	0
22	M17	X	.017	.017	0	0
23	M18	X	.019	.019	0	0
24	M20	X	.019	.019	0	0
25	M19	X	.019	.019	0	0
26	M21	X	.019	.019	0	0
27	M22	X	.019	.019	0	0
28	M24	X	.019	.019	0	0
29	M23	X	.019	.019	0	0
30	M25	X	.019	.019	0	0

Member Distributed Loads (BLC 5 : 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	.039	.039	90	124
2	M1	X	.035	.035	60	90

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
3	M1	X	.03	.03	30	60
4	M1	X	.022	.022	0	30
5	M1	X	.013	.013	101	109
6	M1	X	.013	.013	0	0
7	M2	X	.016	.016	0	0
8	M3	X	.016	.016	0	0
9	M4	X	.016	.016	0	0
10	M5	X	.016	.016	0	0
11	M6	X	.016	.016	0	0
12	M7	X	.016	.016	0	0
13	M8	X	.016	.016	0	0
14	M9	X	.016	.016	0	0
15	M10	X	.016	.016	0	0
16	M11	X	.016	.016	0	0
17	M12	X	.016	.016	0	0
18	M13	X	.016	.016	0	0
19	M14	X	.016	.016	0	0
20	M15	X	.016	.016	0	0
21	M16	X	.016	.016	0	0
22	M17	X	.016	.016	0	0
23	M18	X	.02	.02	0	0
24	M19	X	.02	.02	0	0
25	M20	X	.02	.02	0	0
26	M21	X	.02	.02	0	0
27	M22	X	.021	.021	0	0
28	M24	X	.021	.021	0	0
29	M23	X	.021	.021	0	0
30	M25	X	.021	.021	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (Antenna Mast)	None		-1						
2	Weight of Appurtenances	None					7	2		
3	Weight of Ice Only	None					7	27		
4	TIA/EIA Wind w/ Ice	None					6	30		
5	TIA/EIA Wind	None					6	30		

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	TIA/EIA Wind + Ice	Yes			1	1	2	1	3	1	4	1								
2	TIA/EIA Wind	Yes			1	1	2	1	5	1										
3	Self Weight																			

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	18.984	1	.391	2	0	1	0	1	0	1	1.496	2
2			min	14.591	2	.357	1	0	1	0	1	0	1	1.362	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
3		2	max	15.388	1	-.138	1	0	1	0	1	0	1	.17	2
4			min	11.698	2	-.155	2	0	1	0	1	0	1	.139	1
5		3	max	12.076	1	-.207	1	0	1	0	1	0	1	-1.891	1
6			min	9.037	2	-.234	2	0	1	0	1	0	1	-2.151	2
7		4	max	8.873	1	-1.284	1	0	1	0	1	0	1	6.495	2
8			min	6.451	2	-1.481	2	0	1	0	1	0	1	5.628	1
9		5	max	5.069	1	4.928	2	0	1	0	1	0	1	0	1
10			min	3.518	2	4.28	1	0	1	0	1	0	1	0	1
11	M2	1	max	-9.841	1	.009	1	-.02	2	0	1	0	1	0	1
12			min	-11.351	2	.005	2	-.021	1	0	1	0	1	0	1
13		2	max	-9.851	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
14			min	-11.361	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
15		3	max	-9.862	1	0	1	0	1	0	1	-.008	1	-.016	2
16			min	-11.371	2	0	1	0	1	0	1	-.009	2	-.019	1
17		4	max	-9.872	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
18			min	-11.381	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
19		5	max	-9.883	1	-.005	2	.021	1	0	1	0	1	0	1
20			min	-11.391	2	-.009	1	.02	2	0	1	0	1	0	1
21	M3	1	max	-9.841	1	.009	1	.021	1	0	1	0	1	0	1
22			min	-11.351	2	.005	2	.02	2	0	1	0	1	0	1
23		2	max	-9.851	1	.004	1	.011	1	0	1	.014	1	.007	2
24			min	-11.361	2	.003	2	.01	2	0	1	.012	2	.006	1
25		3	max	-9.862	1	0	1	0	1	0	1	.019	1	.009	2
26			min	-11.371	2	0	1	0	1	0	1	.016	2	.008	1
27		4	max	-9.872	1	-.003	2	-.01	2	0	1	.014	1	.007	2
28			min	-11.381	2	-.004	1	-.011	1	0	1	.012	2	.006	1
29		5	max	-9.883	1	-.005	2	-.02	2	0	1	0	1	0	1
30			min	-11.391	2	-.009	1	-.021	1	0	1	0	1	0	1
31	M4	1	max	11.351	2	.009	1	-.02	2	0	1	0	1	0	1
32			min	9.841	1	.005	2	-.021	1	0	1	0	1	0	1
33		2	max	11.361	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
34			min	9.851	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
35		3	max	11.371	2	0	1	0	1	0	1	-.008	1	-.016	2
36			min	9.862	1	0	1	0	1	0	1	-.009	2	-.019	1
37		4	max	11.381	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
38			min	9.872	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
39		5	max	11.391	2	-.005	2	.021	1	0	1	0	1	0	1
40			min	9.883	1	-.009	1	.02	2	0	1	0	1	0	1
41	M5	1	max	11.351	2	.009	1	.021	1	0	1	0	1	0	1
42			min	9.841	1	.005	2	.02	2	0	1	0	1	0	1
43		2	max	11.361	2	.004	1	.011	1	0	1	.014	1	.007	2
44			min	9.851	1	.003	2	.01	2	0	1	.012	2	.006	1
45		3	max	11.371	2	0	1	0	1	0	1	.019	1	.009	2
46			min	9.862	1	0	1	0	1	0	1	.016	2	.008	1
47		4	max	11.381	2	-.003	2	-.01	2	0	1	.014	1	.007	2
48			min	9.872	1	-.004	1	-.011	1	0	1	.012	2	.006	1
49		5	max	11.391	2	-.005	2	-.02	2	0	1	0	1	0	1
50			min	9.883	1	-.009	1	-.021	1	0	1	0	1	0	1
51	M6	1	max	8.109	2	.009	1	-.02	2	0	1	0	1	0	1
52			min	7.024	1	.005	2	-.021	1	0	1	0	1	0	1
53		2	max	8.099	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
54			min	7.014	1	.003	2	-.011	1	0	1	-.007	2	-.014	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
55		3	max	8.089	2	0	1	0	1	0	1	-.008	1	-.016	2
56			min	7.003	1	0	1	0	1	0	1	-.009	2	-.019	1
57		4	max	8.079	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
58			min	6.992	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
59		5	max	8.069	2	-.005	2	.021	1	0	1	0	1	0	1
60			min	6.982	1	-.009	1	.02	2	0	1	0	1	0	1
61	M7	1	max	8.109	2	.009	1	.021	1	0	1	0	1	0	1
62			min	7.024	1	.005	2	.02	2	0	1	0	1	0	1
63		2	max	8.099	2	.004	1	.011	1	0	1	.014	1	.007	2
64			min	7.014	1	.003	2	.01	2	0	1	.012	2	.006	1
65		3	max	8.089	2	0	1	0	1	0	1	.019	1	.009	2
66			min	7.003	1	0	1	0	1	0	1	.016	2	.008	1
67		4	max	8.079	2	-.003	2	-.01	2	0	1	.014	1	.007	2
68			min	6.992	1	-.004	1	-.011	1	0	1	.012	2	.006	1
69		5	max	8.069	2	-.005	2	-.02	2	0	1	0	1	0	1
70			min	6.982	1	-.009	1	-.021	1	0	1	0	1	0	1
71	M8	1	max	-7.024	1	.009	1	-.02	2	0	1	0	1	0	1
72			min	-8.109	2	.005	2	-.021	1	0	1	0	1	0	1
73		2	max	-7.014	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
74			min	-8.099	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
75		3	max	-7.003	1	0	1	0	1	0	1	-.008	1	-.016	2
76			min	-8.089	2	0	1	0	1	0	1	-.009	2	-.019	1
77		4	max	-6.992	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
78			min	-8.079	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
79		5	max	-6.982	1	-.005	2	.021	1	0	1	0	1	0	1
80			min	-8.069	2	-.009	1	.02	2	0	1	0	1	0	1
81	M9	1	max	-7.024	1	.009	1	.021	1	0	1	0	1	0	1
82			min	-8.109	2	.005	2	.02	2	0	1	0	1	0	1
83		2	max	-7.014	1	.004	1	.011	1	0	1	.014	1	.007	2
84			min	-8.099	2	.003	2	.01	2	0	1	.012	2	.006	1
85		3	max	-7.003	1	0	1	0	1	0	1	.019	1	.009	2
86			min	-8.089	2	0	1	0	1	0	1	.016	2	.008	1
87		4	max	-6.992	1	-.003	2	-.01	2	0	1	.014	1	.007	2
88			min	-8.079	2	-.004	1	-.011	1	0	1	.012	2	.006	1
89		5	max	-6.982	1	-.005	2	-.02	2	0	1	0	1	0	1
90			min	-8.069	2	-.009	1	-.021	1	0	1	0	1	0	1
91	M10	1	max	.577	2	.009	1	-.02	2	0	1	0	1	0	1
92			min	.497	1	.005	2	-.021	1	0	1	0	1	0	1
93		2	max	.567	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
94			min	.486	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
95		3	max	.557	2	0	1	0	1	0	1	-.008	1	-.016	2
96			min	.476	1	0	1	0	1	0	1	-.009	2	-.019	1
97		4	max	.547	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
98			min	.465	1	-.004	1	.01	2	0	1	-.007	2	-.014	1
99		5	max	.537	2	-.005	2	.021	1	0	1	0	1	0	1
100			min	.454	1	-.009	1	.02	2	0	1	0	1	0	1
101	M11	1	max	.577	2	.009	1	.021	1	0	1	0	1	0	1
102			min	.497	1	.005	2	.02	2	0	1	0	1	0	1
103		2	max	.567	2	.004	1	.011	1	0	1	.014	1	.007	2
104			min	.486	1	.003	2	.01	2	0	1	.012	2	.006	1
105		3	max	.557	2	0	1	0	1	0	1	.019	1	.009	2
106			min	.476	1	0	1	0	1	0	1	.016	2	.008	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
107		4	max	.547	2	-.003	2	-.01	2	0	1	.014	1	.007	2
108			min	.465	1	-.004	1	-.011	1	0	1	.012	2	.006	1
109		5	max	.537	2	-.005	2	-.02	2	0	1	0	1	0	1
110			min	.454	1	-.009	1	-.021	1	0	1	0	1	0	1
111	M12	1	max	-.497	1	.009	1	-.02	2	0	1	0	1	0	1
112			min	-.577	2	.005	2	-.021	1	0	1	0	1	0	1
113		2	max	-.486	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
114			min	-.567	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
115		3	max	-.476	1	0	1	0	1	0	1	-.008	1	-.016	2
116			min	-.557	2	0	1	0	1	0	1	-.009	2	-.019	1
117		4	max	-.465	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
118			min	-.547	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
119		5	max	-.454	1	-.005	2	.021	1	0	1	0	1	0	1
120			min	-.537	2	-.009	1	.02	2	0	1	0	1	0	1
121	M13	1	max	-.497	1	.009	1	.021	1	0	1	0	1	0	1
122			min	-.577	2	.005	2	.02	2	0	1	0	1	0	1
123		2	max	-.486	1	.004	1	.011	1	0	1	.014	1	.007	2
124			min	-.567	2	.003	2	.01	2	0	1	.012	2	.006	1
125		3	max	-.476	1	0	1	0	1	0	1	.019	1	.009	2
126			min	-.557	2	0	1	0	1	0	1	.016	2	.008	1
127		4	max	-.465	1	-.003	2	-.01	2	0	1	.014	1	.007	2
128			min	-.547	2	-.004	1	-.011	1	0	1	.012	2	.006	1
129		5	max	-.454	1	-.005	2	-.02	2	0	1	0	1	0	1
130			min	-.537	2	-.009	1	-.021	1	0	1	0	1	0	1
131	M14	1	max	-.622	1	.009	1	-.02	2	0	1	0	1	0	1
132			min	-.707	2	.005	2	-.021	1	0	1	0	1	0	1
133		2	max	-.632	1	.004	1	-.01	2	0	1	-.006	1	-.012	2
134			min	-.717	2	.003	2	-.011	1	0	1	-.007	2	-.014	1
135		3	max	-.643	1	0	1	0	1	0	1	-.008	1	-.016	2
136			min	-.727	2	0	1	0	1	0	1	-.009	2	-.019	1
137		4	max	-.654	1	-.003	2	.011	1	0	1	-.006	1	-.012	2
138			min	-.737	2	-.004	1	.01	2	0	1	-.007	2	-.014	1
139		5	max	-.664	1	-.005	2	.021	1	0	1	0	1	0	1
140			min	-.747	2	-.009	1	.02	2	0	1	0	1	0	1
141	M15	1	max	-.622	1	.009	1	.021	1	0	1	0	1	0	1
142			min	-.707	2	.005	2	.02	2	0	1	0	1	0	1
143		2	max	-.632	1	.004	1	.011	1	0	1	.014	1	.007	2
144			min	-.717	2	.003	2	.01	2	0	1	.012	2	.006	1
145		3	max	-.643	1	0	1	0	1	0	1	.019	1	.009	2
146			min	-.727	2	0	1	0	1	0	1	.016	2	.008	1
147		4	max	-.654	1	-.003	2	-.01	2	0	1	.014	1	.007	2
148			min	-.737	2	-.004	1	-.011	1	0	1	.012	2	.006	1
149		5	max	-.664	1	-.005	2	-.02	2	0	1	0	1	0	1
150			min	-.747	2	-.009	1	-.021	1	0	1	0	1	0	1
151	M16	1	max	.707	2	.009	1	-.02	2	0	1	0	1	0	1
152			min	.622	1	.005	2	-.021	1	0	1	0	1	0	1
153		2	max	.717	2	.004	1	-.01	2	0	1	-.006	1	-.012	2
154			min	.632	1	.003	2	-.011	1	0	1	-.007	2	-.014	1
155		3	max	.727	2	0	1	0	1	0	1	-.008	1	-.016	2
156			min	.643	1	0	1	0	1	0	1	-.009	2	-.019	1
157		4	max	.737	2	-.003	2	.011	1	0	1	-.006	1	-.012	2
158			min	.654	1	-.004	1	.01	2	0	1	-.007	2	-.014	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
159		5	max	.747	2	-.005	2	.021	1	0	1	0	1	0	1
160			min	.664	1	-.009	1	.02	2	0	1	0	1	0	1
161	M17	1	max	.707	2	.009	1	.021	1	0	1	0	1	0	1
162			min	.622	1	.005	2	.02	2	0	1	0	1	0	1
163		2	max	.717	2	.004	1	.011	1	0	1	.014	1	.007	2
164			min	.632	1	.003	2	.01	2	0	1	.012	2	.006	1
165		3	max	.727	2	0	1	0	1	0	1	.019	1	.009	2
166			min	.643	1	0	1	0	1	0	1	.016	2	.008	1
167		4	max	.737	2	-.003	2	-.01	2	0	1	.014	1	.007	2
168			min	.654	1	-.004	1	-.011	1	0	1	.012	2	.006	1
169		5	max	.747	2	-.005	2	-.02	2	0	1	0	1	0	1
170			min	.664	1	-.009	1	-.021	1	0	1	0	1	0	1
171	M18	1	max	-.464	1	.045	1	-.069	1	0	1	0	1	0	1
172			min	-.519	2	.03	2	-.073	2	0	1	0	1	0	1
173		2	max	-.498	1	.023	1	-.034	1	0	1	-.032	1	-.139	2
174			min	-.556	2	.015	2	-.036	2	0	1	-.058	2	-.155	1
175		3	max	-.533	1	0	1	0	1	0	1	-.043	1	-.185	2
176			min	-.592	2	0	1	0	1	0	1	-.078	2	-.206	1
177		4	max	-.567	1	-.015	2	.036	2	0	1	-.032	1	-.139	2
178			min	-.628	2	-.023	1	.034	1	0	1	-.058	2	-.155	1
179		5	max	-.602	1	-.03	2	.073	2	0	1	0	1	0	1
180			min	-.664	2	-.045	1	.069	1	0	1	0	1	0	1
181	M19	1	max	-.464	1	.045	1	.072	2	0	1	0	1	0	1
182			min	-.519	2	.03	2	.069	1	0	1	0	1	0	1
183		2	max	-.498	1	.023	1	.036	2	0	1	.155	1	.058	2
184			min	-.556	2	.015	2	.034	1	0	1	.139	2	.032	1
185		3	max	-.533	1	0	1	0	1	0	1	.206	1	.078	2
186			min	-.592	2	0	1	0	1	0	1	.185	2	.043	1
187		4	max	-.567	1	-.015	2	-.034	1	0	1	.155	1	.058	2
188			min	-.628	2	-.023	1	-.036	2	0	1	.139	2	.032	1
189		5	max	-.602	1	-.03	2	-.069	1	0	1	0	1	0	1
190			min	-.664	2	-.045	1	-.073	2	0	1	0	1	0	1
191	M20	1	max	.519	2	.045	1	-.069	1	0	1	0	1	0	1
192			min	.464	1	.03	2	-.073	2	0	1	0	1	0	1
193		2	max	.556	2	.023	1	-.034	1	0	1	-.032	1	-.139	2
194			min	.498	1	.015	2	-.036	2	0	1	-.058	2	-.155	1
195		3	max	.592	2	0	1	0	1	0	1	-.043	1	-.185	2
196			min	.533	1	0	1	0	1	0	1	-.078	2	-.206	1
197		4	max	.628	2	-.015	2	.036	2	0	1	-.032	1	-.139	2
198			min	.567	1	-.023	1	.034	1	0	1	-.058	2	-.155	1
199		5	max	.664	2	-.03	2	.073	2	0	1	0	1	0	1
200			min	.602	1	-.045	1	.069	1	0	1	0	1	0	1
201	M21	1	max	.519	2	.045	1	.072	2	0	1	0	1	0	1
202			min	.464	1	.03	2	.069	1	0	1	0	1	0	1
203		2	max	.556	2	.023	1	.036	2	0	1	.155	1	.058	2
204			min	.498	1	.015	2	.034	1	0	1	.139	2	.032	1
205		3	max	.592	2	0	1	0	1	0	1	.206	1	.078	2
206			min	.533	1	0	1	0	1	0	1	.185	2	.043	1
207		4	max	.628	2	-.015	2	-.034	1	0	1	.155	1	.058	2
208			min	.567	1	-.023	1	-.036	2	0	1	.139	2	.032	1
209		5	max	.664	2	-.03	2	-.069	1	0	1	0	1	0	1
210			min	.602	1	-.045	1	-.073	2	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
211	M22	1	max	-.273	1	.116	1	-.095	1	0	1	0	1	0	1
212			min	-.298	2	.088	2	-.105	2	0	1	0	1	0	1
213		2	max	-.32	1	.058	1	-.047	1	0	1	.04	1	-.362	2
214			min	-.351	2	.044	2	-.052	2	0	1	-.032	2	-.396	1
215		3	max	-.368	1	0	1	0	1	0	1	.053	1	-.482	2
216			min	-.403	2	0	1	0	1	0	1	-.043	2	-.528	1
217		4	max	-.415	1	-.044	2	.053	2	0	1	.04	1	-.362	2
218			min	-.456	2	-.058	1	.048	1	0	1	-.032	2	-.396	1
219		5	max	-.463	1	-.088	2	.105	2	0	1	0	1	0	1
220			min	-.508	2	-.116	1	.095	1	0	1	0	1	0	1
221	M23	1	max	-.273	1	.116	1	.105	2	0	1	0	1	0	1
222			min	-.298	2	.088	2	.095	1	0	1	0	1	0	1
223		2	max	-.32	1	.058	1	.052	2	0	1	.396	1	.032	2
224			min	-.351	2	.044	2	.047	1	0	1	.362	2	-.04	1
225		3	max	-.368	1	0	1	0	1	0	1	.528	1	.043	2
226			min	-.403	2	0	1	0	1	0	1	.482	2	-.053	1
227		4	max	-.415	1	-.044	2	-.048	1	0	1	.396	1	.032	2
228			min	-.456	2	-.058	1	-.053	2	0	1	.362	2	-.04	1
229		5	max	-.463	1	-.088	2	-.095	1	0	1	0	1	0	1
230			min	-.508	2	-.116	1	-.105	2	0	1	0	1	0	1
231	M24	1	max	.298	2	.116	1	-.095	1	0	1	0	1	0	1
232			min	.273	1	.088	2	-.105	2	0	1	0	1	0	1
233		2	max	.351	2	.058	1	-.048	1	0	1	.04	1	-.362	2
234			min	.32	1	.044	2	-.052	2	0	1	-.032	2	-.396	1
235		3	max	.403	2	0	1	0	1	0	1	.053	1	-.482	2
236			min	.368	1	0	1	0	1	0	1	-.043	2	-.528	1
237		4	max	.456	2	-.044	2	.053	2	0	1	.04	1	-.362	2
238			min	.415	1	-.058	1	.047	1	0	1	-.032	2	-.396	1
239		5	max	.508	2	-.088	2	.105	2	0	1	0	1	0	1
240			min	.463	1	-.116	1	.095	1	0	1	0	1	0	1
241	M25	1	max	.298	2	.116	1	.105	2	0	1	0	1	0	1
242			min	.273	1	.088	2	.095	1	0	1	0	1	0	1
243		2	max	.351	2	.058	1	.052	2	0	1	.396	1	.032	2
244			min	.32	1	.044	2	.047	1	0	1	.362	2	-.04	1
245		3	max	.403	2	0	1	0	1	0	1	.528	1	.043	2
246			min	.368	1	0	1	0	1	0	1	.482	2	-.053	1
247		4	max	.456	2	-.044	2	-.048	1	0	1	.396	1	.032	2
248			min	.415	1	-.058	1	-.053	2	0	1	.362	2	-.04	1
249		5	max	.508	2	-.088	2	-.095	1	0	1	0	1	0	1
250			min	.463	1	-.116	1	-.105	2	0	1	0	1	0	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	.979	1	.04	2	0	1	-.195	1	.214	2	0	1	0	1
2			min	.752	2	.037	1	0	1	-.214	2	.195	1	0	1	0	1
3		2	max	.793	1	-.014	1	0	1	-.02	1	.024	2	0	1	0	1
4			min	.603	2	-.016	2	0	1	-.024	2	.02	1	0	1	0	1
5		3	max	.622	1	-.021	1	0	1	.308	2	-.271	1	0	1	0	1
6			min	.466	2	-.024	2	0	1	.271	1	-.308	2	0	1	0	1
7		4	max	.457	1	-.132	1	0	1	-.806	1	.93	2	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
8			min	.333	2	-.153	2	0	1	-.93	2	.806	1	0	1	0	1
9		5	max	.261	1	.508	2	0	1	0	1	0	1	0	1	0	1
10			min	.181	2	.441	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	-10.922	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
12			min	-12.598	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
13		2	max	-10.934	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
14			min	-12.61	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
15		3	max	-10.945	1	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
16			min	-12.621	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
17		4	max	-10.957	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
18			min	-12.632	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
19		5	max	-10.969	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
20			min	-12.643	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
21	M3	1	max	-10.922	1	.023	1	.054	1	0	1	0	1	0	1	0	1
22			min	-12.598	2	.014	2	.051	2	0	1	0	1	0	1	0	1
23		2	max	-10.934	1	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
24			min	-12.61	2	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
25		3	max	-10.945	1	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
26			min	-12.621	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
27		4	max	-10.957	1	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
28			min	-12.632	2	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
29		5	max	-10.969	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
30			min	-12.643	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
31	M4	1	max	12.598	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
32			min	10.922	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
33		2	max	12.61	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
34			min	10.934	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
35		3	max	12.621	2	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
36			min	10.945	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
37		4	max	12.632	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
38			min	10.957	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
39		5	max	12.643	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
40			min	10.969	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
41	M5	1	max	12.598	2	.023	1	.054	1	0	1	0	1	0	1	0	1
42			min	10.922	1	.014	2	.051	2	0	1	0	1	0	1	0	1
43		2	max	12.61	2	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
44			min	10.934	1	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
45		3	max	12.621	2	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
46			min	10.945	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
47		4	max	12.632	2	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
48			min	10.957	1	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
49		5	max	12.643	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
50			min	10.969	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
51	M6	1	max	9	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
52			min	7.796	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
53		2	max	8.989	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
54			min	7.784	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
55		3	max	8.978	2	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
56			min	7.773	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
57		4	max	8.967	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
58			min	7.761	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
59		5	max	8.956	2	-.014	2	.054	1	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
60			min	7.749	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
61	M7	1	max	9	2	.023	1	.054	1	0	1	0	1	0	1	0	1
62			min	7.796	1	.014	2	.051	2	0	1	0	1	0	1	0	1
63		2	max	8.989	2	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
64			min	7.784	1	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
65		3	max	8.978	2	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
66			min	7.773	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
67		4	max	8.967	2	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
68			min	7.761	1	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
69		5	max	8.956	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
70			min	7.749	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
71	M8	1	max	-7.796	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
72			min	-9	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
73		2	max	-7.784	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
74			min	-8.989	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
75		3	max	-7.773	1	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
76			min	-8.978	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
77		4	max	-7.761	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
78			min	-8.967	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
79		5	max	-7.749	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
80			min	-8.956	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
81	M9	1	max	-7.796	1	.023	1	.054	1	0	1	0	1	0	1	0	1
82			min	-9	2	.014	2	.051	2	0	1	0	1	0	1	0	1
83		2	max	-7.784	1	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
84			min	-8.989	2	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
85		3	max	-7.773	1	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
86			min	-8.978	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
87		4	max	-7.761	1	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
88			min	-8.967	2	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
89		5	max	-7.749	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
90			min	-8.956	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
91	M10	1	max	.641	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
92			min	.551	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
93		2	max	.629	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
94			min	.54	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
95		3	max	.618	2	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
96			min	.528	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
97		4	max	.607	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
98			min	.516	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
99		5	max	.596	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
100			min	.504	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
101	M11	1	max	.641	2	.023	1	.054	1	0	1	0	1	0	1	0	1
102			min	.551	1	.014	2	.051	2	0	1	0	1	0	1	0	1
103		2	max	.629	2	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
104			min	.54	1	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
105		3	max	.618	2	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
106			min	.528	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
107		4	max	.607	2	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
108			min	.516	1	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
109		5	max	.596	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
110			min	.504	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
111	M12	1	max	-.551	1	.023	1	-.051	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
112			min	-.641	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
113		2	max	-.54	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
114			min	-.629	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
115		3	max	-.528	1	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
116			min	-.618	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
117		4	max	-.516	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
118			min	-.607	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
119		5	max	-.504	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
120			min	-.596	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
121	M13	1	max	-.551	1	.023	1	.054	1	0	1	0	1	0	1	0	1
122			min	-.641	2	.014	2	.051	2	0	1	0	1	0	1	0	1
123		2	max	-.54	1	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
124			min	-.629	2	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
125		3	max	-.528	1	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
126			min	-.618	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
127		4	max	-.516	1	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
128			min	-.607	2	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
129		5	max	-.504	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
130			min	-.596	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
131	M14	1	max	-.69	1	.023	1	-.051	2	0	1	0	1	0	1	0	1
132			min	-.784	2	.014	2	-.054	1	0	1	0	1	0	1	0	1
133		2	max	-.702	1	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
134			min	-.795	2	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
135		3	max	-.714	1	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
136			min	-.807	2	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
137		4	max	-.726	1	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
138			min	-.818	2	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
139		5	max	-.737	1	-.014	2	.054	1	0	1	0	1	0	1	0	1
140			min	-.829	2	-.023	1	.051	2	0	1	0	1	0	1	0	1
141	M15	1	max	-.69	1	.023	1	.054	1	0	1	0	1	0	1	0	1
142			min	-.784	2	.014	2	.051	2	0	1	0	1	0	1	0	1
143		2	max	-.702	1	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	2
144			min	-.795	2	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
145		3	max	-.714	1	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
146			min	-.807	2	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
147		4	max	-.726	1	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
148			min	-.818	2	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
149		5	max	-.737	1	-.014	2	-.051	2	0	1	0	1	0	1	0	1
150			min	-.829	2	-.023	1	-.054	1	0	1	0	1	0	1	0	1
151	M16	1	max	.784	2	.023	1	-.051	2	0	1	0	1	0	1	0	1
152			min	.69	1	.014	2	-.054	1	0	1	0	1	0	1	0	1
153		2	max	.795	2	.011	1	-.026	2	.336	1	-.283	2	-.285	1	.381	2
154			min	.702	1	.007	2	-.027	1	.283	2	-.336	1	-.338	2	.321	1
155		3	max	.807	2	0	1	0	1	.448	1	-.377	2	-.38	1	.508	2
156			min	.714	1	0	1	0	1	.377	2	-.448	1	-.451	2	.428	1
157		4	max	.818	2	-.007	2	.027	1	.336	1	-.283	2	-.285	1	.381	2
158			min	.726	1	-.011	1	.026	2	.283	2	-.336	1	-.338	2	.321	1
159		5	max	.829	2	-.014	2	.054	1	0	1	0	1	0	1	0	1
160			min	.737	1	-.023	1	.051	2	0	1	0	1	0	1	0	1
161	M17	1	max	.784	2	.023	1	.054	1	0	1	0	1	0	1	0	1
162			min	.69	1	.014	2	.051	2	0	1	0	1	0	1	0	1
163		2	max	.795	2	.011	1	.027	1	-.137	1	.162	2	.7	1	-.664	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
164			min	.702	1	.007	2	.026	2	-.162	2	.137	1	.589	2	-.789	1
165		3	max	.807	2	0	1	0	1	-.182	1	.216	2	.933	1	-.885	2
166			min	.714	1	0	1	0	1	-.216	2	.182	1	.786	2	-1.051	1
167		4	max	.818	2	-.007	2	-.026	2	-.137	1	.162	2	.7	1	-.664	2
168			min	.726	1	-.011	1	-.027	1	-.162	2	.137	1	.589	2	-.789	1
169		5	max	.829	2	-.014	2	-.051	2	0	1	0	1	0	1	0	1
170			min	.737	1	-.023	1	-.054	1	0	1	0	1	0	1	0	1
171	M18	1	max	-.273	1	.062	1	-.094	1	0	1	0	1	0	1	0	1
172			min	-.305	2	.041	2	-.099	2	0	1	0	1	0	1	0	1
173		2	max	-.293	1	.031	1	-.047	1	1.388	1	-1.245	2	-.587	1	1.172	2
174			min	-.327	2	.02	2	-.05	2	1.245	2	-1.388	1	-1.054	2	.652	1
175		3	max	-.313	1	0	1	0	1	1.85	1	-1.659	2	-.782	1	1.562	2
176			min	-.348	2	0	1	0	1	1.659	2	-1.85	1	-1.406	2	.869	1
177		4	max	-.334	1	-.02	2	.05	2	1.388	1	-1.245	2	-.587	1	1.172	2
178			min	-.369	2	-.031	1	.047	1	1.245	2	-1.388	1	-1.054	2	.652	1
179		5	max	-.354	1	-.041	2	.099	2	0	1	0	1	0	1	0	1
180			min	-.391	2	-.062	1	.094	1	0	1	0	1	0	1	0	1
181	M19	1	max	-.273	1	.062	1	.099	2	0	1	0	1	0	1	0	1
182			min	-.305	2	.041	2	.094	1	0	1	0	1	0	1	0	1
183		2	max	-.293	1	.031	1	.05	2	-.29	1	.522	2	2.804	1	-2.794	2
184			min	-.327	2	.02	2	.047	1	-.522	2	.29	1	2.514	2	-3.115	1
185		3	max	-.313	1	0	1	0	1	-.387	1	.696	2	3.738	1	-3.725	2
186			min	-.348	2	0	1	0	1	-.696	2	.387	1	3.352	2	-4.154	1
187		4	max	-.334	1	-.02	2	-.047	1	-.29	1	.522	2	2.804	1	-2.794	2
188			min	-.369	2	-.031	1	-.05	2	-.522	2	.29	1	2.514	2	-3.115	1
189		5	max	-.354	1	-.041	2	-.094	1	0	1	0	1	0	1	0	1
190			min	-.391	2	-.062	1	-.099	2	0	1	0	1	0	1	0	1
191	M20	1	max	.305	2	.062	1	-.094	1	0	1	0	1	0	1	0	1
192			min	.273	1	.041	2	-.099	2	0	1	0	1	0	1	0	1
193		2	max	.327	2	.031	1	-.047	1	1.388	1	-1.245	2	-.587	1	1.172	2
194			min	.293	1	.02	2	-.05	2	1.245	2	-1.388	1	-1.054	2	.652	1
195		3	max	.348	2	0	1	0	1	1.85	1	-1.659	2	-.782	1	1.562	2
196			min	.313	1	0	1	0	1	1.659	2	-1.85	1	-1.406	2	.869	1
197		4	max	.369	2	-.02	2	.05	2	1.388	1	-1.245	2	-.587	1	1.172	2
198			min	.334	1	-.031	1	.047	1	1.245	2	-1.388	1	-1.054	2	.652	1
199		5	max	.391	2	-.041	2	.099	2	0	1	0	1	0	1	0	1
200			min	.354	1	-.062	1	.094	1	0	1	0	1	0	1	0	1
201	M21	1	max	.305	2	.062	1	.099	2	0	1	0	1	0	1	0	1
202			min	.273	1	.041	2	.094	1	0	1	0	1	0	1	0	1
203		2	max	.327	2	.031	1	.05	2	-.29	1	.522	2	2.804	1	-2.794	2
204			min	.293	1	.02	2	.047	1	-.522	2	.29	1	2.514	2	-3.115	1
205		3	max	.348	2	0	1	0	1	-.387	1	.696	2	3.738	1	-3.725	2
206			min	.313	1	0	1	0	1	-.696	2	.387	1	3.352	2	-4.154	1
207		4	max	.369	2	-.02	2	-.047	1	-.29	1	.522	2	2.804	1	-2.794	2
208			min	.334	1	-.031	1	-.05	2	-.522	2	.29	1	2.514	2	-3.115	1
209		5	max	.391	2	-.041	2	-.094	1	0	1	0	1	0	1	0	1
210			min	.354	1	-.062	1	-.099	2	0	1	0	1	0	1	0	1
211	M22	1	max	-.075	1	.074	1	-.061	1	0	1	0	1	0	1	0	1
212			min	-.082	2	.056	2	-.067	2	0	1	0	1	0	1	0	1
213		2	max	-.088	1	.037	1	-.03	1	1.157	1	-1.057	2	.232	1	.211	2
214			min	-.096	2	.028	2	-.034	2	1.057	2	-1.157	1	-.188	2	-.259	1
215		3	max	-.101	1	0	1	0	1	1.543	1	-1.409	2	.309	1	.281	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
216			min	-.11	2	0	1	0	1	1.409	2	-1.543	1	-.251	2	-.346	1
217		4	max	-.114	1	-.028	2	.034	2	1.157	1	-1.057	2	.232	1	.211	2
218			min	-.125	2	-.037	1	.03	1	1.057	2	-1.157	1	-.188	2	-.259	1
219		5	max	-.127	1	-.056	2	.067	2	0	1	0	1	0	1	0	1
220			min	-.139	2	-.074	1	.061	1	0	1	0	1	0	1	0	1
221	M23	1	max	-.075	1	.074	1	.067	2	0	1	0	1	0	1	0	1
222			min	-.082	2	.056	2	.061	1	0	1	0	1	0	1	0	1
223		2	max	-.088	1	.037	1	.034	2	.116	1	.094	2	2.317	1	-2.369	2
224			min	-.096	2	.028	2	.03	1	-.094	2	-.116	1	2.116	2	-2.593	1
225		3	max	-.101	1	0	1	0	1	.154	1	.126	2	3.089	1	-3.158	2
226			min	-.11	2	0	1	0	1	-.126	2	-.154	1	2.821	2	-3.458	1
227		4	max	-.114	1	-.028	2	-.03	1	.116	1	.094	2	2.317	1	-2.369	2
228			min	-.125	2	-.037	1	-.034	2	-.094	2	-.116	1	2.116	2	-2.593	1
229		5	max	-.127	1	-.056	2	-.061	1	0	1	0	1	0	1	0	1
230			min	-.139	2	-.074	1	-.067	2	0	1	0	1	0	1	0	1
231	M24	1	max	.082	2	.074	1	-.061	1	0	1	0	1	0	1	0	1
232			min	.075	1	.056	2	-.067	2	0	1	0	1	0	1	0	1
233		2	max	.096	2	.037	1	-.03	1	1.157	1	-1.057	2	.232	1	.211	2
234			min	.088	1	.028	2	-.034	2	1.057	2	-1.157	1	-.188	2	-.259	1
235		3	max	.11	2	0	1	0	1	1.543	1	-1.409	2	.309	1	.281	2
236			min	.101	1	0	1	0	1	1.409	2	-1.543	1	-.251	2	-.346	1
237		4	max	.125	2	-.028	2	.034	2	1.157	1	-1.057	2	.232	1	.211	2
238			min	.114	1	-.037	1	.03	1	1.057	2	-1.157	1	-.188	2	-.259	1
239		5	max	.139	2	-.056	2	.067	2	0	1	0	1	0	1	0	1
240			min	.127	1	-.074	1	.061	1	0	1	0	1	0	1	0	1
241	M25	1	max	.082	2	.074	1	.067	2	0	1	0	1	0	1	0	1
242			min	.075	1	.056	2	.061	1	0	1	0	1	0	1	0	1
243		2	max	.096	2	.037	1	.034	2	.116	1	.094	2	2.317	1	-2.369	2
244			min	.088	1	.028	2	.03	1	-.094	2	-.116	1	2.116	2	-2.593	1
245		3	max	.11	2	0	1	0	1	.154	1	.126	2	3.089	1	-3.158	2
246			min	.101	1	0	1	0	1	-.126	2	-.154	1	2.821	2	-3.458	1
247		4	max	.125	2	-.028	2	-.03	1	.116	1	.094	2	2.317	1	-2.369	2
248			min	.114	1	-.037	1	-.034	2	-.094	2	-.116	1	2.116	2	-2.593	1
249		5	max	.139	2	-.056	2	-.061	1	0	1	0	1	0	1	0	1
250			min	.127	1	-.074	1	-.067	2	0	1	0	1	0	1	0	1

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	-.357	1	18.984	1	0	2	0	2	0	1	1.496	2
2		min	-.391	2	14.591	2	0	1	0	1	0	1	1.362	1
3	N9	max	-.394	1	.116	1	-.26	1	0	1	0	1	0	1
4		min	-.434	2	.088	2	-.285	2	0	1	0	1	0	1
5	N10	max	-.394	1	.116	1	.285	2	0	1	0	1	0	1
6		min	-.434	2	.088	2	.26	1	0	1	0	1	0	1
7	N11	max	-.394	1	.116	1	.285	2	0	1	0	1	0	1
8		min	-.434	2	.088	2	.26	1	0	1	0	1	0	1
9	N12	max	-.394	1	.116	1	-.26	1	0	1	0	1	0	1
10		min	-.434	2	.088	2	-.285	2	0	1	0	1	0	1
11	N13	max	-.474	1	.045	1	-.377	1	0	1	0	1	0	1
12		min	-.521	2	.03	2	-.418	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
13	N14	max	-.474	1	.045	1	.418	2	0	1	0	1	0	1
14		min	-.521	2	.03	2	.377	1	0	1	0	1	0	1
15	N15	max	-.474	1	.045	1	.418	2	0	1	0	1	0	1
16		min	-.521	2	.03	2	.377	1	0	1	0	1	0	1
17	N16	max	-.474	1	.045	1	-.377	1	0	1	0	1	0	1
18		min	-.521	2	.03	2	-.418	2	0	1	0	1	0	1
19	N17	max	-.485	1	.009	1	-.455	1	0	1	0	1	0	1
20		min	-.542	2	.005	2	-.514	2	0	1	0	1	0	1
21	N18	max	-.485	1	.009	1	.514	2	0	1	0	1	0	1
22		min	-.542	2	.005	2	.455	1	0	1	0	1	0	1
23	N19	max	-.485	1	.009	1	.514	2	0	1	0	1	0	1
24		min	-.542	2	.005	2	.455	1	0	1	0	1	0	1
25	N20	max	-.485	1	.009	1	-.455	1	0	1	0	1	0	1
26		min	-.542	2	.005	2	-.514	2	0	1	0	1	0	1
27	N21	max	.366	2	.009	1	.394	2	0	1	0	1	0	1
28		min	.306	1	.005	2	.336	1	0	1	0	1	0	1
29	N22	max	.366	2	.009	1	-.336	1	0	1	0	1	0	1
30		min	.306	1	.005	2	-.394	2	0	1	0	1	0	1
31	N23	max	.366	2	.009	1	-.336	1	0	1	0	1	0	1
32		min	.306	1	.005	2	-.394	2	0	1	0	1	0	1
33	N24	max	.366	2	.009	1	.394	2	0	1	0	1	0	1
34		min	.306	1	.005	2	.336	1	0	1	0	1	0	1
35	N25	max	5.692	2	.009	1	5.72	2	0	1	0	1	0	1
36		min	4.922	1	.005	2	4.952	1	0	1	0	1	0	1
37	N26	max	5.692	2	.009	1	-4.952	1	0	1	0	1	0	1
38		min	4.922	1	.005	2	-5.72	2	0	1	0	1	0	1
39	N27	max	5.692	2	.009	1	-4.952	1	0	1	0	1	0	1
40		min	4.922	1	.005	2	-5.72	2	0	1	0	1	0	1
41	N28	max	5.692	2	.009	1	5.72	2	0	1	0	1	0	1
42		min	4.922	1	.005	2	4.952	1	0	1	0	1	0	1
43	N29	max	-7.003	1	.009	1	-6.973	1	0	1	0	1	0	1
44		min	-8.069	2	.005	2	-8.041	2	0	1	0	1	0	1
45	N30	max	-7.003	1	.009	1	8.041	2	0	1	0	1	0	1
46		min	-8.069	2	.005	2	6.973	1	0	1	0	1	0	1
47	N31	max	-7.003	1	.009	1	8.041	2	0	1	0	1	0	1
48		min	-8.069	2	.005	2	6.973	1	0	1	0	1	0	1
49	N32	max	-7.003	1	.009	1	-6.973	1	0	1	0	1	0	1
50		min	-8.069	2	.005	2	-8.041	2	0	1	0	1	0	1
51	Totals:	max	-12.872	1	19.771	1	0	1						
52		min	-14.425	2	15.148	2	0	1						

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	1	0	1	0	1	0	1
2		min	0	1	0	1	0	2	0	2	0	1	0	2
3	N2	max	0	2	-.006	2	0	2	0	2	0	1	1.132e-5	2
4		min	0	1	-.008	1	0	1	0	1	0	1	9.985e-6	1
5	N3	max	.002	2	-.011	2	0	2	0	1	0	1	-6.949e-5	1
6		min	.002	1	-.014	1	0	1	0	2	0	1	-7.91e-5	2
7	N4	max	.002	2	-.018	2	0	1	0	2	0	1	5.688e-5	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
8		min	.001	1	-.023	1	0	2	0	1	0	1	5.032e-5	1
9	N5	max	-.001	1	-.019	2	0	2	0	1	0	1	1.057e-4	2
10		min	-.001	2	-.026	1	0	1	0	2	0	1	9.141e-5	1
11	N6	max	-.016	1	-.021	2	0	2	0	1	0	1	-8.549e-5	1
12		min	-.019	2	-.028	1	0	1	0	2	0	1	-9.873e-5	2
13	N7	max	.026	2	-.022	2	0	2	0	2	0	1	-2.168e-3	1
14		min	.023	1	-.029	1	0	1	0	1	0	1	-2.501e-3	2
15	N8	max	2.503	2	-.024	2	0	2	0	2	0	1	-1.04e-2	1
16		min	2.171	1	-.032	1	0	1	0	1	0	1	-1.198e-2	2
17	N9	max	0	2	0	2	0	2	-1.574e-3	2	-2.305e-3	2	1.823e-3	1
18		min	0	1	0	1	0	1	-1.813e-3	1	-2.404e-3	1	1.585e-3	2
19	N10	max	0	2	0	2	0	1	6.443e-4	1	7.767e-4	2	6.543e-4	1
20		min	0	1	0	1	0	2	2.819e-4	2	3.839e-4	1	2.932e-4	2
21	N11	max	0	2	0	2	0	1	-1.585e-3	2	-2.305e-3	2	-1.574e-3	2
22		min	0	1	0	1	0	2	-1.823e-3	1	-2.404e-3	1	-1.813e-3	1
23	N12	max	0	2	0	2	0	2	6.543e-4	1	7.767e-4	2	-2.819e-4	2
24		min	0	1	0	1	0	1	2.932e-4	2	3.839e-4	1	-6.443e-4	1
25	N13	max	0	2	0	2	0	2	-1.849e-3	2	-3.067e-3	2	2.111e-3	1
26		min	0	1	0	1	0	1	-2.18e-3	1	-3.254e-3	1	1.77e-3	2
27	N14	max	0	2	0	2	0	1	2.104e-4	1	1.868e-3	2	1.409e-4	1
28		min	0	1	0	1	0	2	-2.243e-4	2	1.433e-3	1	-3.034e-4	2
29	N15	max	0	2	0	2	0	1	-1.77e-3	2	-3.067e-3	2	-1.849e-3	2
30		min	0	1	0	1	0	2	-2.111e-3	1	-3.254e-3	1	-2.18e-3	1
31	N16	max	0	2	0	2	0	2	1.409e-4	1	1.868e-3	2	2.243e-4	2
32		min	0	1	0	1	0	1	-3.034e-4	2	1.433e-3	1	-2.104e-4	1
33	N17	max	0	2	0	2	0	2	-4.587e-4	2	-3.868e-4	2	6.533e-4	1
34		min	0	1	0	1	0	1	-6.029e-4	1	-4.36e-4	1	5.156e-4	2
35	N18	max	0	2	0	2	0	1	3.219e-4	1	2.855e-4	2	3.723e-4	1
36		min	0	1	0	1	0	2	1.943e-4	2	2.685e-4	1	2.511e-4	2
37	N19	max	0	2	0	2	0	1	-5.156e-4	2	-3.868e-4	2	-4.587e-4	2
38		min	0	1	0	1	0	2	-6.533e-4	1	-4.36e-4	1	-6.029e-4	1
39	N20	max	0	2	0	2	0	2	3.723e-4	1	2.855e-4	2	-1.943e-4	2
40		min	0	1	0	1	0	1	2.511e-4	2	2.685e-4	1	-3.219e-4	1
41	N21	max	0	1	0	2	0	1	-4.614e-4	2	-3.377e-4	2	7.105e-4	1
42		min	0	2	0	1	0	2	-6.191e-4	1	-3.932e-4	1	5.671e-4	2
43	N22	max	0	1	0	2	0	2	3.381e-4	1	2.363e-4	2	4.295e-4	1
44		min	0	2	0	1	0	1	1.97e-4	2	2.257e-4	1	3.026e-4	2
45	N23	max	0	1	0	2	0	2	-5.671e-4	2	-3.377e-4	2	-4.614e-4	2
46		min	0	2	0	1	0	1	-7.105e-4	1	-3.932e-4	1	-6.191e-4	1
47	N24	max	0	1	0	2	0	1	4.295e-4	1	2.363e-4	2	-1.97e-4	2
48		min	0	2	0	1	0	2	3.026e-4	2	2.257e-4	1	-3.381e-4	1
49	N25	max	0	1	0	2	0	1	-5.922e-4	2	-4.944e-5	2	6.612e-4	1
50		min	0	2	0	1	0	2	-7.467e-4	1	-1.433e-4	1	4.935e-4	2
51	N26	max	0	1	0	2	0	2	4.657e-4	1	-2.414e-5	1	3.802e-4	1
52		min	0	2	0	1	0	1	3.277e-4	2	-5.191e-5	2	2.29e-4	2
53	N27	max	0	1	0	2	0	2	-4.935e-4	2	-4.944e-5	2	-5.922e-4	2
54		min	0	2	0	1	0	1	-6.612e-4	1	-1.433e-4	1	-7.467e-4	1
55	N28	max	0	1	0	2	0	1	3.802e-4	1	-2.414e-5	1	-3.277e-4	2
56		min	0	2	0	1	0	2	2.29e-4	2	-5.191e-5	2	-4.657e-4	1
57	N29	max	0	2	0	2	0	2	-1.803e-3	1	-7.888e-4	1	-3.652e-4	1
58		min	0	1	0	1	0	1	-1.804e-3	2	-7.942e-4	2	-6.972e-4	2
59	N30	max	0	2	0	2	0	1	1.54e-3	2	6.929e-4	2	-6.462e-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
60		min	0	1	0	1	0	2	1.522e-3	1	6.213e-4	1	-9.616e-4	2
61	N31	max	0	2	0	2	0	1	6.972e-4	2	-7.888e-4	1	-1.803e-3	1
62		min	0	1	0	1	0	2	3.652e-4	1	-7.942e-4	2	-1.804e-3	2
63	N32	max	0	2	0	2	0	2	-6.462e-4	1	6.929e-4	2	-1.522e-3	1
64		min	0	1	0	1	0	1	-9.616e-4	2	6.213e-4	1	-1.54e-3	2

Envelope AISC ASD Steel Code Checks

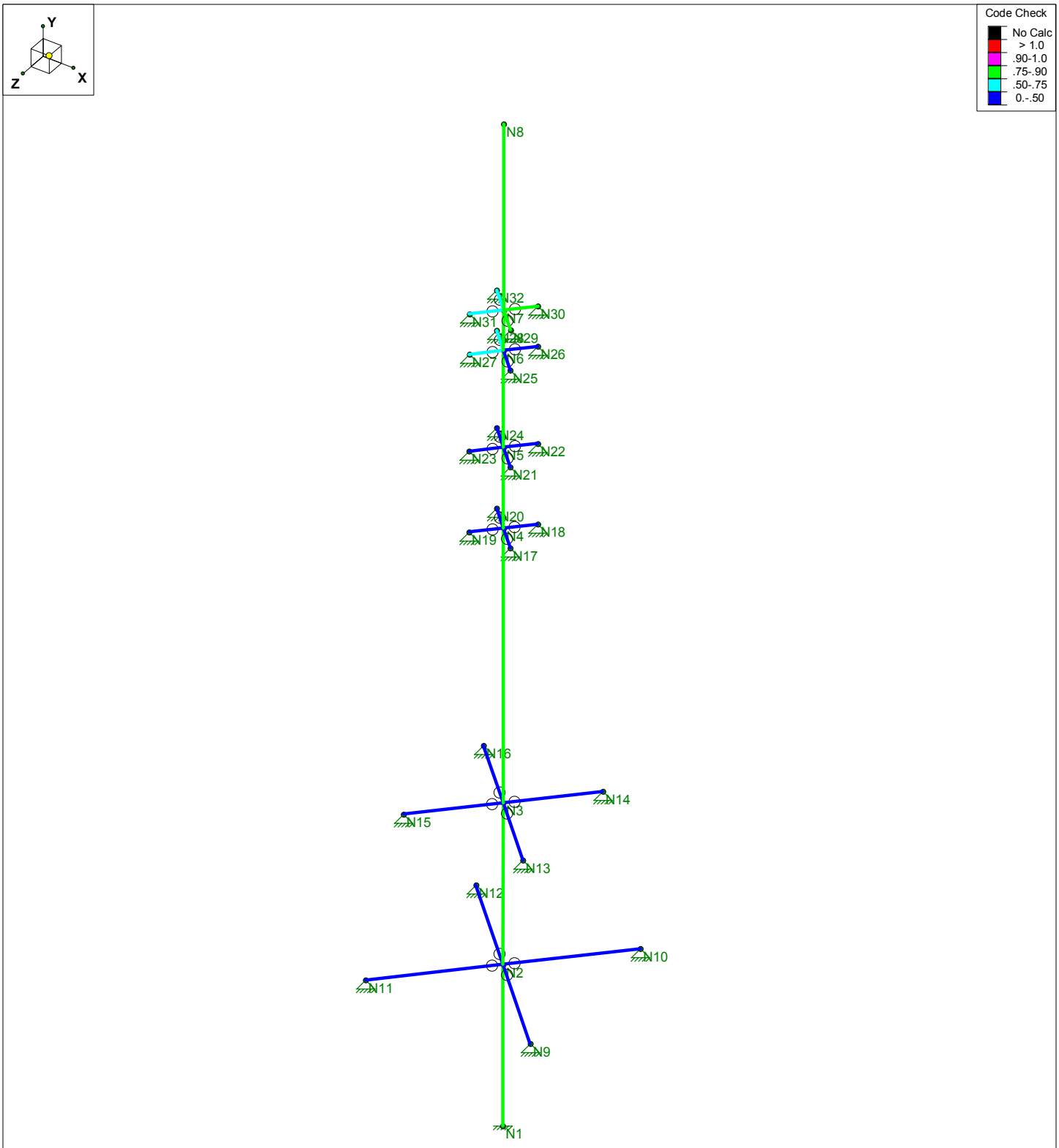
	Me...	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Fa ...	Ft [...	Fb y-y [ksi]	Fb	...	AS...
1	M1	HSS18...	.752	100.75	2	.153	100.75		2	2.6..	25.2	27.72	27...	1.6	H1-1
2	M2	L2.5x2....	.585	3.536	2	.004	0	z	1	14...	21.6	- Code check b...			H2-1
3	M3	L2.5x2....	.585	3.536	2	.004	0	z	1	14...	21.6	- Code check b...			H2-1
4	M4	L2.5x2....	.886	3.536	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
5	M5	L2.5x2....	.886	3.536	2	.004	0	z	1	14...	21.6	- Code check b...			H1-1
6	M6	L2.5x2....	.631	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
7	M7	L2.5x2....	.631	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
8	M8	L2.5x2....	.417	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H2-1
9	M9	L2.5x2....	.417	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H2-1
10	M10	L2.5x2....	.045	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
11	M11	L2.5x2....	.045	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
12	M12	L2.5x2....	.030	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H2-1
13	M13	L2.5x2....	.030	0	2	.004	3.536	z	1	14...	21.6	- Code check b...			H2-1
14	M14	L2.5x2....	.038	3.536	2	.004	3.536	z	1	14...	21.6	- Code check b...			H2-1
15	M15	L2.5x2....	.038	3.536	2	.004	0	z	1	14...	21.6	- Code check b...			H2-1
16	M16	L2.5x2....	.058	3.536	2	.004	3.536	z	1	14...	21.6	- Code check b...			H1-1
17	M17	L2.5x2....	.058	3.536	2	.004	0	z	1	14...	21.6	- Code check b...			H1-1
18	M18	L3.5x3....	.018	10.253	2	.007	10.253	z	2	4.6..	21.6	- Code check b...			H2-1
19	M19	L3.5x3....	.018	10.253	2	.007	10.253	z	2	4.6..	21.6	- Code check b...			H2-1
20	M20	L3.5x3....	.084	10.253	2	.007	10.253	z	2	4.6..	21.6	- Code check b...			H1-1
21	M21	L3.5x3....	.084	10.253	2	.007	10.253	z	2	4.6..	21.6	- Code check b...			H1-1
22	M22	L5x5x6	.006	14.142	2	.005	14.142	y	1	5.0..	21.6	- Code check b...			H2-1
23	M23	L5x5x6	.006	14.142	2	.005	14.142	y	1	5.0..	21.6	- Code check b...			H2-1
24	M24	L5x5x6	.028	14.142	2	.005	14.142	y	1	5.0..	21.6	- Code check b...			H1-1
25	M25	L5x5x6	.028	14.142	2	.005	14.142	y	1	5.0..	21.6	- Code check b...			H1-1

Joint Reactions

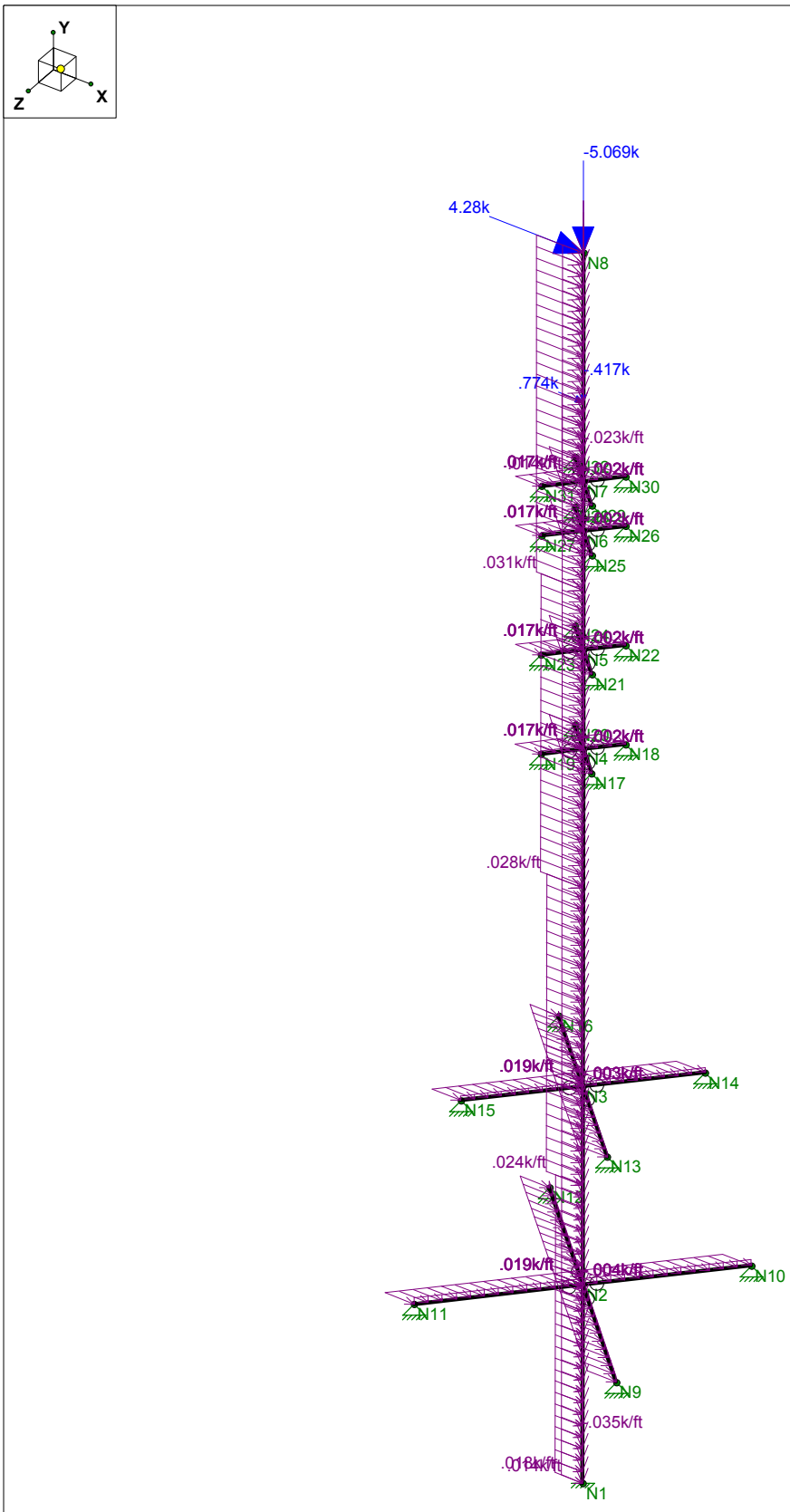
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.357	18.984	0	0	0	1.362
2	1	N9	-.394	.116	-.26	0	0	0
3	1	N10	-.394	.116	.26	0	0	0
4	1	N11	-.394	.116	.26	0	0	0
5	1	N12	-.394	.116	-.26	0	0	0
6	1	N13	-.474	.045	-.377	0	0	0
7	1	N14	-.474	.045	.377	0	0	0
8	1	N15	-.474	.045	.377	0	0	0
9	1	N16	-.474	.045	-.377	0	0	0
10	1	N17	-.485	.009	-.455	0	0	0
11	1	N18	-.485	.009	.455	0	0	0
12	1	N19	-.485	.009	.455	0	0	0
13	1	N20	-.485	.009	-.455	0	0	0
14	1	N21	.306	.009	.336	0	0	0
15	1	N22	.306	.009	-.336	0	0	0
16	1	N23	.306	.009	-.336	0	0	0
17	1	N24	.306	.009	.336	0	0	0
18	1	N25	4.922	.009	4.952	0	0	0
19	1	N26	4.922	.009	-4.952	0	0	0
20	1	N27	4.922	.009	-4.952	0	0	0
21	1	N28	4.922	.009	4.952	0	0	0
22	1	N29	-7.003	.009	-6.973	0	0	0
23	1	N30	-7.003	.009	6.973	0	0	0
24	1	N31	-7.003	.009	6.973	0	0	0
25	1	N32	-7.003	.009	-6.973	0	0	0
26	1	Totals:	-12.872	19.771	0			
27	1	COG (ft):	X: 0	Y: 77.301	Z: 0			

Joint Reactions

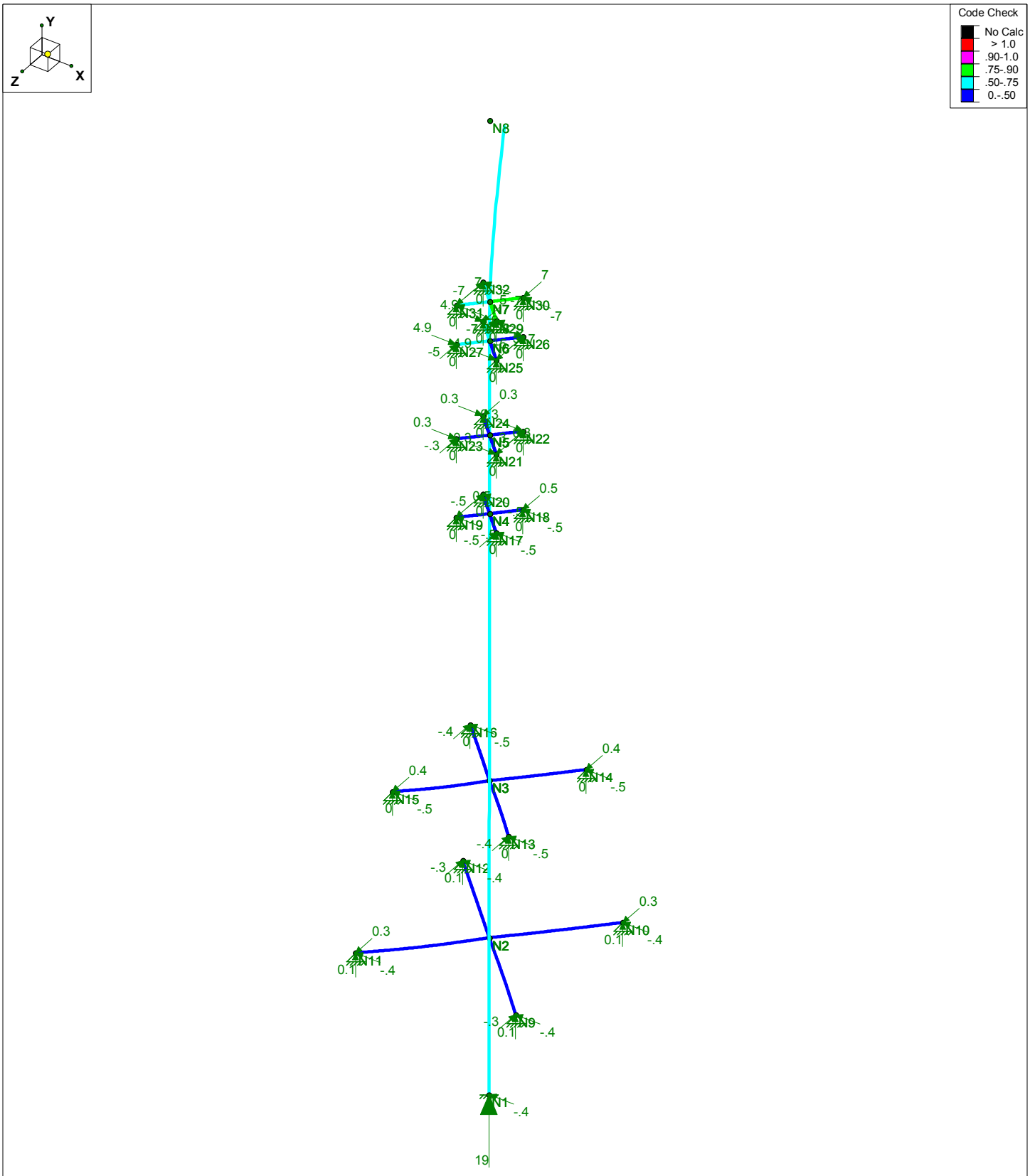
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.391	14.591	0	0	0	1.496
2	2	N9	-.434	.088	-.285	0	0	0
3	2	N10	-.434	.088	.285	0	0	0
4	2	N11	-.434	.088	.285	0	0	0
5	2	N12	-.434	.088	-.285	0	0	0
6	2	N13	-.521	.03	-.418	0	0	0
7	2	N14	-.521	.03	.418	0	0	0
8	2	N15	-.521	.03	.418	0	0	0
9	2	N16	-.521	.03	-.418	0	0	0
10	2	N17	-.542	.005	-.514	0	0	0
11	2	N18	-.542	.005	.514	0	0	0
12	2	N19	-.542	.005	.514	0	0	0
13	2	N20	-.542	.005	-.514	0	0	0
14	2	N21	.366	.005	.394	0	0	0
15	2	N22	.366	.005	-.394	0	0	0
16	2	N23	.366	.005	-.394	0	0	0
17	2	N24	.366	.005	.394	0	0	0
18	2	N25	5.692	.005	5.72	0	0	0
19	2	N26	5.692	.005	-5.72	0	0	0
20	2	N27	5.692	.005	-5.72	0	0	0
21	2	N28	5.692	.005	5.72	0	0	0
22	2	N29	-8.069	.005	-8.041	0	0	0
23	2	N30	-8.069	.005	8.041	0	0	0
24	2	N31	-8.069	.005	8.041	0	0	0
25	2	N32	-8.069	.005	-8.041	0	0	0
26	2	Totals:	-14.425	15.148	0			
27	2	COG (ft):	X: 0	Y: 75.472	Z: 0			



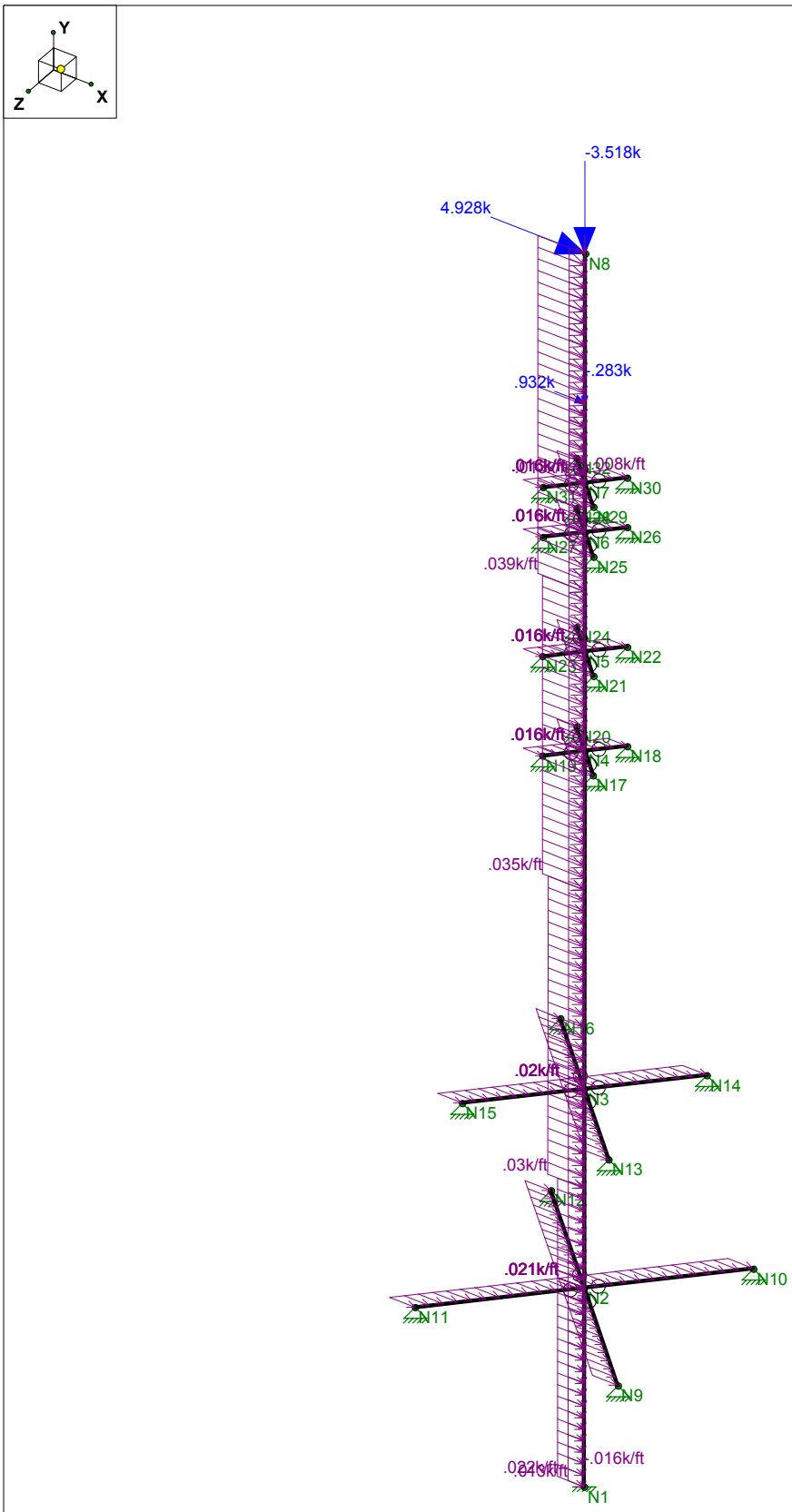
CENTEK Engineering, INC.		
tjl, cfc	Tower # 1321 - Antenna Mast	Jan 26, 2016 at 8:56 AM
16002.001 - CT2043	Unity Check	EIA-TIA - Antenna Mast.r3d



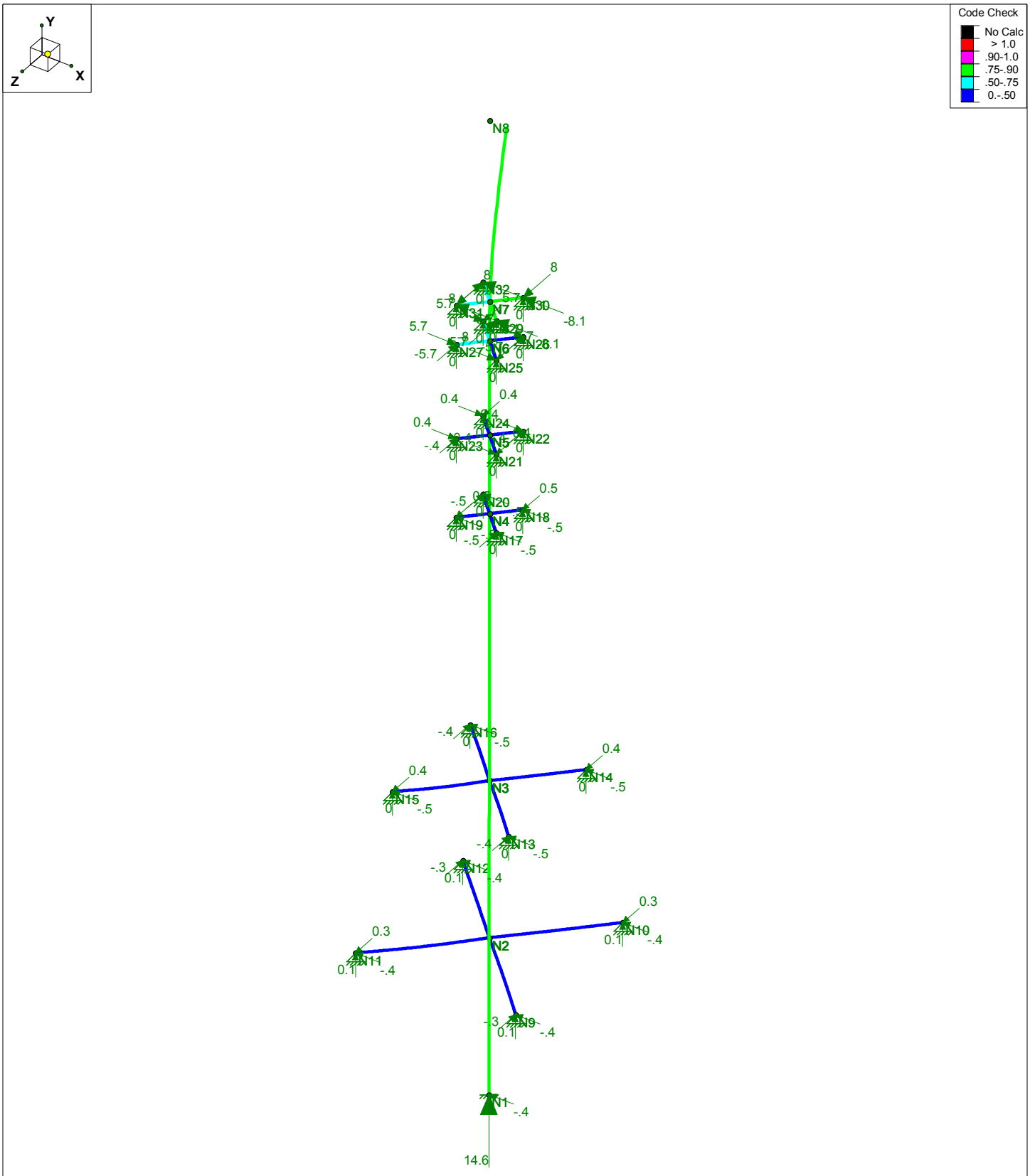
CENTEK Engineering, INC.		
tjl, cfc	Tower # 1321 - Antenna Mast	Jan 26, 2016 at 8:54 AM
16002.001 - CT2043	LC #1 Loads	EIA-TIA - Antenna Mast.r3d



CENTEK Engineering, INC.		
tjl, cfc	Tower # 1321 - Antenna Mast	Jan 26, 2016 at 8:55 AM
16002.001 - CT2043	LC #1 Reactions and Deflected Shape	EIA-TIA - Antenna Mast.r3d



CENTEK Engineering, INC.		
tjl, cfc	Tower # 1321 - Antenna Mast	Jan 26, 2016 at 8:54 AM
16002.001 - CT2043	LC #2 Loads	EIA-TIA - Antenna Mast.r3d



CENTEK Engineering, INC.		
tjl, cfc	Tower # 1321 - Antenna Mast	Jan 26, 2016 at 8:56 AM
16002.001 - CT2043	LC #2 Reactions and Deflected Shape	EIA-TIA - Antenna Mast.r3d

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Subject:	Connection of Powermount to CL&P Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/26/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

Antenna Mast Connection to Tower:

Reactions:

Horz = $Horz := 34 \cdot kips$ (User Input)

Pipe Collar:

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)

Plate Data:

Plate Width = $W_{plt} := 5 \cdot in$ (User Input)

Plate Thickness = $t_{plt} := 1.25 \cdot in$ (User Input)

Distance from Bolt to Collar = $d_{st} := 1.75 \cdot in$ (User Input)

Allowable Yield Strength = $F_y := 36 \cdot ksi$ (User Input)

Weld Data:

Weld Size = $sw := \frac{5}{16} \cdot in$ (User Input)

Weld Length = $l_w := 5 \cdot in$ (User Input)

Number of Welds = $n_w := 2$ (User Input)

Weld Strength = $F_w := 70 \cdot ksi$ (User Input)

Check Pipe Collar Bolts:

Tension Force = $f_t := \frac{Horz}{N_b} = 8.5 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 61.59 \cdot \%$

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

$Bolt\_Tension = "OK"$

Check Pipe Collar Plate:

Allowable Bending Strength = $F_b := 0.75F_y = 27 \cdot ksi$

Plate Section Modulus = $S_{plt} := \frac{1}{6} \cdot W_{plt} \cdot t_{plt}^{2} = 1.302 \cdot in^3$

Plate Bending Moment = $M := \frac{Horz}{2} \cdot d_{st} = 29.75 \cdot in \cdot kips$

Plate Bending Stress = $f_b := \frac{M}{S_{plt}} = 22.848 \cdot ksi$

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

$Plate\_Bending = "OK"$

Check Pipe Collar Weld:

Allowable Weld Strength = $F_w := 0.3 \cdot F_w = 21 \cdot ksi$

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

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 1.105 \cdot in^2$

Plate Stress = $f_w := \frac{Horz}{A_w \cdot n_w} = 15.389 \cdot ksi$

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

$Weld = "OK"$

Reactions:

Angle Brace Force =	Fab := 11.4·kips	(User Input)

Angle Plate:

Bolt Data:

Bolt Type =	ASTM A325	(User Input)
Bolt Diameter =	$D := 0.75 \cdot in$	(User Input)
Number of Bolts =	$N_b := 1$	(User Input)
Allowable Tensile Strength =	$F_t := 19.9 \cdot kips$	(User Input)
Allowable Shear Strength =	$F_v := 11.9 \cdot kips$	(User Input)

Plate Data:

Plate Width =	$W_{plt} := 3 \cdot in$	(User Input)
Plate Thickness =	$t_{plt} := 0.75 \cdot in$	(User Input)
Distance from Bolt to Collar =	$d_{st} := 1.5 \cdot in$	(User Input)
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)
Tensile Strength =	$F_u := 58 \cdot ksi$	(User Input)
Hole Diamter =	$Hole_d := .8125 \cdot in$	(User Input)

Weld Data:

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

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 11.4 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 95.8 \cdot \%$

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

$Bolt\_Shear = "OK"$

Check Angle Connection Plate:

Plate Gross Area = $A_g := W_{plt} \cdot t_{plt} = 2.25 \cdot in^2$

Plate Net Area = $A_n := \left[W_{plt} - \left(Hole_d + .0625 \cdot in\right)\right] \cdot t_{plt} = 1.594 \cdot in^2$

Shear Lag Factor = $U := 1.0$

Plate Effective Net Area = $A_e := A_n \cdot U = 1.594 \cdot in^2$

Yielding Safety Factor = $\Omega_t := 1.67$

Rupture Safety Factor = $\Omega_r := 2.0$

Bearing Strength Safety Factor = $\Omega_b := 2.0$

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

Tensile Yielding = $P_{at} := \frac{F_y \cdot A_g}{\Omega_t} = 48.503 \cdot kips$

Tensile Rupture = $P_{ar} := \frac{F_u \cdot A_e}{\Omega_r} = 46.219 \cdot kips$

Bearing Strength = $R_a := \frac{1.2 \cdot l_c \cdot t_{plt} \cdot F_u}{\Omega_b} = 28.547 \cdot kips$

$Pa := \min\left(P_{at}, P_{ar}, R_a\right) = 28.547 \cdot kips$

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

$Plate = "OK"$

Check Angle Connection Plate Weld:

Allowable Weld Strength = $F_w := 0.3 \cdot F_w = 21 \cdot ksi$

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

Plate Stress = $f_w := \frac{Fab}{A_w \cdot n_w} = 8.6 \cdot ksi$

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

$Weld = "OK"$

CENTEK engineering
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Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

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 := 124	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 =	$Kz := 2.01\cdot\left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.324$		(NESC 2007 Table 250-2)
Exposure Factor =	$Es := 0.346\left[\frac{33}{(0.67\cdot TME)}\right]^{\frac{1}{7}} = 0.303$		(NESC 2007 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375\cdot\frac{TME}{220}\right)} = 0.826$		(NESC 2007 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7\cdot Es\cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.853$		(NESC 2007 Table 250-3)
Wind Pressure =	$qz := 0.00256\cdot Kz\cdot V^2\cdot Grf\cdot I = 35$	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 # 1321

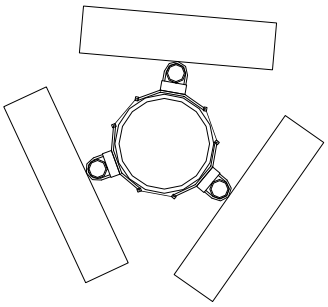
Location: Stratford, CT

Rev. 0: 1/25/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16002.001

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)



Antenna Model =	RFS APX 16DWV-16DWVS-E-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13.0$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 40.7$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$	sf	
Total Antenna Wind Force =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1059$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 106$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant1} := (WT_{ant} \cdot N_{ant}) = 122$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 99$	lbs	**BLC 3**

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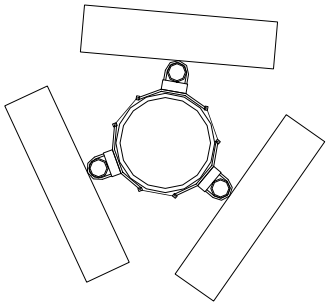
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile)

Mount Type: Microflect Tri-Sector Chain Mount w/ 3 Pipes



Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 66$	in	(User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)
Tri Sector Chain Mount Weight =	$W_{tsc.mnt} := 101$	lbs	(User Input)

Wind Load (NESC Extreme)

Assumes Mount is Shielded by Antenna

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

Total Mount Wind Force = $F_{mnt1} := qz \cdot Cd_F \cdot A_{mnt} \cdot m = 0$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Mount is Shielded by Antenna

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

Total Mount Wind Force = $Fi_{mnt1} := p \cdot Cd_F \cdot A_{ICEmnt} = 0$ lbs **BLC 4**

Gravity Loads (without ice)

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

Weight Each Pipe Mount = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 20$ lbs

Weight of All Mounts = $Wt_{mnt1} := \left(WT_{mnt} \cdot N_{mnt}\right) = 60$ lbs **BLC 2**

Gravity Load (ice only)

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

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^{2} \cdot L_{mnt} = 292$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 1\right)^2\right] \cdot \left(L_{mnt} + 1\right)\right] - V_{mnt} = 307$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := W_{ICEmnt} \cdot N_{mnt} = 30$ lbs **BLC 3**

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Subject: Load Analysis of Antenna Mast on Tower # 1321

Location: Stratford, CT

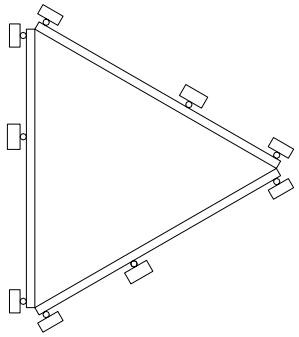
Rev. 0: 1/25/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16002.001

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



Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 25.2$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1764$ 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 = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 179$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := (WT_{ant} \cdot N_{ant}) = 234$ 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 = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 196$ lbs **BLC 3**

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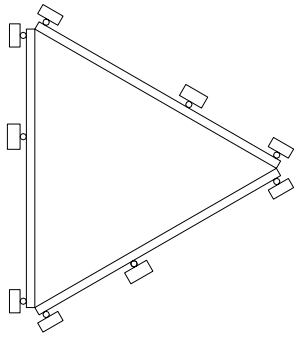
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

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 =	$F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1553$	lbs	**BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant3} := (WT_{ant} \cdot N_{ant}) = 153$	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 =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 63$	lbs	
Weight of Ice on All Antennas =	$Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 189$	lbs	**BLC 3**

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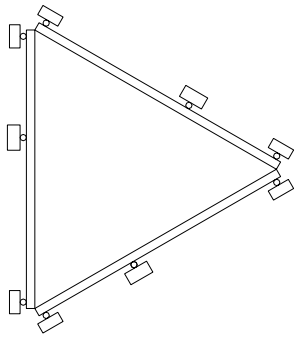
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)



TMA Model =	Powerwave LGP214		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 9.2$	in	(User Input)
TMA Width =	$W_{TMA} := 14.4$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.6$	in	(User Input)
TMA Weight =	$WT_{TMA} := 14.1$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 12$		(User Input)

Wind Load (NESC Extreme Wind)

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

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf	
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 11$	sf	
Total TMA Wind Force =	$F_{TMA1} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 772$	lbs	**BLC 5**

Wind Load (NESC Heavy Wind)

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

Surface Area for One TMA w/ Ice =	$SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 1.1$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 13.1$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{TMA1} := p \cdot Cd_F \cdot A_{ICETMA} = 84$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All TMA's =	$Wt_{TMA1} := (WT_{TMA} \cdot N_{TMA}) = 169$	lbs	**BLC 2**

Gravity Load (ice)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 221$	cu in	
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs	
Weight of Ice on All TMA's =	$Wt_{ice.TMA1} := W_{ICETMA} \cdot N_{TMA} = 86$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model = CCI DTMABP7819VG12A TMA

TMA Shape = Flat (User Input)

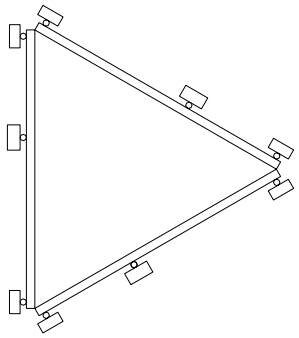
TMA Height = $L_{TMA} := 14.25$ in (User Input)

TMA Width = $W_{TMA} := 1.46$ in (User Input)

TMA Thickness = $T_{TMA} := 4.17$ in (User Input)

TMA Weight = $WT_{TMA} := 20$ lbs (User Input)

Number of TMA's = $N_{TMA} := 3$ (User Input)



Wind Load (NESC Extreme Wind)

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

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.1$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 0.4$ sf

Total TMA Wind Force = $F_{TMA2} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 30$ lbs **BLC 5**

Wind Load (NESC Heavy Wind)

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

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (W_{TMA} + 2 \cdot Ir)}{144} = 0.3$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 0.8$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA2} := p \cdot Cd_F \cdot A_{ICETMA} = 5$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All TMA's = $Wt_{TMA2} := (WT_{TMA} \cdot N_{TMA}) = 60$ lbs **BLC 2**

Gravity Load (ice)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 87$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 107$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 3$ lbs

Weight of Ice on All TMA's = $Wt_{ice.TMA2} := W_{ICETMA} \cdot N_{TMA} = 10$ lbs **BLC 3**

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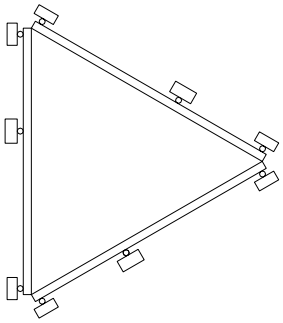
Subject:	Load Analysis of Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

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 = $F_{mnt2} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 740$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt2} := p \cdot Cd_F \cdot A_{ICEplt} = 86$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt2} := WT_{plt} = 2902$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt2} := WT_{ICEplt} - WT_{plt} = 1051$ lbs **BLC 3**

Total Equipment Loads:

AT&T @ 125-ft AGL

NESC Heavy Wind Vertical =

$$\left(Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{TMA1} + Wt_{ice.TMA1} + Wt_{TMA2} + Wt_{ice.TMA2} + Wt_{mnt2} + Wt_{ice.mnt2}\right)\cdot 1.5 = 7576$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant2} + Fi_{ant3} + Fi_{TMA1} + Fi_{TMA2} + Fi_{mnt2}\right)\cdot 2.5 = 1268$

NESC Extreme Wind Vertical = $\left(Wt_{ant2} + Wt_{ant3} + Wt_{TMA1} + Wt_{TMA2} + Wt_{mnt2}\right) = 3518$

NESC Extreme Wind Trasnsverse = $\left(F_{ant2} + F_{ant3} + F_{TMA1} + F_{TMA2} + F_{mnt2}\right) = 4860$

T-Mobile @ 109-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 467$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{mnt1}\right)\cdot 2.5 = 266$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{mnt1}\right) = 182$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{mnt1}\right) = 1059$

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Subject:	Coax Cable on Antenna Mast on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

Coax Cable on Antenna Mast

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 11.5 \\ 14 \\ 8.5 \\ 11 \\ 22 \\ 27 \\ 30 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable =	$D_{coax} := 1.55 \cdot in$	*(User Input)*	
Weight of Coax Cable =	$W_{coax} := 0.66 \cdot plf$	*(User Input)*	
Number of Coax Cables =	$N_{coax} := 24$	*(User Input)*	(18 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 =	$qz := 35 \cdot psf$	*(User Input)*	
Heavy Wind Pressure =	$p := 4 \cdot psf$	*(User Input)*	
Radial Ice Thickness =	$Ir := 0.5 \cdot in$	*(User Input)*	
Radial Ice Density =	$Id := 56 \cdot pcf$	*(User Input)*	
Shape Factor =	$Cd_{coax} := 1.6$	*(User Input)*	
Overload Factor for NESC Heavy Wind Load =	$OF_{HW} := 2.5$	*(User Input)*	
Overload Factor for NESC Extreme Wind Load =	$OF_{EW} := 1.0$	*(User Input)*	
Overload Factor for NESC Heavy Vertical Load =	$OF_{HV} := 1.5$	*(User Input)*	
Overload Factor for NESC Extreme Vertical Load =	$OF_{EV} := 1.0$	*(User Input)*	

Wind Area without Ice =	$A := \left(NP_{coax} \cdot D_{coax}\right) = 3.1 \cdot in$
Wind Area with Ice =	$A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.1 \cdot in$
Ice Area per Liner Ft =	$Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.022\,ft^2$
Weight of Ice on All Coax Cables =	$W_{ice} := Ai_{coax} \cdot Id \cdot NE_{coax} = 7.514 \cdot plf$

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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 403 \\ 490 \\ 298 \\ 385 \\ 771 \\ 946 \\ 1051 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 63 \\ 77 \\ 46 \\ 60 \\ 120 \\ 148 \\ 164 \end{pmatrix} lb$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 182 \\ 222 \\ 135 \\ 174 \\ 348 \\ 428 \\ 475 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 166 \\ 203 \\ 123 \\ 159 \\ 318 \\ 391 \\ 434 \end{pmatrix} lb$$

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Subject:	Coax Cable on Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16002.001

Coax Cable on Tower

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 5 \\ 8 \\ 9 \\ 11 \\ 10 \\ 11 \\ 17 \\ 30 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

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

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 12$ *(User Input)*

Diameter of Ret Cable = $D_{RET} := 0.375 \cdot in$ *(User Input)*

Weight of Ret Cable = $W_{RET} := 0.06 \cdot plf$ *(User Input)*

Number of Ret Cables = $N_{RET} := 6$ *(User Input)*

Number of Projected Ret Cables Transverse = $NP_{RET} := 0$ *(User Input)*

Extreme Wind Pressure = $qz := 34.7 \cdot psf$ *(User Input)*

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

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

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

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

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

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

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

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

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 19.6 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 18.6 \cdot in$

Ice Area per Liner Ft Coax = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.022\,ft^2$

Ice Area per Liner Ft RET = $Ai_{RET} := \frac{\pi}{4} \cdot \left[\left(D_{RET} + 2 \cdot Ir\right)^2 - D_{RET}^2\right] = 0.01\,ft^2$

Weight of Ice on All Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} + Ai_{RET} \cdot Id \cdot N_{RET} = 18.234 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 199 \\ 318 \\ 358 \\ 437 \\ 398 \\ 437 \\ 676 \\ 1193 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 131 \\ 209 \\ 235 \\ 287 \\ 261 \\ 287 \\ 444 \\ 784 \end{pmatrix} lb$$

Extreme Vertical Load =

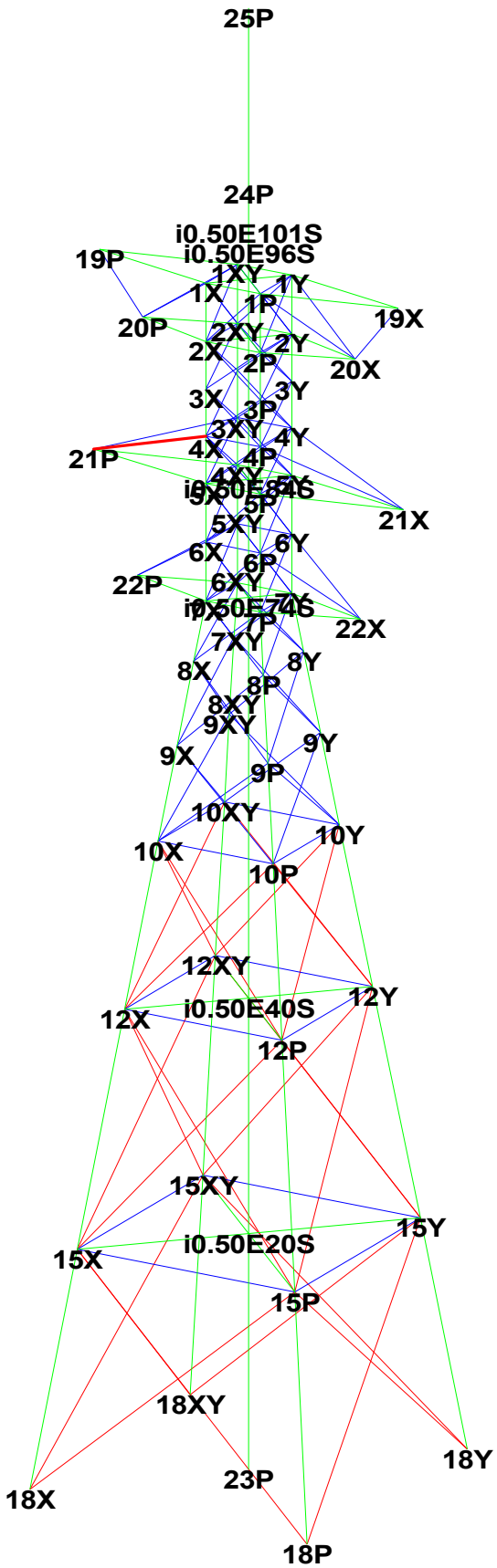
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + N_{RET} \cdot W_{RET}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

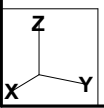
Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 41 \\ 66 \\ 75 \\ 91 \\ 83 \\ 91 \\ 141 \\ 248 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 430 \\ 688 \\ 775 \\ 947 \\ 861 \\ 947 \\ 1463 \\ 2582 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p tower #1321"
Tower Version 12.50, 5:18:55 PM Monday, January 25, 2016
Undeformed geometry displayed





Project Name : 16002.001 - Stratford, CT
Project Notes: Structure # 1321/ AT&T CT2043
Project File : J:\Jobs\1600200.WI\001_Stratford NU - CT2043\04_Structural\Backup Documentation\Calcs\PLS Tower\cl&p tower #1321.tow
Date run : 5:16:49 PM Monday, January 25, 2016
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??
Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 34 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\001_stratford nu - ct2043\04_structural\backup documentation\calcs\pls tower\cl&p # 1321.lca

*** Analysis Results:

Maximum element usage is 96.71% for Angle "g37X" in load case "NESC Extreme"
Maximum insulator usage is 17.14% for Clamp "Clamp28" 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	18P	-7.47	-7.44	-54.75	10.55	0.24	0.10	0.26	0.01	0.00
NESC Heavy	23P	0.11	-1.05	-28.65	1.05	12.97	2.26	13.17	-0.81	0.00
NESC Heavy	18X	6.38	-8.11	32.58	10.32	0.34	0.05	0.34	0.00	0.00
NESC Heavy	18XY	-5.89	-6.44	30.42	8.73	0.21	-0.03	0.22	-0.04	0.00
NESC Heavy	18Y	6.89	-6.87	-50.50	9.73	0.20	0.10	0.22	-0.03	0.00
NESC Extreme	18P	-13.46	-13.87	-96.76	19.33	0.53	0.29	0.60	0.03	0.00
NESC Extreme	23P	0.45	-1.75	-11.11	1.81	24.18	6.13	24.94	-2.14	0.00
NESC Extreme	18X	13.27	-17.83	67.85	22.22	0.71	0.05	0.71	-0.01	0.00
NESC Extreme	18XY	-15.22	-15.56	78.63	21.77	0.30	-0.08	0.31	-0.10	0.00
NESC Extreme	18Y	10.30	-11.00	-75.53	15.07	0.32	0.32	0.45	-0.06	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	18P	15P	g14X	55.753	0.097	0.098	-0.053	-0.083	-7.47	-7.44	-54.75
NESC Heavy	18X	15X	g14P	-33.934	4.032	4.100	-1.898	3.634	6.38	-8.11	32.58
NESC Heavy	18XY	15XY	g14Y	-31.526	2.780	2.831	1.711	2.255	-5.89	-6.44	30.42
NESC Heavy	18Y	15Y	g14XY	51.431	0.091	0.093	0.058	-0.072	6.89	-6.87	-50.50
NESC Extreme	18P	15P	g14X	98.673	0.581	0.589	0.159	0.567	-13.46	-13.87	-96.76
NESC Extreme	18X	15X	g14P	-70.798	9.215	9.367	-3.940	8.498	13.27	-17.83	67.85
NESC Extreme	18XY	15XY	g14Y	-81.339	6.362	6.481	4.412	4.748	-15.22	-15.56	78.63
NESC Extreme	18Y	15Y	g14XY	77.012	0.619	0.623	0.084	0.618	10.30	-11.00	-75.53

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)

```
-------------------------------------------------------------------------------------------------------
       3 124.000 74.000    42    147       0.00       5.00    192.500       0.00      20.50    629.500  Problem calculating gross area of longitudinal
face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section.  ??
       2  74.000 40.000    22     61       5.00      14.46    330.830       5.00      14.46    330.830
       1  40.000  0.000    15     34      14.46      25.50    799.600      14.46      25.50    799.600

*** 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           Group Angle          Angle    Steel   Max Usage   Max   Comp.   Comp.   Comp.      L/R    Comp.    Comp.   RLX   RLY   RLZ    L/R
KL/R Length Curve   No.
 Label           Desc.  Type          Size Strength Usage Cont-   Use Control   Force Control Capacity Connect. Connect.
Comp.   No.    Of                                                 rol    In  Member           Load            Shear  Bearing
Member       Bolts                                                      Comp.                  Case          Capacity Capacity
Comp.                                                 (ksi)     %          %          (kips)           (kips)   (kips)   (kips)
(ft)
-------------------------------------------------------------------------------------------------------------------------------------------------
----------------------
  Leg1       L5x5x5/16   SAE     5X5X0.3125     33.0 72.05  Tens 61.92     g8X -55.414NESC Ext   89.489  166.500  210.937 1.000 1.000 1.000  60.36
60.36  5.000     1    10
  Leg2       L6x6x5/16   SAE     6X6X0.3125     33.0 80.29  Comp 80.29    g10X -73.398NESC Ext   91.422  166.500  210.937 1.000 1.000 1.000  71.33
71.33  7.133     1    10
  Leg3        L6x6x3/8   SAE      6X6X0.375     33.0 78.53  Comp 78.53    g14X -97.743NESC Ext  124.467  199.800  303.750 0.333 0.333 0.333  68.42
68.42 20.375     1    12
 Diag1     L2.5x2x3/16   SAU   2.5X2X0.1875     33.0 60.05  Comp 60.05    g15P -10.499NESC Ext   17.484   33.300   25.312 0.500 0.750 0.500 106.07
109.55  7.071     2     2
 Diag2      L2.5x2x1/4   SAU     2.5X2X0.25     33.0 27.62  Comp 27.62    g21P  -6.706NESC Ext   24.281   33.300   33.750 0.500 0.750 0.500  97.34
103.01  6.403     2     2
 Diag3    L2.5x2.5x1/4   SAE   2.5X2.5X0.25     33.0 34.31 Cross 34.31    g26Y  -8.321NESC Ext   24.256   49.950   50.625 1.000 0.500 0.500 110.34
115.17  7.071     3     3
 Diag4   L2.5x2.5x5/16   SAE 2.5X2.5X0.3125     33.0  9.05 Cross  8.71    g28Y  -2.453NESC Ext   28.168   33.300   42.187 1.000 0.560 0.560 120.07
120.04  7.614     6     2
    M1      L2.5x2x1/4   SAU     2.5X2X0.25     33.0  0.00        0.00           0.000            0.000    0.000    0.000 0.000 0.000 0.000   0.00
0.00  0.000     0     0
    M2    L2.5x2.5x1/4   SAE   2.5X2.5X0.25     33.0 33.58  Comp 33.58    g60X  -5.255NESC Ext   15.646   33.300   33.750 1.000 0.500 0.500 164.79
147.54 10.560     6     2
    M3      L3x2.5x1/4   SAU     3X2.5X0.25     33.0 27.55  Comp 27.55    g41P  -7.224NESC Ext   26.226   33.300   33.750 1.000 1.000 1.000 113.64
116.82  5.000     3     2
    M4        L3x3x1/4   SAE       3X3X0.25     33.0 15.45  Comp 15.45    g42P  -4.805NESC Hea   31.104   49.950   50.625 1.000 0.500 0.500  98.95
109.48  7.669     3     3
    M5        L4x3x1/4   SAU       4X3X0.25     33.0 24.44  Comp 24.44    g62X  -7.034NESC Ext   28.782   33.300   33.750 1.000 0.500 0.500 135.56
129.57 14.460     6     2
    M6        L4x4x1/4   SAE       4X4X0.25     33.0 29.40  Comp 29.40    g64X  -6.048NESC Ext   20.575   33.300   33.750 1.000 0.500 0.500 192.00
164.28 20.000     6     2
    M7     L2.5x2x3/16   SAU   2.5X2X0.1875     33.0 24.58  Comp 24.58    g45P  -1.760NESC Hea    7.160   16.650   12.656 1.000 1.000 1.000 179.95
179.95  6.403     4     1
    M8      L2.5x2x1/4   SAU     2.5X2X0.25     33.0 20.90  Tens  0.00    g50Y   0.000            3.334   33.300   33.750 1.000 1.000 1.000 358.34
301.66 12.661     5     2
 Diag5      L2.5x2x1/4   SAU     2.5X2X0.25     33.0 96.71  Tens 57.97    g33P  -2.510NESC Hea    4.330   33.300   33.750 0.580 0.790 0.580 309.85
264.71 18.876     5     2
    M9     L2.5x2x3/16   SAU   2.5X2X0.1875     33.0 87.23  Tens 64.33    g57X  -7.554NESC Ext   11.742   16.650   12.656 1.000 1.000 1.000 140.52
```

140.52 5.000 4 1
M10 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 33.0 91.76 Tens 86.46 g70Y -9.119NESC Ext 20.689 16.800 10.547 1.000 1.000 1.000 85.71 102.85 3.536 3 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??
M11 L5x5x3/8 SAE 5X5X0.375 33.0 27.38 Comp 27.38 g65XY -4.599NESC Ext 35.163 16.800 21.094 1.000 1.000 1.000 171.42 171.42 14.142 4 1
M12 L3.5x3.5x1/4 SAE 3.5X3.5X0.25 33.0 21.19 Comp 21.19 g66Y -2.980NESC Ext 15.475 16.800 14.062 1.000 1.000 1.000 176.80 176.80 10.225 4 1
PM Powermount Pwmnt Pipe 18" Std. 50.0 3.03 Comp 3.03 g71P -27.481NESC Hea 907.332 0.000 0.000 1.000 1.000 1.000 38.46 38.46 20.000 1 0
M13 L4x3x1/4 SAU 4X3X0.25 33.0 15.61 Comp 15.61 g47P -5.310NESC Hea 34.023 66.600 67.500 1.000 0.500 0.500 112.62 116.31 12.013 3 4
M14 Bar 2-1/2 x 1/4 Bar 2x1/4 33.0 30.31 Tens 0.00 g58Y 0.000 14.788 33.300 33.750 1.000 1.000 1.000 60.00 60.00 5.000 1 2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	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	No. Of Holes	Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	72.05	Tens	72.05	g8Y	50.524	NESC Ext	70.122	166.500	210.937	183.823	5.000	10	3.310	0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	80.29	Comp	74.63	g10Y	67.597	NESC Ext	90.582	166.500	210.937	183.823	7.133	10	3.310	0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	78.53	Comp	67.01	g14Y	72.401	NESC Ext	108.039	199.800	303.750	281.250	20.375	12	3.310	0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	60.05	Comp	53.40	g15XY	10.244	NESC Ext	19.184	33.300	25.312	21.094	7.071	2	1.000	0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	27.62	Comp	27.15	g21XY	6.785	NESC Ext	24.985	33.300	33.750	26.766	6.403	2	1.000	0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.31	Cross	29.54	g25XY	8.521	NESC Ext	28.846	49.950	50.625	42.187	7.071	3	1.000	0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	9.05	Cross	9.05	g28X	3.014	NESC Ext	35.241	33.300	42.187	35.156	7.614	2	1.000	0.875
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	33.58	Comp	3.78	g60P	0.830	NESC Ext	28.846	33.300	33.750	21.984	10.560	2	1.000	0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	27.55	Comp	21.19	g41X	6.232	NESC Ext	32.410	33.300	33.750	29.412	5.000	2	1.000	0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	6.80	g40Y	3.232	NESC Hea	47.520	0.000	0.000	0.000	5.000	0	0.000	0
M5	L4x3x1/4	SAU	4X3X0.25	33.0	24.44	Comp	7.75	g62P	1.942	NESC Ext	36.271	33.300	33.750	25.078	14.460	2	1.000	0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	29.40	Comp	12.25	g64P	3.446	NESC Ext	44.624	33.300	33.750	28.125	20.000	2	2.000	0.875
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.58	Comp	21.37	g46P	3.854	NESC Hea	19.184	33.300	25.312	18.035	9.155	2	1.000	0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.90	Tens	20.90	g50XY	4.594	NESC Hea	24.985	33.300	33.750	21.984	12.661	2	1.000	0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	96.71	Tens	96.71	g37X	11.469	NESC Ext	24.985	16.650	16.875	11.859	30.416	1	1.000	

0.875
M9 L2.5x2x3/16 SAU 2.5X2X0.1875 33.0 87.23 Tens 87.23 g57P 7.759NESC Ext 19.184 16.650 12.656 8.895 5.000 1 1.000
0.875
M10 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 33.0 91.76 Tens 91.76 g70XY 9.677NESC Ext 22.961 16.800 10.547 11.719 3.536 1 1.000
0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??
M11 L5x5x3/8 SAE 5X5X0.375 33.0 27.38 Comp 0.00 g65Y 0.000 99.560 16.800 21.094 23.437 14.142 1 1.000
0.6875
M12 L3.5x3.5x1/4 SAE 3.5X3.5X0.25 33.0 21.19 Comp 0.00 g66Y 0.000 45.088 16.800 14.062 15.625 10.225 1 1.000
0.6875
PM Powermount Pwmnt Pipe 18" Std. 50.0 3.03 Comp 0.00 g78P 0.000 969.998 0.000 0.000 0.000 15.000 0 0.000
0
M13 L4x3x1/4 SAU 4X3X0.25 33.0 15.61 Comp 1.24 g47XY 0.543NESC Ext 43.696 66.600 67.500 56.250 12.013 4 1.000
0.875
M14 Bar 2-1/2 x 1/4 Bar 2x1/4 33.0 30.31 Tens 30.31 g51P 2.814NESC Hea 9.281 33.300 33.750 28.125 5.000 2 1.000
0.875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	57.97	g33P	Angle
NESC Extreme	96.71	g37X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.64	NESC Heavy	0.0
Clamp2	Clamp	3.44	NESC Heavy	0.0
Clamp3	Clamp	6.81	NESC Heavy	0.0
Clamp4	Clamp	6.73	NESC Heavy	0.0
Clamp5	Clamp	6.91	NESC Heavy	0.0
Clamp6	Clamp	6.85	NESC Heavy	0.0
Clamp7	Clamp	6.78	NESC Heavy	0.0
Clamp8	Clamp	6.71	NESC Heavy	0.0
Clamp9	Clamp	1.92	NESC Extreme	0.0
Clamp10	Clamp	2.09	NESC Extreme	0.0
Clamp11	Clamp	3.45	NESC Extreme	0.0
Clamp12	Clamp	2.71	NESC Extreme	0.0
Clamp13	Clamp	2.88	NESC Extreme	0.0
Clamp14	Clamp	5.68	NESC Extreme	0.0
Clamp15	Clamp	6.86	NESC Extreme	0.0
Clamp17	Clamp	2.56	NESC Heavy	0.0
Clamp18	Clamp	2.65	NESC Heavy	0.0
Clamp19	Clamp	3.50	NESC Heavy	0.0
Clamp20	Clamp	6.76	NESC Heavy	0.0
Clamp21	Clamp	8.70	NESC Heavy	0.0
Clamp22	Clamp	8.26	NESC Heavy	0.0
Clamp23	Clamp	1.41	NESC Extreme	0.0
Clamp24	Clamp	0.61	NESC Extreme	0.0

Clamp25	Clamp	0.61	NESC Extreme	0.0
Clamp26	Clamp	0.61	NESC Extreme	0.0
Clamp27	Clamp	4.66	NESC Heavy	0.0
Clamp28	Clamp	17.14	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	23724.7
Total:	23724.7

*** End of Report

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

Project Name : 16002.001 - Stratford, CT
Project Notes: Structure # 1321/ AT&T CT2043
Project File : J:\Jobs\1600200.WI\001_Stratford NU - CT2043\04_Structural\Backup Documentation\Calcs\PLS Tower\cl&p tower #1321.tow
Date run     : 5:16:49 PM Monday, January 25, 2016
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??
```

KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??
Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 34 warnings. ??

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

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	2.5	2.5	101	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	96	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	2.5	92	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2.5	2.5	88	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	84	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	79	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	2.5	2.5	74	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.2	3.2	69	Free	Free	Free	Free	Free	Free

9P	XY-Symmetry	4.17	4.17	62	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	5.28	5.28	54	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	7.23	7.23	40	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	10	10	20	Free	Free	Free	Free	Free	Free
18P	XY-Symmetry	12.75	12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19P	X-Symmetry	0	-13.75	101	Free	Free	Free	Free	Free	Free
20P	X-Symmetry	0	-9.75	96	Free	Free	Free	Free	Free	Free
21P	X-Symmetry	0	-14.25	84	Free	Free	Free	Free	Free	Free
22P	X-Symmetry	0	-10.25	74	Free	Free	Free	Free	Free	Free
23P	None	0	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
24P	None	0	0	109	Free	Free	Free	Free	Free	Free
25P	None	0	0	124	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	-2.5	101	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	101	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	101	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2.5	-2.5	96	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	96	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	96	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	92	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	92	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	92	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	88	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	88	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	88	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	84	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	84	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	84	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	79	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	79	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	79	Free	Free	Free	Free	Free	Free
7X	X-GenXY	2.5	-2.5	74	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-2.5	-2.5	74	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-2.5	2.5	74	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.2	-3.2	69	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.2	-3.2	69	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.2	3.2	69	Free	Free	Free	Free	Free	Free
9X	X-GenXY	4.17	-4.17	62	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-4.17	-4.17	62	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-4.17	4.17	62	Free	Free	Free	Free	Free	Free
10X	X-GenXY	5.28	-5.28	54	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-5.28	-5.28	54	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-5.28	5.28	54	Free	Free	Free	Free	Free	Free
12X	X-GenXY	7.23	-7.23	40	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-7.23	-7.23	40	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-7.23	7.23	40	Free	Free	Free	Free	Free	Free
15X	X-GenXY	10	-10	20	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-10	-10	20	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-10	10	20	Free	Free	Free	Free	Free	Free
18X	X-GenXY	12.75	-12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18XY	XY-GenXY	-12.75	-12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18Y	Y-GenXY	-12.75	12.75	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
19X	X-Gen	0	13.75	101	Free	Free	Free	Free	Free	Free
20X	X-Gen	0	9.75	96	Free	Free	Free	Free	Free	Free
21X	X-Gen	0	14.25	84	Free	Free	Free	Free	Free	Free
22X	X-Gen	0	10.25	74	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint	Symmetry Origin	End Fraction	Elevation	X Disp.	Y Disp.	Z Disp.	X Rot.	Y Rot.	Z Rot.

Label	Code	Joint	Joint	(ft)		Rest.	Rest.	Rest.	Rest.	Rest.	Rest.
i0.50E20S	None	15X	15Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E40S	None	12X	12Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E74S	None	7X	7Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E84S	None	5X	5Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E96S	None	2XY	2P	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E101S	None	1XY	1P	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 63 primary and 6 secondary joints for a total of 69 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member All. Stress Hyp. 1 (ksi)	Member All. Stress Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A7	2.9e+004	33	60	0	0	0	0	0	0
A500-50	2.9e+004	50	62	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
3/4 A394 TYPE0 N	0.75	0.875	16.65	1.35	1.8	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
3/4 A394 TYPE0 N	550
5/8 A325	24

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	6X6X0.3125	6	6	0.3125	12.5	3.65	16.6	1.89	1.89	1.2	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	5X5X0.3125	5	5	0.3125	10.3	3.03	13.4	1.57	1.57	0.994	1	5	2.5	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.3125	2.5	2.5	0.3125	5	1.46	6	0.761	0.761	0.489	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAU	4X3X0.25	4	3	0.25	5.8	1.69	13.25	1.28	0.896	0.651	1	4	1.5	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0

SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
Pwmnt	Pipe 18" Std.	18	17.25	0	70.66	19.4	1	6.24	6.24	6.24	1	18	0	0	0.0000	0
Bar	2x1/4	2	0	0.25	1.7	0.5	8	1	1	1	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	L5x5x5/16	SAE	5X5X0.3125	A7	Beam	Leg	None	0.000
Leg2	L6x6x5/16	SAE	6X6X0.3125	A7	Beam	Leg	None	0.000
Leg3	L6x6x3/8	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Crossing Diagonal	None	0.000
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss	Crossing Diagonal	None	0.000
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	A7	Truss	Crossing Diagonal	None	0.000
M1	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Beam	Other	None	0.000
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss	Other	None	0.000
M3	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
M4	L3x3x1/4	SAE	3X3X0.25	A7	Beam	Other	None	0.000
M5	L4x3x1/4	SAU	4X3X0.25	A7	Truss	Other	None	0.000
M6	L4x4x1/4	SAE	4X4X0.25	A7	Truss	Other	None	0.000
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
M8	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Truss	Other	None	0.000
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only	Other	None	0.000
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
M10	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Beam	Other	None	0.000
M11	L5x5x3/8	SAE	5X5X0.375	A7	Beam	Other	None	0.000
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A7	Beam	Other	None	0.000
PM	Powermount	Pwmnt	Pipe 18" Std.	A500-50	Beam	Other	None	0.000
M13	L4x3x1/4	SAU	4X3X0.25	A7	Beam	Other	None	0.000
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	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	5X5X0.3125	A7	108.00	180.00	1112.40
SAE	6X6X0.3125	A7	48.92	97.84	611.51
SAE	6X6X0.375	A7	252.70	505.41	3765.30
SAU	2.5X2X0.1875	A7	164.22	123.16	451.60
SAU	2.5X2X0.25	A7	811.00	608.25	2935.83
SAE	2.5X2.5X0.25	A7	336.51	280.43	1379.70
SAE	2.5X2.5X0.3125	A7	60.92	50.76	304.58
SAE	3X3X0.25	A7	139.35	139.35	682.80
SAU	3X2.5X0.25	A7	40.00	36.67	180.00
SAU	4X3X0.25	A7	115.89	135.21	672.17
Bar	2x1/4	A7	20.00	6.67	34.00
SAE	4X4X0.25	A7	80.00	106.67	528.00
SAE	5X5X0.375	A7	56.57	94.28	695.79
SAE	3.5X3.5X0.25	A7	40.90	47.72	237.21

SAE 2.5X2.5X0.1875	A7	56.57	47.14	173.67		
Pwmnt Pipe 18" Std.	A500-50	124.00	728.50	8761.84		

Sections:

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

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
3	7X	1.050	3.300	3.300	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
2	12X	1.000	3.200	3.200	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
1	18X	1.100	3.400	3.400	1.000	1.000	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 Bolt Spacing (in)	End Shear Path Length (in)	Tension Rest. Path Length (in)	Rest. Coef.
g3P	Leg1		XY-Symmetry	1X	2X	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g3X	Leg1		X-GenXY	1P	2P	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g3XY	Leg1		XY-GenXY	1Y	2Y	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g3Y	Leg1		Y-GenXY	1XY	2XY	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g4P	Leg1		XY-Symmetry	2X	3X	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g4X	Leg1		X-GenXY	2P	3P	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g4XY	Leg1		XY-GenXY	2Y	3Y	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g4Y	Leg1		Y-GenXY	2XY	3XY	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g5P	Leg1		XY-Symmetry	3X	4X	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g5X	Leg1		X-GenXY	3P	4P	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g5XY	Leg1		XY-GenXY	3Y	4Y	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g5Y	Leg1		Y-GenXY	3XY	4XY	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g6P	Leg1		XY-Symmetry	4X	5X	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g6X	Leg1		X-GenXY	4P	5P	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g6XY	Leg1		XY-GenXY	4Y	5Y	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0
g6Y	Leg1		Y-GenXY	4XY	5XY	1	4	1	1	1	3/4 A394 TYPE0 N	0	4	0		0	0	0	0	0	0

0	0	0	0	0																											
	g7P	Leg1		XY-Symmetry		5X		6X	1	4	1	1	1 3/4	A394	TYPE0	N	0	4	0			0	0								
0	0	0	0	0																											
	g7X	Leg1		X-GenXY		5P		6P	1	4	1	1	1 3/4	A394	TYPE0	N	0	4	0			0	0								
0	0	0	0	0																											
	g7XY	Leg1		XY-GenXY		5Y		6Y	1	4	1	1	1 3/4	A394	TYPE0	N	0	4	0			0	0								
0	0	0	0	0																											
	g7Y	Leg1		Y-GenXY		5XY		6XY	1	4	1	1	1 3/4	A394	TYPE0	N	0	4	0			0	0								
0	0	0	0	0																											
	g8P	Leg1		XY-Symmetry		6X		7X	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g8X	Leg1		X-GenXY		6P		7P	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g8XY	Leg1		XY-GenXY		6Y		7Y	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g8Y	Leg1		Y-GenXY		6XY		7XY	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g9P	Leg2		XY-Symmetry		7X		8X	1	4	1	1	1 3/4	A394	TYPE0	N	0	2.36	0			0	0								
0	0	0	0	0																											
	g9X	Leg2		X-GenXY		7P		8P	1	4	1	1	1 3/4	A394	TYPE0	N	0	2.36	0			0	0								
0	0	0	0	0																											
	g9XY	Leg2		XY-GenXY		7Y		8Y	1	4	1	1	1 3/4	A394	TYPE0	N	0	2.36	0			0	0								
0	0	0	0	0																											
	g9Y	Leg2		Y-GenXY		7XY		8XY	1	4	1	1	1 3/4	A394	TYPE0	N	0	2.36	0			0	0								
0	0	0	0	0																											
	g10P	Leg2		XY-Symmetry		8X		9X	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g10X	Leg2		X-GenXY		8P		9P	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g10XY	Leg2		XY-GenXY		8Y		9Y	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g10Y	Leg2		Y-GenXY		8XY		9XY	1	4	1	1	1 3/4	A394	TYPE0	N	10	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g11P	Leg3		XY-Symmetry		9X		10X	1	4	1	1	1 3/4	A394	TYPE0	N	0	3	0			0	0								
0	0	0	0	0																											
	g11X	Leg3		X-GenXY		9P		10P	1	4	1	1	1 3/4	A394	TYPE0	N	0	3	0			0	0								
0	0	0	0	0																											
	g11XY	Leg3		XY-GenXY		9Y		10Y	1	4	1	1	1 3/4	A394	TYPE0	N	0	3	0			0	0								
0	0	0	0	0																											
	g11Y	Leg3		Y-GenXY		9XY		10XY	1	4	1	1	1 3/4	A394	TYPE0	N	0	3	0			0	0								
0	0	0	0	0																											
	g12P	Leg3		XY-Symmetry		10X		12X	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375								
1.25	3	0	0	0																											
	g12X	Leg3		X-GenXY		10P		12P	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375								
1.25	3	0	0	0																											
	g12XY	Leg3		XY-GenXY		10Y		12Y	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375								
1.25	3	0	0	0																											
	g12Y	Leg3		Y-GenXY		10XY		12XY	1	4	0.5	0.5	0.5	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375								
1.25	3	0	0	0																											
	g13P	Leg3		XY-Symmetry		12X		15X	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g13X	Leg3		X-GenXY		12P		15P	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g13XY	Leg3		XY-GenXY		12Y		15Y	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g13Y	Leg3		Y-GenXY		12XY		15XY	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both		1	3								
1.25	3	0	0	0																											
	g14P	Leg3		XY-Symmetry		15X		18X	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1	Both	1.4375	3.4375								
1.25	3	0	0	0																											

g14X	Leg3		X-GenXY	15P	18P	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375	1.25	3	0	0	0
g14XY	Leg3		XY-GenXY	15Y	18Y	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375	1.25	3	0	0	0
g14Y	Leg3		Y-GenXY	15XY	18XY	1	4	0.333	0.333	0.333	3/4	A394	TYPE0	N	12	3.31	1		Both	1.4375	3.4375	1.25	3	0	0	0
g15P	Diag1		XY-Symmetry	1X	2P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g15X	Diag1		X-GenXY	1P	2X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g15XY	Diag1		XY-GenXY	1Y	2XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g15Y	Diag1		Y-GenXY	1XY	2Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g16P	Diag1		XY-Symmetry	1P	2Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g16X	Diag1		X-GenXY	1X	2XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g16XY	Diag1		XY-GenXY	1XY	2X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g16Y	Diag1		Y-GenXY	1Y	2P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.8125	0	0	0
g17P	Diag2		XY-Symmetry	2X	3P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g17X	Diag2		X-GenXY	2P	3X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g17XY	Diag2		XY-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g17Y	Diag2		Y-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g18P	Diag2		XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g18X	Diag2		X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g18XY	Diag2		XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g18Y	Diag2		Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g19P	Diag2		XY-Symmetry	3X	4P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g19X	Diag2		X-GenXY	3P	4X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g19XY	Diag2		XY-GenXY	3Y	4XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g19Y	Diag2		Y-GenXY	3XY	4Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g20P	Diag2		XY-Symmetry	3P	4Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g20X	Diag2		X-GenXY	3X	4XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g20XY	Diag2		XY-GenXY	3XY	4X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g20Y	Diag2		Y-GenXY	3Y	4P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g21P	Diag2		XY-Symmetry	4X	5P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g21X	Diag2		X-GenXY	4P	5X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0	1.125	2.5313	0	0	0
g21XY	Diag2		XY-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long	only	1.125	0					

1.125	2.5313	0	0	0															
	g21Y Diag2		Y-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2.5313	0	0	0															
	g22P Diag2		XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2.5313	0	0	0															
	g22X Diag2		X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2.5313	0	0	0															
	g22XY Diag2		XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2.5313	0	0	0															
	g22Y Diag2		Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2.5313	0	0	0															
	g23P Diag3		XY-Symmetry	5X	6P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g23X Diag3		X-GenXY	5P	6X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g23XY Diag3		XY-GenXY	5Y	6XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g23Y Diag3		Y-GenXY	5XY	6Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g24P Diag3		XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g24X Diag3		X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g24XY Diag3		XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g24Y Diag3		Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g25P Diag3		XY-Symmetry	6X	7P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g25X Diag3		X-GenXY	6P	7X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g25XY Diag3		XY-GenXY	6Y	7XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g25Y Diag3		Y-GenXY	6XY	7Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g26P Diag3		XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g26X Diag3		X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g26XY Diag3		XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g26Y Diag3		Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Short only	1.125	0
1.125	2.8125	0	0	0															
	g27P Diag4		XY-Symmetry	7X	8P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g27X Diag4		X-GenXY	7P	8X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g27XY Diag4		XY-GenXY	7Y	8XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g27Y Diag4		Y-GenXY	7XY	8Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g28P Diag4		XY-Symmetry	7P	8Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g28X Diag4		X-GenXY	7X	8XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g28XY Diag4		XY-GenXY	7XY	8X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															
	g28Y Diag4		Y-GenXY	7Y	8P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0
1.125	3.0625	0	0	0															

g29P Diag3	XY-Symmetry	8X	9P	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g29X Diag3	X-GenXY	8P	9X	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g29XY Diag3	XY-GenXY	8Y	9XY	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g29Y Diag3	Y-GenXY	8XY	9Y	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g30P Diag3	XY-Symmetry	8P	9Y	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g30X Diag3	X-GenXY	8X	9XY	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g30XY Diag3	XY-GenXY	8XY	9X	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g30Y Diag3	Y-GenXY	8Y	9P	2	5	0.78	0.57	0.57	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3.3125	0	0	0															
g31P Diag3	XY-Symmetry	9X	10P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g31X Diag3	X-GenXY	9P	10X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g31XY Diag3	XY-GenXY	9Y	10XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g31Y Diag3	Y-GenXY	9XY	10Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g32P Diag3	XY-Symmetry	9P	10Y	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g32X Diag3	X-GenXY	9X	10XY	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g32XY Diag3	XY-GenXY	9XY	10X	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g32Y Diag3	Y-GenXY	9Y	10P	2	5	0.78	0.56	0.56	3/4	A394	TYPE0	N	2	1	1	Short only	1.125	0	
1.125	3	0	0	0															
g33P Diag5	XY-Symmetry	10X	12P	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g33X Diag5	X-GenXY	10P	12X	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g33XY Diag5	XY-GenXY	10Y	12XY	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g33Y Diag5	Y-GenXY	10XY	12Y	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g34P Diag5	XY-Symmetry	10P	12Y	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g34X Diag5	X-GenXY	10X	12XY	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g34XY Diag5	XY-GenXY	10XY	12X	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g34Y Diag5	Y-GenXY	10Y	12P	2	5	0.58	0.79	0.58	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	3.625	0	0	0															
g35P Diag5	XY-Symmetry	12X	15P	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0															
g35X Diag5	X-GenXY	12P	15X	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0															
g35XY Diag5	XY-GenXY	12Y	15XY	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0															
g35Y Diag5	Y-GenXY	12XY	15Y	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0															
g36P Diag5	XY-Symmetry	12P	15Y	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	
1.125	2	0	0	0															
g36X Diag5	X-GenXY	12X	15XY	2	5	0.42	0.79	0.42	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0	

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1.125       2      0       0     0
  g36XY Diag5             XY-GenXY       12XY       15X    2     5  0.42  0.79  0.42 3/4 A394 TYPE0 N     2      1       1  Long only  1.125      0
1.125       2      0       0     0
   g36Y Diag5              Y-GenXY        12Y       15P    2     5  0.42  0.79  0.42 3/4 A394 TYPE0 N     2      1       1  Long only  1.125      0
1.125       2      0       0     0
   g37P Diag5          XY-Symmetry        15X       18P    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g37X Diag5              X-GenXY        15P       18X    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
  g37XY Diag5             XY-GenXY        15Y      18XY    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g37Y Diag5              Y-GenXY       15XY       18Y    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g38P Diag5          XY-Symmetry        15P       18Y    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g38X Diag5              X-GenXY        15X      18XY    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
  g38XY Diag5             XY-GenXY       15XY       18X    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g38Y Diag5              Y-GenXY        15Y       18P    2     4  0.44  0.78  0.44 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       2      0       0     0
   g39P    M4          XY-Symmetry        19P        1X    3     6   0.5   0.5   0.5 3/4 A394 TYPE0 N     2      1       1  Long only    1.5      0
1.125       3      0       0     0
   g39X    M4              X-GenXY        19X        1P    3     6   0.5   0.5   0.5 3/4 A394 TYPE0 N     2      1       1  Long only    1.5      0
1.125       3      0       0     0
  g39XY    M4             XY-GenXY        19X        1Y    3     6   0.5   0.5   0.5 3/4 A394 TYPE0 N     2      1       1  Long only    1.5      0
1.125       3      0       0     0
   g39Y    M4              Y-GenXY        19P       1XY    3     6   0.5   0.5   0.5 3/4 A394 TYPE0 N     2      1       1  Long only    1.5      0
1.125       3      0       0     0
   g40P    M4           Y-Symmetry         1X        1P    3     6     1     1     1                       0      0       0                 0      0
0       0      0       0     0
   g40Y    M4                Y-Gen        1XY        1Y    3     6     1     1     1                       0      0       0                 0      0
0       0      0       0     0
   g41P    M3           X-Symmetry         1X       1XY    3     6     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only      1      0
1.5       3      0       0     0
   g41X    M3                X-Gen         1P        1Y    3     6     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only      1      0
1.5       3      0       0     0
   g42P    M4          XY-Symmetry        20P        2X    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     3      1       1  Long only    1.5      0
1.125     2.5      0       0     0
   g42X    M4              X-GenXY        20X        2P    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     3      1       1  Long only    1.5      0
1.125     2.5      0       0     0
  g42XY    M4             XY-GenXY        20X        2Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     3      1       1  Long only    1.5      0
1.125     2.5      0       0     0
   g42Y    M4              Y-GenXY        20P       2XY    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     3      1       1  Long only    1.5      0
1.125     2.5      0       0     0
   g43P    M4           Y-Symmetry         2X        2P    3     6     1     1     1 3/4 A394 TYPE0 N     0      0       0                 0      0
0       0      0       0     0
   g43Y    M4                Y-Gen        2XY        2Y    3     6     1     1     1 3/4 A394 TYPE0 N     0      0       0                 0      0
0       0      0       0     0
   g44P    M3           X-Symmetry         2X       2XY    3     6     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only      1      0
1.5       3      0       0     0
   g44X    M3                X-Gen         2P        2Y    3     6     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only      1      0
1.5       3      0       0     0
   g45P    M7           X-Symmetry        19P       20P    3     4     1     1     1 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       0      0       0     0
   g45X    M7                X-Gen        19X       20X    3     4     1     1     1 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       0      0       0     0
   g46P    M7          XY-Symmetry        20P        1X    3     5     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only  1.375      0
1.125       2      0       0     0
```

g46X	M7		X-GenXY	20X	1P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g46XY	M7		XY-GenXY	20X	1Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g46Y	M7		Y-GenXY	20P	1XY	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.375	0
1.125	2	0	0	0																
g47P	M13		XY-Symmetry	21P	5X	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47X	M13		X-GenXY	21X	5P	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47XY	M13		XY-GenXY	21X	5Y	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g47Y	M13		Y-GenXY	21P	5XY	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	4	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g48P	M13		Y-Symmetry	5X	5P	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g48Y	M13		Y-Gen	5XY	5Y	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g49P	M3		X-Symmetry	5X	5XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0																
g49X	M3		X-Gen	5P	5Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.5	3	0	0	0																
g50P	M8		XY-Symmetry	21P	4X	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50X	M8		X-GenXY	21X	4P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50XY	M8		XY-GenXY	21X	4Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g50Y	M8		Y-GenXY	21P	4XY	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g51P	M14		Y-Symmetry	4X	4P	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.125	0
1.125	2	0	0	0																
g51Y	M14		Y-Gen	4XY	4Y	1	4	1	1	1	3/4	A394	TYPE0	N	2	1	1	Both	1.125	0
1.125	2	0	0	0																
g52P	M9		X-Symmetry	4X	4XY	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0																
g52X	M9		X-Gen	4P	4Y	3	4	1	1	1	3/4	A394	TYPE0	N	1	1	1	Long only	1.125	0
1.125	0	0	0	0																
g53P	M4		XY-Symmetry	22P	7X	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53X	M4		X-GenXY	22X	7P	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53XY	M4		XY-GenXY	22X	7Y	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g53Y	M4		Y-GenXY	22P	7XY	3	5	1	0.5	0.5	3/4	A394	TYPE0	N	3	1	1	Long only	1.5	0
1.125	2.5	0	0	0																
g54P	M4		Y-Symmetry	7X	7P	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g54Y	M4		Y-Gen	7XY	7Y	3	6	1	1	1					0	0	0		0	0
0	0	0	0	0																
g55P	M3		X-Symmetry	7X	7XY	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.125	3	0	0	0																
g55X	M3		X-Gen	7P	7Y	3	6	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1	0
1.125	3	0	0	0																
g56P	M7		XY-Symmetry	22P	6X	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g56X	M7		X-GenXY	22X	6P	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0
1.125	2	0	0	0																
g56XY	M7		XY-GenXY	22X	6Y	3	5	1	1	1	3/4	A394	TYPE0	N	2	1	1	Long only	1.125	0

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1.125       2      0       0     0
   g56Y    M7              Y-GenXY        22P        6XY    3     5     1     1     1 3/4 A394 TYPE0 N     2      1       1  Long only  1.125      0
1.125       2      0       0     0
   g57P    M9            X-Symmetry        6P         6Y    3     4     1     1     1 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       0      0       0     0
   g57X    M9              X-Gen           6X         6XY   3     4     1     1     1 3/4 A394 TYPE0 N     1      1       1  Long only  1.125      0
1.125       0      0       0     0
   g58P   M14            Y-Symmetry        6X         6P    1     4     1     1     1 3/4 A394 TYPE0 N     2      1       1        Both   1.25      0
1.125       2      0       0     0
   g58Y   M14              Y-Gen           6XY        6Y    1     4     1     1     1 3/4 A394 TYPE0 N     2      1       1        Both   1.25      0
1.125       2      0       0     0
   g59P    M2            Y-Symmetry       10X        10P    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only  1.125      0
1.125       2      0       0     0
   g59Y    M2              Y-Gen          10XY        10Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only  1.125      0
1.125       2      0       0     0
   g60P    M2            X-Symmetry       10P        10Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only  1.125      0
1.125       2      0       0     0
   g60X    M2              X-Gen          10X        10XY   3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only  1.125      0
1.125       2      0       0     0
   g61P    M5            Y-Symmetry       12X        12P    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only    1.5      0
1.125       2      0       0     0
   g61Y    M5              Y-Gen          12XY        12Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only    1.5      0
1.125       2      0       0     0
   g62P    M5            X-Symmetry       12P        12Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only    1.5      0
1.125       2      0       0     0
   g62X    M5              X-Gen          12X        12XY   3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      1       1 Short only    1.5      0
1.125       2      0       0     0
   g63P    M6            Y-Symmetry       15X        15P    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      2       1 Short only      2      0
1.125       2      0       0     0
   g63Y    M6              Y-Gen          15XY        15Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      2       1 Short only      2      0
1.125       2      0       0     0
   g64P    M6            X-Symmetry       15P        15Y    3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      2       1 Short only      2      0
1.125       2      0       0     0
   g64X    M6              X-Gen          15X        15XY   3     6     1   0.5   0.5 3/4 A394 TYPE0 N     2      2       1 Short only      2      0
1.125       2      0       0     0
   g65P   M11           XY-Symmetry  i0.50E20S        15Y    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g65X   M11              X-GenXY  i0.50E20S       15XY    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
  g65XY   M11             XY-GenXY  i0.50E20S        15X    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g65Y   M11              Y-GenXY  i0.50E20S        15P    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g66P   M12           XY-Symmetry  i0.50E40S        12Y    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g66X   M12              X-GenXY  i0.50E40S       12XY    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
  g66XY   M12             XY-GenXY  i0.50E40S        12X    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g66Y   M12              Y-GenXY  i0.50E40S        12P    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g67P   M10           XY-Symmetry  i0.50E74S         7Y    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g67X   M10              X-GenXY  i0.50E74S        7XY    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
  g67XY   M10             XY-GenXY  i0.50E74S         7X    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
   g67Y   M10              Y-GenXY  i0.50E74S         7P    3     4     1     1     1         5/8 A325     1      1       1  Long only      0      0
0       0      0       0     0
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g68P	M10		XY-Symmetry	i0.50E84S		5Y	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g68X	M10		X-GenXY	i0.50E84S		5XY	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g68XY	M10		XY-GenXY	i0.50E84S		5X	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g68Y	M10		Y-GenXY	i0.50E84S		5P	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g69P	M10		XY-Symmetry	i0.50E96S		2P	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g69X	M10		X-GenXY	i0.50E96S		2X	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g69XY	M10		XY-GenXY	i0.50E96S		2XY	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g69Y	M10		Y-GenXY	i0.50E96S		2Y	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g70P	M10		XY-Symmetry	i0.50E101S		1P	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g70X	M10		X-GenXY	i0.50E101S		1X	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g70XY	M10		XY-GenXY	i0.50E101S		1XY	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g70Y	M10		Y-GenXY	i0.50E101S		1Y	3	4	1	1	1		5/8	A325	1	1	1	Long only	0	0	0	0	0	0	0
g71P	PM		None		23P	i0.50E20S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g72P	PM		None	i0.50E20S		i0.50E40S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g73P	PM		None	i0.50E40S		i0.50E74S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g74P	PM		None	i0.50E74S		i0.50E84S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g75P	PM		None	i0.50E84S		i0.50E96S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g76P	PM		None	i0.50E96S		i0.50E101S	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g77P	PM		None	i0.50E101S		24P	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0
g78P	PM		None		24P	25P	1	4	1	1	1				0	0	0		0	0	0	0	0	0	0

Member Capacities and Overrides:

Member Label	Group Label	Design Comp.	Design Control	Tension Criterion	L/r Control	Length (ft)	L/r Comp.	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity (kips)	Rupture Tension Capacity (kips)	RTE End Dist. Capacity (kips)	RTE Edge Dist. Capacity (kips)	Override Comp. Capacity (kips)	Override Tension Capacity (kips)	Override Unsup. Member (kips)	Override Warnings
g3P	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000	

0.000		Automatic														
g3X	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g3XY	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g3Y	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g4Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g5Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6P	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6X	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6XY	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g6Y	Leg1	93.269	L/r	63.896	Net Sect	48	4.00	93.269	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7P	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7X	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7XY	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g7Y	Leg1	89.489	L/r	63.896	Net Sect	60	5.00	89.489	0.000	0.000	63.896	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g8P	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**166.500**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**	**Member "g8P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**													
g8X	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**166.500**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**	**Member "g8X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**													
g8XY	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**166.500**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**	**Member "g8XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**													
g8Y	**Leg1**	**89.489**	**L/r**	**70.122**	**Net Sect**	**60**	**5.00**	**89.489**	**166.500**	**210.937**	**70.122**	**183.823**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**	**Member "g8Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**													
g9P	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9X	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9XY	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g9Y	Leg2	97.966	L/r	99.155	Net Sect	51	5.10	97.966	0.000	0.000	99.155	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														

g10P	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g10X	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g10XY	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g10Y	Leg2	91.422	L/r	90.582	Net Sect	71	7.13	91.422	166.500	210.937	90.582	183.823	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g11P	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g11X	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g11XY	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g11Y	Leg3	115.850	L/r	111.395	Net Sect	82	8.15	115.850	0.000	0.000	111.395	0.000	0.000	0.000	0.000	0.000	0.000
Automatic																	
g12P	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g12X	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g12XY	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g12Y	Leg3	122.414	L/r	108.039	Net Sect	72	14.27	122.414	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g13P	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g13P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g13X	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g13XY	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g13Y	Leg3	124.456	L/r	108.039	Net Sect	68	20.38	124.456	199.800	303.750	108.039	264.705	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g14P	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g14X	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g14XY	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g14Y	Leg3	124.467	L/r	108.039	Net Sect	68	20.37	124.467	199.800	303.750	108.039	281.250	0.000	0.000	0.000	0.000	0.000
Automatic	Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??																
g15P	Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000	0.000
Automatic																	

g15X Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g15XY Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g15Y Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16P Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16X Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16XY Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g16Y Diag1	17.484	L/r	19.184	Net Sect	106	7.07	17.484	33.300	25.312	19.184	21.094	0.000	0.000	0.000	0.000
0.000	Automatic														
g17P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g17Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g18Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g19Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g20Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g21Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22P Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22X Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic														
g22XY Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000

0.000	Automatic															
g22Y Diag2	24.281	L/r	24.985	Net Sect	97	6.40	24.281	33.300	33.750	24.985	26.766	0.000	0.000	0.000	0.000
0.000	Automatic															
g23P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g23X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g23XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g23Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g24P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g24X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g24XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g24Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g25P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g25X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g25XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g25Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g26P Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g26X Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g26XY Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g26Y Diag3	29.096	L/r	28.846	Net Sect	86	7.07	29.096	49.950	50.625	28.846	42.187	0.000	0.000	0.000	0.000
0.000	Automatic															
g27P Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g27X Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g27XY Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g27Y Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g28P Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g28X Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g28XY Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g28Y Diag4	31.837	L/r	33.300	Shear	105	7.61	31.837	33.300	42.187	35.241	35.156	0.000	0.000	0.000	0.000
0.000	Automatic															
g29P Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic															
g29X Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic															
g29XY Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic															
g29Y Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic															

g30P Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g30X Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g30XY Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g30Y Diag3	18.150	L/r	28.125	Rupture	142	10.21	18.150	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g31P Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g31X Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g31XY Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g31Y Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g32P Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g32X Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g32XY Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g32Y Diag3	13.601	L/r	28.125	Rupture	170	12.43	13.601	33.300	33.750	28.846	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g33P Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g33X Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g33XY Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g33Y Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g34P Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g34X Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g34XY Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g34Y Diag5	4.330	L/r	24.985	Net Sect	310	18.88	4.330	33.300	33.750	24.985	28.125	0.000	0.000	0.000	0.000
0.000	Automatic														
g35P Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g35X Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g35XY Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g35Y Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g36P Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g36X Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g36XY Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g36Y Diag5	2.442	L/r	21.984	Rupture	425	26.54	2.442	33.300	33.750	24.985	21.984	0.000	0.000	0.000	0.000
0.000	Automatic														
g37P Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000	Automatic														
g37X Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000

0.000		Automatic														
g37XY	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g37Y	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38P	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38X	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38XY	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g38Y	Diag5	1.312	L/r	11.859	Rupture	481	30.42	1.312	16.650	16.875	24.985	11.859	0.000	0.000	0.000	0.000
0.000		Automatic														
g39P	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39X	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39XY	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g39Y	M4	28.318	L/r	28.125	Rupture	117	11.52	28.318	33.300	33.750	36.271	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g40P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g40Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g41P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g41X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g42P	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42X	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42XY	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g42Y	M4	31.104	L/r	36.271	Net Sect	99	7.67	31.104	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g43P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g43Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g44P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g44X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g45P	M7	7.160	L/r	8.895	Rupture	180	6.40	7.160	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g45X	M7	7.160	L/r	8.895	Rupture	180	6.40	7.160	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g46P	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46P" ??																
g46X	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46X" ??																
g46XY	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46XY" ??																
g46Y	**M7**	**4.594**	**L/r**	**18.035**	**Rupture**	**257**	**9.15**	**4.594**	**33.300**	**25.312**	**19.184**	**18.035**	**0.000**	**0.000**	**0.000**	**0.000**

0.000 Automatic
KL/R value of 224.65 exceeds maximum of 200.00 for member "g46Y" ??

g47P	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47X	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47XY	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g47Y	M13	34.023	L/r	43.696	Net Sect	113	12.01	34.023	66.600	67.500	43.696	56.250	0.000	0.000	0.000	0.000
0.000		Automatic														
g48P	M13	37.680	L/r	55.770	Net Sect	92	5.00	37.680	0.000	0.000	55.770	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g48Y	M13	37.680	L/r	55.770	Net Sect	92	5.00	37.680	0.000	0.000	55.770	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g49P	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g49X	M3	26.226	L/r	29.412	Rupture	114	5.00	26.226	33.300	33.750	32.410	29.412	0.000	0.000	0.000	0.000
0.000		Automatic														
g50P	**M8**	**3.334**	**L/r**	**21.984**	**Rupture**	**358**	**12.66**	**3.334**	**33.300**	**33.750**	**24.985**	**21.984**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50P" ??																
g50X	**M8**	**3.334**	**L/r**	**21.984**	**Rupture**	**358**	**12.66**	**3.334**	**33.300**	**33.750**	**24.985**	**21.984**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50X" ??																
g50XY	**M8**	**3.334**	**L/r**	**21.984**	**Rupture**	**358**	**12.66**	**3.334**	**33.300**	**33.750**	**24.985**	**21.984**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50XY" ??																
g50Y	**M8**	**3.334**	**L/r**	**21.984**	**Rupture**	**358**	**12.66**	**3.334**	**33.300**	**33.750**	**24.985**	**21.984**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 301.66 exceeds maximum of 200.00 for member "g50Y" ??																
g51P	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g51Y	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g52P	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g52X	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g53P	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53X	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53XY	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g53Y	M4	30.173	L/r	36.271	Net Sect	105	8.14	30.173	49.950	50.625	36.271	42.187	0.000	0.000	0.000	0.000
0.000		Automatic														
g54P	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g54Y	M4	30.742	L/r	47.520	Net Sect	101	5.00	30.742	0.000	0.000	47.520	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g55P	M3	26.226	L/r	28.125	Rupture	114	5.00	26.226	33.300	33.750	32.410	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g55X	M3	26.226	L/r	28.125	Rupture	114	5.00	26.226	33.300	33.750	32.410	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g56P	**M7**	**4.262**	**L/r**	**16.488**	**Rupture**	**269**	**9.56**	**4.262**	**33.300**	**25.312**	**19.184**	**16.488**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														
KL/R value of 233.23 exceeds maximum of 200.00 for member "g56P" ??																
g56X	**M7**	**4.262**	**L/r**	**16.488**	**Rupture**	**269**	**9.56**	**4.262**	**33.300**	**25.312**	**19.184**	**16.488**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56X" ??

g56XY	**M7**	**4.262**	**L/r**	**16.488**	**Rupture**	**269**	**9.56**	**4.262**	**33.300**	**25.312**	**19.184**	**16.488**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56XY" ??

g56Y	**M7**	**4.262**	**L/r**	**16.488**	**Rupture**	**269**	**9.56**	**4.262**	**33.300**	**25.312**	**19.184**	**16.488**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**Automatic**														

KL/R value of 233.23 exceeds maximum of 200.00 for member "g56Y" ??

g57P	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g57X	M9	11.742	L/r	8.895	Rupture	141	5.00	11.742	16.650	12.656	19.184	8.895	0.000	0.000	0.000	0.000
0.000		Automatic														
g58P	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g58Y	M14	14.788	L/r	9.281	Net Sect	60	5.00	14.788	33.300	33.750	9.281	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g59P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g59Y	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g60P	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g60X	M2	15.646	L/r	21.984	Rupture	165	10.56	15.646	33.300	33.750	28.846	21.984	0.000	0.000	0.000	0.000
0.000		Automatic														
g61P	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g61Y	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g62P	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g62X	M5	28.782	L/r	25.078	Rupture	136	14.46	28.782	33.300	33.750	36.271	25.078	0.000	0.000	0.000	0.000
0.000		Automatic														
g63P	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g63Y	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g64P	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g64X	M6	20.575	L/r	28.125	Rupture	192	20.00	20.575	33.300	33.750	44.624	28.125	0.000	0.000	0.000	0.000
0.000		Automatic														
g65P	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65X	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65XY	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g65Y	M11	16.800	Shear	16.800	Shear	171	14.14	35.163	16.800	21.094	99.560	23.437	0.000	0.000	0.000	0.000
0.000		Automatic														
g66P	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66X	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66XY	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g66Y	M12	14.062	Bearing	14.062	Bearing	177	10.22	15.475	16.800	14.062	45.088	15.625	0.000	0.000	0.000	0.000
0.000		Automatic														
g67P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g67X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														

g67XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g67Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g68Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g69Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70P	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70X	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70XY	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g70Y	M10	10.547	Bearing	10.547	Bearing	86	3.54	20.689	16.800	10.547	22.961	11.719	0.000	0.000	0.000	0.000
0.000		Automatic														
g71P	PM	907.332	L/r	969.998	Net Sect	38	20.00	907.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g72P	PM	907.332	L/r	969.998	Net Sect	38	20.00	907.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g73P	PM	788.892	L/r	969.998	Net Sect	65	34.00	788.892	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g74P	PM	954.332	L/r	969.998	Net Sect	19	10.00	954.332	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g75P	PM	947.438	L/r	969.998	Net Sect	23	12.00	947.438	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g76P	PM	966.082	L/r	969.998	Net Sect	10	5.00	966.082	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g77P	PM	959.972	L/r	969.998	Net Sect	15	8.00	959.972	0.000	0.000	969.998	0.000	0.000	0.000	0.000	0.000
0.000		Automatic														
g78P	PM	934.748	L/r	969.998	Net Sect	29	15.00	934.748	0.000	0.000	969.998	0.000	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	0.115	5.508	4.079
2P	0.137	6.008	5.414
3P	0.0876	3.834	3.834
4P	0.122	5.544	4.846
5P	0.165	7.268	5.518
6P	0.134	5.976	5.701

7P	0.174	6.731	6.075
8P	0.156	6.140	6.140
9P	0.198	7.712	7.712
10P	0.33	12.212	12.212
12P	0.536	20.327	20.327
15P	0.729	25.623	25.623
18P	0.262	10.305	10.305
19P	0.0653	3.479	1.146
20P	0.0716	4.314	2.310
21P	0.116	6.503	1.816
22P	0.0662	3.859	1.790
23P	0.707	15.000	15.000
24P	0.813	17.250	17.250
25P	0.53	11.250	11.250
1X	0.115	5.508	4.079
1XY	0.115	5.508	4.079
1Y	0.115	5.508	4.079
2X	0.137	6.008	5.414
2XY	0.137	6.008	5.414
2Y	0.137	6.008	5.414
3X	0.0876	3.834	3.834
3XY	0.0876	3.834	3.834
3Y	0.0876	3.834	3.834
4X	0.122	5.544	4.846
4XY	0.122	5.544	4.846
4Y	0.122	5.544	4.846
5X	0.165	7.268	5.518
5XY	0.165	7.268	5.518
5Y	0.165	7.268	5.518
6X	0.134	5.976	5.701
6XY	0.134	5.976	5.701
6Y	0.134	5.976	5.701
7X	0.174	6.731	6.075
7XY	0.174	6.731	6.075
7Y	0.174	6.731	6.075
8X	0.156	6.140	6.140
8XY	0.156	6.140	6.140
8Y	0.156	6.140	6.140
9X	0.198	7.712	7.712
9XY	0.198	7.712	7.712
9Y	0.198	7.712	7.712
10X	0.33	12.212	12.212
10XY	0.33	12.212	12.212
10Y	0.33	12.212	12.212
12X	0.536	20.327	20.327
12XY	0.536	20.327	20.327
12Y	0.536	20.327	20.327
15X	0.729	25.623	25.623
15XY	0.729	25.623	25.623
15Y	0.729	25.623	25.623
18X	0.262	10.305	10.305
18XY	0.262	10.305	10.305
18Y	0.262	10.305	10.305
19X	0.0653	3.479	1.146
20X	0.0716	4.314	2.310
21X	0.116	6.503	1.816
22X	0.0662	3.859	1.790
i0.50E20S	1.76	38.333	38.333
i0.50E40S	2.03	44.718	44.718

i0.50E74S	1.58	34.042	34.042
i0.50E84S	0.799	17.542	17.542
i0.50E96S	0.622	13.792	13.792
i0.50E101S	0.481	10.792	10.792
Total	22.5	731.776	687.987

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)
3	7.708	268.639	224.850	157.737	122.008
2	6.690	211.489	211.489	112.724	112.724
1	8.129	251.649	251.649	130.666	130.666
Total	22.526	731.776	687.987	401.127	365.399

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
3	7.708	8.093	1083.852	1138.044
2	6.690	6.690	902.796	902.796
1	8.129	8.942	1057.235	1162.959
Total	22.526	23.725	3043.883	3203.799

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
3	1X	101.000
3	2X	96.000
3	1P	101.000
3	2P	96.000
3	1Y	101.000
3	2Y	96.000
3	1XY	101.000
3	2XY	96.000
3	3X	92.000
3	3P	92.000
3	3Y	92.000
3	3XY	92.000
3	4X	88.000
3	4P	88.000
3	4Y	88.000
3	4XY	88.000
3	5X	84.000
3	5P	84.000
3	5Y	84.000
3	5XY	84.000
3	6X	79.000
3	6P	79.000
3	6Y	79.000
3	6XY	79.000
3	7X	74.000

3	7P	74.000
3	7Y	74.000
3	7XY	74.000
3	19P	101.000
3	19X	101.000
3	20P	96.000
3	20X	96.000
3	21P	84.000
3	21X	84.000
3	22P	74.000
3	22X	74.000
3	i0.50E74S	74.000
3	i0.50E84S	84.000
3	i0.50E96S	96.000
3	i0.50E101S	101.000
3	24P	109.000
3	25P	124.000
2	7X	74.000
2	8X	69.000
2	7P	74.000
2	8P	69.000
2	7Y	74.000
2	8Y	69.000
2	7XY	74.000
2	8XY	69.000
2	9X	62.000
2	9P	62.000
2	9Y	62.000
2	9XY	62.000
2	10X	54.000
2	10P	54.000
2	10Y	54.000
2	10XY	54.000
2	12X	40.000
2	12P	40.000
2	12Y	40.000
2	12XY	40.000
2	i0.50E40S	40.000
2	i0.50E74S	74.000
1	12X	40.000
1	15X	20.000
1	12P	40.000
1	15P	20.000
1	12Y	40.000
1	15Y	20.000
1	12XY	40.000
1	15XY	20.000
1	18X	0.000
1	18P	0.000
1	18Y	0.000
1	18XY	0.000
1	i0.50E20S	20.000
1	23P	0.000
1	i0.50E40S	40.000

Sections Information:

Section Label	Top Z	Bottom Z	Joint Count	Member Count	Tran. Face Top Width	Tran. Face Bot Width	Tran. Face Gross Area	Long. Face Top Width	Long. Face Bot Width	Long. Face Gross Area

	(ft)	(ft)			(ft)	(ft)	(ft^2)	(ft)	(ft)	(ft^2)	
3	124.000	74.000	42	147	0.00	5.00	192.500	0.00	20.50	629.500	Problem calculating gross area of longitudinal face for section "3": width is zero at elevation 101.00 (ft) which is not the top of the section. ??
2	74.000	40.000	22	61	5.00	14.46	330.830	5.00	14.46	330.830	
1	40.000	0.000	15	34	14.46	25.50	799.600	14.46	25.50	799.600	

*** Insulator Data

Clamp Properties:

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

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
Clamp1	19P	C-EX1	No Limit
Clamp2	19X	C-EX1	No Limit
Clamp3	20P	C-EX1	No Limit
Clamp4	20X	C-EX1	No Limit
Clamp5	21P	C-EX1	No Limit
Clamp6	21X	C-EX1	No Limit
Clamp7	22P	C-EX1	No Limit
Clamp8	22X	C-EX1	No Limit
Clamp9	3X	C-EX1	No Limit
Clamp10	5X	C-EX1	No Limit
Clamp11	7X	C-EX1	No Limit
Clamp12	9X	C-EX1	No Limit
Clamp13	10X	C-EX1	No Limit
Clamp14	12X	C-EX1	No Limit
Clamp15	15X	C-EX1	No Limit
Clamp17	i0.50E101S	C-EX1	No Limit
Clamp18	i0.50E96S	C-EX1	No Limit
Clamp19	i0.50E84S	C-EX1	No Limit
Clamp20	i0.50E74S	C-EX1	No Limit
Clamp21	i0.50E40S	C-EX1	No Limit
Clamp22	i0.50E20S	C-EX1	No Limit
Clamp23	1X	C-EX1	No Limit
Clamp24	1XY	C-EX1	No Limit
Clamp25	2X	C-EX1	No Limit
Clamp26	2XY	C-EX1	No Limit
Clamp27	24P	C-EX1	No Limit
Clamp28	25P	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1600200.wi\001_stratford nu - ct2043\04_structural\backup documentation\calcs\pls tower\cl&p # 1321.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)	124.00	(ft)	
Structure height	124.00	(ft)	
Structure height above ground	124.00	(ft)	
Tower Shape	Rectangular		

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

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles and Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	25 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	25 loads	NESC 2007	31	0	0.000	0.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
19P	1282	1147	0	Shield Wire
19X	1191	1135	0	Shield Wire
20P	2739	1785	0	Conductor
20X	2739	1785	0	Conductor
21P	2739	1785	0	Conductor
21X	2739	1785	0	Conductor
22P	2739	1785	0	Conductor
22X	2739	1785	0	Conductor
1X	199	131	0	Coax Cables - Tower
3X	318	209	0	Coax Cables - Tower
5X	358	235	0	Coax Cables - Tower
7X	437	287	0	Coax Cables - Tower
9X	398	261	0	Coax Cables - Tower
10X	437	287	0	Coax Cables - Tower
12X	676	444	0	Coax Cables - Tower
15X	1193	784	0	Coax Cables - Tower
24P	403	63	0	Coax Cables - Powermount
i0.50E101S	490	77	0	Coax Cables - Powermount
i0.50E96S	298	46	0	Coax Cables - Powermount
i0.50E84S	385	60	0	Coax Cables - Powermount

i0.50E74S	771	120	0	Coax Cables - Powermount	
i0.50E40S	946	148	0	Coax Cables - Powermount	
i0.50E20S	1051	164	0	Coax Cables - Powermount	
25P	7576	1268	0	AT&T Loading	
24P	467	266	0	T-Mobile Loading	

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
3	124.00	74.00	99.00	10.00	10.00	3.300	4026.3	0.00	3.300	0.0	0	12140
2	74.00	40.00	57.00	10.00	10.00	3.200	3607.2	0.00	3.200	0.0	0	10035
1	40.00	0.00	20.00	10.00	10.00	3.400	4442.7	0.00	3.400	0.0	0	13412

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
19P	364	705	26	Shield Wire
19X	294	697	9	Shield Wire
20P	1007	1917	772	Conductor
20X	1007	1917	772	Conductor
21P	1007	1917	772	Conductor
21X	1007	1917	772	Conductor
22P	1007	1917	772	Conductor
22X	1007	1917	772	Conductor
1X	41	430	0	Coax Cables - Tower
3X	66	688	0	Coax Cables - Tower
5X	75	775	0	Coax Cables - Tower
7X	91	947	0	Coax Cables - Tower
9X	83	861	0	Coax Cables - Tower
10X	91	947	0	Coax Cables - Tower
12X	141	1463	0	Coax Cables - Tower
15X	248	2582	0	Coax Cables - Tower
24P	182	166	0	Coax Cables - Powermount
i0.50E101S	222	203	0	Coax Cables - Powermount
i0.50E96S	135	123	0	Coax Cables - Powermount
i0.50E84S	174	159	0	Coax Cables - Powermount
i0.50E74S	348	318	0	Coax Cables - Powermount
i0.50E40S	428	391	0	Coax Cables - Powermount
i0.50E20S	475	434	0	Coax Cables - Powermount
25P	3518	4860	0	AT&T Loading
24P	182	1059	0	T-Mobile Loading

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

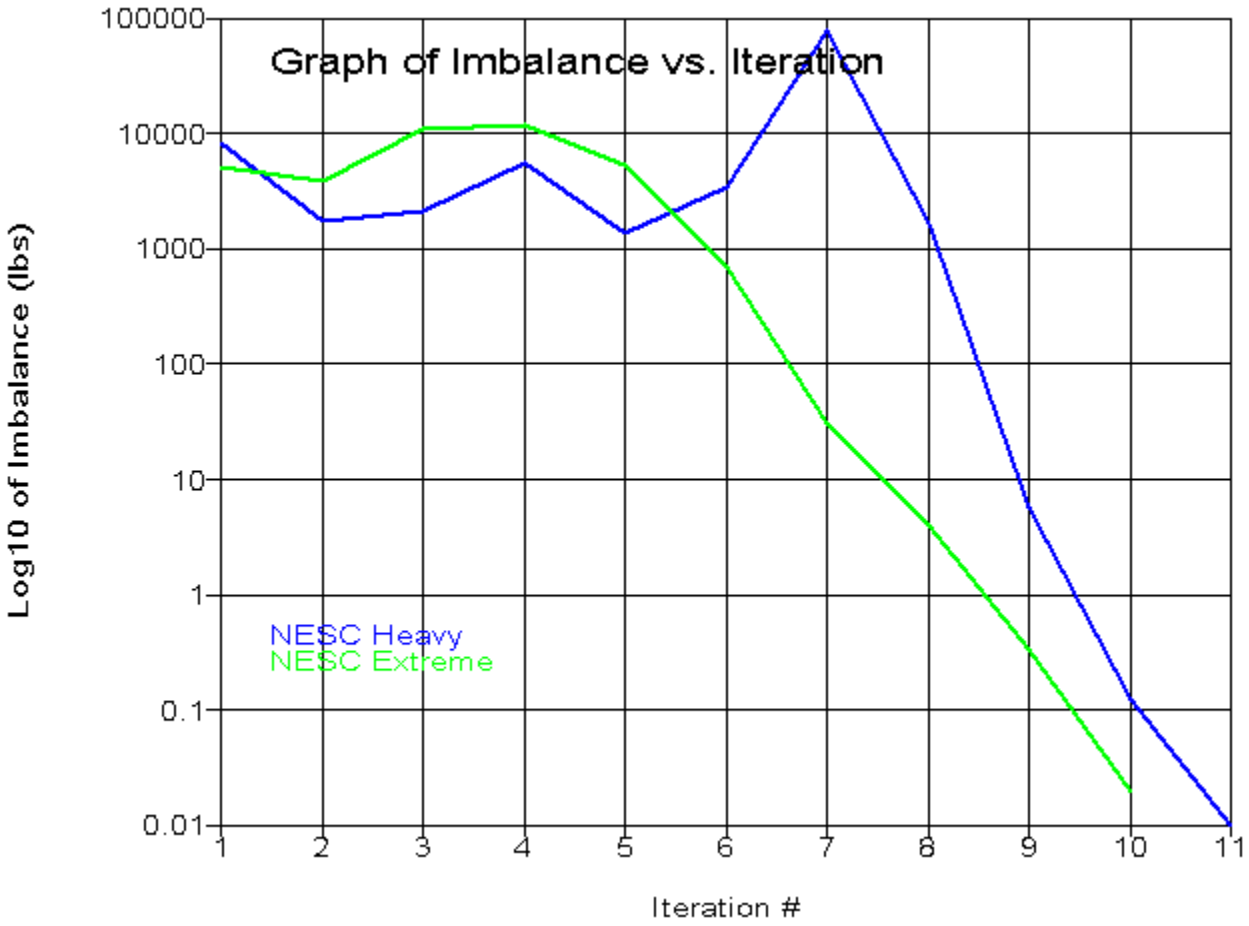
Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)

(lbs)

3	124.00	74.00	99.00	32.15	32.15	54.51	67.50	192.50	0.634	3.200	2.000	9947.9	0.00	82.74	75.00	629.50	0.251	3.200	2.000	0.0	0
8093																					
2	74.00	40.00	57.00	32.15	32.15	61.72	51.00	330.83	0.341	3.200	2.000	9629.3	0.00	61.72	51.00	330.83	0.341	3.200	2.000	0.0	0
6690																					
1	40.00	0.00	20.00	32.15	32.15	70.67	60.00	799.60	0.163	3.200	2.000	11128.0	0.00	70.67	60.00	799.60	0.163	3.200	2.000	0.0	0
8942																					

*** Analysis Results:

Maximum element usage is 96.71% for Angle "g37X" in load case "NESC Extreme"
Maximum insulator usage is 17.14% for Clamp "Clamp28" in load case "NESC Heavy"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Leg1	g3P	10.11	6.457	0.000	0.855	6.457
Leg1	g3X	8.68	0.000	-7.771	-4.804	-7.771
Leg1	g3XY	8.97	0.000	-8.024	-4.744	-8.024
Leg1	g3Y	9.69	6.189	0.000	0.993	6.189

Leg1	g4P	26.47	16.912	0.000	6.099	16.912
Leg1	g4X	20.39	0.000	-19.021	-9.847	-19.021
Leg1	g4XY	19.75	0.000	-18.422	-9.765	-18.422
Leg1	g4Y	27.65	17.665	0.000	6.185	17.665
Leg1	g5P	36.55	23.353	0.000	8.917	23.353
Leg1	g5X	29.96	0.000	-27.940	-15.221	-27.940
Leg1	g5XY	28.03	0.000	-26.143	-15.101	-26.143
Leg1	g5Y	39.72	25.378	0.000	9.290	25.378
Leg1	g6P	44.52	28.447	0.000	11.124	28.447
Leg1	g6X	37.54	0.000	-35.014	-19.974	-35.014
Leg1	g6XY	34.73	0.000	-32.396	-19.734	-32.396
Leg1	g6Y	48.48	30.979	0.000	11.438	30.979
Leg1	g7P	56.00	35.780	0.000	15.934	35.780
Leg1	g7X	49.60	0.000	-44.388	-24.486	-44.388
Leg1	g7XY	44.10	0.000	-39.461	-24.458	-39.461
Leg1	g7Y	63.46	40.546	0.000	16.753	40.546
Leg1	g8P	61.79	43.329	0.000	20.134	43.329
Leg1	g8X	61.92	0.000	-55.414	-31.246	-55.414
Leg1	g8XY	54.14	0.000	-48.448	-31.801	-48.448
Leg1	g8Y	72.05	50.524	0.000	21.446	50.524
Leg2	g9P	52.30	51.855	0.000	25.678	51.855
Leg2	g9X	69.50	0.000	-68.082	-38.320	-68.082
Leg2	g9XY	59.80	0.000	-58.581	-39.170	-58.581
Leg2	g9Y	63.57	63.036	0.000	27.726	63.036
Leg2	g10P	58.66	53.137	0.000	27.609	53.137
Leg2	g10X	80.29	0.000	-73.398	-41.884	-73.398
Leg2	g10XY	68.63	0.000	-62.743	-42.906	-62.743
Leg2	g10Y	74.63	67.597	0.000	29.472	67.597
Leg3	g11P	47.65	53.077	0.000	27.895	53.077
Leg3	g11X	63.08	0.000	-73.076	-41.943	-73.076
Leg3	g11XY	54.09	0.000	-62.662	-43.043	-62.662
Leg3	g11Y	61.42	68.419	0.000	29.822	68.419
Leg3	g12P	44.86	48.464	0.000	27.361	48.464
Leg3	g12X	65.64	0.000	-80.355	-43.960	-80.355
Leg3	g12XY	53.93	0.000	-66.013	-44.838	-66.013
Leg3	g12Y	62.11	67.100	0.000	29.022	67.100
Leg3	g13P	46.65	50.401	0.000	26.209	50.401
Leg3	g13X	71.57	0.000	-89.070	-50.225	-89.070
Leg3	g13XY	57.82	0.000	-71.958	-47.833	-71.958
Leg3	g13Y	62.36	67.375	0.000	27.560	67.375
Leg3	g14P	53.82	58.150	0.000	28.455	58.150
Leg3	g14X	78.53	0.000	-97.743	-55.329	-97.743
Leg3	g14XY	61.32	0.000	-76.326	-51.007	-76.326
Leg3	g14Y	67.01	72.401	0.000	27.831	72.401
Diag1	g15P	60.05	0.000	-10.499	-4.429	-10.499
Diag1	g15X	52.73	10.116	0.000	4.102	10.116
Diag1	g15XY	53.40	10.244	0.000	4.049	10.244
Diag1	g15Y	57.90	0.000	-10.123	-4.347	-10.123
Diag1	g16P	3.62	0.000	-0.473	-0.473	-0.435
Diag1	g16X	3.15	0.604	-0.024	-0.024	0.604
Diag1	g16XY	0.90	0.173	-0.016	-0.016	0.173
Diag1	g16Y	5.82	0.000	-0.761	-0.500	-0.761
Diag2	g17P	25.81	0.000	-6.267	-4.372	-6.267
Diag2	g17X	19.87	4.965	0.000	2.101	4.965
Diag2	g17XY	20.83	5.205	0.000	2.173	5.205
Diag2	g17Y	25.07	0.000	-6.086	-4.323	-6.086
Diag2	g18P	0.47	0.117	0.000	0.117	0.003
Diag2	g18X	4.85	1.211	0.000	0.481	1.211
Diag2	g18XY	1.80	0.449	0.000	0.449	0.042

Diag2	g18Y	4.21	0.137	-0.799	0.137	-0.799
Diag2	g19P	24.72	0.000	-6.003	-2.344	-6.003
Diag2	g19X	25.87	6.464	0.000	4.468	6.464
Diag2	g19XY	25.41	6.349	0.000	4.416	6.349
Diag2	g19Y	22.00	0.000	-5.341	-2.162	-5.341
Diag2	g20P	1.76	0.439	-0.322	-0.322	0.439
Diag2	g20X	1.81	0.296	-0.344	-0.344	0.296
Diag2	g20XY	3.69	0.000	-0.897	-0.376	-0.897
Diag2	g20Y	1.59	0.000	-0.381	-0.302	-0.381
Diag2	g21P	27.62	0.000	-6.706	-3.021	-6.706
Diag2	g21X	24.74	6.181	0.000	3.892	6.181
Diag2	g21XY	27.15	6.785	0.000	3.826	6.785
Diag2	g21Y	22.89	0.000	-5.559	-2.909	-5.559
Diag2	g22P	11.16	0.000	-2.117	-1.542	-2.117
Diag2	g22X	12.69	3.170	0.000	0.946	3.170
Diag2	g22XY	6.70	1.673	0.000	0.911	1.673
Diag2	g22Y	17.30	0.000	-3.282	-1.530	-3.282
Diag3	g23P	30.18	0.000	-8.782	-5.094	-8.782
Diag3	g23X	26.82	7.737	0.000	4.634	7.737
Diag3	g23XY	27.84	8.032	0.000	4.711	8.032
Diag3	g23Y	25.49	0.000	-7.417	-5.050	-7.417
Diag3	g24P	14.73	0.000	-3.574	-2.605	-3.574
Diag3	g24X	18.26	5.268	0.000	1.865	5.268
Diag3	g24XY	9.40	2.711	0.000	1.586	2.711
Diag3	g24Y	20.94	0.000	-5.079	-2.294	-5.079
Diag3	g25P	31.45	0.000	-9.150	-5.096	-9.150
Diag3	g25X	26.01	7.502	0.000	4.601	7.502
Diag3	g25XY	29.54	8.521	0.000	4.794	8.521
Diag3	g25Y	25.69	0.000	-7.476	-5.139	-7.476
Diag3	g26P	26.54	0.000	-6.438	-4.667	-6.438
Diag3	g26X	28.00	8.077	0.000	3.047	8.077
Diag3	g26XY	18.18	5.244	0.000	2.788	5.244
Diag3	g26Y	34.31	0.000	-8.321	-4.404	-8.321
Diag4	g27P	5.36	0.000	-1.624	-1.624	-1.510
Diag4	g27X	2.05	0.682	0.000	0.682	0.266
Diag4	g27XY	1.87	0.623	0.000	0.479	0.623
Diag4	g27Y	4.64	0.000	-1.478	-1.478	-0.677
Diag4	g28P	8.32	0.000	-2.344	-1.519	-2.344
Diag4	g28X	9.05	3.014	0.000	0.955	3.014
Diag4	g28XY	2.68	0.893	0.000	0.893	0.717
Diag4	g28Y	8.71	0.000	-2.453	-1.221	-2.453
Diag3	g29P	5.32	0.000	-0.966	-0.966	-0.960
Diag3	g29X	5.44	1.531	0.000	1.118	1.531
Diag3	g29XY	3.58	1.008	0.000	1.008	0.915
Diag3	g29Y	6.78	0.000	-1.231	-0.781	-1.231
Diag3	g30P	6.38	1.795	0.000	0.882	1.795
Diag3	g30X	3.92	0.000	-0.641	-0.641	-0.355
Diag3	g30XY	13.64	0.000	-2.235	-0.694	-2.235
Diag3	g30Y	5.91	1.663	0.000	1.090	1.663
Diag3	g31P	20.74	0.000	-2.821	-1.430	-2.821
Diag3	g31X	4.00	1.126	0.000	0.668	1.126
Diag3	g31XY	4.60	1.294	0.000	0.527	1.294
Diag3	g31Y	9.51	0.000	-1.294	-0.998	-1.294
Diag3	g32P	10.97	0.000	-1.364	-0.922	-1.364
Diag3	g32X	5.46	1.537	0.000	0.369	1.537
Diag3	g32XY	1.39	0.392	0.000	0.392	0.145
Diag3	g32Y	10.36	0.000	-1.288	-0.669	-1.288
Diag5	g33P	57.97	0.000	-2.510	-2.510	0.000
Diag5	g33X	22.56	5.636	0.000	0.181	5.636

Diag5	g33XY	6.66	1.665	-0.114	-0.114	1.665
Diag5	g33Y	41.88	0.000	-1.814	-1.814	-1.685
Diag5	g34P	0.00	0.000	0.000	0.000	0.000
Diag5	g34X	26.78	6.690	0.000	2.877	6.690
Diag5	g34XY	21.89	5.468	0.000	2.981	5.468
Diag5	g34Y	0.58	0.145	0.000	0.145	0.032
Diag5	g35P	0.00	0.000	0.000	0.000	0.000
Diag5	g35X	46.43	10.208	0.000	4.735	10.208
Diag5	g35XY	24.50	5.387	0.000	1.743	5.387
Diag5	g35Y	0.00	0.000	0.000	0.000	0.000
Diag5	g36P	0.00	0.000	0.000	0.000	0.000
Diag5	g36X	32.07	7.051	0.000	2.618	7.051
Diag5	g36XY	30.30	6.660	0.000	3.510	6.660
Diag5	g36Y	30.35	0.000	-0.741	-0.741	-0.499
Diag5	g37P	0.00	0.000	0.000	0.000	0.000
Diag5	g37X	96.71	11.469	0.000	4.950	11.469
Diag5	g37XY	49.34	5.851	0.000	2.875	5.851
Diag5	g37Y	0.00	0.000	0.000	0.000	0.000
Diag5	g38P	0.00	0.000	0.000	0.000	0.000
Diag5	g38X	55.40	6.571	0.000	2.506	6.571
Diag5	g38XY	49.32	5.849	0.000	2.785	5.849
Diag5	g38Y	24.59	0.000	-0.323	0.000	-0.323
M4	g39P	1.17	0.000	-0.331	-0.052	-0.331
M4	g39X	3.94	1.109	0.000	1.109	0.652
M4	g39XY	3.96	1.113	0.000	1.113	0.701
M4	g39Y	0.69	0.000	-0.194	-0.044	-0.194
M4	g40P	6.70	3.183	0.000	3.183	0.929
M4	g40Y	6.80	3.232	0.000	3.232	1.553
M3	g41P	27.55	0.000	-7.224	-3.757	-7.224
M3	g41X	21.19	6.232	0.000	1.108	6.232
M4	g42P	15.45	0.000	-4.805	-4.805	-3.629
M4	g42X	8.82	0.000	-2.744	-2.744	-1.190
M4	g42XY	8.80	0.564	-2.736	-2.736	0.564
M4	g42Y	15.40	0.000	-4.791	-4.791	-1.768
M4	g43P	8.03	0.000	-2.468	-2.468	-1.648
M4	g43Y	8.15	0.000	-2.504	-2.504	-0.233
M3	g44P	14.52	4.270	0.000	2.828	4.270
M3	g44X	12.48	0.000	-3.272	-0.127	-3.272
M7	g45P	24.58	0.000	-1.760	-1.760	-0.699
M7	g45X	22.94	0.000	-1.642	-1.642	-0.609
M7	g46P	21.37	3.854	0.000	3.854	1.265
M7	g46X	20.87	3.763	0.000	3.763	1.128
M7	g46XY	20.84	3.759	0.000	3.759	1.871
M7	g46Y	21.34	3.848	0.000	3.848	1.896
M13	g47P	15.61	0.000	-5.310	-5.310	-4.171
M13	g47X	9.99	0.000	-3.398	-3.398	-1.819
M13	g47XY	10.09	0.543	-3.433	-3.433	0.543
M13	g47Y	15.56	0.000	-5.293	-5.293	-1.590
M13	g48P	10.81	0.000	-4.072	-4.072	-2.578
M13	g48Y	10.65	0.000	-4.011	-4.011	-0.952
M3	g49P	12.29	0.000	-3.224	-0.324	-3.224
M3	g49X	15.79	4.644	0.000	3.706	4.644
M8	g50P	20.88	4.590	0.000	4.590	1.261
M8	g50X	20.68	4.547	0.000	4.547	1.119
M8	g50XY	20.90	4.594	0.000	4.594	2.558
M8	g50Y	20.85	4.585	0.000	4.585	2.481
M14	g51P	30.31	2.814	0.000	2.814	1.053
M14	g51Y	29.88	2.773	0.000	2.773	1.381
M9	g52P	17.93	0.000	-2.106	-1.333	-2.106

M9	g52X	21.28	1.893	0.000	0.652	1.893
M4	g53P	10.98	0.000	-3.313	-3.313	-3.050
M4	g53X	4.28	0.000	-1.290	-1.290	-0.577
M4	g53XY	4.64	0.971	-1.400	-1.400	0.971
M4	g53Y	10.81	0.000	-3.260	-3.260	-1.184
M4	g54P	7.60	0.000	-2.335	-2.335	-1.998
M4	g54Y	7.07	0.000	-2.175	-2.175	-0.233
M3	g55P	3.84	1.080	0.000	1.080	0.958
M3	g55X	2.20	0.618	-0.150	0.618	-0.150
M7	g56P	16.62	2.740	0.000	2.740	0.762
M7	g56X	15.88	2.619	0.000	2.619	0.526
M7	g56XY	16.71	2.755	0.000	2.755	1.675
M7	g56Y	16.29	2.687	0.000	2.687	1.541
M9	g57P	87.23	7.759	0.000	4.121	7.759
M9	g57X	64.33	0.000	-7.554	-3.840	-7.554
M14	g58P	24.04	2.231	0.000	2.231	1.311
M14	g58Y	23.44	2.176	0.000	2.176	0.623
M2	g59P	13.65	0.714	-2.135	0.714	-2.135
M2	g59Y	2.90	0.637	-0.106	0.637	-0.106
M2	g60P	3.78	0.830	0.000	0.420	0.830
M2	g60X	33.58	0.000	-5.255	-2.589	-5.255
M5	g61P	15.72	0.000	-4.524	-1.090	-4.524
M5	g61Y	1.60	0.104	-0.460	0.104	-0.460
M5	g62P	7.75	1.942	0.000	0.987	1.942
M5	g62X	24.44	0.000	-7.034	-3.672	-7.034
M6	g63P	28.26	0.000	-5.815	-2.836	-5.815
M6	g63Y	5.16	0.000	-1.061	-0.679	-1.061
M6	g64P	12.25	3.446	0.000	1.757	3.446
M6	g64X	29.40	0.000	-6.048	-2.822	-6.048
M11	g65P	26.96	0.000	-4.530	-2.667	-4.530
M11	g65X	23.95	0.000	-4.024	-1.595	-4.024
M11	g65XY	27.38	0.000	-4.599	-2.189	-4.599
M11	g65Y	26.67	0.000	-4.481	-2.069	-4.481
M12	g66P	16.31	0.000	-2.294	-0.723	-2.294
M12	g66X	19.06	0.000	-2.681	-1.006	-2.681
M12	g66XY	15.03	0.000	-2.113	-0.264	-2.113
M12	g66Y	21.19	0.000	-2.980	-1.673	-2.980
M10	g67P	19.51	0.000	-2.058	-1.610	-2.058
M10	g67X	17.92	1.890	0.000	0.805	1.890
M10	g67XY	7.72	0.815	0.000	0.584	0.815
M10	g67Y	13.50	0.000	-1.423	-1.395	-1.423
M10	g68P	6.60	0.696	-0.266	-0.266	0.696
M10	g68X	12.23	0.000	-1.290	-0.731	-1.290
M10	g68XY	14.04	0.000	-1.481	-0.990	-1.481
M10	g68Y	11.74	1.238	0.000	0.047	1.238
M10	g69P	59.72	6.298	0.000	1.940	6.298
M10	g69X	60.64	0.000	-6.396	-2.533	-6.396
M10	g69XY	60.01	0.000	-6.329	-2.480	-6.329
M10	g69Y	57.01	6.012	0.000	1.869	6.012
M10	g70P	86.29	0.000	-9.101	-2.890	-9.101
M10	g70X	90.06	9.498	0.000	4.003	9.498
M10	g70XY	91.76	9.677	0.000	4.011	9.677
M10	g70Y	86.46	0.000	-9.119	-2.877	-9.119
PM	g71P	3.03	0.000	-27.481	-27.481	-10.517
PM	g72P	2.59	0.000	-23.493	-23.493	-9.407
PM	g73P	2.46	0.000	-19.368	-19.368	-8.035
PM	g74P	1.66	0.000	-15.857	-15.857	-6.748
PM	g75P	1.46	0.000	-13.852	-13.852	-5.932
PM	g76P	1.26	0.000	-12.190	-12.190	-5.168

PM	g77P	1.10	0.000	-10.541	-10.541	-4.161
PM	g78P	0.90	0.000	-8.395	-8.395	-3.602

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.002733	0.2416	-0.0213	-0.3280	0.0178	0.0467	2.503	2.742	101
2P	0.001536	0.2133	-0.02095	-0.3189	0.0099	0.0504	2.502	2.713	95.98
3P	0.001061	0.1919	-0.02044	-0.2934	0.0122	0.0492	2.501	2.692	91.98
4P	-0.0001493	0.1717	-0.0197	-0.2928	0.0156	0.0479	2.5	2.672	87.98
5P	-0.0008492	0.1513	-0.01874	-0.2803	0.0092	0.0468	2.499	2.651	83.98
6P	-0.001701	0.1288	-0.01729	-0.2516	0.0169	0.0479	2.498	2.629	78.98
7P	-0.003168	0.1078	-0.01547	-0.2081	0.0039	0.0492	2.497	2.608	73.98
8P	-0.003407	0.09253	-0.01574	-0.1628	-0.0065	0.0482	3.197	3.293	68.98
9P	-0.005547	0.07435	-0.01565	-0.1369	0.0222	0.0476	4.164	4.244	61.98
10P	-0.009992	0.05824	-0.01573	-0.1031	0.0109	0.0429	5.27	5.338	53.98
12P	-0.008302	0.03755	-0.01331	-0.0797	-0.0217	0.0279	7.222	7.268	39.99
15P	-0.003168	0.01296	-0.00774	-0.0567	-0.0193	0.0059	9.997	10.01	19.99
18P	0	0	0	0.0000	0.0000	0.0000	12.75	12.75	0
19P	0.0161	0.2394	0.06223	-0.2777	0.0131	0.0463	0.0161	-13.51	101.1
20P	0.01165	0.2126	0.04159	-0.2714	0.0133	0.0463	0.01165	-9.537	96.04
21P	0.01264	0.1511	0.05116	-0.2079	0.0129	0.0464	0.01264	-14.1	84.05
22P	0.007093	0.1069	0.0313	-0.2149	0.0104	0.0465	0.007093	-10.14	74.03
23P	0	0	0	0.0000	0.0000	0.0000	0	0	0
24P	0.006532	0.3005	-0.004476	-0.4804	0.0132	0.0300	0.006532	0.3005	109
25P	0.00993	0.4391	-0.00534	-0.5531	0.0133	0.0300	0.00993	0.4391	124
1X	0.006546	0.2413	0.005089	-0.3098	0.0127	0.0443	2.507	-2.259	101
1XY	0.007042	0.2372	0.00625	-0.3095	0.0138	0.0545	-2.493	-2.263	101
1Y	0.002589	0.2375	-0.02017	-0.3281	0.0083	0.0521	-2.497	2.738	101
2X	0.005847	0.2136	0.005117	-0.3078	0.0172	0.0496	2.506	-2.286	96.01
2XY	0.005476	0.2095	0.00627	-0.3082	0.0093	0.0489	-2.495	-2.29	96.01
2Y	0.001555	0.2091	-0.01982	-0.3189	0.0161	0.0480	-2.498	2.709	95.98
3X	0.004467	0.1921	0.004898	-0.3102	0.0171	0.0486	2.504	-2.308	92
3XY	0.005041	0.188	0.006047	-0.3102	0.0094	0.0494	-2.495	-2.312	92.01
3Y	0.0002641	0.1878	-0.01931	-0.2935	0.0135	0.0488	-2.5	2.688	91.98
4X	0.003712	0.1708	0.004548	-0.2901	0.0078	0.0477	2.504	-2.329	88
4XY	0.003997	0.1667	0.005681	-0.2896	0.0183	0.0498	-2.496	-2.333	88.01
4Y	-0.0002862	0.1676	-0.01858	-0.2926	0.0102	0.0497	-2.5	2.668	87.98
5X	0.002943	0.1518	0.004088	-0.2640	0.0191	0.0467	2.503	-2.348	84
5XY	0.002988	0.1476	0.005206	-0.2638	0.0069	0.0504	-2.497	-2.352	84.01
5Y	-0.001335	0.1472	-0.01763	-0.2801	0.0158	0.0504	-2.501	2.647	83.98
6X	0.00144	0.1281	0.003237	-0.2582	0.0080	0.0445	2.501	-2.372	79
6XY	0.002259	0.124	0.004308	-0.2583	0.0177	0.0507	-2.498	-2.376	79
6Y	-0.002576	0.1247	-0.01618	-0.2514	0.0075	0.0477	-2.503	2.625	78.98
7X	0.0008643	0.1081	0.002131	-0.2025	0.0219	0.0422	2.501	-2.392	74
7XY	0.0007239	0.1041	0.003128	-0.2000	0.0009	0.0511	-2.499	-2.396	74
7Y	-0.003248	0.1038	-0.01433	-0.2065	0.0219	0.0449	-2.503	2.604	73.99
8X	-0.0007296	0.09184	0.002954	-0.1729	0.0217	0.0410	3.199	-3.108	69
8XY	0.00157	0.08699	0.004069	-0.1693	-0.0014	0.0473	-3.198	-3.113	69
8Y	-0.006353	0.08758	-0.01421	-0.1592	0.0320	0.0410	-3.206	3.288	68.99
9X	-0.0009568	0.07417	0.003497	-0.1311	0.0046	0.0418	4.169	-4.096	62
9XY	0.0009705	0.06825	0.00475	-0.1269	0.0124	0.0396	-4.169	-4.102	62
9Y	-0.008998	0.06853	-0.01351	-0.1317	0.0111	0.0361	-4.179	4.239	61.99
10X	-0.0007257	0.05804	0.00395	-0.1052	0.0074	0.0378	5.279	-5.222	54
10XY	6.882e-005	0.05134	0.00528	-0.1003	0.0073	0.0367	-5.28	-5.229	54.01
10Y	-0.01012	0.05151	-0.01287	-0.0992	0.0006	0.0318	-5.29	5.332	53.99

12X	-0.0012	0.03788	0.003559	-0.0744	0.0073	0.0296	7.229	-7.192	40
12XY	-0.0001141	0.03017	0.004931	-0.0643	0.0014	0.0327	-7.23	-7.2	40
12Y	-0.008591	0.03019	-0.01088	-0.0662	-0.0132	0.0284	-7.239	7.26	39.99
15X	-0.0007066	0.01398	0.002648	-0.0529	0.0092	0.0098	9.999	-9.986	20
15XY	0.0002971	0.0102	0.003123	-0.0391	-0.0052	0.0155	-10	-9.99	20
15Y	-0.003792	0.009959	-0.006485	-0.0359	-0.0069	0.0134	-10	10.01	19.99
18X	0	0	0	0.0000	0.0000	0.0000	12.75	-12.75	0
18XY	0	0	0	0.0000	0.0000	0.0000	-12.75	-12.75	0
18Y	0	0	0	0.0000	0.0000	0.0000	-12.75	12.75	0
19X	-0.00663	0.2397	-0.08925	-0.3598	0.0129	0.0462	-0.00663	13.99	100.9
20X	-0.004442	0.2105	-0.06522	-0.3699	0.0128	0.0463	-0.004442	9.961	95.93
21X	-0.01077	0.1481	-0.08768	-0.3671	0.0125	0.0464	-0.01077	14.4	83.91
22X	-0.009497	0.1054	-0.05149	-0.2981	0.0134	0.0461	-0.009497	10.36	73.95
i0.50E20S	-0.002034	0.01223	-0.0009808	-0.0558	-0.0089	0.0079	-0.002034	0.01223	20
i0.50E40S	-0.004624	0.03438	-0.001828	-0.0696	-0.0030	0.0155	-0.004624	0.03438	40
i0.50E74S	-0.001211	0.1062	-0.003075	-0.2160	0.0118	0.0257	-0.001211	0.1062	74
i0.50E84S	0.0009331	0.1495	-0.003451	-0.2719	0.0128	0.0279	0.0009331	0.1495	84
i0.50E96S	0.003605	0.2109	-0.003903	-0.3166	0.0130	0.0296	0.003605	0.2109	96
i0.50E101S	0.004727	0.2403	-0.004098	-0.3712	0.0131	0.0299	0.004727	0.2403	101

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 %
18P	-7.47	0.0	-7.44	0.0	0.0	-54.75	0.0	0.0	55.75	0.0	0.24	0.0	0.1	0.0	0.0	0.01	0.0	0.0
23P	0.11	0.0	-1.05	0.0	0.0	-28.65	0.0	0.0	28.67	0.0	12.97	0.0	2.3	0.0	0.0	-0.81	0.0	0.0
18X	6.38	0.0	-8.11	0.0	0.0	32.58	0.0	0.0	34.17	0.0	0.34	0.0	0.0	0.0	0.0	0.00	0.0	0.0
18XY	-5.89	0.0	-6.44	0.0	0.0	30.42	0.0	0.0	31.65	0.0	0.21	0.0	-0.0	0.0	0.0	-0.04	0.0	0.0
18Y	6.89	0.0	-6.87	0.0	0.0	-50.50	0.0	0.0	51.43	0.0	0.20	0.0	0.1	0.0	0.0	-0.03	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1810	-0.0000	0.0000	0.1810	0.0027	0.2416	-0.0213
2P	0.0000	0.0000	-0.2153	-0.0000	0.0000	0.2153	0.0015	0.2133	-0.0209
3P	0.0000	0.0000	-0.1379	0.0000	0.0000	0.1379	0.0011	0.1919	-0.0204
4P	0.0000	0.0000	-0.1915	0.0000	0.0000	0.1915	-0.0001	0.1717	-0.0197
5P	0.0000	0.0000	-0.2591	-0.0000	0.0000	0.2591	-0.0008	0.1513	-0.0187
6P	0.0000	0.0000	-0.2107	0.0000	0.0000	0.2107	-0.0017	0.1288	-0.0173
7P	0.0000	0.0000	-0.2681	-0.0000	0.0000	0.2681	-0.0032	0.1078	-0.0155
8P	0.0000	0.0000	-0.2346	0.0000	0.0000	0.2346	-0.0034	0.0925	-0.0157
9P	0.0000	0.0000	-0.2972	0.0000	0.0000	0.2972	-0.0055	0.0744	-0.0157
10P	0.0000	0.0000	-0.4945	0.0000	0.0000	0.4945	-0.0100	0.0582	-0.0157
12P	0.0000	0.0000	-0.8413	0.0000	0.0000	0.8413	-0.0083	0.0376	-0.0133
15P	0.0000	0.0000	-1.2025	0.0000	0.0000	1.2025	-0.0032	0.0130	-0.0077
18P	0.0000	0.0000	-0.4321	7.4748	7.4448	-54.3142	0.0000	0.0000	0.0000
19P	0.0000	1.1848	-1.3848	0.0000	-1.1848	1.3848	0.0161	0.2394	0.0622
20P	0.0000	1.8612	-2.8517	0.0000	-1.8612	2.8517	0.0116	0.2126	0.0416
21P	0.0000	1.8449	-2.9209	0.0000	-1.8449	2.9209	0.0126	0.1511	0.0512
22P	0.0000	1.8441	-2.8432	0.0000	-1.8441	2.8432	0.0071	0.1069	0.0313
23P	0.0000	0.5100	-1.1659	-0.1053	0.5395	-27.4811	0.0000	0.0000	0.0000
24P	0.0000	0.8982	-2.1498	-0.0000	-0.8982	2.1498	0.0065	0.3005	-0.0045
25P	0.0000	1.6392	-8.4107	-0.0000	-1.6392	8.4107	0.0099	0.4391	-0.0053

1X	0.0000	0.2192	-0.3800	-0.0000	-0.2192	0.3800	0.0065	0.2413	0.0051
1XY	0.0000	0.0882	-0.1810	-0.0000	-0.0882	0.1810	0.0070	0.2372	0.0063
1Y	0.0000	0.0000	-0.1810	-0.0000	0.0000	0.1810	0.0026	0.2375	-0.0202
2X	0.0000	0.1185	-0.2153	-0.0000	-0.1185	0.2153	0.0058	0.2136	0.0051
2XY	0.0000	0.1185	-0.2153	-0.0000	-0.1185	0.2153	0.0055	0.2095	0.0063
2Y	0.0000	0.0000	-0.2153	-0.0000	0.0000	0.2153	0.0016	0.2091	-0.0198
3X	0.0000	0.3080	-0.4559	0.0000	-0.3080	0.4559	0.0045	0.1921	0.0049
3XY	0.0000	0.0990	-0.1379	0.0000	-0.0990	0.1379	0.0050	0.1880	0.0060
3Y	0.0000	0.0000	-0.1379	0.0000	0.0000	0.1379	0.0003	0.1878	-0.0193
4X	0.0000	0.1324	-0.1915	0.0000	-0.1324	0.1915	0.0037	0.1708	0.0045
4XY	0.0000	0.1324	-0.1915	0.0000	-0.1324	0.1915	0.0040	0.1667	0.0057
4Y	0.0000	0.0000	-0.1915	0.0000	0.0000	0.1915	-0.0003	0.1676	-0.0186
5X	0.0000	0.3569	-0.6171	-0.0000	-0.3569	0.6171	0.0029	0.1518	0.0041
5XY	0.0000	0.1219	-0.2591	-0.0000	-0.1219	0.2591	0.0030	0.1476	0.0052
5Y	0.0000	0.0000	-0.2591	-0.0000	0.0000	0.2591	-0.0013	0.1472	-0.0176
6X	0.0000	0.1538	-0.2107	0.0000	-0.1538	0.2107	0.0014	0.1281	0.0032
6XY	0.0000	0.1538	-0.2107	0.0000	-0.1538	0.2107	0.0023	0.1240	0.0043
6Y	0.0000	0.0000	-0.2107	0.0000	0.0000	0.2107	-0.0026	0.1247	-0.0162
7X	0.0000	0.4217	-0.7051	-0.0000	-0.4217	0.7051	0.0009	0.1081	0.0021
7XY	0.0000	0.1347	-0.2681	-0.0000	-0.1347	0.2681	0.0007	0.1041	0.0031
7Y	0.0000	0.0000	-0.2681	-0.0000	0.0000	0.2681	-0.0032	0.1038	-0.0143
8X	0.0000	0.1561	-0.2346	0.0000	-0.1561	0.2346	-0.0007	0.0918	0.0030
8XY	0.0000	0.1561	-0.2346	0.0000	-0.1561	0.2346	0.0016	0.0870	0.0041
8Y	0.0000	0.0000	-0.2346	0.0000	0.0000	0.2346	-0.0064	0.0876	-0.0142
9X	0.0000	0.4573	-0.6952	0.0000	-0.4573	0.6952	-0.0010	0.0742	0.0035
9XY	0.0000	0.1963	-0.2972	0.0000	-0.1963	0.2972	0.0010	0.0682	0.0048
9Y	0.0000	0.0000	-0.2972	0.0000	0.0000	0.2972	-0.0090	0.0685	-0.0135
10X	0.0000	0.6037	-0.9315	0.0000	-0.6037	0.9315	-0.0007	0.0580	0.0040
10XY	0.0000	0.3167	-0.4945	0.0000	-0.3167	0.4945	0.0001	0.0513	0.0053
10Y	0.0000	0.0000	-0.4945	0.0000	0.0000	0.4945	-0.0101	0.0515	-0.0129
12X	0.0000	0.9619	-1.5173	-0.0000	-0.9619	1.5173	-0.0012	0.0379	0.0036
12XY	0.0000	0.5179	-0.8413	-0.0000	-0.5179	0.8413	-0.0001	0.0302	0.0049
12Y	0.0000	0.0000	-0.8413	-0.0000	0.0000	0.8413	-0.0086	0.0302	-0.0109
15X	0.0000	1.4413	-2.3955	-0.0000	-1.4413	2.3955	-0.0007	0.0140	0.0026
15XY	0.0000	0.6573	-1.2025	-0.0000	-0.6573	1.2025	0.0003	0.0102	0.0031
15Y	0.0000	0.0000	-1.2025	0.0000	0.0000	1.2025	-0.0038	0.0100	-0.0065
18X	0.0000	0.2789	-0.4321	-6.3777	7.8347	33.0096	0.0000	0.0000	0.0000
18XY	0.0000	0.2789	-0.4321	5.8939	6.1590	30.8534	0.0000	0.0000	0.0000
18Y	0.0000	0.0000	-0.4321	-6.8856	6.8723	-50.0703	0.0000	0.0000	0.0000
19X	0.0000	1.1350	-1.2938	0.0000	-1.1350	1.2938	-0.0066	0.2397	-0.0892
20X	0.0000	1.7850	-2.8517	0.0000	-1.7850	2.8517	-0.0044	0.2105	-0.0652
21X	0.0000	1.7850	-2.9209	0.0000	-1.7850	2.9209	-0.0108	0.1481	-0.0877
22X	0.0000	1.7850	-2.8432	0.0000	-1.7850	2.8432	-0.0095	0.1054	-0.0515
i0.50E20S	0.0000	1.1840	-3.9568	0.0000	-1.1840	3.9568	-0.0020	0.0122	-0.0010
i0.50E40S	0.0000	1.4740	-4.0916	0.0000	-1.4740	4.0916	-0.0046	0.0344	-0.0018
i0.50E74S	0.0000	1.1835	-3.1635	0.0000	-1.1835	3.1635	-0.0012	0.1062	-0.0031
i0.50E84S	0.0000	0.6045	-1.6434	0.0000	-0.6045	1.6434	0.0009	0.1495	-0.0035
i0.50E96S	0.0000	0.3430	-1.2782	0.0000	-0.3430	1.2782	0.0036	0.2109	-0.0039
i0.50E101S	0.0000	0.2750	-1.2476	0.0000	-0.2750	1.2476	0.0047	0.2403	-0.0041

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

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g16P	g16Y	Long only	-0.47	-0.50	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6

g16X	g16XY	Long only	-0.02	-0.02	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g16XY	g16X	Long only	-0.02	-0.02	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g16Y	g16P	Long only	-0.50	-0.47	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g20P	g20Y	Long only	-0.32	-0.30	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20X	g20XY	Long only	-0.34	-0.38	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20XY	g20X	Long only	-0.38	-0.34	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g20Y	g20P	Long only	-0.30	-0.32	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22P	g22Y	Long only	-1.54	-1.53	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22Y	g22P	Long only	-1.53	-1.54	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g24P	g24Y	Short only	-2.61	-2.29	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g24Y	g24P	Short only	-2.29	-2.61	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26P	g26Y	Short only	-4.67	-4.40	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26Y	g26P	Short only	-4.40	-4.67	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g28P	g28Y	Short only	-1.52	-1.22	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28Y	g28P	Short only	-1.22	-1.52	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30X	g30XY	Short only	-0.64	-0.69	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g30XY	g30X	Short only	-0.69	-0.64	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g32P	g32Y	Short only	-0.92	-0.67	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g32Y	g32P	Short only	-0.67	-0.92	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.822	50.00	50.00	3.64
Clamp2	1.721	50.00	50.00	3.44
Clamp3	3.405	50.00	50.00	6.81
Clamp4	3.364	50.00	50.00	6.73
Clamp5	3.455	50.00	50.00	6.91
Clamp6	3.423	50.00	50.00	6.85
Clamp7	3.389	50.00	50.00	6.78
Clamp8	3.357	50.00	50.00	6.71
Clamp9	0.550	50.00	50.00	1.10
Clamp10	0.713	50.00	50.00	1.43
Clamp11	0.822	50.00	50.00	1.64
Clamp12	0.832	50.00	50.00	1.66
Clamp13	1.110	50.00	50.00	2.22
Clamp14	1.797	50.00	50.00	3.59
Clamp15	2.796	50.00	50.00	5.59
Clamp17	1.278	50.00	50.00	2.56
Clamp18	1.323	50.00	50.00	2.65
Clamp19	1.751	50.00	50.00	3.50
Clamp20	3.378	50.00	50.00	6.76
Clamp21	4.349	50.00	50.00	8.70
Clamp22	4.130	50.00	50.00	8.26
Clamp23	0.439	50.00	50.00	0.88
Clamp24	0.201	50.00	50.00	0.40
Clamp25	0.246	50.00	50.00	0.49
Clamp26	0.246	50.00	50.00	0.49
Clamp27	2.330	50.00	50.00	4.66
Clamp28	8.569	50.00	50.00	17.14

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 10

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	0.0439	0.4484	-0.03487	-0.6174	0.0798	0.1155	2.544	2.948	101
2P	0.03734	0.3947	-0.03413	-0.5936	0.0633	0.1269	2.537	2.895	95.97
3P	0.03354	0.3549	-0.03307	-0.5547	0.0654	0.1241	2.534	2.855	91.97
4P	0.02818	0.3167	-0.03161	-0.5403	0.0774	0.1213	2.528	2.817	87.97
5P	0.02355	0.28	-0.02984	-0.5038	0.0620	0.1187	2.524	2.78	83.97
6P	0.01832	0.2383	-0.02714	-0.4603	0.0740	0.1177	2.518	2.738	78.97
7P	0.01201	0.2011	-0.02385	-0.3690	0.0443	0.1169	2.512	2.701	73.98
8P	0.008268	0.174	-0.02475	-0.2894	0.0214	0.1134	3.208	3.374	68.98
9P	0.0004597	0.1429	-0.02502	-0.2369	0.0635	0.1104	4.17	4.313	61.97
10P	-0.01063	0.1143	-0.02566	-0.1975	0.0387	0.0970	5.269	5.394	53.97
12P	-0.01313	0.07233	-0.02256	-0.1607	-0.0214	0.0670	7.217	7.302	39.98
15P	-0.008221	0.02612	-0.0136	-0.1097	-0.0369	0.0221	9.992	10.03	19.99
18P	0	0	0	0.0000	0.0000	0.0000	12.75	12.75	0
19P	0.07817	0.4439	0.1349	-0.5949	0.0691	0.1192	0.07817	-13.31	101.1
20P	0.06412	0.3909	0.09318	-0.6003	0.0683	0.1244	0.06412	-9.359	96.09
21P	0.05989	0.2764	0.1177	-0.5034	0.0667	0.1280	0.05989	-13.97	84.12
22P	0.03866	0.197	0.06794	-0.4502	0.0573	0.1234	0.03866	-10.05	74.07
23P	0	0	0	0.0000	0.0000	0.0000	0	0	0
24P	0.05836	0.5746	-0.004101	-1.0660	0.0699	0.0769	0.05836	0.5746	109
25P	0.07628	0.8923	-0.007573	-1.2853	0.0701	0.0772	0.07628	0.8923	124
1X	0.05362	0.4486	0.01471	-0.6010	0.0677	0.1162	2.554	-2.051	101
1XY	0.05458	0.438	0.02071	-0.6015	0.0715	0.1384	-2.445	-2.062	101
1Y	0.0431	0.4379	-0.02889	-0.6161	0.0582	0.1352	-2.457	2.938	101
2X	0.04839	0.3952	0.01463	-0.5874	0.0790	0.1295	2.548	-2.105	96.01
2XY	0.04784	0.3846	0.02065	-0.5862	0.0621	0.1253	-2.452	-2.115	96.02
2Y	0.03778	0.3843	-0.02814	-0.5951	0.0765	0.1213	-2.462	2.884	95.97
3X	0.04249	0.3552	0.01407	-0.5626	0.0769	0.1271	2.542	-2.145	92.01
3XY	0.04399	0.3447	0.02004	-0.5617	0.0650	0.1264	-2.456	-2.155	92.02
3Y	0.03197	0.3443	-0.0271	-0.5548	0.0744	0.1222	-2.468	2.844	91.97
4X	0.03819	0.3166	0.01319	-0.5385	0.0601	0.1248	2.538	-2.183	88.01
4XY	0.03865	0.306	0.01908	-0.5392	0.0800	0.1274	-2.461	-2.194	88.02
4Y	0.0278	0.3063	-0.02573	-0.5368	0.0614	0.1233	-2.472	2.806	87.97
5X	0.03341	0.2805	0.01206	-0.4945	0.0816	0.1222	2.533	-2.22	84.01
5XY	0.03385	0.27	0.01783	-0.4917	0.0571	0.1287	-2.466	-2.23	84.02
5Y	0.02296	0.2697	-0.02408	-0.5048	0.0742	0.1242	-2.477	2.77	83.98
6X	0.0269	0.238	0.01021	-0.4635	0.0576	0.1192	2.527	-2.262	79.01
6XY	0.02852	0.2279	0.01571	-0.4636	0.0789	0.1249	-2.471	-2.272	79.02
6Y	0.01669	0.228	-0.02166	-0.4572	0.0585	0.1203	-2.483	2.728	78.98
7X	0.02213	0.2014	0.007881	-0.3658	0.0826	0.1159	2.522	-2.299	74.01
7XY	0.02202	0.1911	0.01297	-0.3614	0.0399	0.1214	-2.478	-2.309	74.01
7Y	0.01205	0.191	-0.01876	-0.3719	0.0741	0.1163	-2.488	2.691	73.98
8X	0.01605	0.1733	0.008506	-0.3038	0.0802	0.1121	3.216	-3.027	69.01
8XY	0.02084	0.1609	0.01437	-0.2952	0.0301	0.1119	-3.179	-3.039	69.01
8Y	0.003358	0.1606	-0.01883	-0.2955	0.0839	0.1072	-3.197	3.361	68.98
9X	0.01203	0.1422	0.008672	-0.2293	0.0394	0.1107	4.182	-4.028	62.01
9XY	0.01612	0.1263	0.01525	-0.2339	0.0540	0.0974	-4.154	-4.044	62.02
9Y	-0.00495	0.126	-0.01808	-0.2345	0.0434	0.0936	-4.175	4.296	61.98
10X	0.009226	0.1151	0.008608	-0.1918	0.0390	0.0991	5.289	-5.165	54.01
10XY	0.01086	0.09484	0.01592	-0.1826	0.0389	0.0899	-5.269	-5.185	54.02
10Y	-0.01086	0.09474	-0.01741	-0.1819	0.0230	0.0838	-5.291	5.375	53.98

12X	0.003867	0.07371	0.00811	-0.1582	0.0328	0.0750	7.234	-7.156	40.01
12XY	0.005956	0.05499	0.01449	-0.1197	0.0201	0.0795	-7.224	-7.175	40.01
12Y	-0.01369	0.05481	-0.01493	-0.1238	-0.0073	0.0723	-7.244	7.285	39.99
15X	0.0002668	0.0282	0.005687	-0.1024	0.0275	0.0311	10	-9.972	20.01
15XY	0.00242	0.01712	0.009192	-0.0683	0.0010	0.0416	-9.998	-9.983	20.01
15Y	-0.009444	0.01673	-0.008938	-0.0618	-0.0138	0.0367	-10.01	10.02	19.99
18X	0	0	0	0.0000	0.0000	0.0000	12.75	-12.75	0
18XY	0	0	0	0.0000	0.0000	0.0000	-12.75	-12.75	0
18Y	0	0	0	0.0000	0.0000	0.0000	-12.75	12.75	0
19X	0.01971	0.4426	-0.1538	-0.6248	0.0687	0.1180	0.01971	14.19	100.8
20X	0.02281	0.3891	-0.1103	-0.6379	0.0679	0.1124	0.02281	10.14	95.89
21X	0.0002852	0.2741	-0.1391	-0.5672	0.0664	0.1068	0.0002852	14.52	83.86
22X	-0.00315	0.1958	-0.08221	-0.4841	0.0570	0.1099	-0.00315	10.45	73.92
i0.50E20S	-0.004142	0.0229	-0.0003874	-0.1050	-0.0121	0.0209	-0.004142	0.0229	20
i0.50E40S	-0.004538	0.06466	-0.0007654	-0.1307	0.0121	0.0395	-0.004538	0.06466	40
i0.50E74S	0.01702	0.1964	-0.001513	-0.3918	0.0607	0.0655	0.01702	0.1964	74
i0.50E84S	0.02839	0.2751	-0.001949	-0.4936	0.0688	0.0710	0.02839	0.2751	84
i0.50E96S	0.04279	0.3883	-0.002618	-0.6001	0.0698	0.0755	0.04279	0.3883	96
i0.50E101S	0.04879	0.4455	-0.002995	-0.7523	0.0697	0.0765	0.04879	0.4455	101

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 %
18P	-13.46	0.0	-13.87	0.0	0.0	-96.76	0.0	0.0	98.67	0.0	0.53	0.0	0.3	0.0	0.0	0.03	0.0	0.0
23P	0.45	0.0	-1.75	0.0	0.0	-11.11	0.0	0.0	11.26	0.0	24.18	0.0	6.1	0.0	0.0	-2.14	0.0	0.0
18X	13.27	0.0	-17.83	0.0	0.0	67.85	0.0	0.0	71.40	0.0	0.71	0.0	0.1	0.0	0.0	-0.01	0.0	0.0
18XY	-15.22	0.0	-15.56	0.0	0.0	78.63	0.0	0.0	81.59	0.0	0.30	0.0	-0.1	0.0	0.0	-0.10	0.0	0.0
18Y	10.30	0.0	-11.00	0.0	0.0	-75.53	0.0	0.0	77.01	0.0	0.32	0.0	0.3	0.0	0.0	-0.06	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	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0439	0.4484	-0.0349
2P	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0373	0.3947	-0.0341
3P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0335	0.3549	-0.0331
4P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0282	0.3167	-0.0316
5P	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0236	0.2800	-0.0298
6P	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0183	0.2383	-0.0271
7P	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0120	0.2011	-0.0238
8P	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0083	0.1740	-0.0247
9P	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0005	0.1429	-0.0250
10P	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	-0.0106	0.1143	-0.0257
12P	0.0000	1.1796	-0.9002	0.0000	-1.1796	0.9002	-0.0131	0.0723	-0.0226
15P	0.0000	0.7419	-0.5961	0.0000	-0.7419	0.5961	-0.0082	0.0261	-0.0136
18P	0.0000	0.7419	-0.5961	13.4641	13.1302	-96.1664	0.0000	0.0000	0.0000
19P	0.0260	0.9419	-0.5567	-0.0260	-0.9419	0.5567	0.0782	0.4439	0.1349
20P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0641	0.3909	0.0932
21P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0599	0.2764	0.1177
22P	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0387	0.1970	0.0679
23P	0.0000	0.7419	-0.5961	-0.4513	1.0117	-10.5187	0.0000	0.0000	0.0000
24P	0.0000	1.4619	-0.5567	-0.0000	-1.4619	0.5567	0.0584	0.5746	-0.0041
25P	0.0000	5.0969	-3.7107	-0.0000	-5.0969	3.7107	0.0763	0.8923	-0.0076

1X	0.0000	0.6669	-0.2337	0.0000	-0.6669	0.2337	0.0536	0.4486	0.0147
1XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0546	0.4380	0.0207
1Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0431	0.4379	-0.0289
2X	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0484	0.3952	0.0146
2XY	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0478	0.3846	0.0206
2Y	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0378	0.3843	-0.0281
3X	0.0000	0.9249	-0.2587	-0.0000	-0.9249	0.2587	0.0425	0.3552	0.0141
3XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0440	0.3447	0.0200
3Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0320	0.3443	-0.0271
4X	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0382	0.3166	0.0132
4XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0386	0.3060	0.0191
4Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0278	0.3063	-0.0257
5X	0.0000	1.0119	-0.2677	0.0000	-1.0119	0.2677	0.0334	0.2805	0.0121
5XY	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0338	0.2700	0.0178
5Y	0.0000	0.2369	-0.1927	0.0000	-0.2369	0.1927	0.0230	0.2697	-0.0241
6X	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0269	0.2380	0.0102
6XY	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0285	0.2279	0.0157
6Y	0.0000	0.2369	-0.1927	-0.0000	-0.2369	0.1927	0.0167	0.2280	-0.0217
7X	0.0000	1.6215	-0.5878	0.0000	-1.6215	0.5878	0.0221	0.2014	0.0079
7XY	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0220	0.1911	0.0130
7Y	0.0000	0.6745	-0.4968	0.0000	-0.6745	0.4968	0.0120	0.1910	-0.0188
8X	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0160	0.1733	0.0085
8XY	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	0.0208	0.1609	0.0144
8Y	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0034	0.1606	-0.0188
9X	0.0000	1.2987	-0.3871	0.0000	-1.2987	0.3871	0.0120	0.1422	0.0087
9XY	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0161	0.1263	0.0153
9Y	0.0000	0.4377	-0.3041	-0.0000	-0.4377	0.3041	-0.0049	0.1260	-0.0181
10X	0.0000	1.3847	-0.3951	0.0000	-1.3847	0.3951	0.0092	0.1151	0.0086
10XY	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	0.0109	0.0948	0.0159
10Y	0.0000	0.4377	-0.3041	0.0000	-0.4377	0.3041	-0.0109	0.0947	-0.0174
12X	0.0000	2.6426	-1.0412	0.0000	-2.6426	1.0412	0.0039	0.0737	0.0081
12XY	0.0000	1.1796	-0.9002	0.0000	-1.1796	0.9002	0.0060	0.0550	0.0145
12Y	0.0000	1.1796	-0.9002	-0.0000	-1.1796	0.9002	-0.0137	0.0548	-0.0149
15X	0.0000	3.3239	-0.8441	0.0000	-3.3239	0.8441	0.0003	0.0282	0.0057
15XY	0.0000	0.7419	-0.5961	0.0000	-0.7419	0.5961	0.0024	0.0171	0.0092
15Y	0.0000	0.7419	-0.5961	-0.0000	-0.7419	0.5961	-0.0094	0.0167	-0.0089
18X	0.0000	0.7419	-0.5961	-13.2688	17.0855	68.4444	0.0000	0.0000	0.0000
18XY	0.0000	0.7419	-0.5961	15.2233	14.8180	79.2256	0.0000	0.0000	0.0000
18Y	0.0000	0.7419	-0.5961	-10.3003	10.2604	-74.9290	0.0000	0.0000	0.0000
19X	0.0090	0.9339	-0.4867	-0.0090	-0.9339	0.4867	0.0197	0.4426	-0.1538
20X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0228	0.3891	-0.1103
21X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	0.0003	0.2741	-0.1391
22X	0.7720	2.1539	-1.1997	-0.7720	-2.1539	1.1997	-0.0032	0.1958	-0.0822
i0.50E20S	0.0000	1.1759	-1.0711	0.0000	-1.1759	1.0711	-0.0041	0.0229	-0.0004
i0.50E40S	0.0000	1.5706	-1.3282	0.0000	-1.5706	1.3282	-0.0045	0.0647	-0.0008
i0.50E74S	0.0000	0.9925	-0.8448	0.0000	-0.9925	0.8448	0.0170	0.1964	-0.0015
i0.50E84S	0.0000	0.3959	-0.3667	-0.0000	-0.3959	0.3667	0.0284	0.2751	-0.0019
i0.50E96S	0.0000	0.3599	-0.3277	0.0000	-0.3599	0.3277	0.0428	0.3883	-0.0026
i0.50E101S	0.0000	0.4399	-0.4147	-0.0000	-0.4399	0.4147	0.0488	0.4455	-0.0030

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 Cap. (kips)	Original Supported L/R	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g16P	g16Y	Long only	-0.44	-0.76	17.48	0.500	0.750	0.500	106.07	109.55		2	13.07	1.000	141.42	133.17	6

g16Y	g16P	Long only	-0.76	-0.44	17.48	0.500	0.750	0.500	106.07	109.55	2	13.07	1.000	141.42	133.17	6
g18Y	g18P	Long only	-0.80	0.00	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22P	g22Y	Long only	-2.12	-3.28	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g22Y	g22P	Long only	-3.28	-2.12	24.28	0.500	0.750	0.500	97.34	103.01	2	18.97	1.000	129.79	126.02	6
g24P	g24Y	Short only	-3.57	-5.08	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g24Y	g24P	Short only	-5.08	-3.57	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26P	g26Y	Short only	-6.44	-8.32	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g26Y	g26P	Short only	-8.32	-6.44	29.10	0.750	0.500	0.500	86.41	94.81	2	24.26	1.000	110.34	115.17	3
g27P	g27X	Short only	-1.51	0.27	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28P	g28Y	Short only	-2.34	-2.45	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g28Y	g28P	Short only	-2.45	-2.34	31.84	0.780	0.560	0.560	104.64	108.48	2	28.17	1.000	120.07	120.04	6
g30X	g30XY	Short only	-0.36	-2.24	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g30XY	g30X	Short only	-2.24	-0.36	18.15	0.780	0.570	0.570	142.24	136.99	5	16.38	1.000	159.33	144.19	6
g32P	g32Y	Short only	-1.36	-1.29	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6
g32Y	g32P	Short only	-1.29	-1.36	13.60	0.780	0.560	0.560	170.14	158.24	5	12.43	1.000	193.98	165.50	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.094	50.00	50.00	2.19
Clamp2	1.053	50.00	50.00	2.11
Clamp3	2.583	50.00	50.00	5.17
Clamp4	2.583	50.00	50.00	5.17
Clamp5	2.583	50.00	50.00	5.17
Clamp6	2.583	50.00	50.00	5.17
Clamp7	2.583	50.00	50.00	5.17
Clamp8	2.583	50.00	50.00	5.17
Clamp9	0.960	50.00	50.00	1.92
Clamp10	1.047	50.00	50.00	2.09
Clamp11	1.725	50.00	50.00	3.45
Clamp12	1.355	50.00	50.00	2.71
Clamp13	1.440	50.00	50.00	2.88
Clamp14	2.840	50.00	50.00	5.68
Clamp15	3.429	50.00	50.00	6.86
Clamp17	0.605	50.00	50.00	1.21
Clamp18	0.487	50.00	50.00	0.97
Clamp19	0.540	50.00	50.00	1.08
Clamp20	1.303	50.00	50.00	2.61
Clamp21	2.057	50.00	50.00	4.11
Clamp22	1.591	50.00	50.00	3.18
Clamp23	0.707	50.00	50.00	1.41
Clamp24	0.305	50.00	50.00	0.61
Clamp25	0.305	50.00	50.00	0.61
Clamp26	0.305	50.00	50.00	0.61
Clamp27	1.564	50.00	50.00	3.13
Clamp28	6.305	50.00	50.00	12.61

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Comp. Use In %	Comp. Member	Comp. Force (kips)	Comp. Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	72.05	Tens	61.92	g8X	-55.414	NESC Ext	89.489	166.500	210.937	1.000	1.000	1.000	60.36
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	80.29	Comp	80.29	g10X	-73.398	NESC Ext	91.422	166.500	210.937	1.000	1.000	1.000	71.33
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	78.53	Comp	78.53	g14X	-97.743	NESC Ext	124.467	199.800	303.750	0.333	0.333	0.333	68.42
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	60.05	Comp	60.05	g15P	-10.499	NESC Ext	17.484	33.300	25.312	0.500	0.750	0.500	106.07
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	27.62	Comp	27.62	g21P	-6.706	NESC Ext	24.281	33.300	33.750	0.500	0.750	0.500	97.34
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.31	Cross	34.31	g26Y	-8.321	NESC Ext	24.256	49.950	50.625	1.000	0.500	0.500	110.34
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	9.05	Cross	8.71	g28Y	-2.453	NESC Ext	28.168	33.300	42.187	1.000	0.560	0.560	120.04
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	33.58	Comp	33.58	g60X	-5.255	NESC Ext	15.646	33.300	33.750	1.000	0.500	0.500	164.79
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	27.55	Comp	27.55	g41P	-7.224	NESC Ext	26.226	33.300	33.750	1.000	1.000	1.000	113.64
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	15.45	g42P	-4.805	NESC Hea	31.104	49.950	50.625	1.000	0.500	0.500	98.95
M5	L4x3x1/4	SAU	4X3X0.25	33.0	24.44	Comp	24.44	g62X	-7.034	NESC Ext	28.782	33.300	33.750	1.000	0.500	0.500	135.56
M6	L4x4x1/4	SAE	4X4X0.25	33.0	29.40	Comp	29.40	g64X	-6.048	NESC Ext	20.575	33.300	33.750	1.000	0.500	0.500	192.00
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.58	Comp	24.58	g45P	-1.760	NESC Hea	7.160	16.650	12.656	1.000	1.000	1.000	179.95
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.90	Tens	0.00	g50Y	0.000		3.334	33.300	33.750	1.000	1.000	1.000	358.34
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	96.71	Tens	57.97	g33P	-2.510	NESC Hea	4.330	33.300	33.750	0.580	0.790	0.580	309.85
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	87.23	Tens	64.33	g57X	-7.554	NESC Ext	11.742	16.650	12.656	1.000	1.000	1.000	140.52
M10	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**33.0**	**91.76**	**Tens**	**86.46**	**g70Y**	**-9.119**	**NESC Ext**	**20.689**	**16.800**	**10.547**	**1.000**	**1.000**	**1.000**	**85.71**

5.000	1	10															
7.133	1	10															
20.375	1	12															
7.071	2	2															
6.403	2	2															
7.071	3	3															
7.614	6	2															
0.000	0	0															
10.560	6	2															
5.000	3	2															
7.669	3	3															
14.460	6	2															
20.000	6	2															
6.403	4	1															
12.661	5	2															
18.876	5	2															
5.000	4	1															
3.536	**3**	**1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??**															

M11	L5x5x3/8	SAE	5X5X0.375	33.0	27.38	Comp	27.38	g65XY	-4.599	NESC	Ext	35.163	16.800	21.094	1.000	1.000	1.000	171.42	171.42	14.142	4	1
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	21.19	Comp	21.19	g66Y	-2.980	NESC	Ext	15.475	16.800	14.062	1.000	1.000	1.000	176.80	176.80	10.225	4	1
PM	Powermount	Pwmnt	Pipe 18" Std.	50.0	3.03	Comp	3.03	g71P	-27.481	NESC	Hea	907.332	0.000	0.000	1.000	1.000	1.000	38.46	38.46	20.000	1	0
M13	L4x3x1/4	SAU	4X3X0.25	33.0	15.61	Comp	15.61	g47P	-5.310	NESC	Hea	34.023	66.600	67.500	1.000	0.500	0.500	112.62	116.31	12.013	3	4
M14	Bar 2-1/2 x 1/4	Bar	2x1/4	33.0	30.31	Tens	0.00	g58Y	0.000			14.788	33.300	33.750	1.000	1.000	1.000	60.00	60.00	5.000	1	2

Group Summary (Tension Portion):

Group Label	Group 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	No. Of Holes	Hole Diameter (in)
Leg1	L5x5x5/16	SAE	5X5X0.3125	33.0	72.05	Tens	72.05	g8Y	50.524	NESC Ext	70.122	166.500	210.937	183.823	5.000	10	3.310	0.875
Leg2	L6x6x5/16	SAE	6X6X0.3125	33.0	80.29	Comp	74.63	g10Y	67.597	NESC Ext	90.582	166.500	210.937	183.823	7.133	10	3.310	0.875
Leg3	L6x6x3/8	SAE	6X6X0.375	33.0	78.53	Comp	67.01	g14Y	72.401	NESC Ext	108.039	199.800	303.750	281.250	20.375	12	3.310	0.875
Diag1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	60.05	Comp	53.40	g15XY	10.244	NESC Ext	19.184	33.300	25.312	21.094	7.071	2	1.000	0.875
Diag2	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	27.62	Comp	27.15	g21XY	6.785	NESC Ext	24.985	33.300	33.750	26.766	6.403	2	1.000	0.875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.31	Cross	29.54	g25XY	8.521	NESC Ext	28.846	49.950	50.625	42.187	7.071	3	1.000	0.875
Diag4	L2.5x2.5x5/16	SAE	2.5X2.5X0.3125	33.0	9.05	Cross	9.05	g28X	3.014	NESC Ext	35.241	33.300	42.187	35.156	7.614	2	1.000	0.875
M1	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
M2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	33.58	Comp	3.78	g60P	0.830	NESC Ext	28.846	33.300	33.750	21.984	10.560	2	1.000	0.875
M3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	27.55	Comp	21.19	g41X	6.232	NESC Ext	32.410	33.300	33.750	29.412	5.000	2	1.000	0.875
M4	L3x3x1/4	SAE	3X3X0.25	33.0	15.45	Comp	6.80	g40Y	3.232	NESC Hea	47.520	0.000	0.000	0.000	5.000	0	0.000	0
M5	L4x3x1/4	SAU	4X3X0.25	33.0	24.44	Comp	7.75	g62P	1.942	NESC Ext	36.271	33.300	33.750	25.078	14.460	2	1.000	0.875
M6	L4x4x1/4	SAE	4X4X0.25	33.0	29.40	Comp	12.25	g64P	3.446	NESC Ext	44.624	33.300	33.750	28.125	20.000	2	2.000	0.875
M7	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	24.58	Comp	21.37	g46P	3.854	NESC Hea	19.184	33.300	25.312	18.035	9.155	2	1.000	0.875
M8	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	20.90	Tens	20.90	g50XY	4.594	NESC Hea	24.985	33.300	33.750	21.984	12.661	2	1.000	0.875
Diag5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	96.71	Tens	96.71	g37X	11.469	NESC Ext	24.985	16.650	16.875	11.859	30.416	1	1.000	0.875
M9	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	87.23	Tens	87.23	g57P	7.759	NESC Ext	19.184	16.650	12.656	8.895	5.000	1	1.000	0.875
M10	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**33.0**	**91.76**	**Tens**	**91.76**	**g70XY**	**9.677**	**NESC Ext**	**22.961**	**16.800**	**10.547**	**11.719**	**3.536**	**1**	**1.000**	**0.875**

0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g70X g70XY ??

M11	L5x5x3/8	SAE	5X5X0.375	33.0	27.38	Comp	0.00	g65Y	0.000		99.560	16.800	21.094	23.437	14.142	1	1.000
0.6875																	
M12	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	33.0	21.19	Comp	0.00	g66Y	0.000		45.088	16.800	14.062	15.625	10.225	1	1.000
0.6875																	
PM	Powermount	Pwmnt	Pipe 18" Std.	50.0	3.03	Comp	0.00	g78P	0.000		969.998	0.000	0.000	0.000	15.000	0	0.000
0																	
M13	L4x3x1/4	SAU	4X3X0.25	33.0	15.61	Comp	1.24	g47XY	0.543	NESC Ext	43.696	66.600	67.500	56.250	12.013	4	1.000
0.875																	
M14 Bar 2-1/2 x 1/4		Bar	2x1/4	33.0	30.31	Tens	30.31	g51P	2.814	NESC Hea	9.281	33.300	33.750	28.125	5.000	2	1.000
0.875																	

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	57.97	g33P	Angle
NESC Extreme	96.71	g37X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.64	NESC Heavy	0.0
Clamp2	Clamp	3.44	NESC Heavy	0.0
Clamp3	Clamp	6.81	NESC Heavy	0.0
Clamp4	Clamp	6.73	NESC Heavy	0.0
Clamp5	Clamp	6.91	NESC Heavy	0.0
Clamp6	Clamp	6.85	NESC Heavy	0.0
Clamp7	Clamp	6.78	NESC Heavy	0.0
Clamp8	Clamp	6.71	NESC Heavy	0.0
Clamp9	Clamp	1.92	NESC Extreme	0.0
Clamp10	Clamp	2.09	NESC Extreme	0.0
Clamp11	Clamp	3.45	NESC Extreme	0.0
Clamp12	Clamp	2.71	NESC Extreme	0.0
Clamp13	Clamp	2.88	NESC Extreme	0.0
Clamp14	Clamp	5.68	NESC Extreme	0.0
Clamp15	Clamp	6.86	NESC Extreme	0.0
Clamp17	Clamp	2.56	NESC Heavy	0.0
Clamp18	Clamp	2.65	NESC Heavy	0.0
Clamp19	Clamp	3.50	NESC Heavy	0.0
Clamp20	Clamp	6.76	NESC Heavy	0.0
Clamp21	Clamp	8.70	NESC Heavy	0.0
Clamp22	Clamp	8.26	NESC Heavy	0.0
Clamp23	Clamp	1.41	NESC Extreme	0.0
Clamp24	Clamp	0.61	NESC Extreme	0.0
Clamp25	Clamp	0.61	NESC Extreme	0.0
Clamp26	Clamp	0.61	NESC Extreme	0.0
Clamp27	Clamp	4.66	NESC Heavy	0.0
Clamp28	Clamp	17.14	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	Clamp1	Clamp	19P	0.000	1.185	1.385	1.822
NESC Heavy	Clamp2	Clamp	19X	0.000	1.135	1.294	1.721
NESC Heavy	Clamp3	Clamp	20P	0.000	1.861	2.852	3.405
NESC Heavy	Clamp4	Clamp	20X	0.000	1.785	2.852	3.364
NESC Heavy	Clamp5	Clamp	21P	0.000	1.845	2.921	3.455
NESC Heavy	Clamp6	Clamp	21X	0.000	1.785	2.921	3.423
NESC Heavy	Clamp7	Clamp	22P	0.000	1.844	2.843	3.389
NESC Heavy	Clamp8	Clamp	22X	0.000	1.785	2.843	3.357
NESC Heavy	Clamp9	Clamp	3X	0.000	0.308	0.456	0.550
NESC Heavy	Clamp10	Clamp	5X	0.000	0.357	0.617	0.713
NESC Heavy	Clamp11	Clamp	7X	0.000	0.422	0.705	0.822
NESC Heavy	Clamp12	Clamp	9X	0.000	0.457	0.695	0.832
NESC Heavy	Clamp13	Clamp	10X	0.000	0.604	0.931	1.110
NESC Heavy	Clamp14	Clamp	12X	0.000	0.962	1.517	1.797
NESC Heavy	Clamp15	Clamp	15X	0.000	1.441	2.396	2.796
NESC Heavy	Clamp17	Clamp	i0.50E101S	0.000	0.275	1.248	1.278
NESC Heavy	Clamp18	Clamp	i0.50E96S	0.000	0.343	1.278	1.323
NESC Heavy	Clamp19	Clamp	i0.50E84S	0.000	0.604	1.643	1.751
NESC Heavy	Clamp20	Clamp	i0.50E74S	0.000	1.183	3.163	3.378
NESC Heavy	Clamp21	Clamp	i0.50E40S	0.000	1.474	4.092	4.349
NESC Heavy	Clamp22	Clamp	i0.50E20S	0.000	1.184	3.957	4.130
NESC Heavy	Clamp23	Clamp	1X	0.000	0.219	0.380	0.439
NESC Heavy	Clamp24	Clamp	1XY	0.000	0.088	0.181	0.201
NESC Heavy	Clamp25	Clamp	2X	0.000	0.119	0.215	0.246
NESC Heavy	Clamp26	Clamp	2XY	0.000	0.119	0.215	0.246
NESC Heavy	Clamp27	Clamp	24P	0.000	0.898	2.150	2.330
NESC Heavy	Clamp28	Clamp	25P	0.000	1.639	8.411	8.569
NESC Extreme	Clamp1	Clamp	19P	0.026	0.942	0.557	1.094
NESC Extreme	Clamp2	Clamp	19X	0.009	0.934	0.487	1.053
NESC Extreme	Clamp3	Clamp	20P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp4	Clamp	20X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp5	Clamp	21P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp6	Clamp	21X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp7	Clamp	22P	0.772	2.154	1.200	2.583
NESC Extreme	Clamp8	Clamp	22X	0.772	2.154	1.200	2.583
NESC Extreme	Clamp9	Clamp	3X	0.000	0.925	0.259	0.960
NESC Extreme	Clamp10	Clamp	5X	0.000	1.012	0.268	1.047
NESC Extreme	Clamp11	Clamp	7X	0.000	1.622	0.588	1.725
NESC Extreme	Clamp12	Clamp	9X	0.000	1.299	0.387	1.355
NESC Extreme	Clamp13	Clamp	10X	0.000	1.385	0.395	1.440
NESC Extreme	Clamp14	Clamp	12X	0.000	2.643	1.041	2.840
NESC Extreme	Clamp15	Clamp	15X	0.000	3.324	0.844	3.429
NESC Extreme	Clamp17	Clamp	i0.50E101S	0.000	0.440	0.415	0.605
NESC Extreme	Clamp18	Clamp	i0.50E96S	0.000	0.360	0.328	0.487
NESC Extreme	Clamp19	Clamp	i0.50E84S	0.000	0.396	0.367	0.540
NESC Extreme	Clamp20	Clamp	i0.50E74S	0.000	0.993	0.845	1.303
NESC Extreme	Clamp21	Clamp	i0.50E40S	0.000	1.571	1.328	2.057
NESC Extreme	Clamp22	Clamp	i0.50E20S	0.000	1.176	1.071	1.591
NESC Extreme	Clamp23	Clamp	1X	0.000	0.667	0.234	0.707
NESC Extreme	Clamp24	Clamp	1XY	0.000	0.237	0.193	0.305
NESC Extreme	Clamp25	Clamp	2X	0.000	0.237	0.193	0.305

NESC Extreme	Clamp26	Clamp	2XY	0.000	0.237	0.193	0.305
NESC Extreme	Clamp27	Clamp	24P	0.000	1.462	0.557	1.564
NESC Extreme	Clamp28	Clamp	25P	0.000	5.097	3.711	6.305

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	17.842	0.000	35.310	1478.909	24.064	15.809
NESC Extreme	29.310	4.667	13.200	2395.735	400.720	52.322

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 23724.7
Total: 23724.7

*** End of Report

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Subject: Anchor Bolt Analysis for Tower #1321

Location: Startford, CT

Rev. 0: 1/25/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16002.001

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $Uplift := 78.63 \cdot kips$ (User Input)

Shear = $Shear := 22.22 \cdot kips$ (User Input)

Compression = $Compression := 96.76 \cdot kips$ (User Input)

Anchor Bolt Data:

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

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

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

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

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

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

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

Anchor Bolt Area:

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

Check Anchor Bolt Area:

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

Required Area = $A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 3.5 \cdot in^2$

$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y} \right] = -0.405 \cdot in^2$

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

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

Condition2 = "OK"

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

Condition3 = "OK"

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Subject:	Foundation Analysis Tower # 1321
Location:	Stratford, CT
Rev. 0: 1/25/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16002.001

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear =	Shear := 22.22·1.1·kips = 24.4·kips	(User Input)
Compression =	Comp := 96.76·1.1·kips = 106.4·kips	(User Input)
Uplift =	Uplift := 78.63·1.1·kips = 86.5·kips	(User Input)

Tower Properties:

Tower Height =	$H_t := 101 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 5.67 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 5 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 8 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2.0 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 33.5 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 3.5 \cdot ft$	(User Input)

Subgrade Properties:

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

Calculated Data:

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

Volume of the Concrete Mat = $V_{mat} := \frac{\left(Mat_w^2 \cdot Mat_t\right)}{4} = 982 \cdot ft^3$

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

Resisting Pyramid Base 2 = $B_2 := \left[P_{w2} - \frac{\left(P_{w2} - P_{w1}\right)}{P_H} \cdot \left(P_H - Mat_t\right)\right]^2 = 14.84 ft^2$

Volume of the Concrete Pier = $V_{pier} := \frac{\left(P_H - Mat_t\right)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right) = 42.75 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{mat} + V_{pier} = 1153 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 172.9 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{Conc}}{Uplift} = 2$

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

Uplift_Check = "OK"

Cross Sectional Area of Mat = $A_{mat} := \frac{Mat_w^2}{4} = 281 ft^2$

Section Modulus of Mat = $S_{mat} := \frac{\left(\frac{Mat_w}{2}\right)^3}{6} = 783 \cdot ft^3$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{mat}} + \frac{Shear \cdot \left(Mat_t\right)}{S_{mat}} = 1.1 \cdot ksf$

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

Bearing_Check = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT2043	DATE:	09/16/2015	RF DESIGN ENG:	Bayani Del Moro	RF PERF ENG:		RFDS PROGRAM TYPE:	2016 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	(401)834-5095	RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 2C
REVISION:	Preliminary	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	bd250h@att.com	RF PERF EMAIL:		State:	Final
INITIATIVE /PROJECT:	Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.					TRIDENT:		Status:	RF Approval
						GSM FREQUENCY:	850	RFDS ID:	844453
						UMTS FREQUENCY:	850, 1900	RFDS Version:	1.00
						LTE FREQUENCY:	700, 1900	Created By:	ra9161
								Date Created:	9/14/2015 9:07:04 AM
								Date Updated:	9/16/2015 11:57:12 AM
								Updated By:	ra9161
						I-PLAN JOB # 1:	NER-RCTB-12-04510	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:	60376	FA LOCATION CODE:	10035240	LOCATION NAME:	STRATFORD NU	ORACLE PTN # 1:	2051A03DCQ	PACE JOB # 1:	MRCTB016329
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:		PACE JOB # 2:	
ADDRESS:	155 HARVEST RIDGE ROAD	CITY:	STRATFORD	STATE:	CT	ORACLE PTN # 3:		PACE JOB # 3:	
ZIP CODE:	06614	COUNTY:	FAIRFIELD	MSA / RSA:		ORACLE PTN # 4:		PACE JOB # 4:	
LATITUDE (D-M-S):	41d 14m 16.77084s	LONGITUDE (D-M-S):	-73d -7m -20.59716s	LAT (DEC. DEG.):	41.2379919	SEARCH RING NAME:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	STRATFORD UN 2043 MERRITT PARKWAY NORTH TO EXIT 53 TURN RIGHT ONTO MAIN STREET PUTNEY. GO ABOUT ? MILE AND TURN RIGHT ON CHAPEL STREET, AFTER PASSING THE SCHOOL YOU WILL SEE ON YOUR RIGHT A GATE GOING INTO THE POWER LINES SITE IS IN HERE ON THE LEFT POWER TOWER. DEMARC IS IN TELCO BOX IN COMPOUNDFROM SOUTH TAKE MERRITT PARKWAY GOING NORTH TO EXIT 53 MAKE RIGHT ON 110 AT MAIN STREET PUTNEY MAKE RIGHT GO ABOUT ? MILE AND TURN RIGHT ON CHAPEL STREET , AFTER PASSING THE SCHOOL YOU WILL SEE ON YOUR RIGHT A GATE GOING INTO THE POWER LINES SITE IS IN HERE ON THE LEFT POWER TOWER. DEMARC IS IN TELCO BOX IN COMPOUNDADDRESS: 670 CHAPEL STREET STRATFORD, CTACCESS: 24/7 8899 COMBO ON COMPOUNDCONTACT: UI SITE ON POWER TOWERSECURITY: NONEPOWER COMPANY: UNITES ILLUMINATING (800) 722-5584T-1 GSM: DHXV// 264406 & HCGS//7170S7T-1 UMTS :HCGS 730368 & HCGS 730369SNET: (800) 448-1008 AND (203) 420-3131 (24-HR REPAIR)METER 70 311 273									
						SEARCH RING ID:		CASPR INITIATIVE # 1:	
						BTA:		CASPR INITIATIVE # 2:	
						LONG (DEC. DEG.):	-73.1223881	CASPR INITIATIVE # 3:	
						BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE # 4:	
						AM STUDY REQ'D (Y/N):	No		
						FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:	UTILITY	MARKET LOCATION 700 MHz Band:		
ADDITIONAL REGULATORY?:	No	HEIGHT OVERALL (ft):	101.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:		
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	101.00			MARKET LOCATION 1900 MHz Band:		
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:		
						MARKET LOCATION WCS Band:		
						MARKET LOCATION Future Band:		

Section 5 - E-911 INFORMATION - existing

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911	ORANGE POLICE DEPARTMENT	1377		INTRADO_MIAMI		0		
SECTOR B		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_MIAMI		0		
SECTOR C		CONNECTICUT STATE POLICE-I TROOP	1321		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	ORANGE POLICE DEPARTMENT	1377		INTRADO_MIAMI		0		
SECTOR B		CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO_MIAMI		0		
SECTOR C		CONNECTICUT STATE POLICE-I TROOP	1321		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:	98362	142391	172529	222846	258124				360112			
CTS COMMON ID:	321D2043	321P2043	CTU2043	CTV2043	CTU6043				CTL02043			
BTA/TID:	042G	321P	321V	321U	321V				321L			
4-DIGIT SITE ID:	2043	2043	2043	9043	9043				2043			
COW OR TOY?:	No	No	No	No	No				No			
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED				SECTORIZED			
SITE TYPE:	BTS-CONVENTIONAL	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL				MACRO-CONVENTIONAL			
BTS LOCATION ID:	GROUND		INTERNAL	INTERNAL	INTERNAL				INTERNAL			
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR				CINGULAR			
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD				GOLD			
OPS DISTRICT:	CT-SOUTH		CT-SOUTH	CT-SOUTH	CT-SOUTH				CT-SOUTH			
RF DISTRICT:	NPO TRIAGE	NPO TRIAGE	NPO TRIAGE	BRIDGEPORT	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				NE_CT_S_FRFD_CTL_CS			
RF ZONE:	HOTSEAT	HOTSEAT	HOTSEAT	BBP03	BBP03				HOTSEAT			
BASE STATION TYPE:	BASE	BASE	BASE	OVERLAY	OVERLAY				BASE			
EQUIPMENT NAME:	STRATFORD NU	STRATFORD NU	STRATFORD NU	STRATFORD NU	STRATFORD - NU				STRATFORD NU			
DISASTER PRIORITY:	0	0	2	0	0				3			

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:	98362	142391	172529	222846	258124				360112			
CTS COMMON ID:	321D2043	321P2043	CTU2043	CTV2043	CTU6043				CTL02043			
BTA/TID:	042G	321P	321V	321U	321V				321L			
4-DIGIT SITE ID:	2043	2043	2043	9043	9043				2043			
COW OR TOY?:	No	No	No	No	No				No			
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED				SECTORIZED			
SITE TYPE:	BTS-CONVENTIONAL	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL				MACRO-CONVENTIONAL			
BTS LOCATION ID:	GROUND		INTERNAL	INTERNAL	INTERNAL				INTERNAL			
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR				CINGULAR			
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD				GOLD			
OPS DISTRICT:	CT-South		CT-South	CT-South	CT-South				CT-South			
RF DISTRICT:	NPO Triage	NPO Triage	NPO Triage	Bridgeport	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				NE_CT_S_FRFD_CTL_CS			
RF ZONE:	Hotseat	Hotseat	Hotseat	BBP03	BBP03				Hotseat			
BASE STATION TYPE:	BASE	BASE	BASE	OVERLAY	OVERLAY				BASE			
EQUIPMENT NAME:	STRATFORD NU	STRATFORD NU	STRATFORD NU	STRATFORD NU	STRATFORD - NU				STRATFORD NU			
DISASTER PRIORITY:	0	0	2	0	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	BRPTCTBSC03	BRPTCTBSC03	BRPTCT04CR0R05	BRPTCT04CR0R05	BRPTCT04RNC001				FF01			
LAC	05012	05012	05991	05991	05999							
RAC												
EQUIPMENT VENDOR	NOKIA	NOKIA	ERICSSON	ERICSSON	ERICSSON				ERICSSON			
EQUIPMENT TYPE	ULTRASITE	ULTRASITE	3206 INDOOR	3206 INDOOR	3206 INDOOR				6601 INDOOR MU			
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT			
AGPS	Yes	Yes	Yes	Yes	Yes				Yes			
NODE B NUMBER	0	0	0	0	0				2043			
PARENT NAME	BRIDGEPORT BSC 03	BRIDGEPORT BSC 03	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC001				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	BRPTCTBSC03	BRPTCT04CR0R05	BRPTCT04CR0R05	BRPTCT04RNC001				FF01			
LAC	05012	05012	05991	05991	05999							
RAC												
EQUIPMENT VENDOR	NOKIA	NOKIA	ERICSSON	ERICSSON	ERICSSON				ERICSSON			
EQUIPMENT TYPE	ULTRASITE	ULTRASITE	3206 INDOOR	3206 INDOOR	3206 INDOOR				6601 INDOOR MU			
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT			
AGPS	Yes	Yes	Yes	Yes	Yes				Yes			
NODE B NUMBER	0	0	0	0	0				2043			
PARENT NAME	BRIDGEPORT BSC 03	BRIDGEPORT BSC 03	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC5	BRIDGEPORT CT RNC001							

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:	98362	142391			222846	172529	222846	258124									360112							
CELL ID/BCF:	042G2043	321P2043			CTU2043	CTU2043	CTU2043	CTU6043									CTL02043							
CTS COMMON ID:	321D2043	321P2043			CTV2043	CTU2043	CTV2043	CTU6043									CTL02043							
																	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:	98362	142391			222846	172529	222846	258124									360112		360112					
CELL ID/BCF:	042G2043	321P2043			CTU2043	CTU2043	CTU2043	CTU6043									CTL02043		CTL02043					
CTS COMMON ID:	321D2043	321P2043			CTV2043	CTU2043	CTV2043	CTU6043									CTL02043		CTL02043					
																	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)	60376.850.25G.1	60376.1900.25G.1			60376.850.3G.1	60376.1900.3G.1	60376.850.3G.2	60376.1900.3G.100									60376.700.4G.1							
SECTOR A SOFT SECTOR ID	321G20431	321P20434			CTV20431	CTU20437	CTV2043A	CTU60437									CTL02043_7A_1							
SECTOR B	321G20432	321P20435			CTV20432	CTU20438	CTV2043B										CTL02043_7B_1							
SECTOR C	321G20433	321P20436			CTV20433	CTU20439	CTV2043C										CTL02043_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)	60376.850.25G.1	60376.1900.25G.1			60376.850.3G.1	60376.1900.3G.1	60376.850.3G.2	60376.1900.3G.100									60376.700.4G.1		60376.1900.4G.111					
SECTOR A SOFT SECTOR ID	321G20431	321P20434			CTV20431	CTU20437	CTV2043A	CTU60437									CTL02043_7A_1		CTL02043_9A_1					
SECTOR B	321G20432	321P20435			CTV20432	CTU20438	CTV2043B										CTL02043_7B_1		CTL02043_9B_1					
SECTOR C	321G20433	321P20436			CTV20433	CTU20439	CTV2043C										CTL02043_7C_1		CTL02043_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)	60376.850.25G.1	60376.1900.25G.1			60376.850.3G.1	60376.1900.3G.1	60376.850.3G.2	60376.1900.3G.100									60376.700.4G.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)	60376.850.25G.1	60376.1900.25G.1			60376.850.3G.1	60376.1900.3G.1	60376.850.3G.2	60376.1900.3G.100									60376.700.4G.1		60376.1900.4G.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	20431	20434			20431	20437	60431	60437																
SECTOR B	20432	20435			20432	20438	60432																	
SECTOR C	20433	20436			20433	20439	60433																	
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	20431	20434			20431	20437	60431	60437																
SECTOR B	20432	20435			20432	20438	60432																	
SECTOR C	20433	20436			20433	20439	60433																	
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 11 - CURRENT RADIO COUNTS existing

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

Section 12 - CURRENT T1 COUNTS existing

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

Section 13 - NEW/PROPOSED RADIO COUNTS

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

Section 14 - NEW/PROPOSED T1 COUNTS

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

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770.00.850.00		P65-16-XLH-RR	7770.00.850.00			
ANTENNA VENDOR	POWERWAVE		Powerwave	POWERWAVE			
ANTENNA SIZE (H x W x D)			72X12X6				
ANTENNA WEIGHT			64				
AZIMUTH	143		30	143			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03		126.03	126.03			
ANTENNA TIP HEIGHT	129		129	129			
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT	2		2	2			
Antenna RET Motor (QTY/MODEL)			Built-In				
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)			2 Powerwave LGP 21901				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP	2 Pwav LGP21401 Single 1900 w/ 850BP (850)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			2 Polyphaser 1000860			
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)							
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	60376.A.850.3G.1	60376.A.850.3G.1	CTV20431	CTV20431		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.A.850.3G.2	60376.A.850.3G.2	CTV20431	CTV2043A		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.A.1900.3G.1	60376.A.1900.3G.1	CTU20437	CTU20434		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 3	PORT 1	60376.A.700.4G.1	60376.A.700.4G.1	CTL02043_7A_1	CTL02043_7A_1		LTE 700	P65-16-XLH-RR_716MHz_05DT	14.8		5	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO					827.9421		
ANTENNA POSITION 4	PORT 1	60376.A.850.25G.1	60376.A.850.25G.1	321G20431			GSM 850	7770.00.850.00	13.5		0	BOTTOM	1-1/4 at 850 MHz	153.03	NO			NO	12.58	147.57		

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	7770.00.850.06		P65-16-XLH-RR	7770.00.850.06			
ANTENNA VENDOR	POWERWAVE		Powerwave	POWERWAVE			
ANTENNA SIZE (H x W x D)			72X12X6				
ANTENNA WEIGHT			64				
AZIMUTH	263		150	263			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03		126.03	126.03			
ANTENNA TIP HEIGHT	129		129	129			
MECHANICAL DOWNTILT	0		2	0			
FEEDER AMOUNT	2		2	2			
Antenna RET Motor (QTY/MODEL)			Built-In				
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)			2 Powerwave LGP 21901				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP	2 Pwav LGP21401 Single 1900 w/ 850BP (850)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			2 Polyphaser 1000860			
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)							
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	60376.B.850.3G.1	60376.B.850.3G.1	CTV20432	CTV20432		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.B.850.3G.2	60376.B.850.3G.2	CTV20432	CTV2043A		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.B.1900.3G.1	60376.B.1900.3G.1	CTU20438	CTU20435		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 3	PORT 1	60376.B.700.4G.1	60376.B.700.4G.1	CTL02043_7B_1	CTL02043_7B_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO					827.9421		
ANTENNA POSITION 4	PORT 1	60376.B.850.25G.1	60376.B.850.25G.1	321G20432			GSM 850	7770.00.850.06	13.5		6	BOTTOM	1-1/4 at 850 MHz	153.03	NO			NO	12.58	147.57		

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	7770.00.850.00		P65-16-XLH-RR	7770.00.850.00			
ANTENNA VENDOR	POWERWAVE		Powerwave	POWERWAVE			
ANTENNA SIZE (H x W x D)			72X12X6				
ANTENNA WEIGHT			64				
AZIMUTH	23		270	23			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03		126.03	126.03			
ANTENNA TIP HEIGHT	129		129	129			
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT	2		2	2			
Antenna RET Motor (QTY/MODEL)			Built-In				
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)			2 Powerwave LGP 21901				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP	2 Pwav LGP21401 Single 1900 w/ 850BP (850)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			2 Polyphaser 1000860			
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)							
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	60376.C.850.3G.1	60376.C.850.3G.1	CTV20433	CTV20433		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.C.850.3G.2	60376.C.850.3G.2	CTV20433	CTV2043A		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.C.1900.3G.1	60376.C.1900.3G.1	CTV20439	CTV20436		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 3	PORT 1	60376.C.700.4G.1	60376.C.700.4G.1	CTL02043_7C_1	CTL02043_7C_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO					827.9421		
ANTENNA POSITION 4	PORT 1	60376.C.850.25G.1	60376.C.850.25G.1	321G20433			GSM 850	7770.00.850.00	13.5		0	BOTTOM	1-1/4 at 850 MHz	153.03	NO			NO	12.58	147.57		

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 Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				126.03			
ANTENNA TIP HEIGHT				129			
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.						
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	60376.A.1900.4G.111		CTL02043_9A_1	CTL02043_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

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 Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				126.03			
ANTENNA TIP HEIGHT				129			
MECHANICAL DOWNTILT				2			
FEEDER AMOUNT				2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41..						
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	60376.B.1900.4G.111		CTL02043_9B_1	CTL02043_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

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 Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				126.03			
ANTENNA TIP HEIGHT				129			
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT				2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)				1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component1 (QTY/MODEL)							
Additional Component2 (QTY/MODEL)							
Additional Component3 (QTY/MODEL)							
Local Market Note1	Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.						
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	60376.C.1900.4G.111		CTL02043_9C_1	CTL02043_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

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	7770.00.850.00	7770.00.850.00		HPA-65R-BUU-H6			
ANTENNA VENDOR	POWERWAVE	POWERWAVE		CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH	143	143		30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03	126.03		126.03			
ANTENNA TIP HEIGHT	129	129		129			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	2		2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860	2 Polyphaser 1000860					
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 LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.						
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	60376.A.850.3G.1	60376.A.850.3G.1	CTV20431	CTV20431		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.A.850.3G.2	60376.A.850.3G.2	CTV20431	CTV2043A		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.A.1900.3G.1,60376.A.1900.3G.100	60376.A.1900.3G.1	CTU20437	CTU20434		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 2	PORT 1	60376.A.850.25G.1,60376.A.1900.25G.1	60376.A.850.25G.1	321G20431			GSM 850	7770.00.850.00	13.5		0	BOTTOM	1-1/4 at 850 MHz	153.03	NO	0		NO	12.58	147.57		
ANTENNA POSITION 4	PORT 1	60376.A.700.4G.1		CTL02043_7A_1	CTL02043_7A_1		LTE 700	P65-16-XLH-RR_716MHz_05DT	14.8		5	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO	0				827.9421		
	PORT 3	60376.A.1900.4G.111		CTL02043_9A_1	CTL02043_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

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	7770.00.850.06	7770.00.850.06		HPA-65R-BUU-H6			
ANTENNA VENDOR	POWERWAVE	POWERWAVE		CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH	263	263		150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03	126.03		126.03			
ANTENNA TIP HEIGHT	129	129		129			
MECHANICAL DOWNTILT	0	0		2			
FEEDER AMOUNT	2	2		2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860	2 Polyphaser 1000860					
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 LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.						
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	60376.B.850.3G.1	60376.B.850.3G.1	CTV20432	CTV20432		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.B.850.3G.2	60376.B.850.3G.2	CTV20432	CTV2043B		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.B.1900.3G.1	60376.B.1900.3G.1	CTU20438	CTU20435		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 2	PORT 1	60376.B.850.25G.1,60376.B.1900.25G.1	60376.B.850.25G.1	321G20432			GSM 850	7770.00.850.06	13.5		6	BOTTOM	1-1/4 at 850 MHz	153.03	NO	0		NO	12.58	147.57		
ANTENNA POSITION 4	PORT 1	60376.B.700.4G.1		CTL02043_7B_1	CTL02043_7B_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO	0				827.9421		
	PORT 3	60376.B.1900.4G.111		CTL02043_9B_1	CTL02043_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

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	7770.00.850.00	7770.00.850.00		HPA-65R-BUU-H6			
ANTENNA VENDOR	POWERWAVE	POWERWAVE		CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH	23	23		270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	126.03	126.03		126.03			
ANTENNA TIP HEIGHT	129	129		129			
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	2		2			
Antenna RET Motor (QTY/MODEL)				Built-in			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 Powerwave LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)				RRH Controlled			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)		1 CCI DTMABP7819VG12A Twin PCS w/ 700-850BP			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860	2 Polyphaser 1000860					
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 LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.						
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	60376.C.850.3G.1	60376.C.850.3G.1	CTV20433	CTV20433		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 2	60376.C.850.3G.2	60376.C.850.3G.2	CTV20433	CTV2043C		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4 (850)	153.03	NO	0		NO		309		
	PORT 3	60376.C.1900.3G.1	60376.C.1900.3G.1	CTV20439	CTV20436		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4 (1900)	153.03	NO	0		NO		615		
ANTENNA POSITION 2	PORT 1	60376.C.850.25G.1,60376.C.1900.25G.1	60376.C.850.25G.1	321G20433			GSM 850	7770.00.850.00	13.5		0	BOTTOM	1-1/4 at 850 MHz	153.03	NO	0		NO	12.58	147.57		
ANTENNA POSITION 4	PORT 1	60376.C.700.4G.1		CTL02043_7C_1	CTL02043_7C_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	BOTTOM	1 1/4" RFS LCFS114-50JA_700 MHz	153.03	NO	0				827.9421		
	PORT 3	60376.C.1900.4G.111		CTL02043_9C_1	CTL02043_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	BOTTOM	1 1/4" RFS LCFS114-50JA_1900 MHz	153.03	NO	0				3258.367		

Diagram - Sector	A	Diagram File Name - CT2043 powermount.vsd					
Atoll Site Name -	CT2043	Location Name -	STRATFORD NU	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.

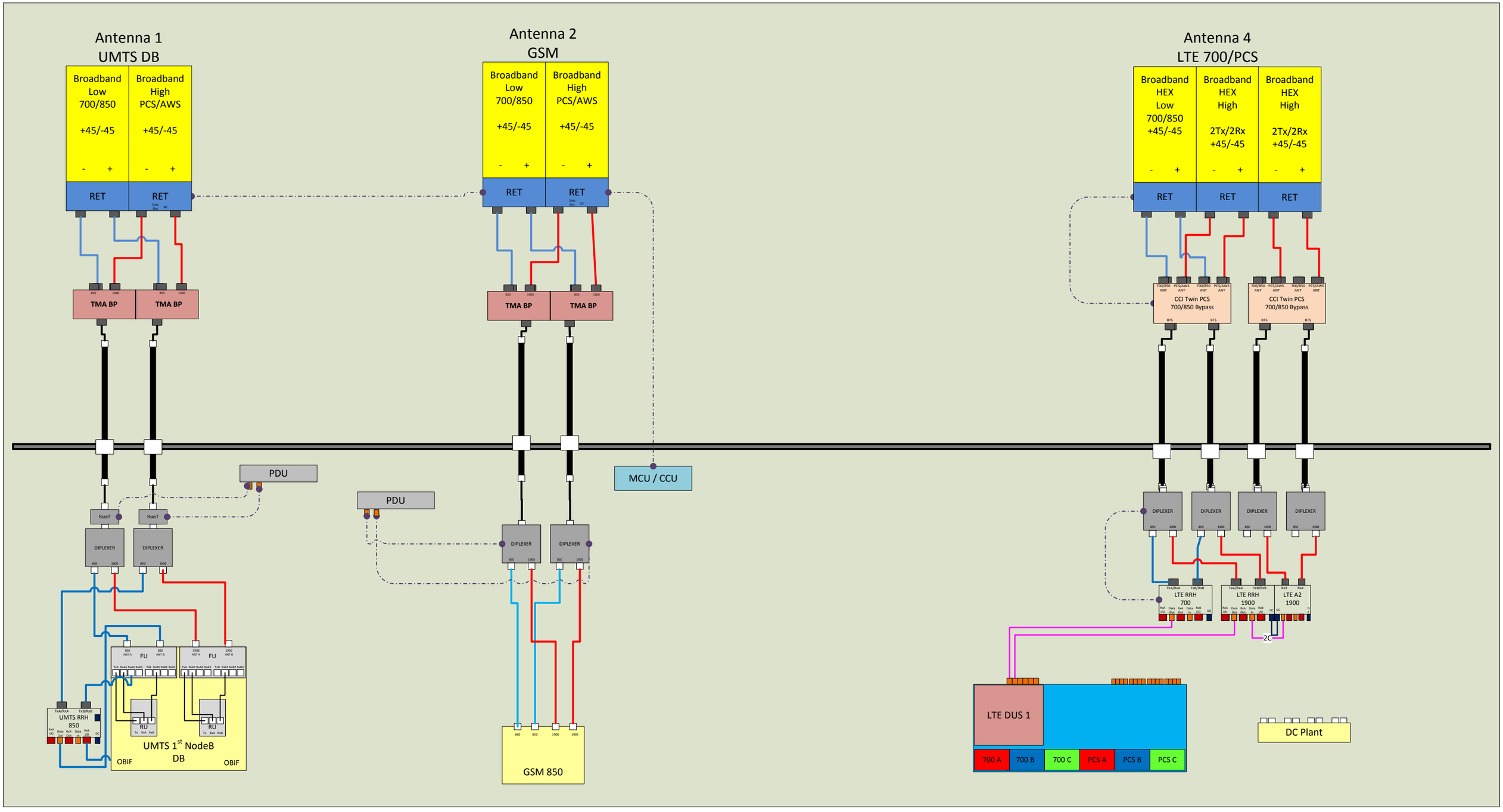


Diagram - Sector	B	Diagram File Name - CT2043 powermount.vsd					
Atoll Site Name -	CT2043	Location Name -	STRATFORD NU	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.

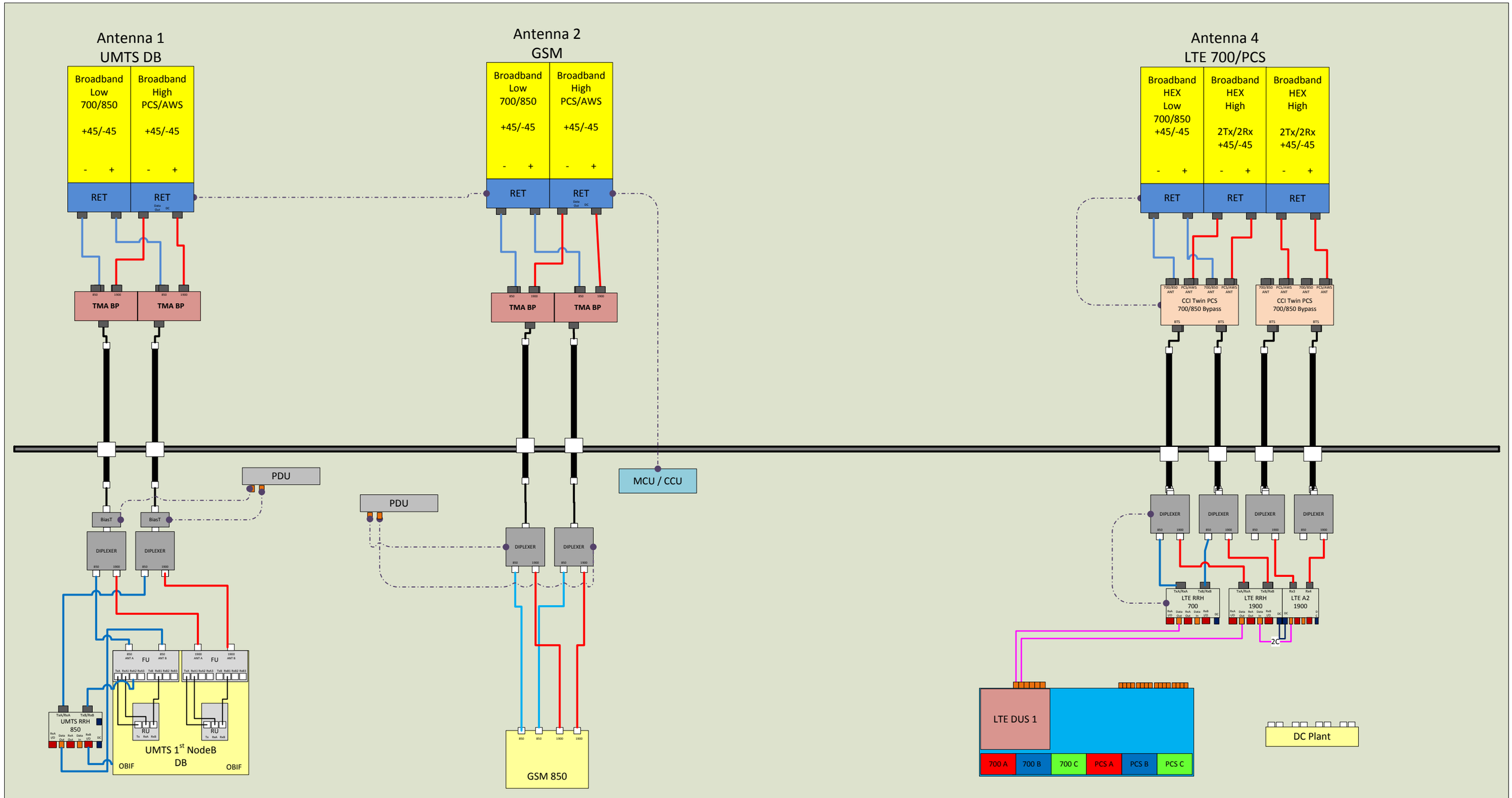
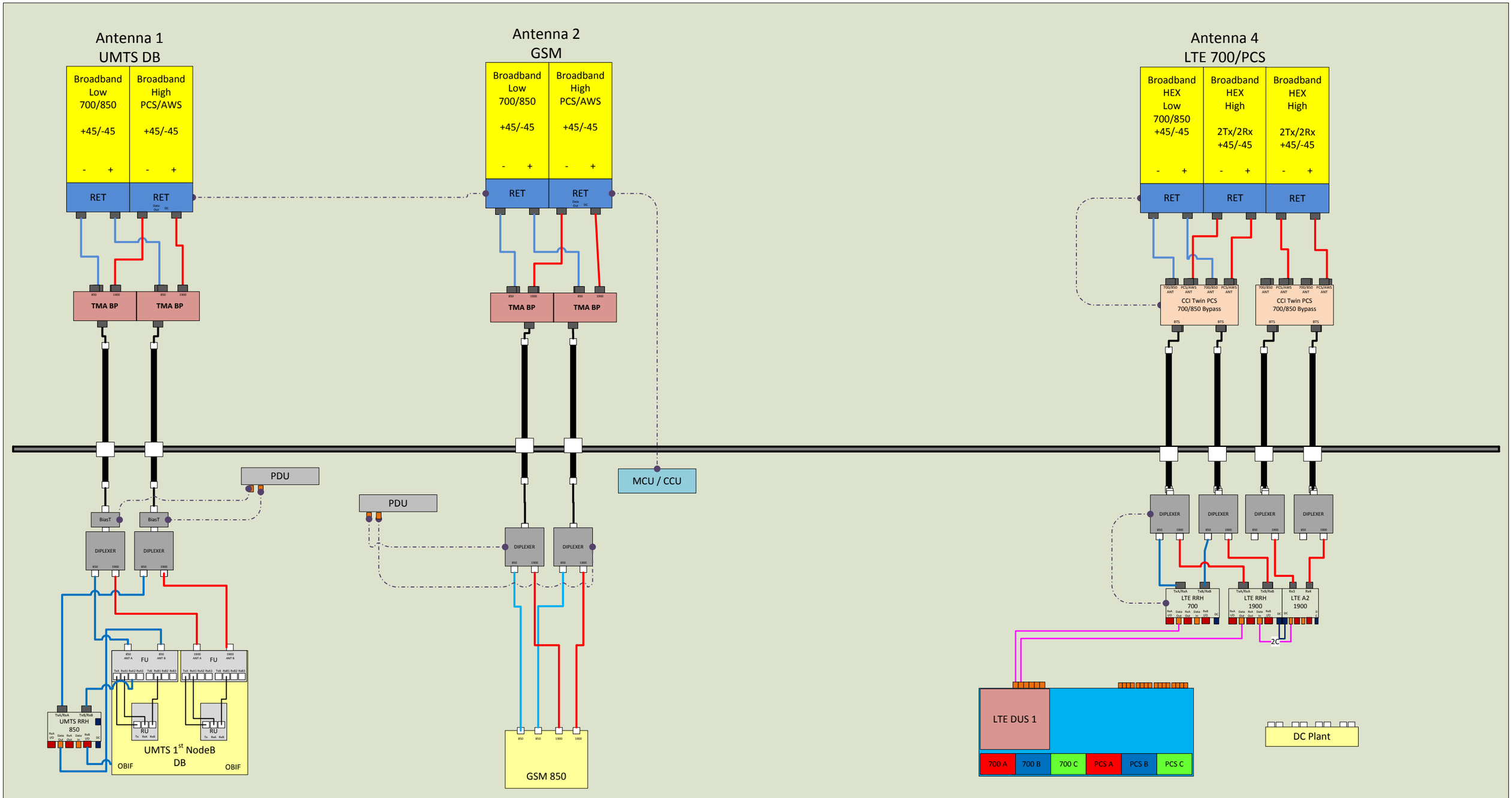


Diagram - Sector	C	Diagram File Name - CT2043 powermount.vsd					
Atoll Site Name -	CT2043	Location Name -	STRATFORD NU	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

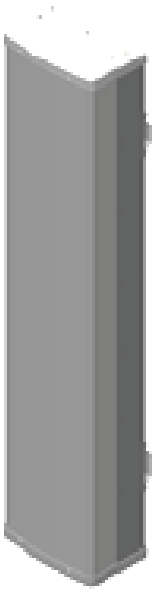
Comments: Replace LTE antenna with HPA-65R-BUU-H6 add 2 hardlines per sector with twin TMA and move it to pos 4 and move the GSM to pos 2 add 1900 RRUS12 and A2 module to LTE it in the shelter, replace DUL21 to DUS41.



WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
09/16/2015	Preliminary / In Progress	ra9161	Preliminary / Submitted for Approval	NA515M	Promote	
09/23/2015	Preliminary / Submitted for Approval	NA515M	Preliminary / Approved	BG144B	Promote	
11/17/2015	Preliminary / Approved	BG144B	Final / RF Approval	om636a	Promote	

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6



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

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

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

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

Hexport Multi-Band Antenna Array

Benefits

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

Features

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

Applications

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

ISO 9001:2008
Quality Management Systems
Système de Qualité
www.ca.sgs.com

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6

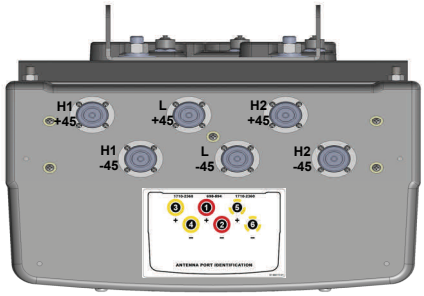
HPA-65R Multi-Band Antenna

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

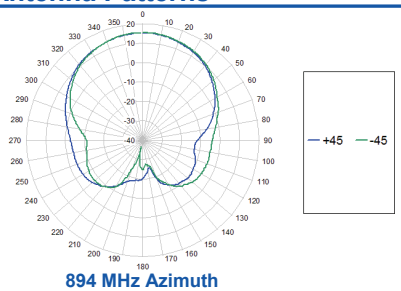
Dimensions (LxWxD)	72.0 x 14.8 x 9.0 inches (1828 x 376 x 229 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph (161 kph)
Side Wind Load	165 lbs (735 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.7 ft^2 (0.90 m^2)
Weight (without Mounting)	51 lbs (23 kg)
RET System Weight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



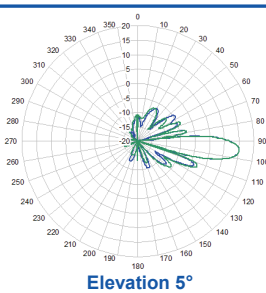
Bottom View

Rear View

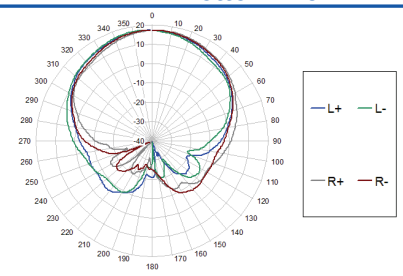
Antenna Patterns*



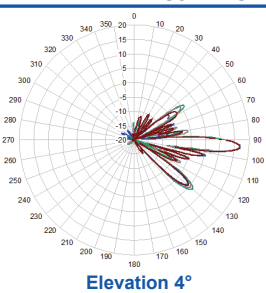
894 MHz Azimuth



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.

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

AT&T Existing Facility

Site ID: CT2043

Stratford NU
155 Harvest Ridge Road
Stratford, CT 06614

June 20, 2016

EBI Project Number: 6216002853

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	3.03 %

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

EBI Consulting
environmental | engineering | due diligence

June 20, 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: **CT2043 – Stratford NU**

EBI Consulting was directed to analyze the proposed AT&T facility located at **155 Harvest Ridge Road, Stratford, 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 **155 Harvest Ridge Road, Stratford, 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 **Kathrein 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 **126 feet** above ground level (AGL) for **Sector A**, **126 feet** above ground level (AGL) for **Sector B** and **126 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:	Kathrein 7770	Make / Model:	Kathrein 7770	Make / Model:	Kathrein 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**126 feet**	Height (AGL):	**126 feet**	Height (AGL):	**126 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	2	Channel Count	4	Channel Count	4
Total TX Power(W):	60 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	1,070.44	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.35 %**	Antenna B1 MPE%	**0.69 %**	Antenna C1 MPE%	**0.69 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Kathrein 7770	Make / Model:	Kathrein 7770	Make / Model:	Kathrein 7770
Gain:	11.4 dBd	Gain:	11.4 dBd	Gain:	11.4 dBd
Height (AGL):	**126 feet**	Height (AGL):	**126 feet**	Height (AGL):	**126 feet**
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	1	Channel Count	2	Channel Count	2
Total TX Power(W):	30 Watts	Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts
ERP (W):	414.12	ERP (W):	828.23	ERP (W):	828.23
Antenna A2 MPE%	**0.18 %**	Antenna B2 MPE%	**0.36 %**	Antenna C2 MPE%	**0.36 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
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):	**126 feet**	Height (AGL):	**126 feet**	Height (AGL):	**126 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	2	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	2,731.28	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	**0.95 %**	Antenna B3 MPE%	**1.90 %**	Antenna C3 MPE%	**1.90 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**2.96 %**
T-Mobile	0.07 %
Site Total MPE %:	**3.03 %**

AT&T Sector A Total:	1.48 %
AT&T Sector B Total:	2.96 %
AT&T Sector C Total:	2.96 %
Site Total:	3.03 %

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	126	2.07	850 MHz	567	0.36 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	126	3.28	1900 MHz (PCS)	1000	0.33 %
AT&T 850 MHz UMTS	2	414.12	126	2.07	850 MHz	567	0.36 %
AT&T 700 MHz LTE	2	940.05	126	4.69	700 MHz	467	1.01 %
AT&T 1900 MHz (PCS) LTE	2	1,791.23	126	8.94	1900 MHz (PCS)	1000	0.89 %
						Total:	**2.96 %**

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	1.48 %
Sector B:	2.96 %
Sector C:	2.96 %
AT&T Maximum Total (per sector):	2.96 %
Site Total:	3.03 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.03 %** 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.