EMPIRE telecom

November 10, 2016

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas, Addition of (3) TMAs and addition of associated lines
Property Address:	95 Halpin Lane, Ridgefield, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T" Site: CT5068)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 105 foot utility tower ("tower") at the above-referenced address, latitude 41.2841111, longitude -73.4866028. AT&T's facility consists of three (3) wireless telecommunications antennas at 115 feet. The tower is controlled and owned by Eversource Energy. Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas, adding (3) TMAs and adding associated lines. The centerline height of said antennas is and will remain at 115 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman of the Town of Ridgefield and the Zoning Enforcement Officer of the Town of Ridgefield. 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 115 foot level of the 105 foot utility tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

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 October 24, 2016).

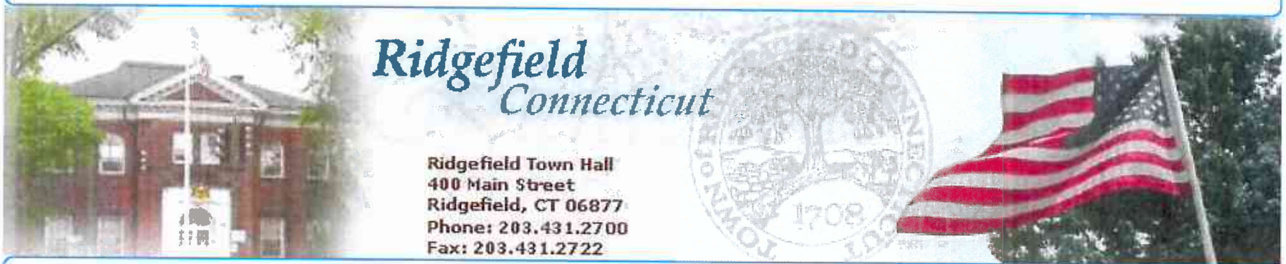
For the foregoing reasons AT&T respectfully requests that the proposed swap of 3 antennas and the addition of (3) TMAs and addition of associated lines be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Rudy Marconi, First Selectman, Town of Ridgefield
Richard Baldelli, Zoning Enforcement Officer, Town of Ridgefield
Eversource Energy, c/o Robert Gray

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2012.



Information on the Property Records for the Municipality of Ridgefield was last updated on 8/6/2014.

Parcel Information

Location:	HALPIN LA	Property Use:	Vacant Land	Primary Use:	Commercial Vacant Land
Unique ID:	F150003	Map Block Lot:	F15-0003	Acres:	28.20
490 Acres:	0.00	Zone:	CAH	Volume / Page:	155/ 332
Developers Map / Lot:	7841	Census:	2453		

Value Information

	Appraised Value	70% Assessed Value
Land	380,700	266,490

	Appraised Value	70% Assessed Value
Buildings	0	0
Detached Outbuildings	0	0
Total	380,700	266,490

Information Published With Permission From The Assessor

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2012.

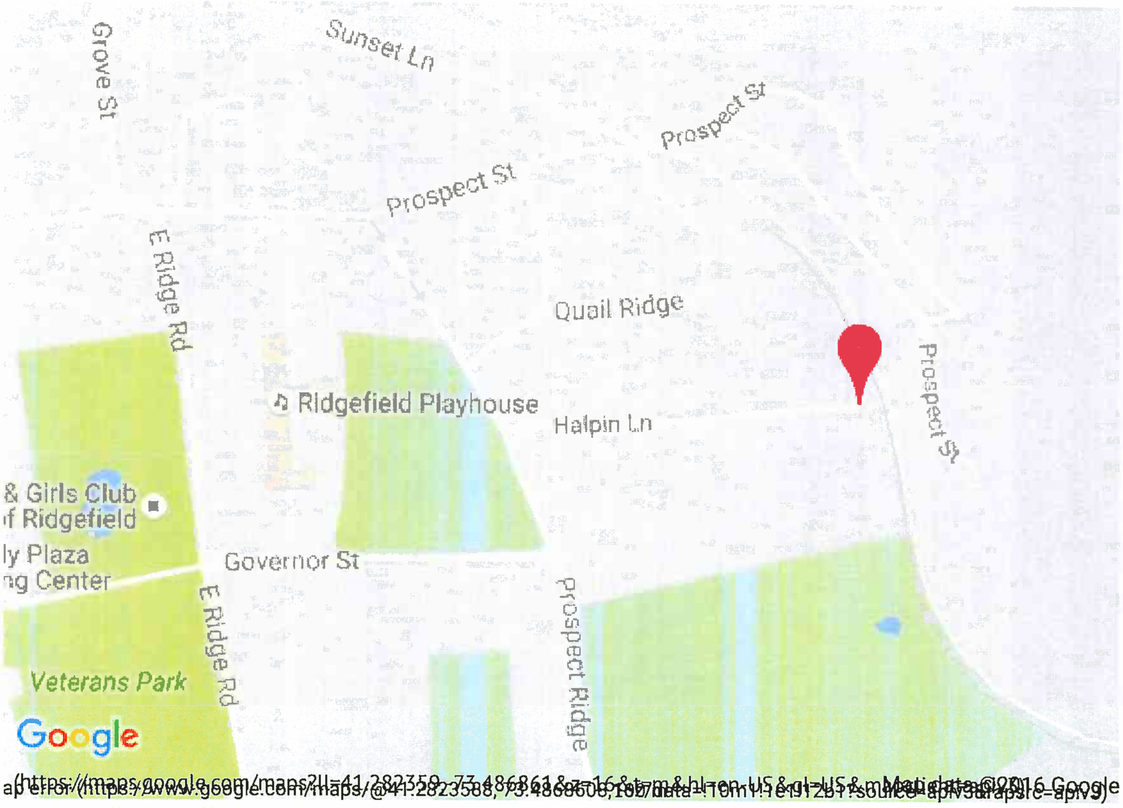
Information on the Property Records for the Municipality of Ridgefield was last updated on 8/6/2014.

Property Summary Information

Parcel Data And Values | Google Map

Google Map

Unique Id:	F150003
Location:	HALPIN LA
MBL:	F15-0003
Primary Use:	Commercial Vacant Land
Zone:	CAH
Acres:	28.20
Appraised Value:	$380,700
Assessed Value:	$266,490



Back To Search (JavaScript:window.history.back(1);)

Print View (PrintPage.aspx?towncode=118&uniqueid=F150003)

Information Published With Permission From The Assessor

WIRELESS COMMUNICATIONS FACILITY
CT5068 - LTE 2C
RIDGEFIELD CENTER
EVERSOURCE UTILITY STRUCT. NO.: 3308
95 HALPIN LANE
RIDGEFIELD, CT 06877

GENERAL NOTES

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

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

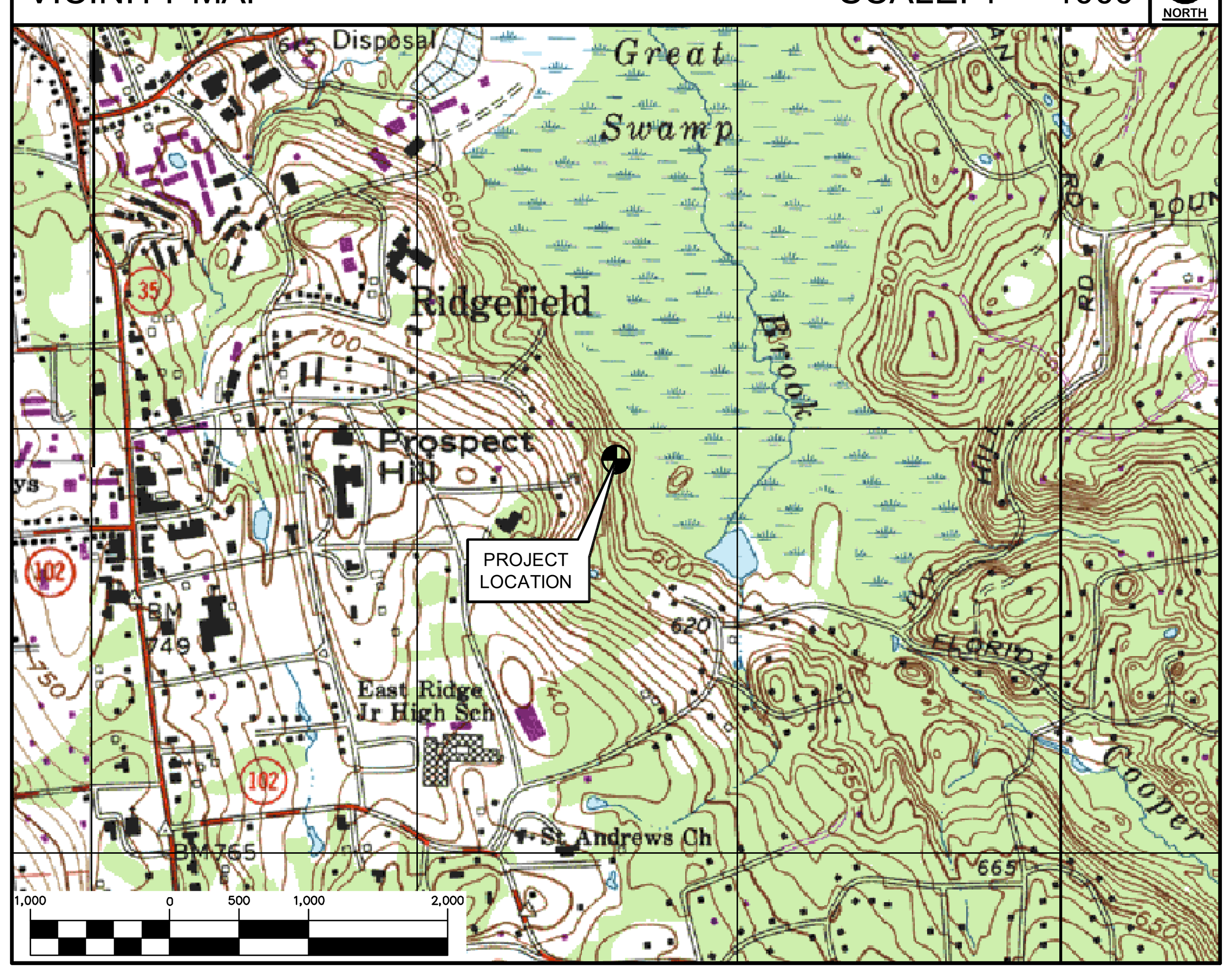
TO: 95 HALPIN LANE
RIDGEFIELD, CONNECTICUT

1.	DEPART ENTERPRISE DR TOWARD CAPITOL BLVD	0.4 MI.
2.	TURN LEFT ONTO CAPITOL BLVD	0.2 MI.
3.	TURN LEFT ONTO WEST ST	0.3 MI.
4.	TAKE RAMP LEFT FOR I-91 SOUTH	9.1 MI.
5.	AT EXIT 18, TAKE RAMP RIGHT FOR I-691 WEST TOWARD WATERBURY / MERIDEN	7.9 MI.
6.	AT EXIT 1, TAKE RAMP LEFT FOR I-84 WEST TOWARD WATERBURY / DANBURY	37.1 MI.
7.	BEAR LEFT ONTO US-7 SOUTH	4.9 MI.
8.	TURN RIGHT ONTO SR-35 / DANBURY RD	2.6 MI.
9.	TURN LEFT ONTO GROVE ST	0.5 MI.
10.	TURN LEFT ONTO PROSPECT ST	0.1 MI.
11.	BEAR RIGHT ONTO PROSPECT RIDGE	0.2 MI.
12.	TURN LEFT ONTO HALPIN LN	0.2 MI.
13.	ARRIVE AT 95 HALPIN LN, RIDGEFIELD	

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   - A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE HEXPORT ANTENNA, (1) PER SECTOR.
   - B. INSTALL (3) NEW RRUS-12+A2 WITHIN EXISTING EQUIPMENT COMPOUND ON PROPOSED SUPPORT FRAME.
   - C. INSTALL (3) TMA'S BEHIND POSITION 1 ANTENNAS ABOVE EXISTING TMA'S
   - D. INSTALL (6) NEW 1 5/8"ø COAX CABLES ROUTED ALONG FACE OF EXISTING TOWER STRUCTURE.
   - E. REMOVE EXISTING (6) TRIPLEXERS AND REPLACE WITH (12) PENTAPLEXERS, INSTALLED AT GROUND LEVEL BY EQUIPMENT CABINETS.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5068
AT&T SITE NAME:	RIDGEFIELD CENTER
SITE ADDRESS:	EVERSOURCE UTILITY STRUCT. NO.: 3308 95 HALPIN LANE RIDGEFIELD, CT 06877
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-16'-57" N LONGITUDE: 73°-29'-13" W GROUND ELEVATION: ±650' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/11/16	KAM/JR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

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

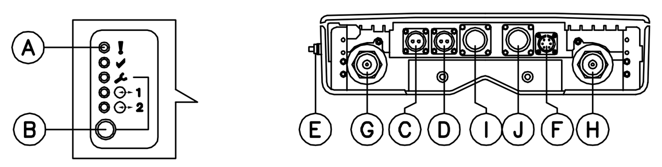
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
RIDGEFIELD CENTER
CT5068 - LTE 2C
95 HALPIN LANE
RIDGEFIELD, CT 06877

DATE: 07/07/16
SCALE: AS NOTED
JOB NO. 16071.32

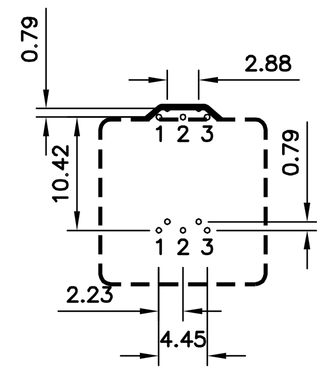
TITLE SHEET

T-1

Sheet No. 1 of 7



SIDE PANEL   BOTTOM VIEW



CONNECTION INTERFACE

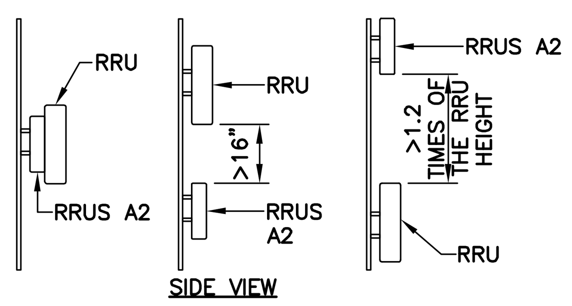
POSITION (ID)	DESCRIPTION	MARKING
A	OPTICAL INDICATORS	!, ✓, 🔧, ⊖-1, ⊖-2
B	MAINTENANCE	🔧
C	−48V DC POWER SUPPLY	POW IN
D	−48V DC POWER SUPPLY TO RRU	POW OUT
E	GROUNDING	⏚
F	RET	RET
G	ANTENNA B	← B
H	ANTENNA A	← A
I	OPTICAL CABLE 1	⊖-1
J	OPTICAL CABLE 2	⊖-2

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

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

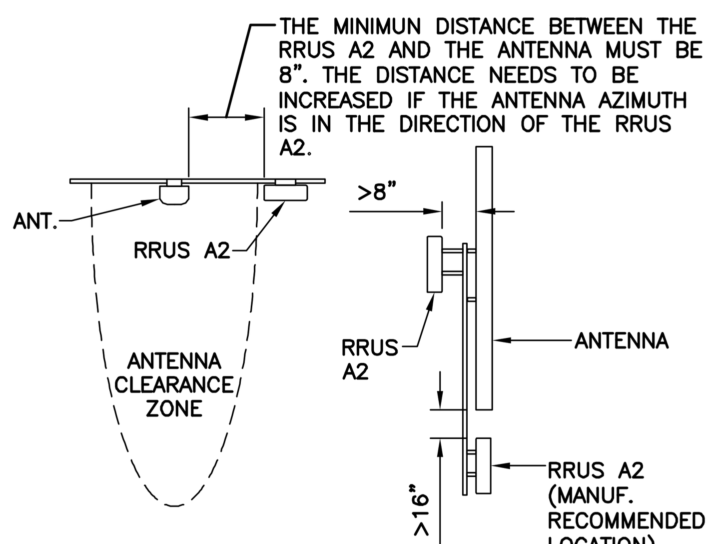
ONE OF THE FOLLOWING SOLUTIONS FOR HOLE POSITIONS MUST BE USED:
- 1, 3
- 1, 2, 3

WALL MOUNTING BRACKET INSTALLATION

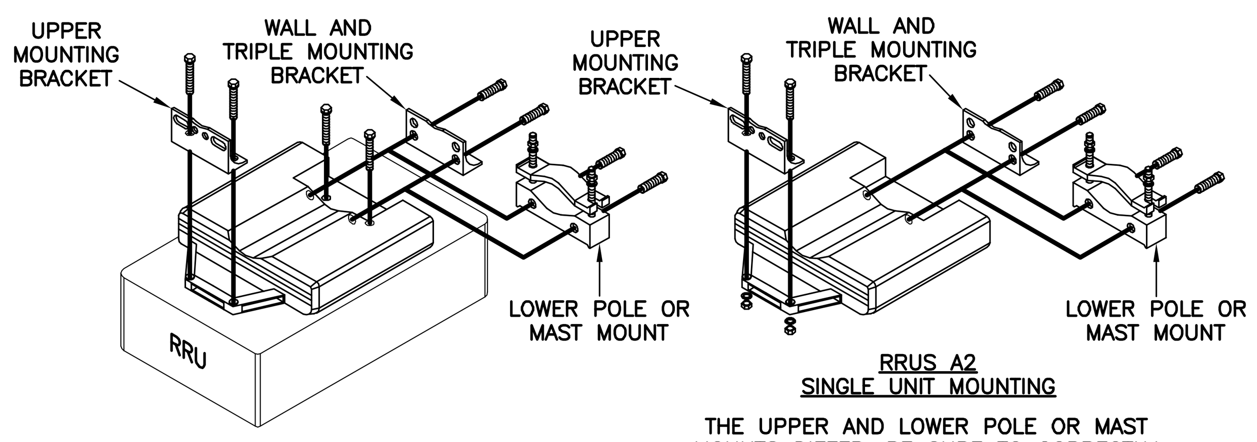


SIDE VIEW

RRUS A2 MANUFACTURER INSTALLATION REQUIREMENTS



TOP VIEW   SIDE VIEW



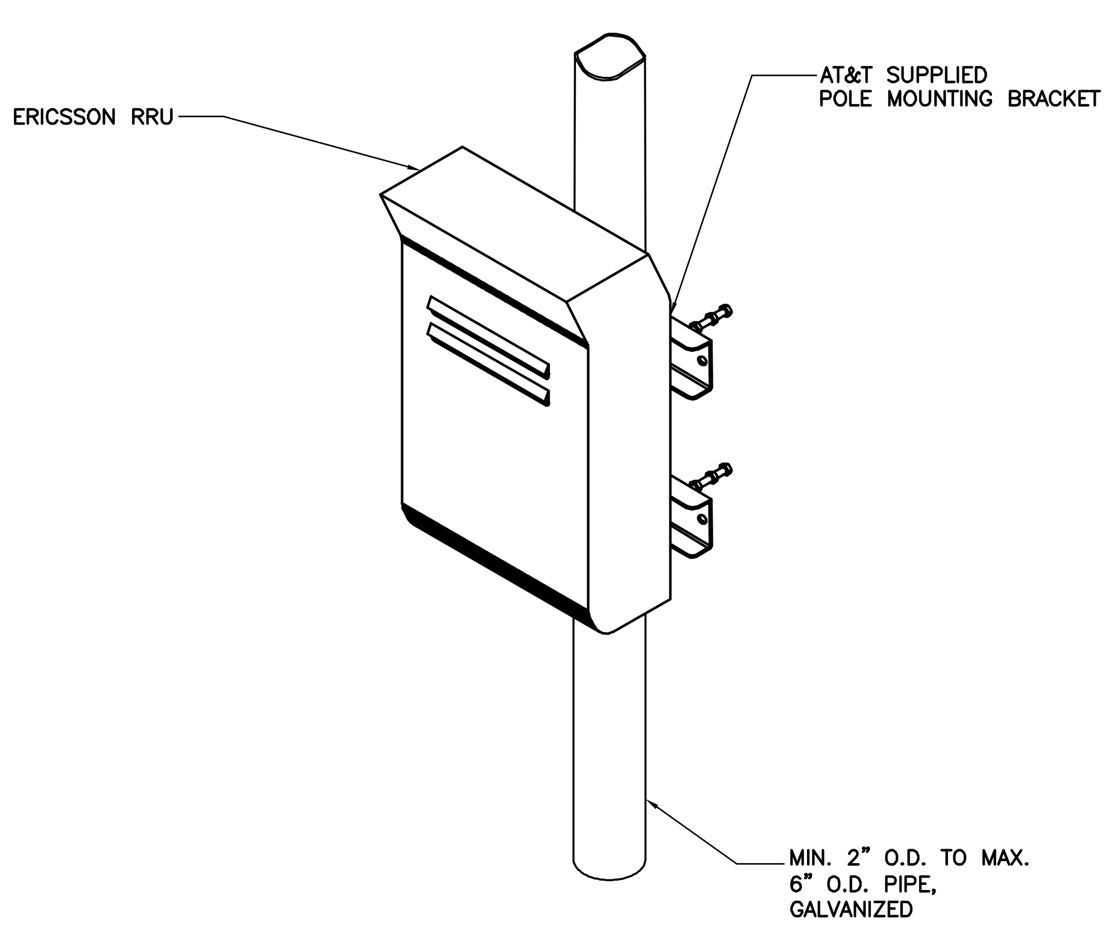
RRUS A2 W/ASSOCIATED RRU MOUNTING

RRUS A2 SINGLE UNIT MOUNTING

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

1 / N-1 **ERICSSON RRU A2 DETAILS**

NOT TO SCALE



ISOMETRIC VIEW

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

2 / N-1 **TYPICAL RRUS MOUNTING DETAILS**

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

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:
ANTENNA MAST

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

TRANSMISSION TOWER

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

GENERAL NOTES:

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

STRUCTURAL STEEL

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

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

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

PAINT NOTES

PAINTING SCHEDULE:

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

EXAMINATION AND PREPARATION:

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

CLEANING:

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

APPLICATION:

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

COMPLETED WORK:

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

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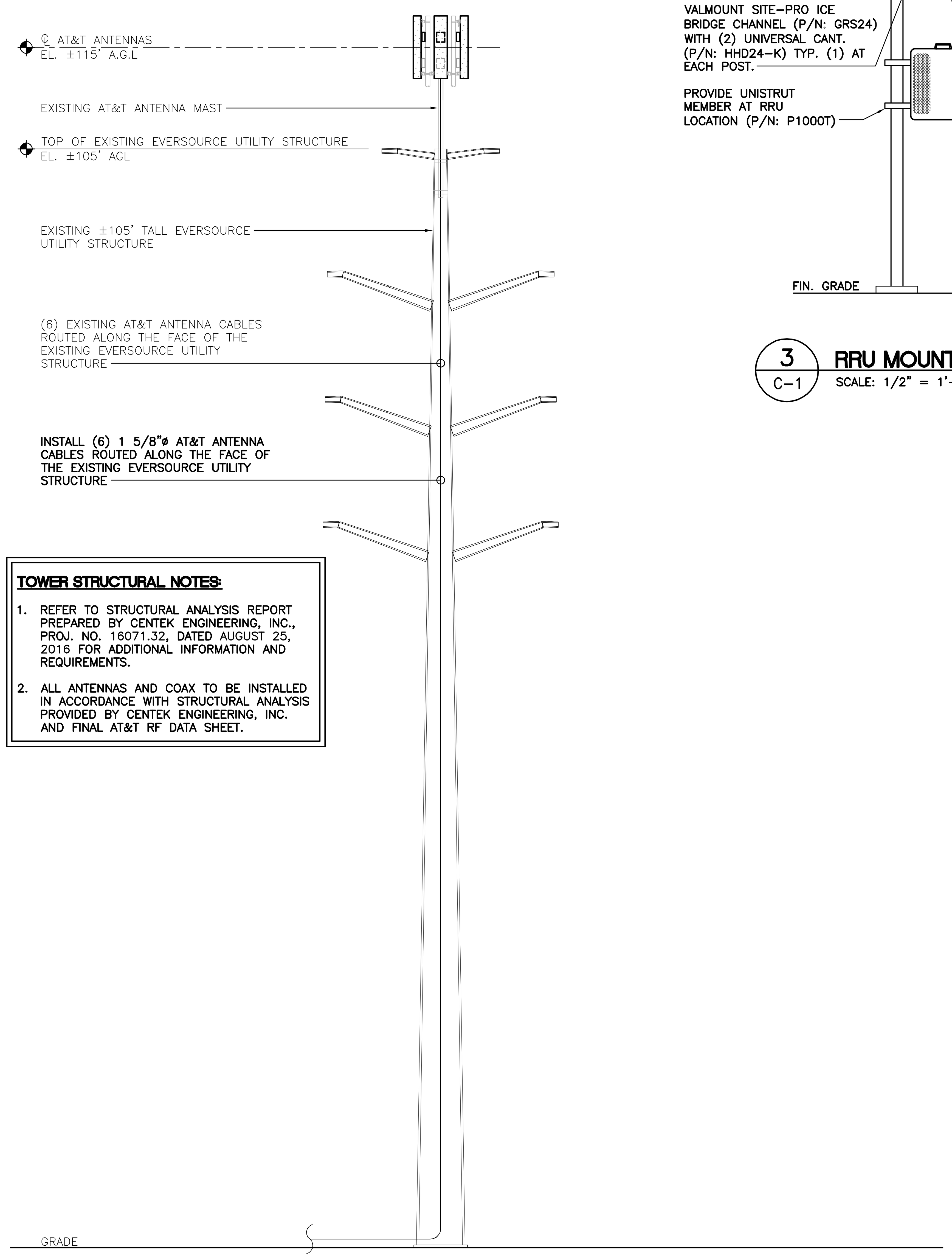
NOTES AND SPECIFICATIONS

N-1

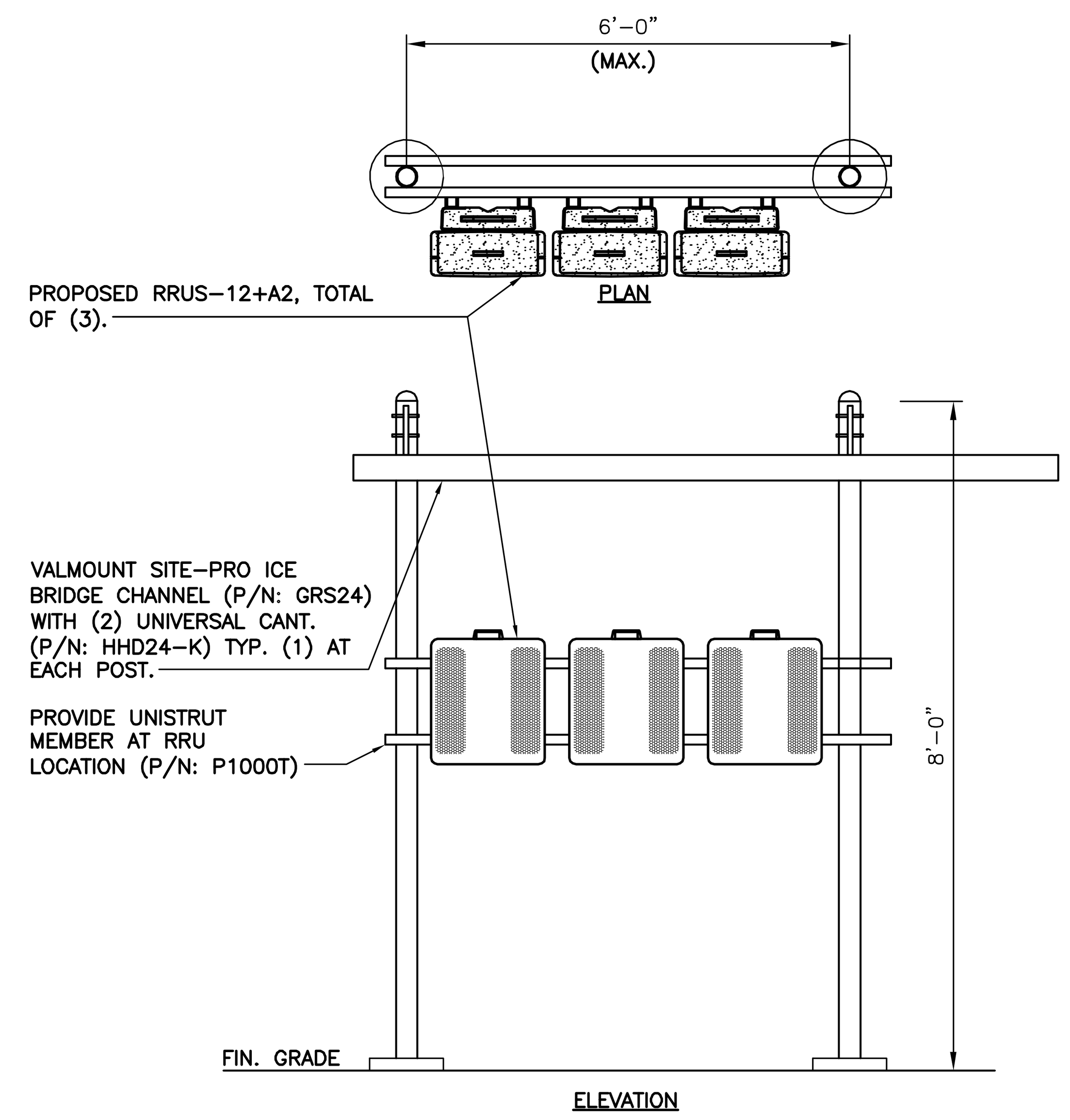


TOWER STRUCTURAL NOTES:

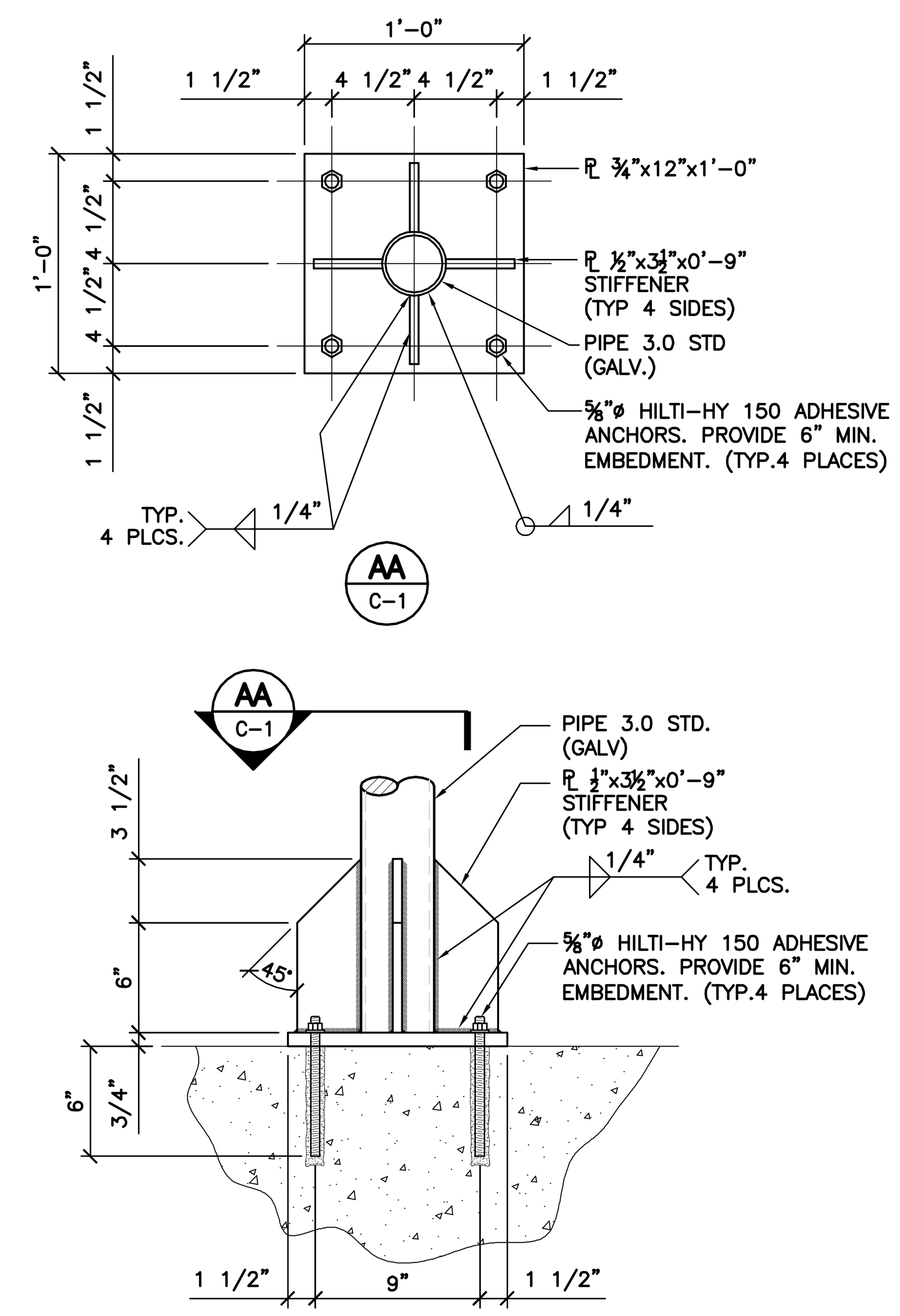
1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 16071.32, DATED AUGUST 25, 2016 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CENTEK ENGINEERING, INC. AND FINAL AT&T RF DATA SHEET.

5 / C-1 **TOWER ELEVATION**
SCALE: 1" = 15'

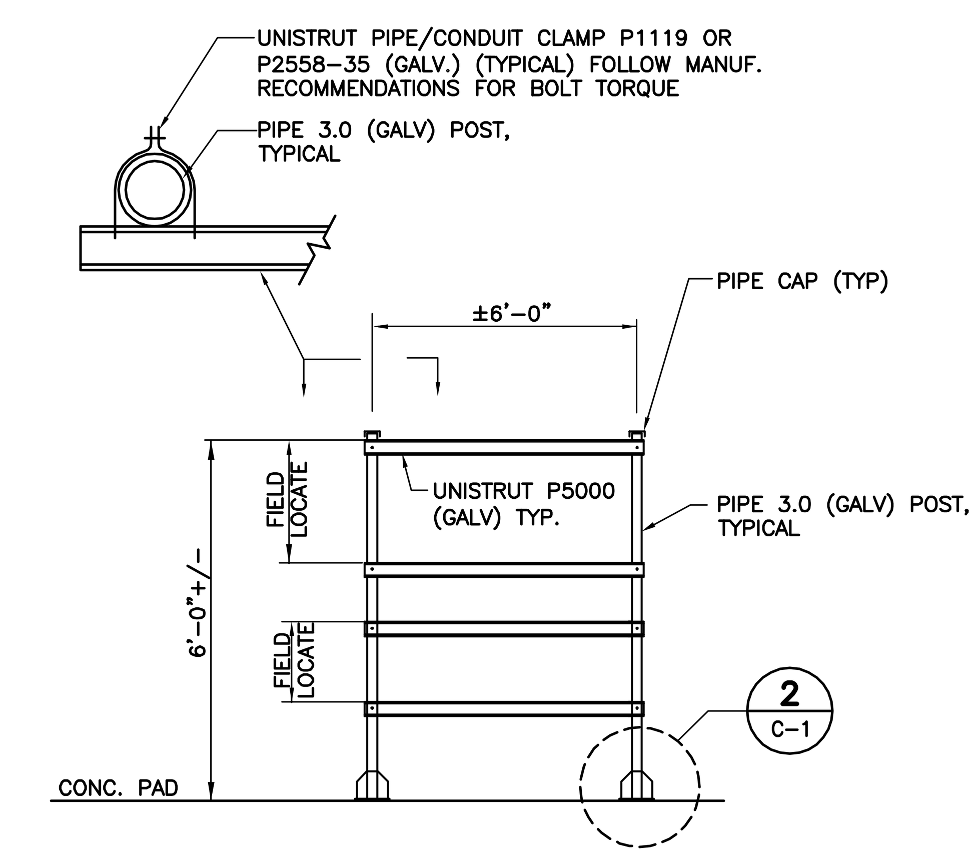
GRAPHIC SCALE
15 0 7.5 15 30 60
(IN FEET)
1 inch = 15 ft.



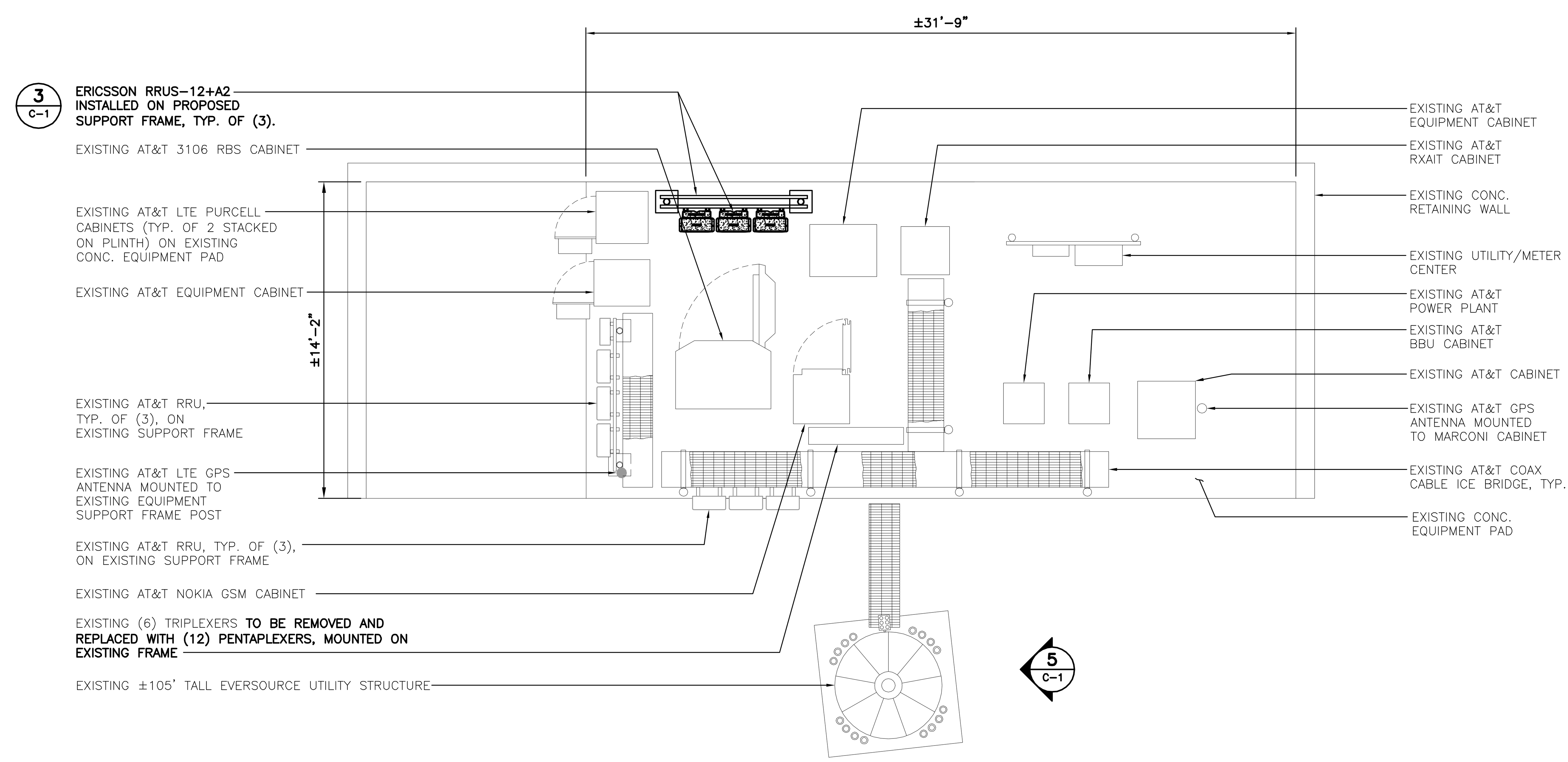
3 / C-1 **RRU MOUNTING CONFIG.**
SCALE: 1/2" = 1'- 0"



2 / C-1 **FRAME TO CONCRETE CONNECTION DETAIL**
NOT TO SCALE



1 / C-1 **EQUIPMENT MOUNTING FRAME DETAIL**
NOT TO SCALE



4 / C-1 **COMPOUND PLAN**
SCALE: 1/4" = 1'-0"

TRUE NORTH

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

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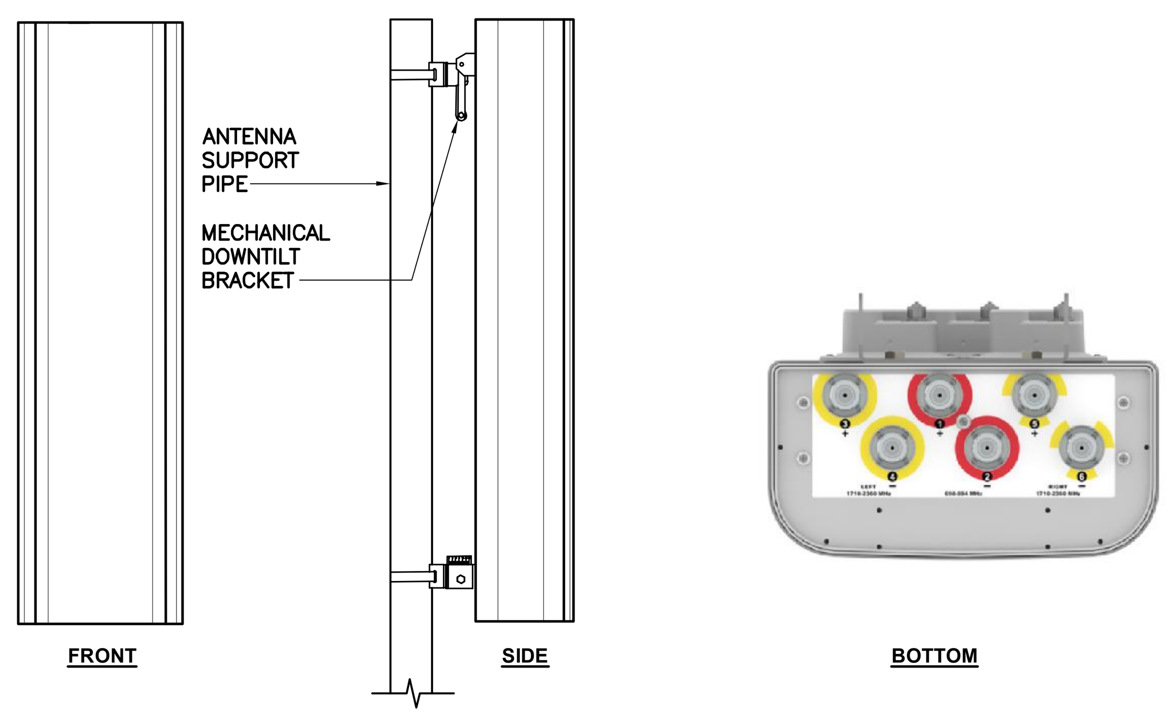
PLANS, ELEVATION AND DETAILS

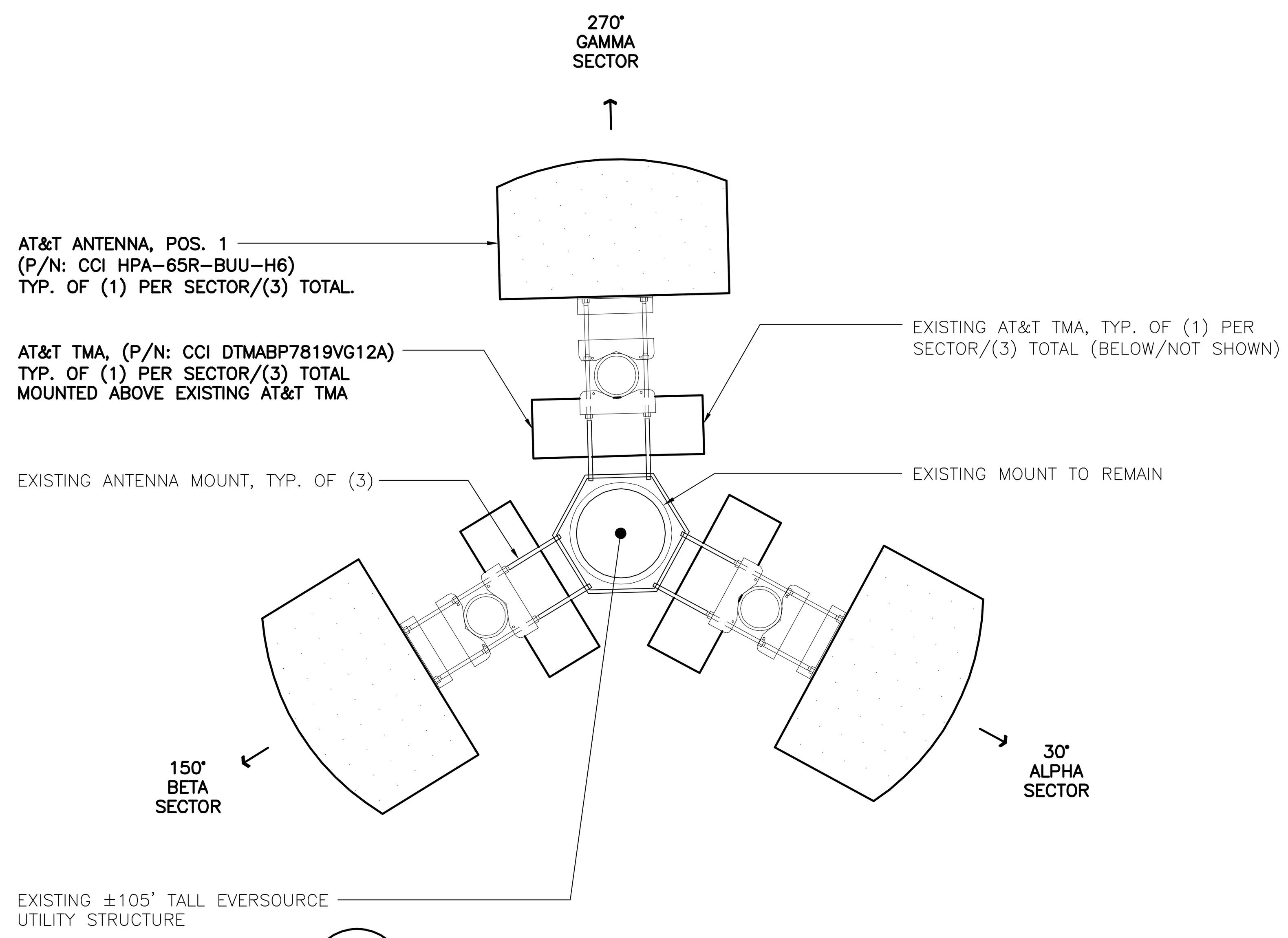
C-1

Sheet No. 3 of 7

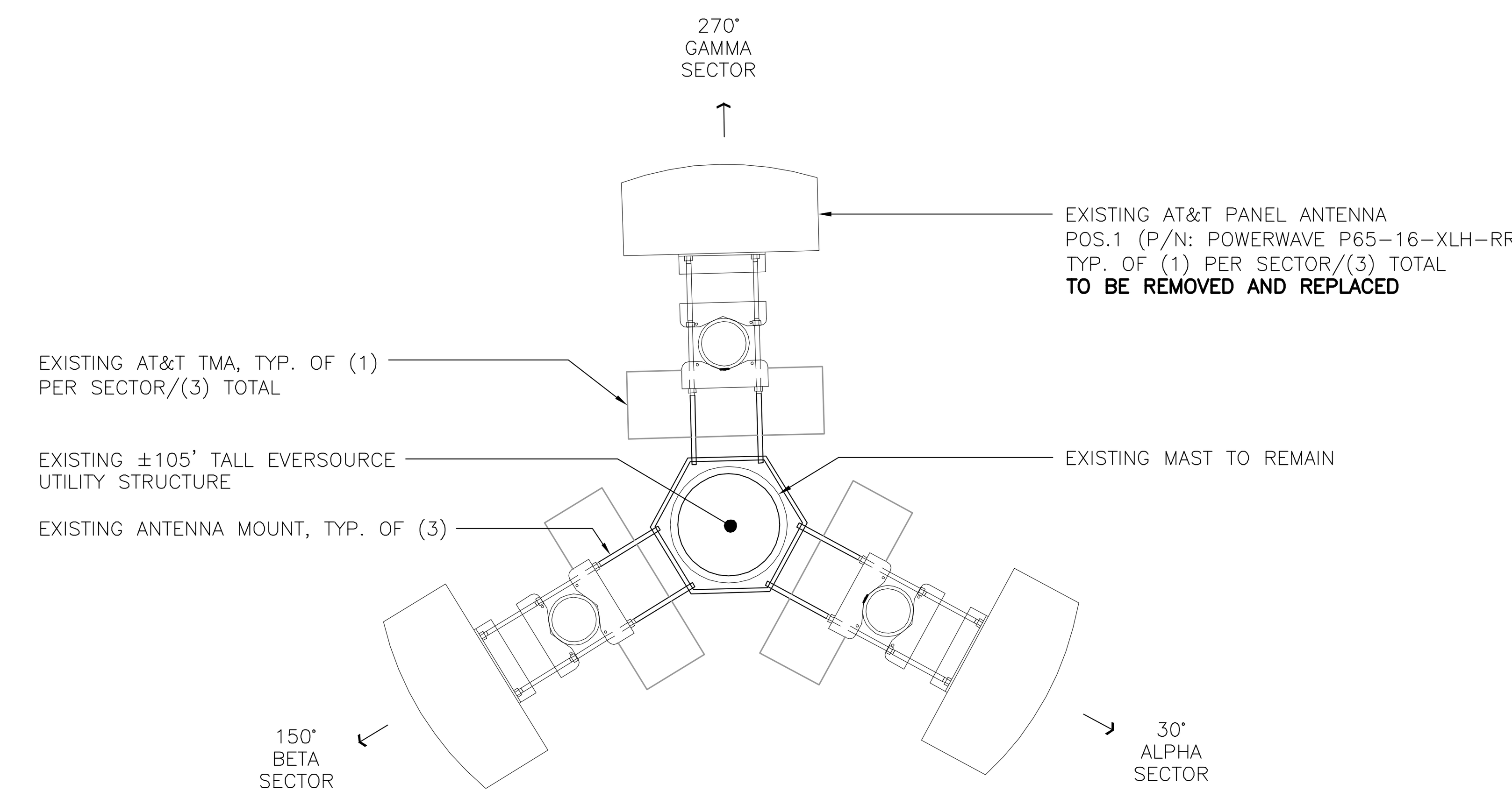


ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6	72.3"L x 14.4"W x 7.3"D	42.9 LBS.

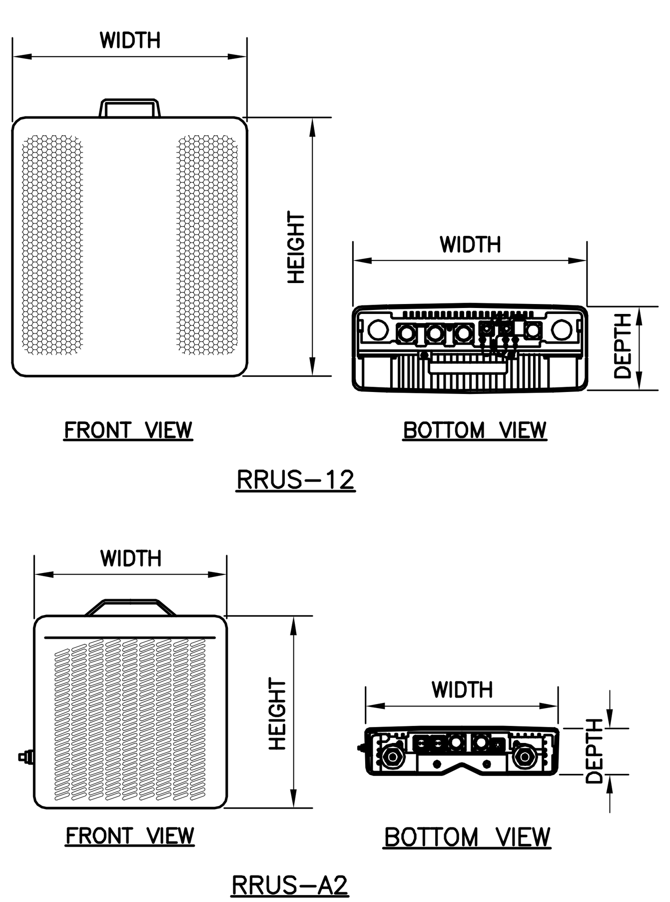
5 / C-2 **PROPOSED ANTENNA DETAIL**
SCALE: 1/2" = 1'-0"



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



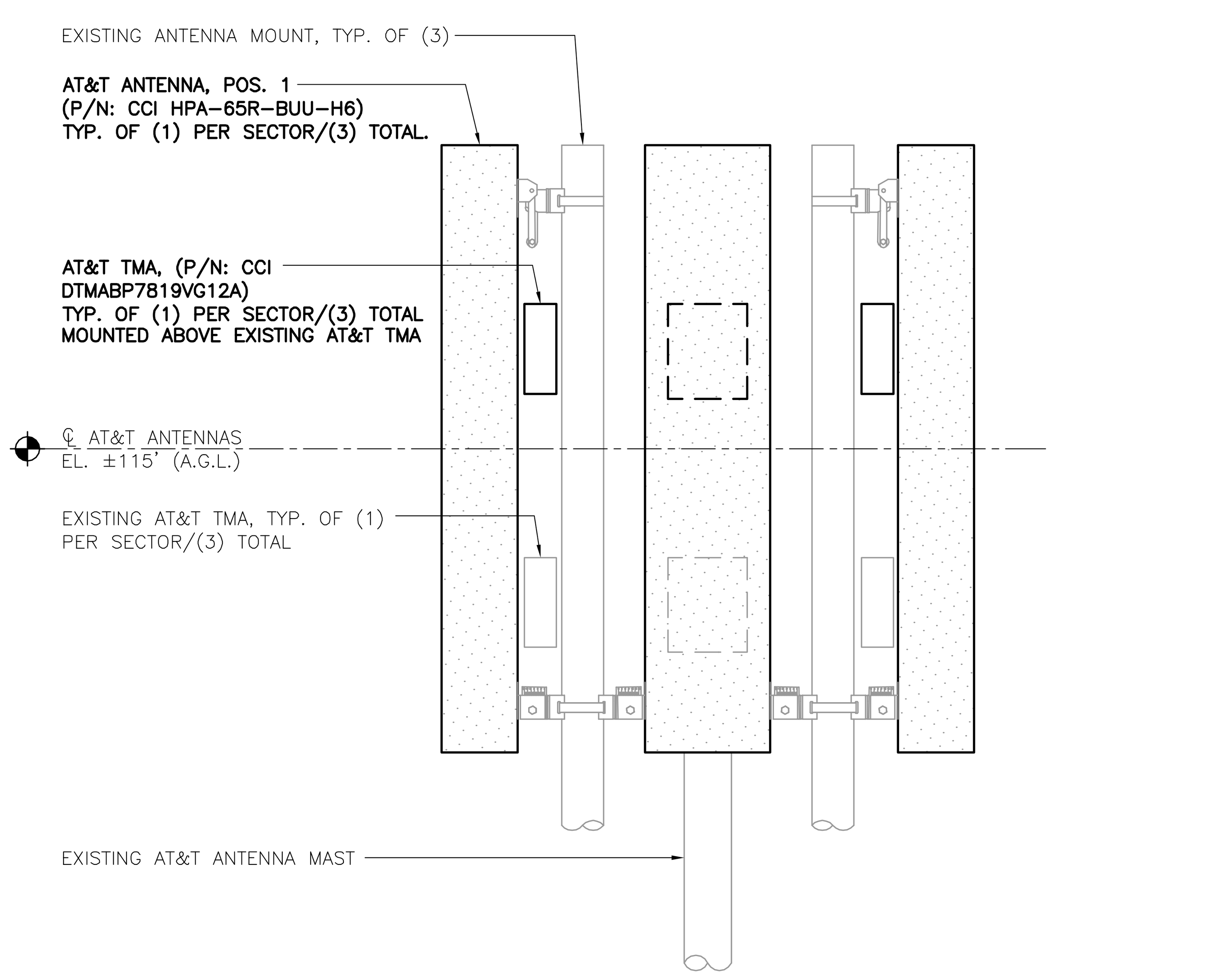
1 / C-2 **EXISTING ANTENNA PLAN**
SCALE: 1 1/2" = 1'



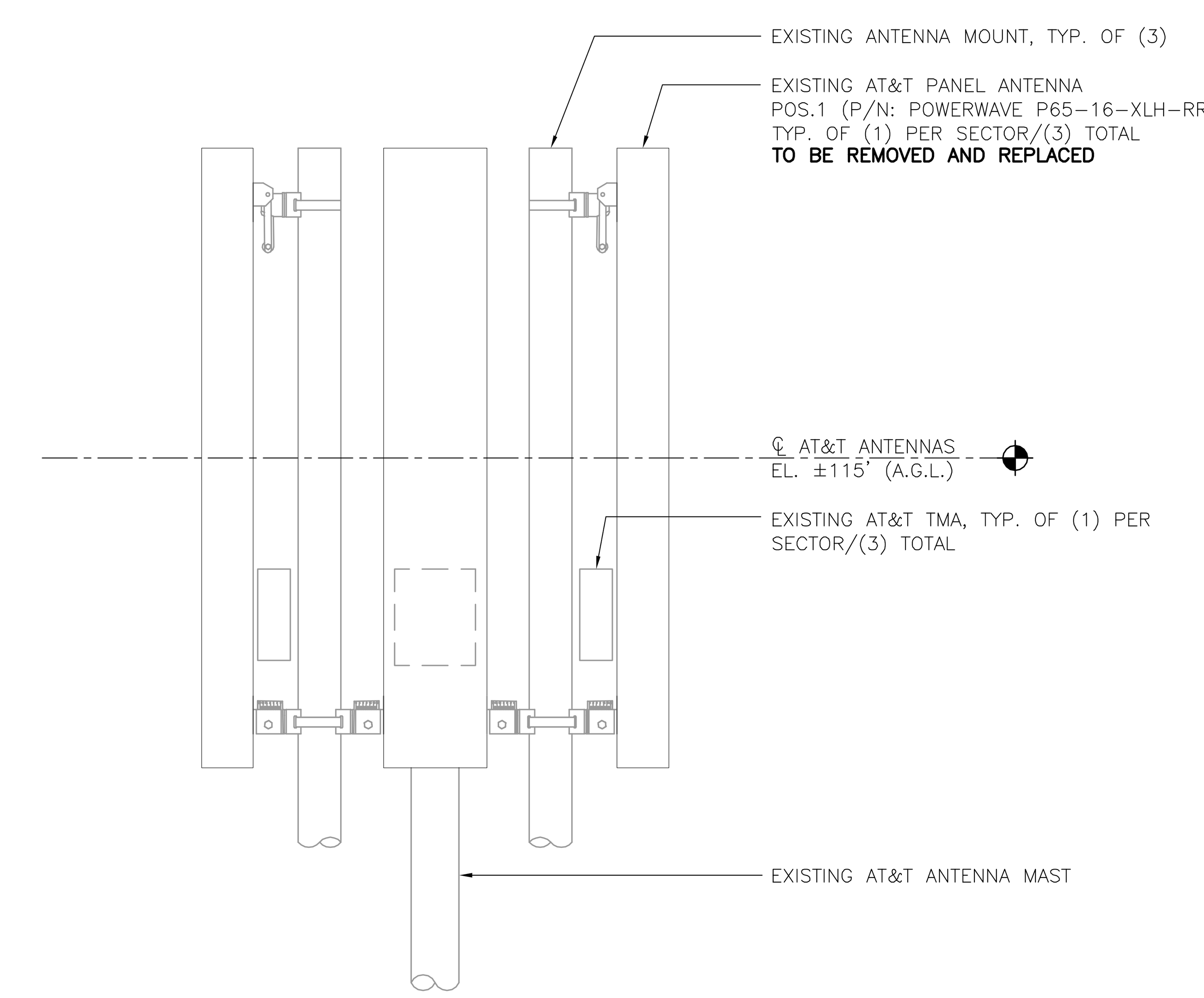
6 / C-2 **ERICSSON RRUS DETAIL**
SCALE: 1" = 1'-0"

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"H x 18.5"W x 7.5"D	50.0 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS A2	16.42"H x 15.19"W x 3.35"D	22.05 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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



4 / C-2 **PROPOSED ANTENNA SECTOR ELEVATION**
SCALE: 3/4" = 1'



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

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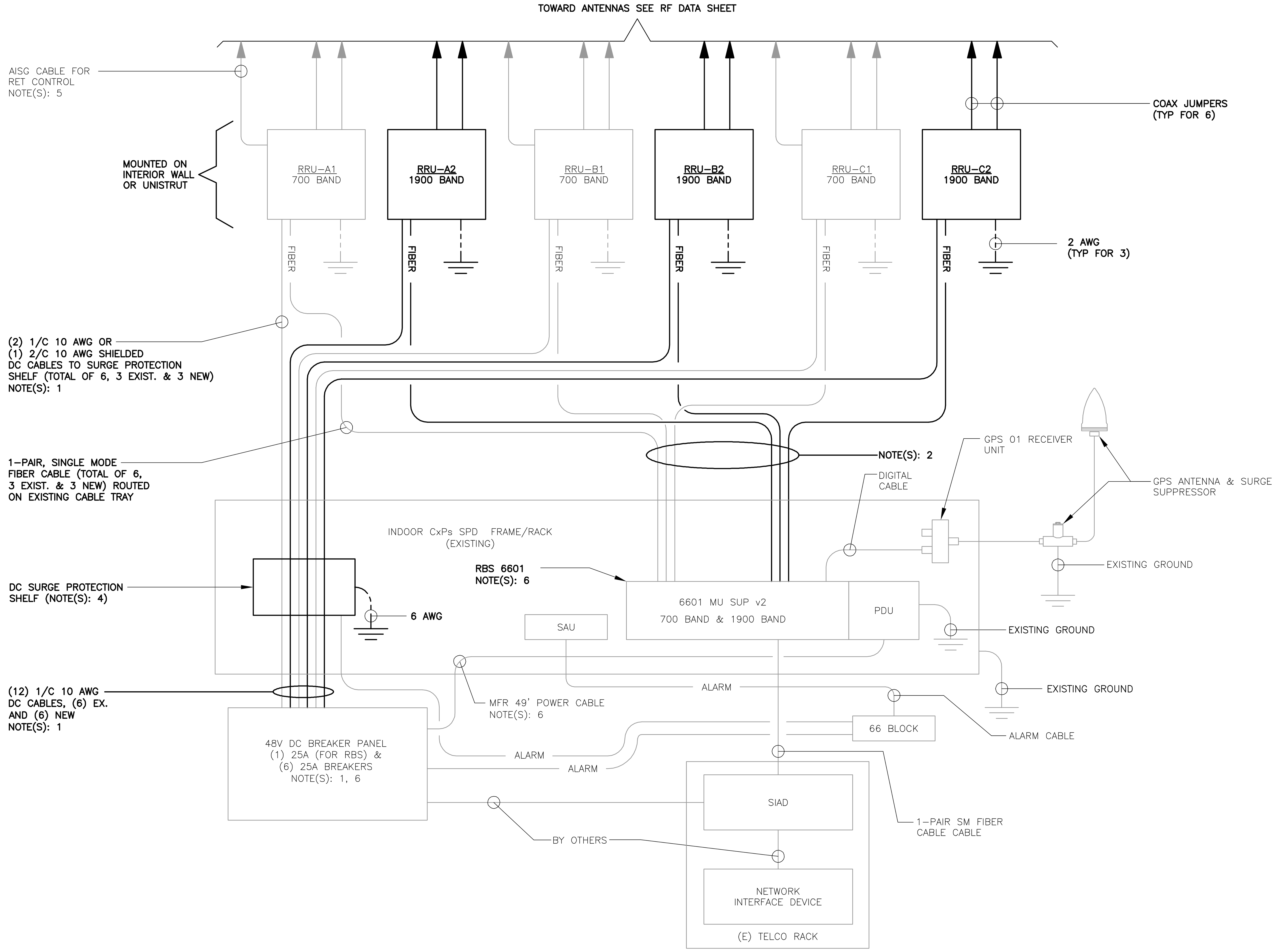
LTE 2C EQUIPMENT DETAILS

C-2



1 E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. COIL EXTRA LENGTH OF FIBER CABLE(S) ON SUSPENDED CABLE LADDER, TYPICAL.
3. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
4. INSTALL DC SURGE PROTECTION SHELF AS REQUIRED. DC SURGE SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
6. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

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

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

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

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

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

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

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

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

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

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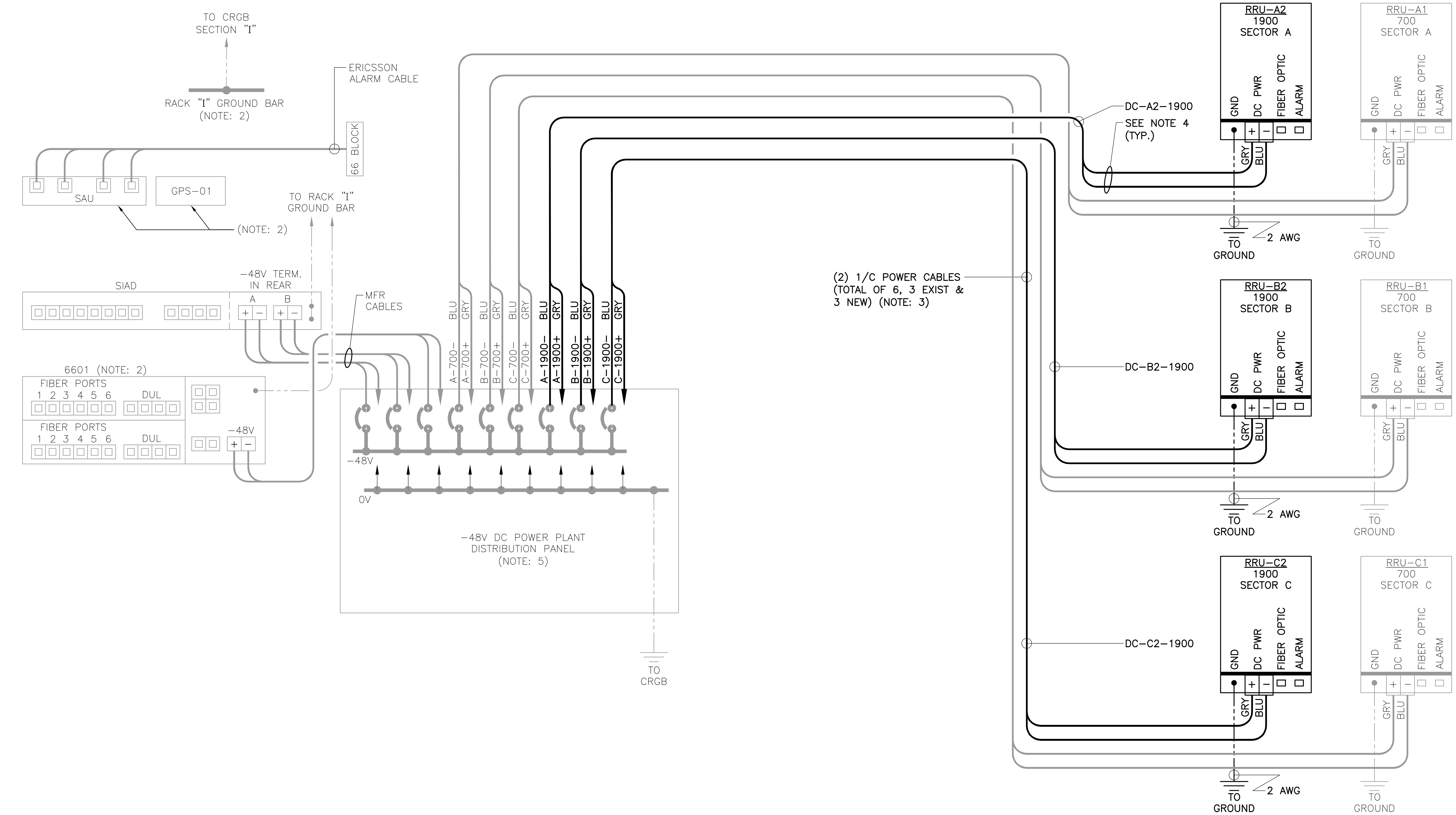
LTE SCHEMATIC DIAGRAM AND NOTES

E-1



1 LTE WIRING DIAGRAM

E-2

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. MAXIMUM CABLE LENGTH IS 49 FEET WITHOUT SURGE PROTECTION AT RRU. INCREASE CONDUCTOR SIZE TO 10 OR 8 AWG WHERE BREAKER RATING IS GREATER THAN 20A.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

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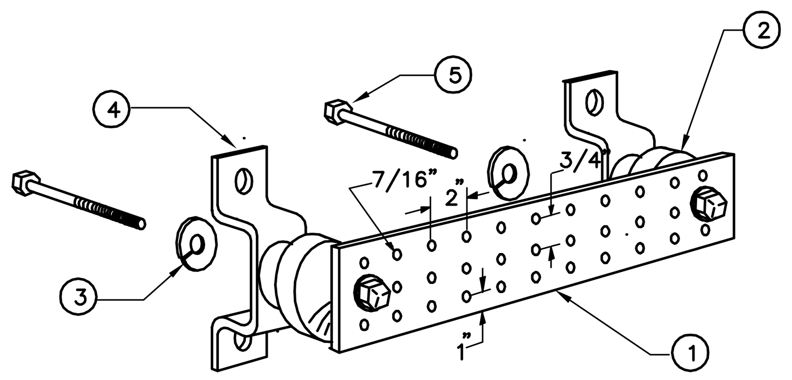
LTE WIRING DIAGRAM

E-2

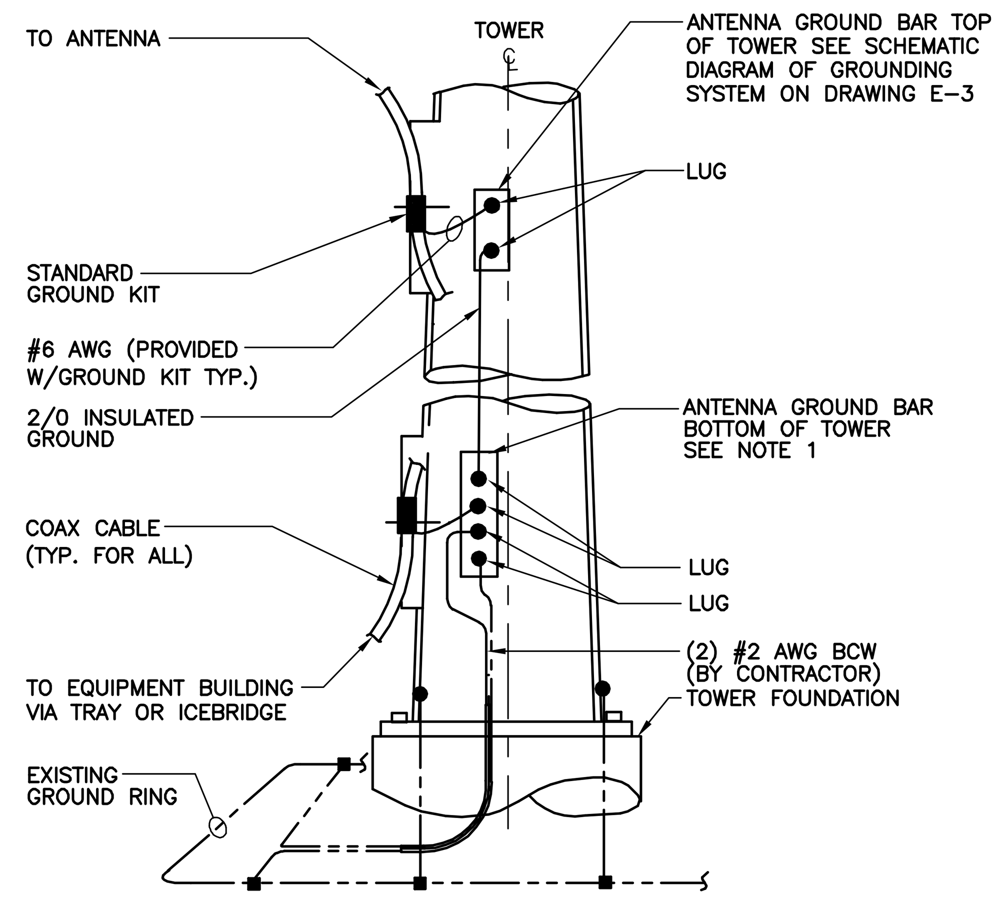


LEGEND

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

3 (E-3) GROUND BAR DETAIL

NOT TO SCALE

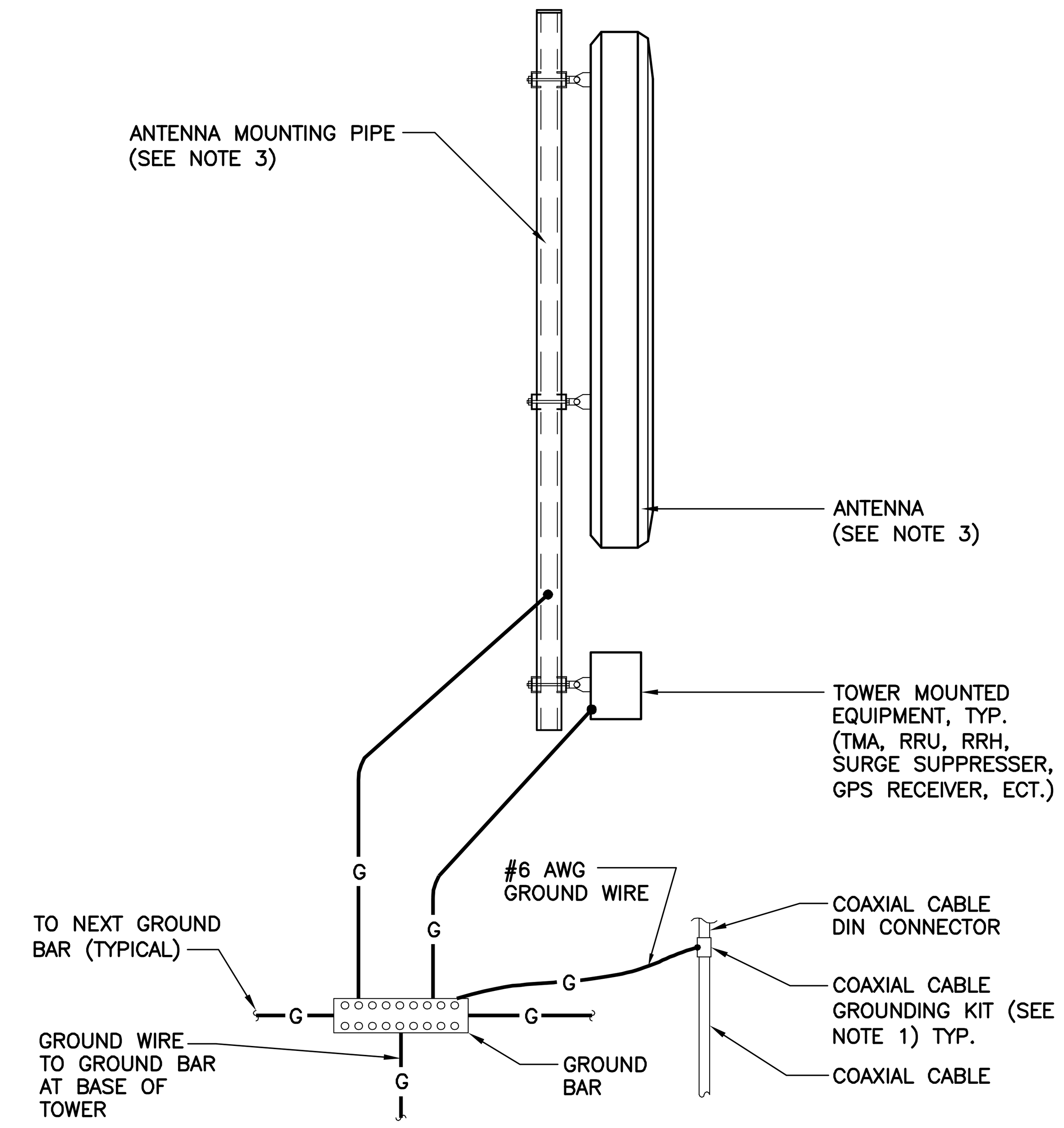


NOTES:

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

2 (E-3) ANTENNA CABLE GROUNDING - TOWER

NOT TO SCALE

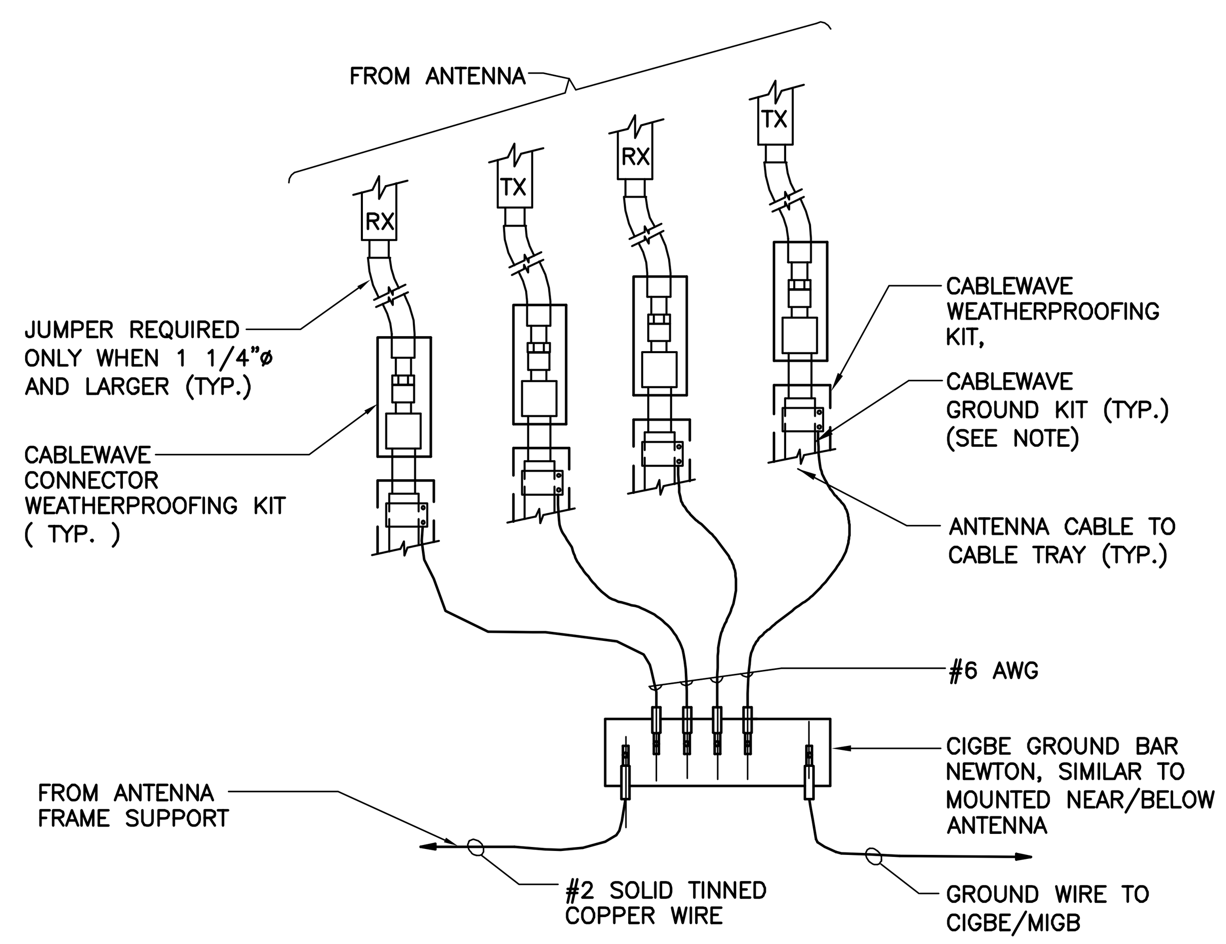


NOTES:

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

1 (E-3) TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

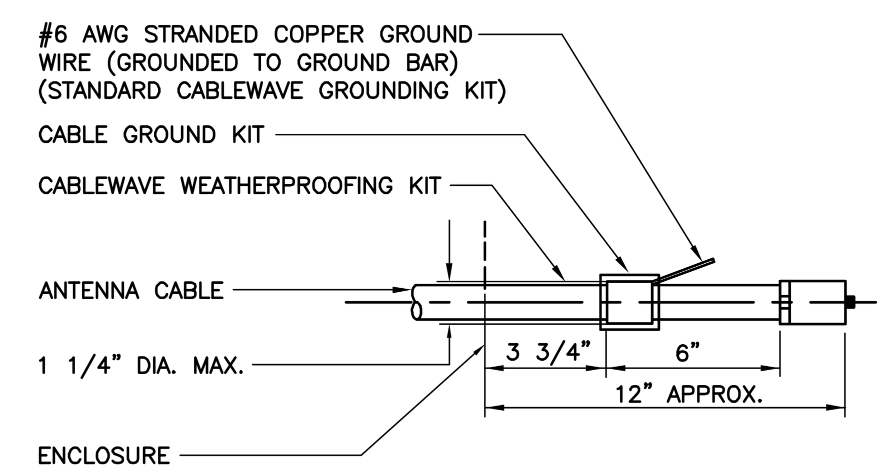


NOTE:

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

5 (E-3) CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE



NOTE:

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

4 (E-3) ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/11/16	KAM/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

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WIRELESS COMMUNICATIONS FACILITY
RIDGEFIELD CENTER
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95 HALPIN LANE
RIDGEFIELD, CT 06877

DATE: 07/07/16
SCALE: AS NOTED
JOB NO. 16071.32

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 7 of 7

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Pole

AT&T Site Ref: CT5068

Eversource Structure No. 3308
105' Electric Transmission Pole

95 Halpin Lane
Ridgefield, CT

CENTEK Project No. 16071.32

~~Date: August 25, 2016~~
Rev 1: October 24, 2016

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER

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 mast and 105' utility pole located at 95 Halpin Lane in Ridgefield, CT for the proposed antenna and equipment upgrade by AT&T.

The existing/proposed loads consist of the following:

- AT&T (Existing to Remain):

  Antennas: Three (3) CCI DTMABP7819VG12A TMAs flush mounted to the existing mast with a RAD center elevation of 115-ft above grade level.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the exterior of the pole.

- AT&T (Existing to Remove):

  Antennas: Three (3) Powerwave P65-16-XLH-RR panel antennas flush mounted to the existing mast with a RAD center elevation of 115-ft above grade level.

- **AT&T (Proposed):**

  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas and three (3) CCI DTMABP7819VG12A TMAs flush mounted to the existing mast with a RAD center elevation of 115-ft above grade level.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the exterior of the pole.

Primary assumptions used in the analysis

- ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", defines steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole 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 existing mast consisting of a HSS 5.563"x0.258" x 16.67' long pipe conforming to ASTM A500 Grade B (Fy = 42ksi) connected at two points to the existing pole was analyzed for its ability to resist loads prescribed by the TIA-222G standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast in order to obtain reactions needed for analyzing the utility pole structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA loading and for NESC/NU loading are listed in report Sections 6 and 8, respectively.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the pole structure.

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 forces calculated in RISA-3D using NESC guidelines were then applied to the pole using PLS-Pole. Maximum usage for the pole was calculated considering the additional forces from the mast and associated appurtenances.

Design Basis

Our analysis was performed in accordance with TIA-222-G, ASCE Manual No. 72 – "Design of Steel Transmission Pole Structures Second Edition", NESC C2-2007 and Northeast Utilities Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole 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. 72.

  Load cases considered:

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

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

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

- MAST ASSEMBLY ANALYSIS

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

Load cases considered:

Load Case 1:
Wind Speed………………………………... 93 mph (2016 CSBC Appendix-N)
Radial Ice Thickness………………………. 0”

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

Results

- MAST ASSEMBLY

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

Member	Stress Ratio (% of capacity)	Result
HSS 5.563”x0.258”	95.2%	**PASS**
3/4” ∅ ASTM A325 Bolt	12.8% (1)	**PASS**

Note 1 – 1/3 increase in allowable stress not used per OTRM 059.

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 72, “Design of Steel Transmission Pole Structures Second Edition”, for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **96.95%** occurs in the utility pole base plate under the **NESC Heavy** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Tube Number 5	14.92’-22.92’ (AGL)	87.97%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output based on 22 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	96.95%	**PASS**

- FOUNDATION AND ANCHORS

  The existing foundation consists of a 9-ft square x 10-ft long reinforced concrete pier with (16) rock anchors. The base of the tower is connected to the foundation by means of (62) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure. Foundation information was obtained from NUSCO drawing # 01106-60001.

BASE REACTIONS:

From PLS-Pole analysis of pole based on NESC/NU prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	55.53 kips	55.50 kips	4659.49 ft-kips
NESC Extreme Wind	45.65 kips	31.66 kips	3445.97 ft-kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	82.93%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (4)	Result
Reinf. Conc. Pier w/ Rock Anchors	OTM (1)	1.0 FS (2)	2.2 FS (2)	**PASS**
	Bearing Pressure	50 ksf (3)	45.4 ksf	**PASS**

Note 1: OTM denotes overturning moment.
Note 2: FS denotes Factor of Safety
Note 3: Bearing Capacity based on Weak Rock.
Note 4: 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 pole **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

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

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

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

Results Features:

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

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

PCS Mast

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

ELECTRIC TRANSMISSION TOWER

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

Condition	Standard	Item	Basic Wind Speed V (MPH)	Pressure Q (PSF)	Height Factor Kz	Gust Factor Gh	Load or Stress Factor	Force Coef - Shape Factor
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
Ice Condition	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
Ice Condition	NESC Heavy	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
Ice Condition	NESC Heavy	Conductors:	Conductor loads provided by NU					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
High Wind Condition	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
High Wind Condition	NESC Extreme Wind	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
High Wind Condition	NESC Extreme Wind	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
NESC Extreme Ice with Wind Conditon*		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
NESC Extreme Ice with Wind Conditon*		Conductors:	Conductor loads provided by NU					

* Only for Structures Installed after 2007

Shape Factor Criteria shall be per TIA Shape Factors.

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

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

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.
b) Conductors and related devices and hardware (wire loads will be provided by NU).
c) Electric Transmission Structure
   i) The loads from the wireless communication equipment components based on NESC and NU Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower.
   ii) Shape Factor Multiplier:

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

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

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

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

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

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

TITLE AT&T Ridgefield

STRUCT CL&P # 3308

07/28/2000

CONDUCTOR

	AHEAD	BACK
	BITTERN	BITTERN
	1272.000	1272.000
	45/7 ACSR	45/7 ACSR
DIAM =	1.345	1.345
WEIGHT =	1.432	1.432

TENSION (LBS)	AHEAD	6,000	BACK	6,000

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

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	NESC HEAVY L	NESC HEAVY V
BACK	17.5	213	327	3393	-9442	1265
AHEAD	17.5	213	327	3393	9442	1265
TOTALS	**35.0**	**426**	**654**	**6786**	**0**	**2530**

TITLE AT&T Ridgefield

STRUCT CL&P # 3308

07/28/2000

CONDUCTOR

	AHEAD		BACK	
	BITTERN		BITTERN	
	1272.000		1272.000	
	45/7 ACSR		45/7 ACSR	
DIAM =	1.345		1.345	
WEIGHT =	1.432		1.432	
TENSION (LBS)	AHEAD	4,751	BACK	4,751

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

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	17.5	213	327	2192	-5211	539
AHEAD	17.5	213	327	2192	5211	539
TOTALS	**35.0**	**426**	**654**	**4384**	**0**	**1077**

TITLE AT&T Ridgefield
STRUCT CL&P # 3308

07/28/2000

CONDUCTOR

	AHEAD		BACK	
	3/8 AW		3/8 AW	
	0.000		0.000	
	7 #8 Al Weld		7 #8 Al Weld	
DIAM =	0.385		0.385	
WEIGHT =	0.262		0.262	
TENSION (LBS)	AHEAD	4,200	BACK	4,200

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

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	17.5	213	327	2330	-6609	398
AHEAD	17.5	213	327	2330	6609	398
TOTALS	**35.0**	**426**	**654**	**4659**	**0**	**797**

TITLE AT&T Ridgefield

STRUCT CL&P # 3308

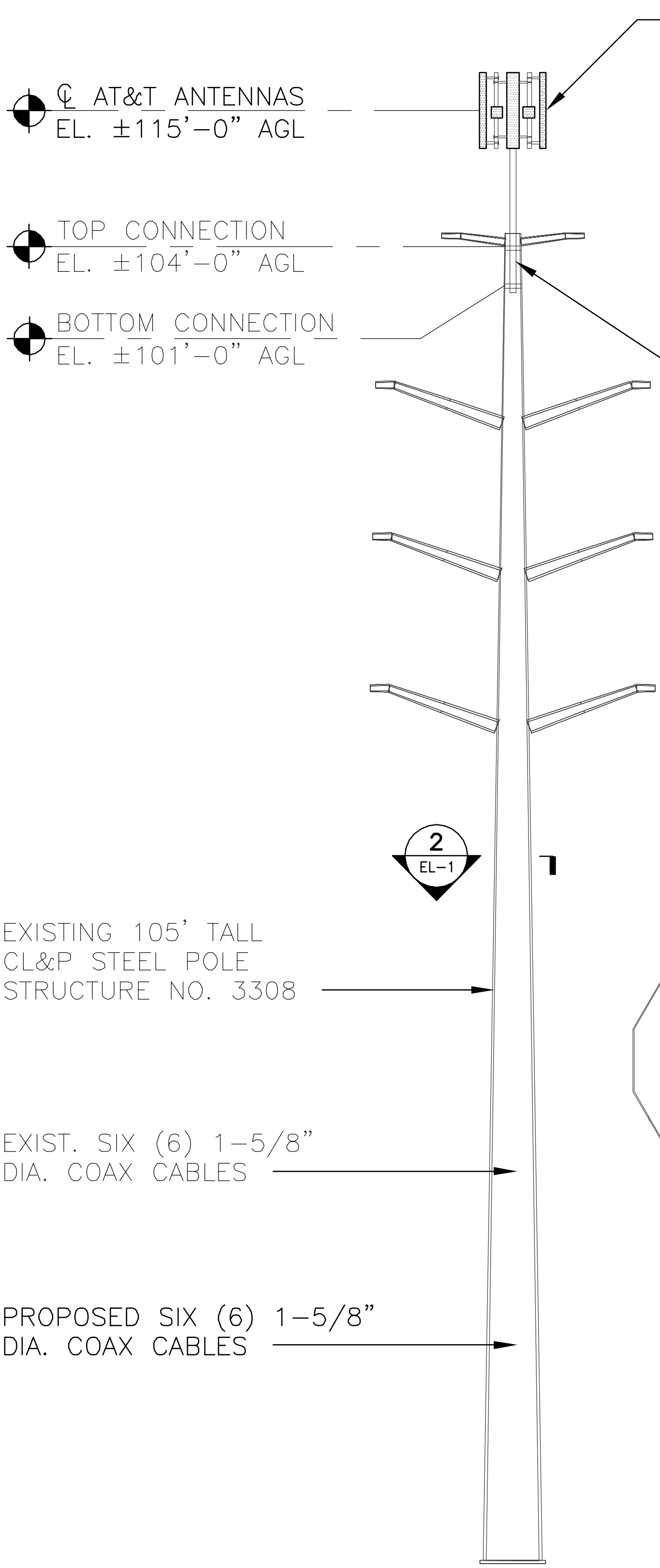
07/28/2000

CONDUCTOR

	AHEAD		BACK	
	3/8 AW		3/8 AW	
	0.000		0.000	
	7 #8 Al Weld		7 #8 Al Weld	
DIAM =	0.385		0.385	
WEIGHT =	0.262		0.262	
TENSION (LBS)	AHEAD	2,814	BACK	2,814

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

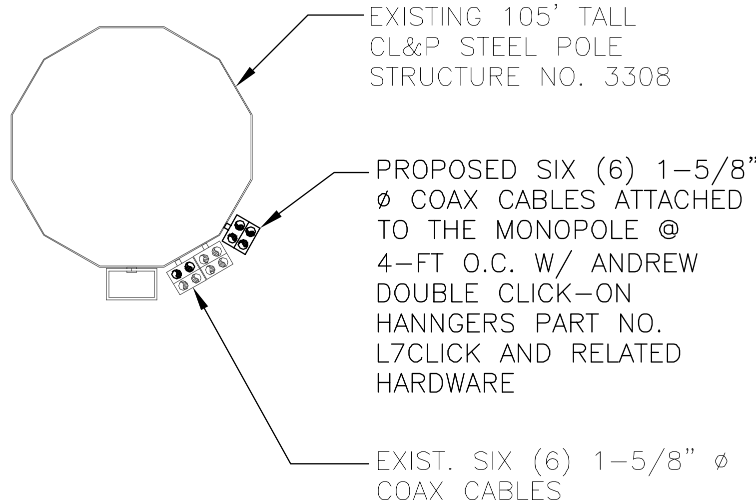
STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	17.5	213	327	1130	-3086	98
AHEAD	17.5	213	327	1130	3086	98
TOTALS	**35.0**	**426**	**654**	**2261**	**0**	**197**



1
EL–1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE



2
EL–1

COAX PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	8/24/16	ISSUED FOR REVIEW
01	10/24/16	CONSTRUCTION

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95 HALPIN LANE
RIDGEFIELD, CT 06877

PROJECT NO:	16071.32
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	8/24/16

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

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

Wind Speeds

Basic Wind Speed $V := 93$ mph (User Input - 2016 CSBC Appendix N)

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

Input

Structure Type = Structure_Type := Pole (User Input)

Structure Category = SC := III (User Input)

Exposure Category = Exp := B (User Input)

Structure Height = $h := 105$ ft (User Input)

Height to Center of Antennas = $z_{AT\&T} := 115$ ft (User Input)

Radial Ice Thickness = $Ir := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

$K_a := 1$ (User Input)

Output

Wind Direction Probability Factor =

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

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

Importance Factor =

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

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

Velocity Pressure Coefficient =

$$Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.028$$

Velocity Pressure w/o Ice =

$$qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V^2 \cdot I = 24.879$$

Velocity Pressure with Ice =

$$qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V_i^2 \cdot I = 7.191$$

Gust Response Factor = $G_H := 1.35$

Development of Wind & Ice Load on Mast

Existing Mast Data: (HSS 5.563"x0.258") (User Input)

Mast Shape = Round (User Input)

Mast Diameter = $D_{mast} := 5.563$ in (User Input)

Mast Length = $L_{mast} := 16.67$ ft (User Input)

Mast Thickness = $t_{mast} := 0.258$ in (User Input)

Mast Aspect Ratio = $Ar_{mast} := \frac{12L_{mast}}{D_{mast}} = 36.0$

Mast Force Coefficient = $Ca_{mast} = 1.2$

Wind Load (without ice)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.464$ sf/ft

Total Mast Wind Force = $qz_{AT\&T} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 19$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot Ir\right)}{12} = 0.589$ sf/ft

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

Gravity Loads (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir \cdot 2\right)^2 - D_{mast}^{\ 2}\right] = 14.9$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 6$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Proposed Antenna Data:

Antenna Model = CCI HPA-65R-BUU-H6

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 72$ in (User Input)

Antenna Width = $W_{ant} := 14.8$ in (User Input)

Antenna Thickness = $T_{ant} := 9$ in (User Input)

Antenna Weight = $WT_{ant} := 51$ lbs (User Input)

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

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$

Antenna Force Coefficient = $Ca_{ant} = 1.31$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$ sf

Total Antenna Wind Force = $F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 973$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 8.3$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 25$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 316$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9590$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir) \cdot (T_{ant} + 2 \cdot Ir) - V_{ant} = 2989$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 97$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 291$ lbs **BLC 3**

Development of Wind & Ice Load on TMA's

Proposed TMA Data:

TMA Model = CCI DTMABP7819VG12A

TMA Shape = Flat (User Input)

TMA Height = $L_{TMA} := 10.63$ in (User Input)

TMA Width = $W_{TMA} := 11.02$ in (User Input)

TMA Thickness = $T_{TMA} := 3.78$ in (User Input)

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

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

TMA Aspect Ratio = $Ar_{TMA} := \frac{L_{TMA}}{T_{TMA}} = 2.8$

TMA Force Coefficient = $Ca_{TMA} = 1.21$

Wind Load (without ice)

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.3$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 1.7$ sf

Total TMA Wind Force = $F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{TMA} = 68$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 2 \cdot Ir) \cdot (T_{TMA} + 2 \cdot Ir)}{144} = 0.4$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 2.7$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot A_{ICETMA} = 31$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 443$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 2 \cdot Ir)(W_{TMA} + 2 \cdot Ir)(T_{TMA} + 2 \cdot Ir) - V_{TMA} = 359$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 12$ lbs

Weight of Ice on All TMA's $W_{ICETMA} \cdot N_{TMA} = 70$ lbs **BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type:	Pipe Mounts		
Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 72$	in	(User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)
Mount Bracket Weight =	$W_{b.mnt} := 15$	lbs	(User Input)
Mount Aspect Ratio =	$Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 30$		
Mount Force Coefficient =	$Ca_{mnt} := 1.2$		

Wind Load (without ice)

Assumes Mount is Shielded by Antenna

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

Total Mount Wind Force = $F_{mnt} := qz_{AT\&T} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 0$ lbs **BLC 5**

Wind Load (with ice)

Assumes Mount is Shielded by Antenna

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

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 0$ lbs **BLC 4**

Gravity Loads (without ice)

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

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} + W_{b.mnt} \cdot N_{mnt} = 111$ lbs **BLC 2**

Gravity Loads (ice only)

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

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[\left(D_{mnt} + 2 \cdot Ir\right)^2\right] \cdot \left(L_{mnt} + 2 \cdot Ir\right)\right] - V_{mnt} = 548$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 18$ lbs

Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 30 = 83$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 12$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 12$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 2$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 72.7$

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

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.3$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{AT\&T} \cdot G_H \cdot A_{coax} = 13$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot Ir)}{12} = 0.5$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.AT\&T} \cdot G_H \cdot AICE_{coax} = 5$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 12$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot Ir)^2 - D_{coax}^{\;2}\right] = 6.4$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 30$ plf **BLC 3**

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-222G Wind and Ice Loads for Analysis of Mast Only**
Tabulated Load Cases
Location: **Ridgefield, CT**
Date: 10/17/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.32

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	TIA Wind with Ice
5	TIA 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-222G Wind and Ice Loads for Analysis of Mast Only**
Load Combinations Table

Location: **Ridgefield, CT**

Date: 10/17/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.32

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D + 1.6W		1	Y	1	1.2	2	1.2	5	1.6				
2	0.9D + 1.6W		1	Y	1	0.9	2	0.9	5	1.6				
3	1.2D + 1.0Di + 1.0Wi		1	Y	1	1.2	2	1.2	3	1.0	4	1.0		

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

Global

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

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

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

Global, Continued

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

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp t...	Lcomp b...	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Existing Mast	16.67									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Existing Mast	HSS5.563x0.258	Beam	Pipe	A500 Gr.42	Typical	4.01	14.2	14.2	28.5

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N4			Existing Mast	Beam	Pipe	A500 Gr.42	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From ...
1	N1	0	0	0	0	
2	N2	0	.5	0	0	
3	N3	0	3.5	0	0	
4	N4	0	16.67	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N1							
2	N2	Reaction	Reaction	Reaction		Fixed		
3	N3	Reaction	Reaction	Reaction		Fixed		

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.153	14
2	M1	Y	-.12	12
3	M1	Y	-.111	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.291	14
2	M1	Y	-.07	12
3	M1	Y	-.083	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.316	14
2	M1	X	.031	12

Member Point Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.973	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	X	.068	12

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	-.012	-.012	7	11

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	-.006	-.006	0	0
2	M1	Y	-.03	-.03	7	11

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.007	.007	0	0
2	M1	X	.005	.005	7	11

Member Distributed Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.019	.019	0	0
2	M1	X	.013	.013	7	11

Basic Load Cases

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

Load Combinations

	Description	Sol...	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	1.2D + 1.6W	Yes	Y		1	1.2	2	1.2	5	1.6										
2	0.9D + 1.6W	Yes	Y		1	.9	2	.9	5	1.6										
3	1.2D +1.0Di + 1.0Wi	Yes	Y		1	1.2	2	1.2	3	1	4	1								

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
1	M1	1	max	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	0	3	0	1	0	1	0	1	0	1
3		2	max	1.362	3	2.145	1	0	1	0	1	0	1	19.134	1
4			min	.542	2	.461	3	0	1	0	1	0	1	4.072	3
5		3	max	1.21	3	1.99	1	0	1	0	1	0	1	10.479	1
6			min	.477	2	.425	3	0	1	0	1	0	1	2.217	3
7		4	max	.784	3	1.699	1	0	1	0	1	0	1	2.661	1
8			min	.289	2	.351	3	0	1	0	1	0	1	.56	3
9		5	max	0	1	.016	1	0	1	0	1	0	1	0	1
10			min	0	1	.006	3	0	1	0	1	0	1	0	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	0	3	0	1	0	1	0	1	0	1	0	1
3		2	max	.34	3	1.07	1	0	1	-9.572	3	44.976	1	0	1	0	1
4			min	.135	2	.23	3	0	1	-44.976	1	9.572	3	0	1	0	1
5		3	max	.302	3	.993	1	0	1	-5.211	3	24.632	1	0	1	0	1
6			min	.119	2	.212	3	0	1	-24.632	1	5.211	3	0	1	0	1
7		4	max	.196	3	.848	1	0	1	-1.317	3	6.255	1	0	1	0	1
8			min	.072	2	.175	3	0	1	-6.255	1	1.317	3	0	1	0	1
9		5	max	0	1	.008	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	.003	3	0	1	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	N2	max	6.795	1	.045	3	0	1	0	1	NC	NC	0	1
2		min	1.446	3	.025	2	0	1	0	1	NC	NC	0	1
3	N3	max	-1.93	3	1.411	3	0	1	0	1	NC	NC	0	1
4		min	-9.051	1	.569	2	0	1	0	1	NC	NC	0	1
5	Totals:	max	-.484	3	1.455	3	0	1						
6		min	-2.256	2	.594	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	.025	1	0	2	0	1	0	1	0	1	4.195e-3	1
2		min	.005	3	0	3	0	1	0	1	0	1	8.932e-4	3
3	N2	max	0	3	0	2	0	1	0	1	0	1	4.195e-3	1
4		min	0	1	0	3	0	1	0	1	0	1	8.931e-4	3
5	N3	max	0	1	0	2	0	1	0	1	0	1	-1.973e-3	3
6		min	0	3	0	3	0	1	0	1	0	1	-9.266e-3	1
7	N4	max	6.781	1	0	2	0	1	0	1	0	1	-1.162e-2	3
8		min	1.44	3	-.001	3	0	1	0	1	0	1	-5.473e-2	1

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

	Member	Shape	Code Check	Loc...	LC	Sh...	Loc[ft]	Dir	LC	phi*Pn..	phi*...	phi*...	phi*...	...	Eqn
1	M1	HSS5.563...	.952	3.473	1	.152	3.473		1	75.721	151...	21.42	21.42	...	H1...

Joint Reactions

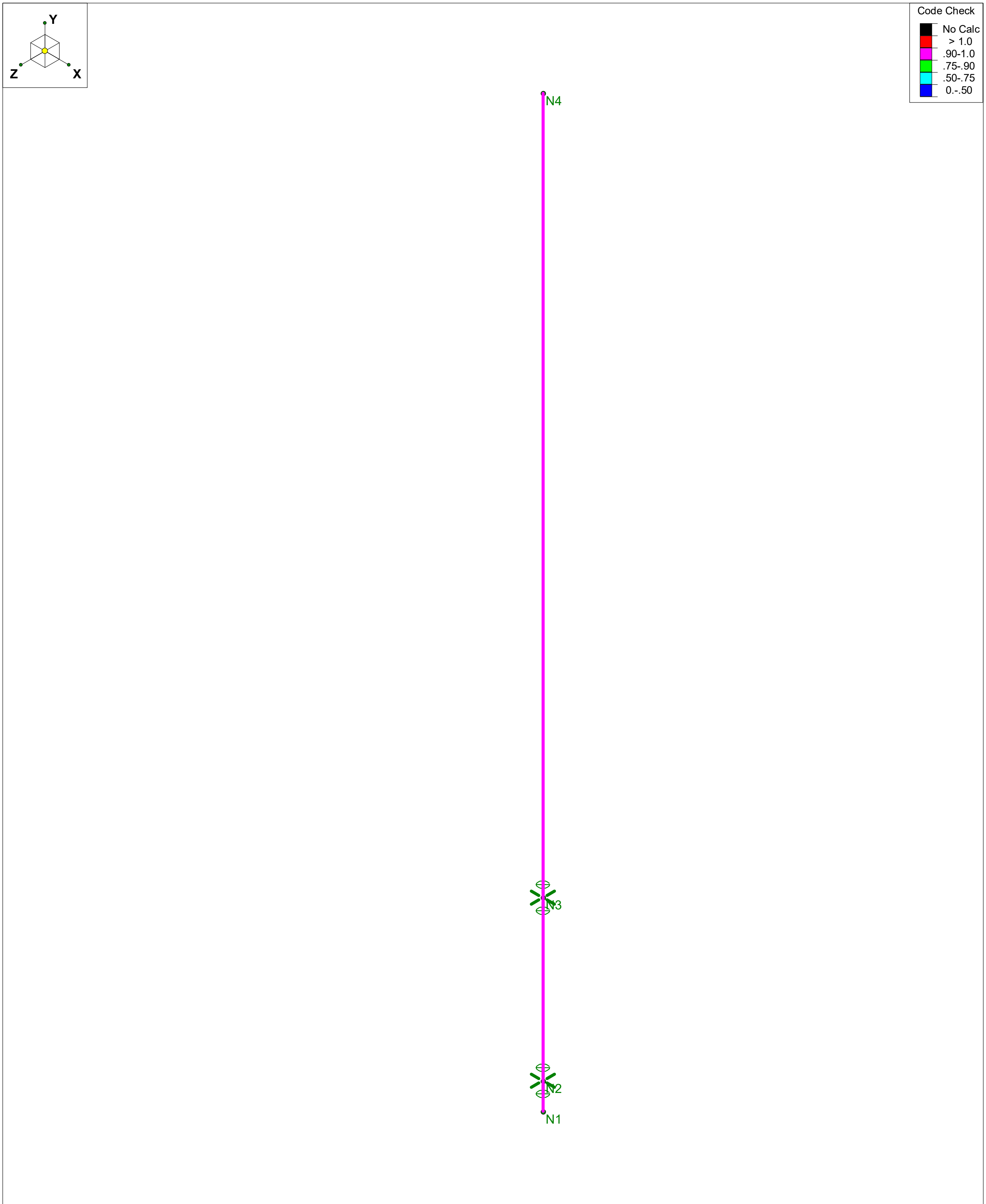
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N2	6.795	.033	0	0	NC	0
2	1	N3	-9.051	.759	0	0	NC	0
3	1	Totals:	-2.256	.791	0			
4	1	COG (ft):	X: 0	Y: 11.318	Z: 0			

Joint Reactions

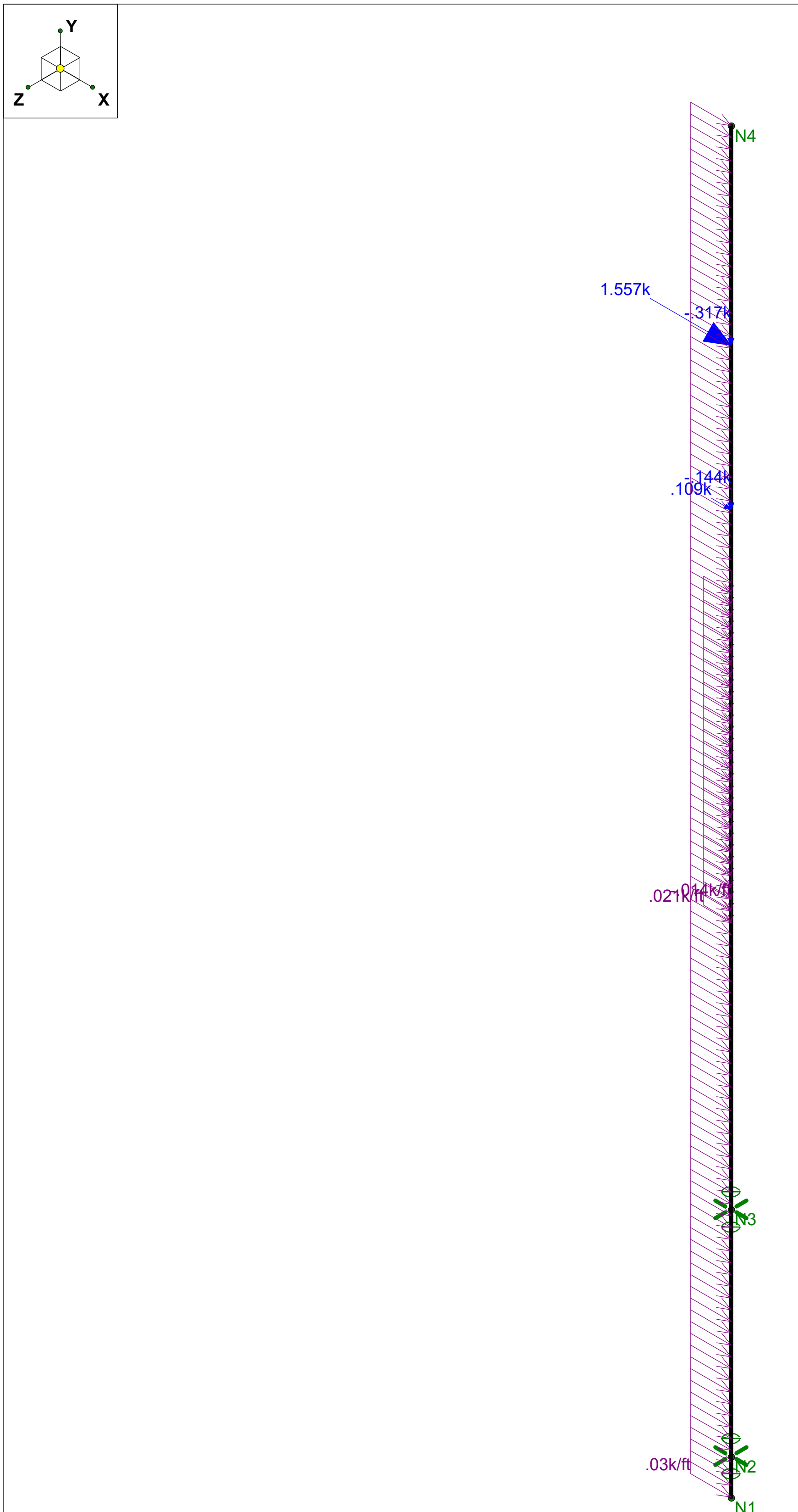
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N2	6.778	.025	0	0	NC	0
2	2	N3	-9.034	.569	0	0	NC	0
3	2	Totals:	-2.256	.594	0			
4	2	COG (ft):	X: 0	Y: 11.318	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N2	1.446	.045	0	0	NC	0
2	3	N3	-1.93	1.411	0	0	NC	0
3	3	Totals:	-.484	1.455	0			
4	3	COG (ft):	X: 0	Y: 11.644	Z: 0			

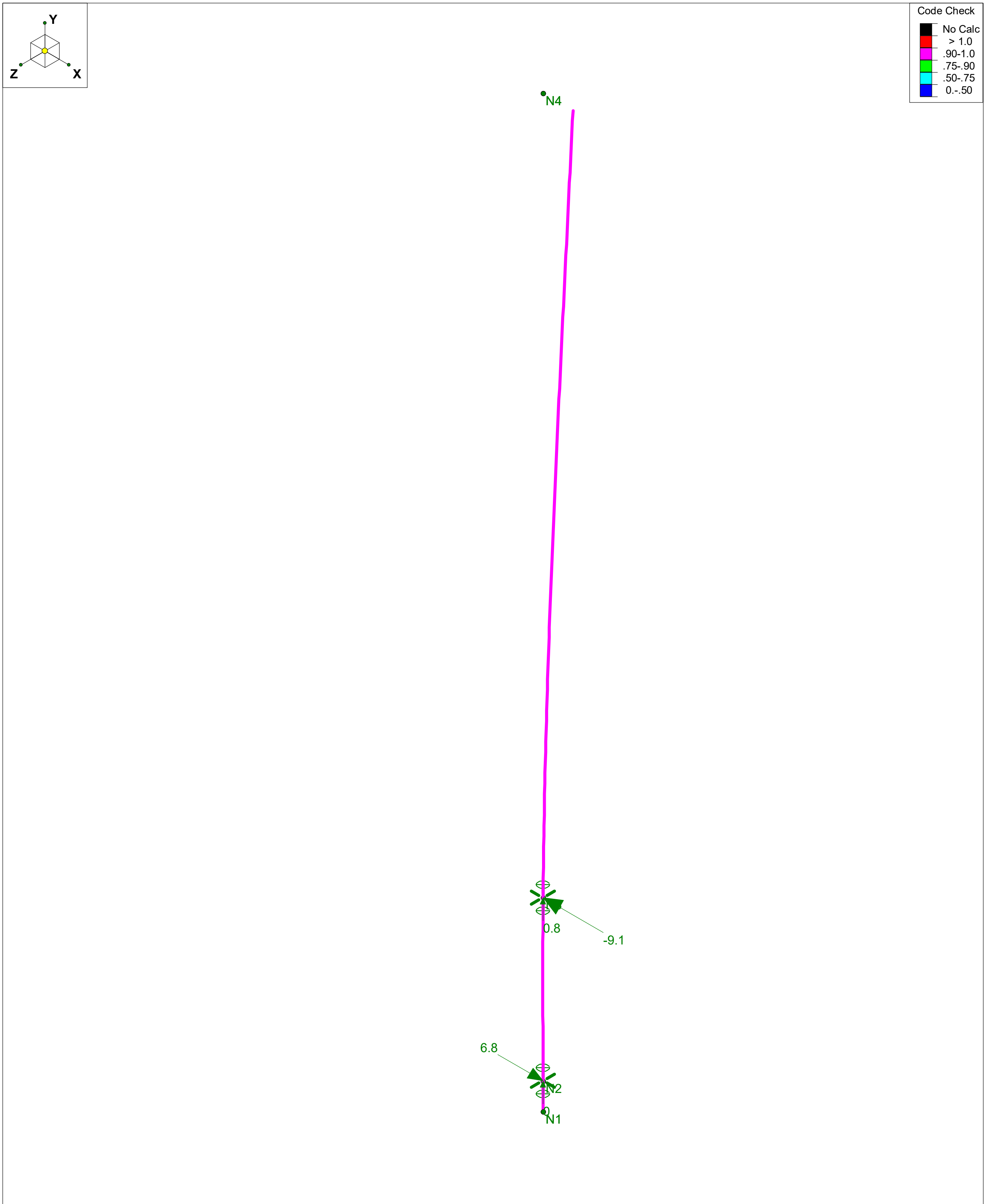


CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:02 PM
16071.32 /AT&T CT5068	Unity Check	TIA.r3d

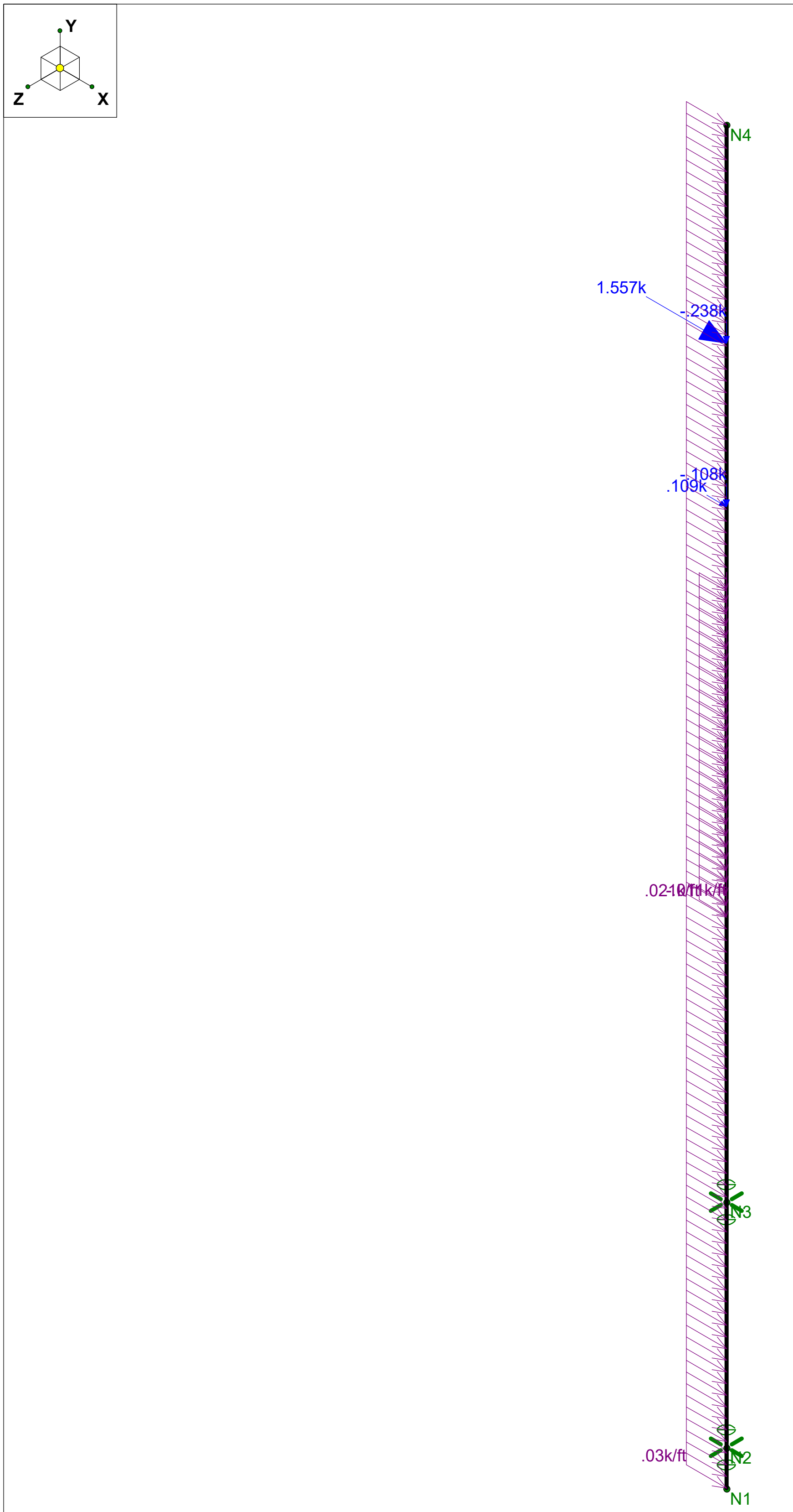


Loads: LC 1, 1.2D + 1.6W

CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:02 PM
16071.32 /AT&T CT5068	LC #1 Loads	TIA.r3d

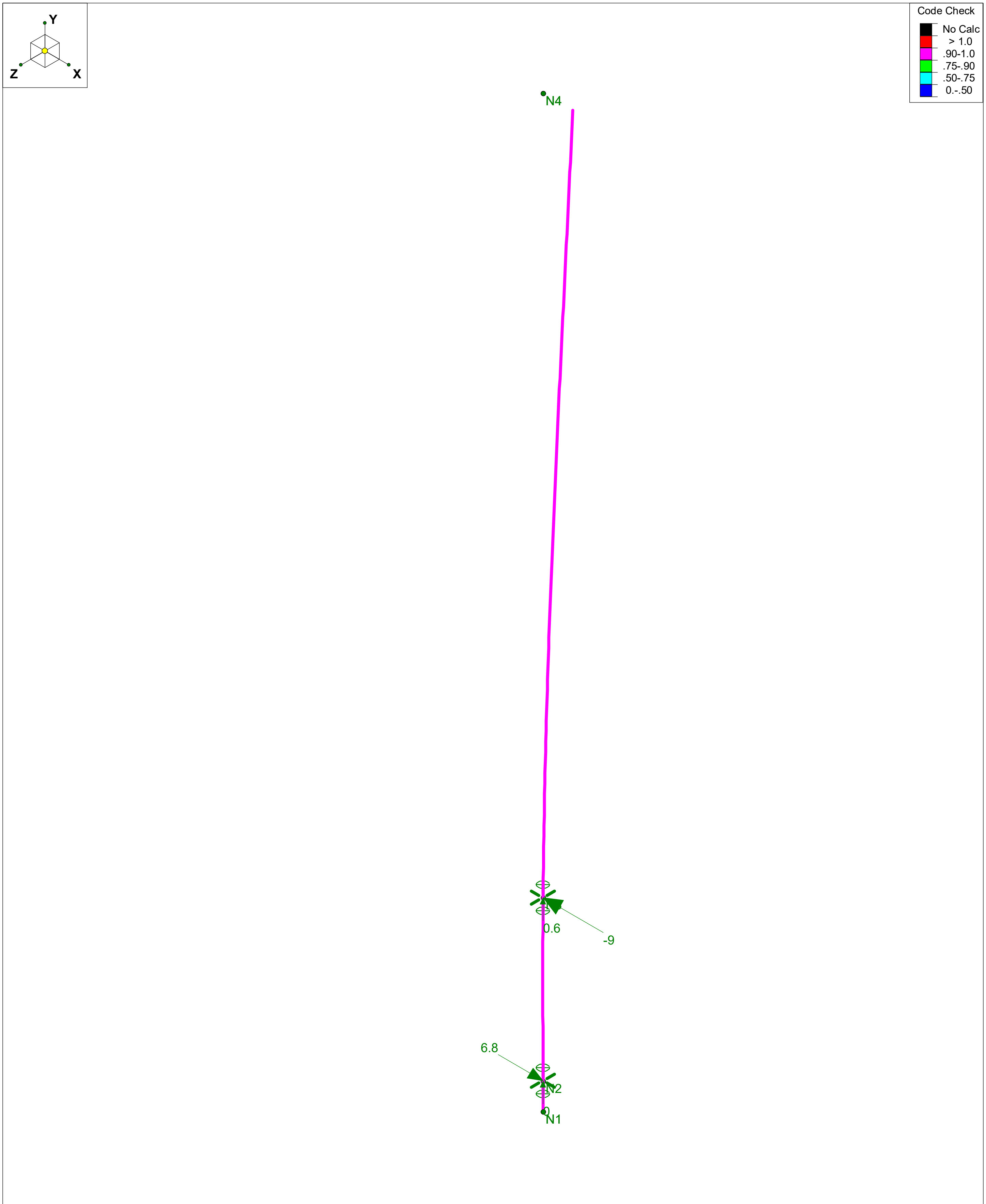


CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:04 PM
16071.32 /AT&T CT5068	LC #1 Reactions and Deflected Shape	TIA.r3d

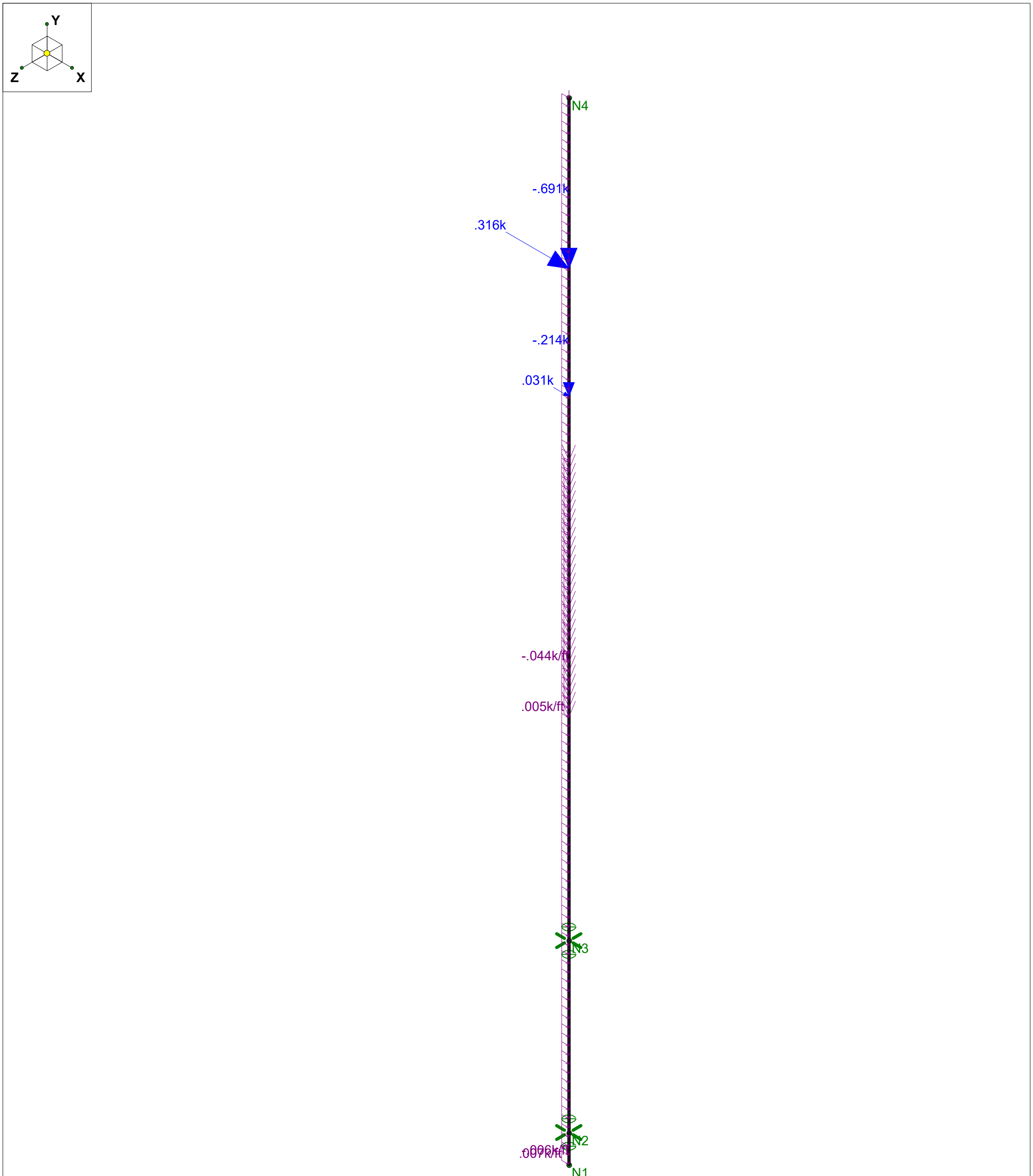


Loads: LC 2, 0.9D + 1.6W

CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:03 PM
16071.32 /AT&T CT5068	LC #2 Loads	TIA.r3d

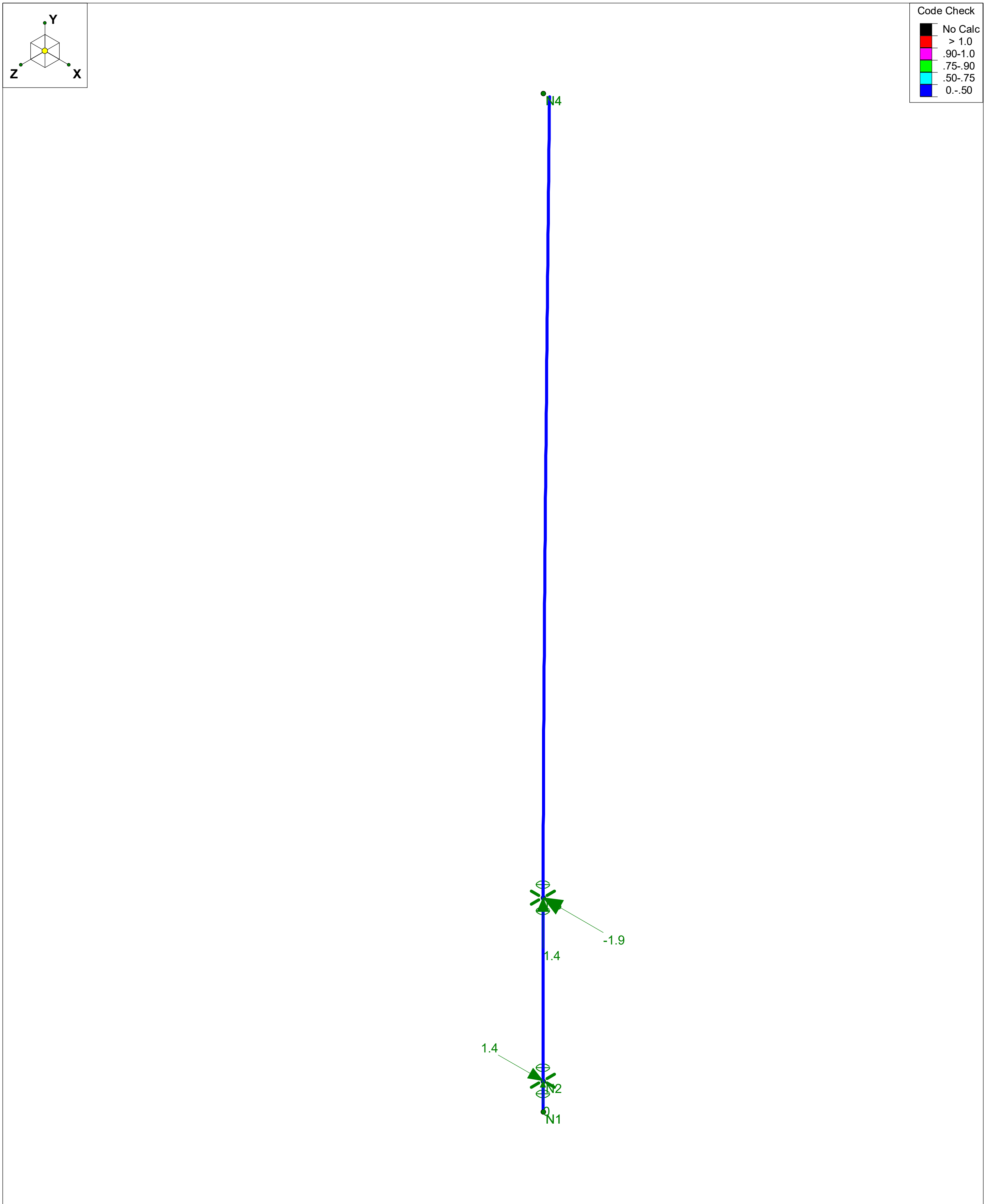


CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:04 PM
16071.32 /AT&T CT5068	LC #2 Reactions and Deflected Shape	TIA.r3d



Loads: LC 3, 1.2D +1.0Di + 1.0Wi

CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:03 PM
16071.32 /AT&T CT5068	LC #3 Loads	TIA.r3d



CENTEK Engineering, INC.		
tjl, cfc	Strcuture # 3308 - Mast	Oct 24, 2016 at 3:05 PM
16071.32 /AT&T CT5068	LC #3 Reactions and Deflected Shape	TIA.r3d

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Subject: Connection of Mast to Pole # 3308

Location: Ridgefield, CT

Rev. 1: 10/24/16

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 16071.32

Mast Connection to Utility Tower:

Reactions:

Moment =	$Moment := 0 \cdot kips$	(Input From Risa-3D)
Vertical =	$Vertical := 0.8 \cdot kips$	(Input From Risa-3D)
Horizontal x-dir =	$Horizontal_x := 9.1 \cdot kips$	(Input From Risa-3D)
Horizontal z-dir =	$Horizontal_z := 9.1 \cdot kips$	(Input From Risa-3D)

Bolt Data:

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

Shear Force = $f_v := \frac{\sqrt{Horizontal_z^2 + Vertical^2}}{N_b} = 2.3 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 12.76 \cdot \%$

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

Bolt_Shear = "OK"

Tension Force = $f_t := \frac{Horizontal_x}{N_b} = 2.3 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 7.63 \cdot \%$

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

Bolt_Tension = "OK"

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 PCS Mast Above Grade = $TME := 118$ ft (User Input)

Multiplier Gust Response Factor = $m := 1.25$ (User Input - Only for NESC Extreme wind case)

NESC Factor = $kv := 1.43$ (User Input from NESC 2007 Table 250-3 equation)

Importance Factor = $I := 1.0$ (User Input from NESC 2007 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.31$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346\left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.305$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.833$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.857$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.8$ 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

Development of Wind & Ice Load on PCS Mast

Proposed PCS Mast Data: (HSS5.563x0.258)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 5.563$	in	(User Input)
Mast Length =	$L_{mast} := 16.67$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.258$	in	(User Input)

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 0.464$ sf/ft

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_R \cdot A_{mast} \cdot m = 26$ plf **BLC 5**

Wind Load (NESE Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 0.547$ sf/ft

Total Mast Wind Force w/ Ice = $p \cdot Cd_R \cdot AICE_{mast} = 3$ plf **BLC 4**

Gravity Loads (without ice)

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

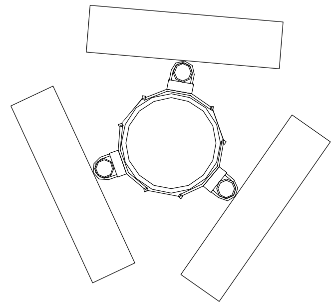
Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^{\,2}\right] = 9.5$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 4$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Proposed Antenna Data:



Antenna Model = CCI HPA-65R-BUU-H6

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 72$ in (User Input)

Antenna Width = $W_{ant} := 14.8$ in (User Input)

Antenna Thickness = $T_{ant} := 9$ in (User Input)

Antenna Weight = $WT_{ant} := 51$ lbs (User Input)

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

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 = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1545$ 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 = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 154$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 153$ 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

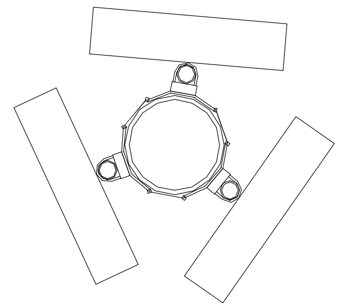
Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 63$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 189$ lbs **BLC 3**

Development of Wind & Ice Load on TMA's

Proposed TMA Data:

TMA Model =	CCI DTMABP7819VG12A		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 10.63$	in	(User Input)
TMA Width =	$W_{TMA} := 11.02$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.78$	in	(User Input)
TMA Weight =	$WT_{TMA} := 20$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 6$		(User Input)



Wind Load (NESC Extreme)

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.3$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 1.7$ sf

Total TMA Wind Force = $F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 116$ lbs **BLC 5**

Wind Load (NESC Heavy)

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (T_{TMA} + 1)}{144} = 0.4$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 2.3$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 15$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 443$ cu in

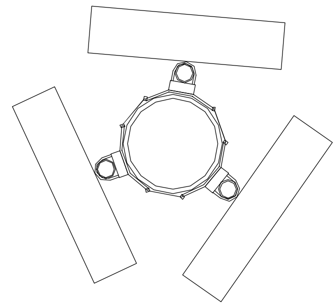
Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 225$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$ lbs

Weight of Ice on All TMA's $W_{ICETMA} \cdot N_{TMA} = 44$ lbs **BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data:



Mount Type:	Pipe Mounts		
Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 72$	in	(User Input)
2 inch Pipe Mount Linear Weight =	$W_{mnt} := 3.66$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 2.375$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)
Tri-Bracket Weight =	$W_{b.mnt} := 15$	lbs	(User Input)

Wind Load (NESC Extreme)

Assumes Mount is Shielded by Antenna

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

Total Mount Wind Force = $F_{mnt} := qz \cdot Cd_R \cdot A_{mnt} \cdot m = 0$ 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 = $Fi_{mnt} := p \cdot Cd_R \cdot A_{ICEmnt} = 0$ lbs **BLC 4**

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

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

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} + W_{b.mnt} \cdot N_{mnt} = 111$ lbs **BLC 2**

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

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

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

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

Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 30 = 62$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 12$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 12$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 2$		(User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.3$ sf/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 21$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot Ir)}{12} = 0.4$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 2$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 12$ plf **BLC 2**

Gravity Load (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 3.9$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 18$ plf **BLC 3**

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

Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining Reactions Applied to Utility Pole**
Tabulated Load Cases
Location: **Ridgefield, CT**

Date:8/24/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.32

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	NESC Heavy Wind
5	NESC Extreme Wind

Footnotes:

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

Subject: **Analysis of NESC Heavy Wind and NESC Extreme Wind for Obtaining Reactions Applied to Utility Pole**
Load Combinations Table
Location: **Ridgefield, CT**
Date: 8/24/16 Prepared by: T.J.L. Checked by: C.F.C. Job No. 16071.32

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	NESC Heavy Wind		1		1	1.5	2	1.5	3	1.5	4	2.5		
2	NESC Extreme Wind		1		1	1	2	1	5	1				

Footnotes:
(1) BLC = Basic Load Case

Global

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

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

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

Global, Continued

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

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Existing Mast	16.67												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Existing Mast	HSS5.563x0.258	Beam	Pipe	A500 Gr.42	Typical	4.01	14.2	14.2	28.5

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	BOTMA...	TOPMA...			Existing Mast	Beam	Pipe	A500 Gr.42	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From D...
1	BOTMAST	0	0	0	0	
2	BOTCONNECTION	0	.5	0	0	
3	TOPCONNECTION	0	3.5	0	0	
4	TOPMAST	0	16.67	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	BOTCONNECTION	Reaction	Reaction	Reaction		Fixed		
2	BOTMAST							
3	TOPCONNECTION	Reaction	Reaction	Reaction		Fixed		

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.153	14
2	M1	Y	-.12	12
3	M1	Y	-.111	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.189	14
2	M1	Y	-.044	12
3	M1	Y	-.062	14

Member Point Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.154	14
2	M1	X	.015	12

Member Point Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.545	14

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	X	.116	12

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	-.012	-.012	0	11

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	-.004	-.004	0	11
2	M1	Y	-.018	-.018	7	11

Member Distributed Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.003	.003	0	11
2	M1	X	.002	.002	7	11

Member Distributed Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.026	.026	0	11
2	M1	X	.021	.021	7	11

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gravity	Z Gra...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					3	1		
3	Weight of Ice Only	None					3	2		
4	NESC Heavy Wind	None					2	2		
5	NESC Extreme Wind	None					2	2		

Load Combinations

	Description	Sol...	PDelta	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	NESC Heavy Wind	Yes			1	1.5	2	1.5	3	1.5	4	2.5								
2	NESC Extreme Wind	Yes			1	1	2	1	5	1										
3	Self Weight				1	1														

Envelope Joint Reactions

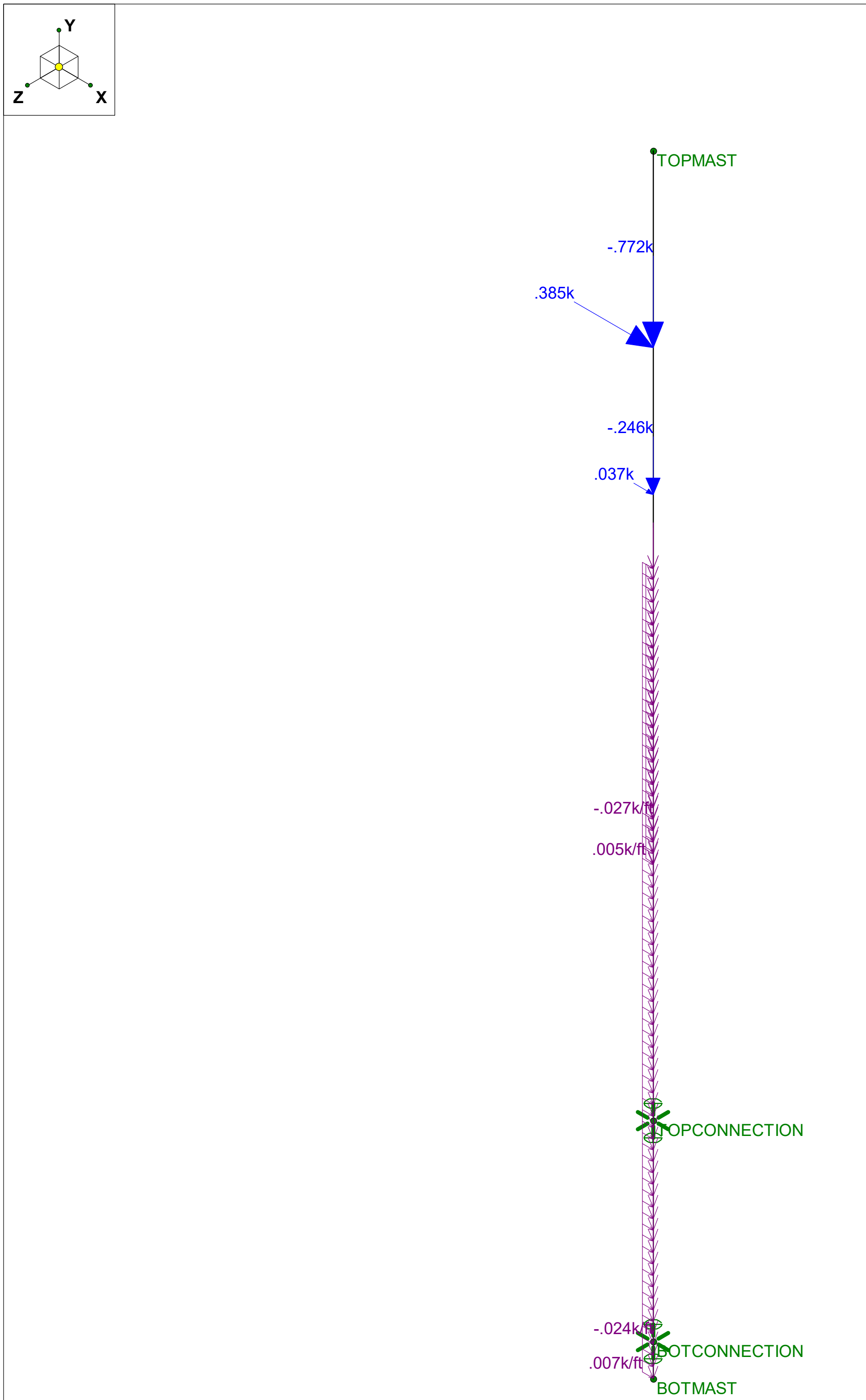
	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	BOTCONNE...	max	6.081	2	.089	1	0	1	0	1	NC	NC	0	1
2		min	1.545	1	.051	2	0	1	0	1	NC	NC	0	1
3	TOPCONNE...	max	-2.07	1	1.643	1	0	1	0	1	NC	NC	0	1
4		min	-8.112	2	.692	2	0	1	0	1	NC	NC	0	1
5	Totals:	max	-.525	1	1.732	1	0	1						
6		min	-2.031	2	.743	2	0	1						

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	1.545	.089	0	0	NC	0
2	1	TOPCONNECTION	-2.07	1.643	0	0	NC	0
3	1	Totals:	-.525	1.732	0			
4	1	COG (ft):	X: 0	Y: 10.992	Z: 0			

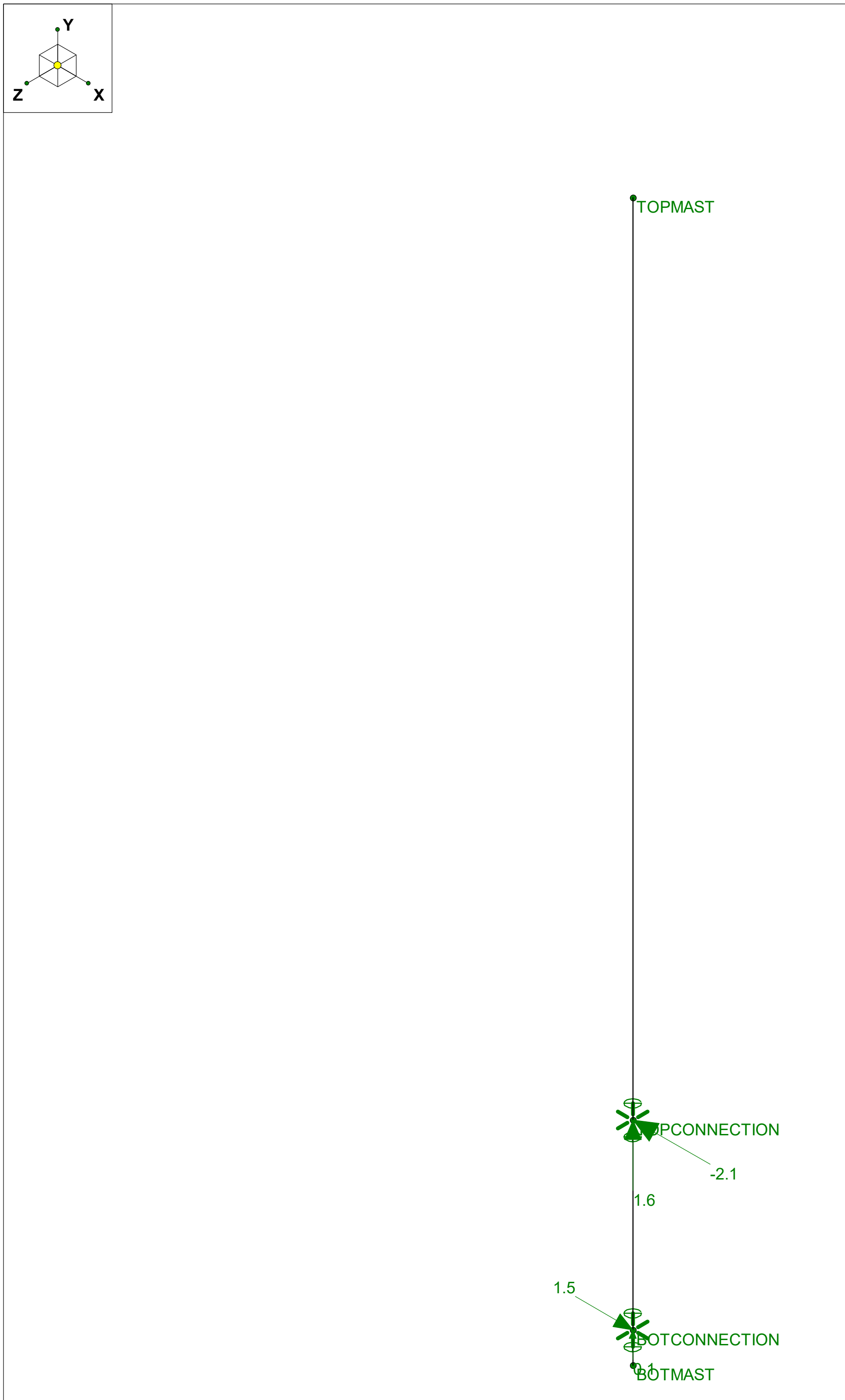
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	6.081	.051	0	0	NC	0
2	2	TOPCONNECTION	-8.112	.692	0	0	NC	0
3	2	Totals:	-2.031	.743	0			
4	2	COG (ft):	X: 0	Y: 10.435	Z: 0			



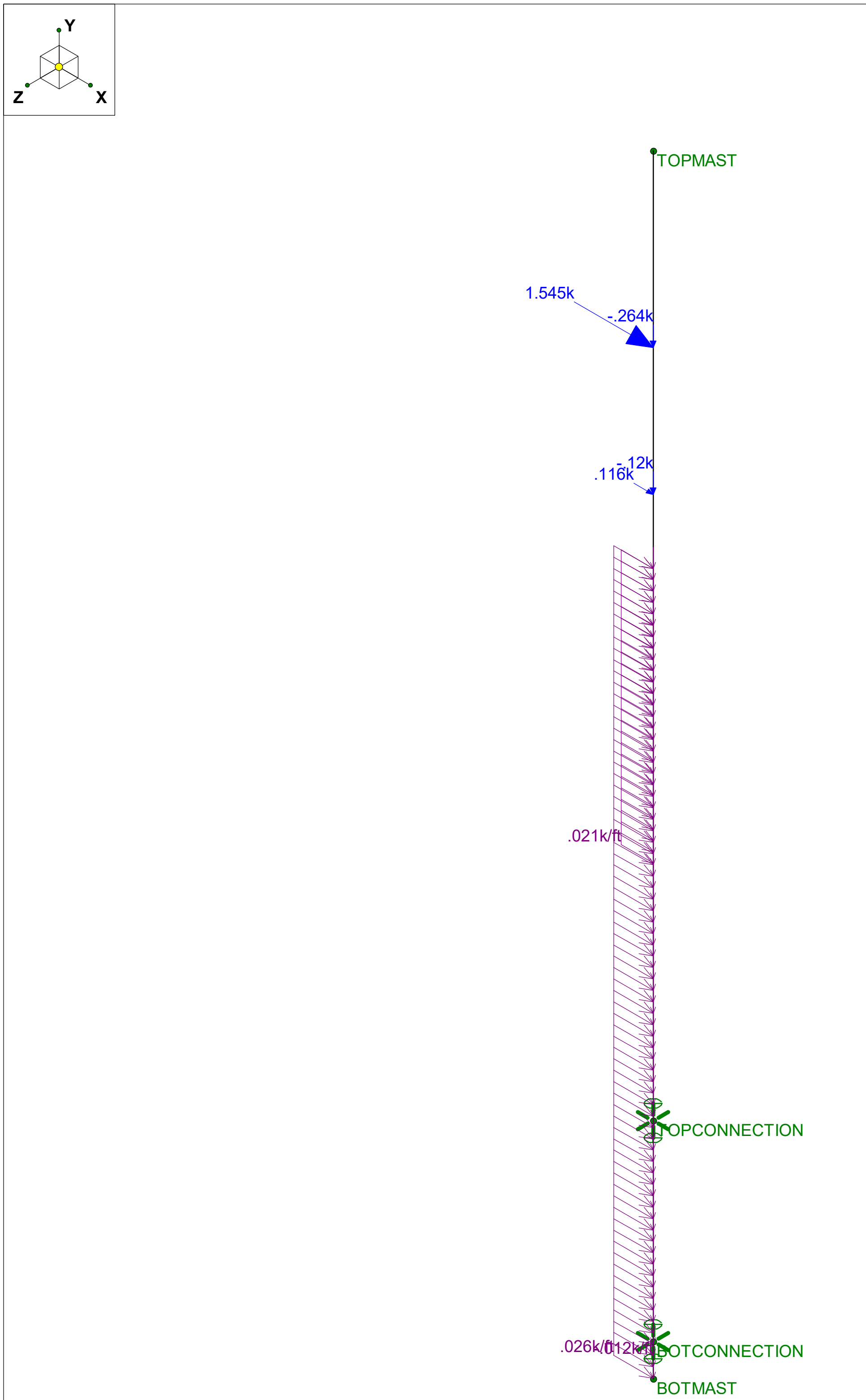
Loads: LC 1, NESC Heavy Wind

CENTEK Engineering, Inc.		
tjl, cfc	Structure # 3308 - Mast	Aug 25, 2016 at 11:24 AM
16071.32 /AT&T CT5068	LC #1 Loads	NESC.r3d



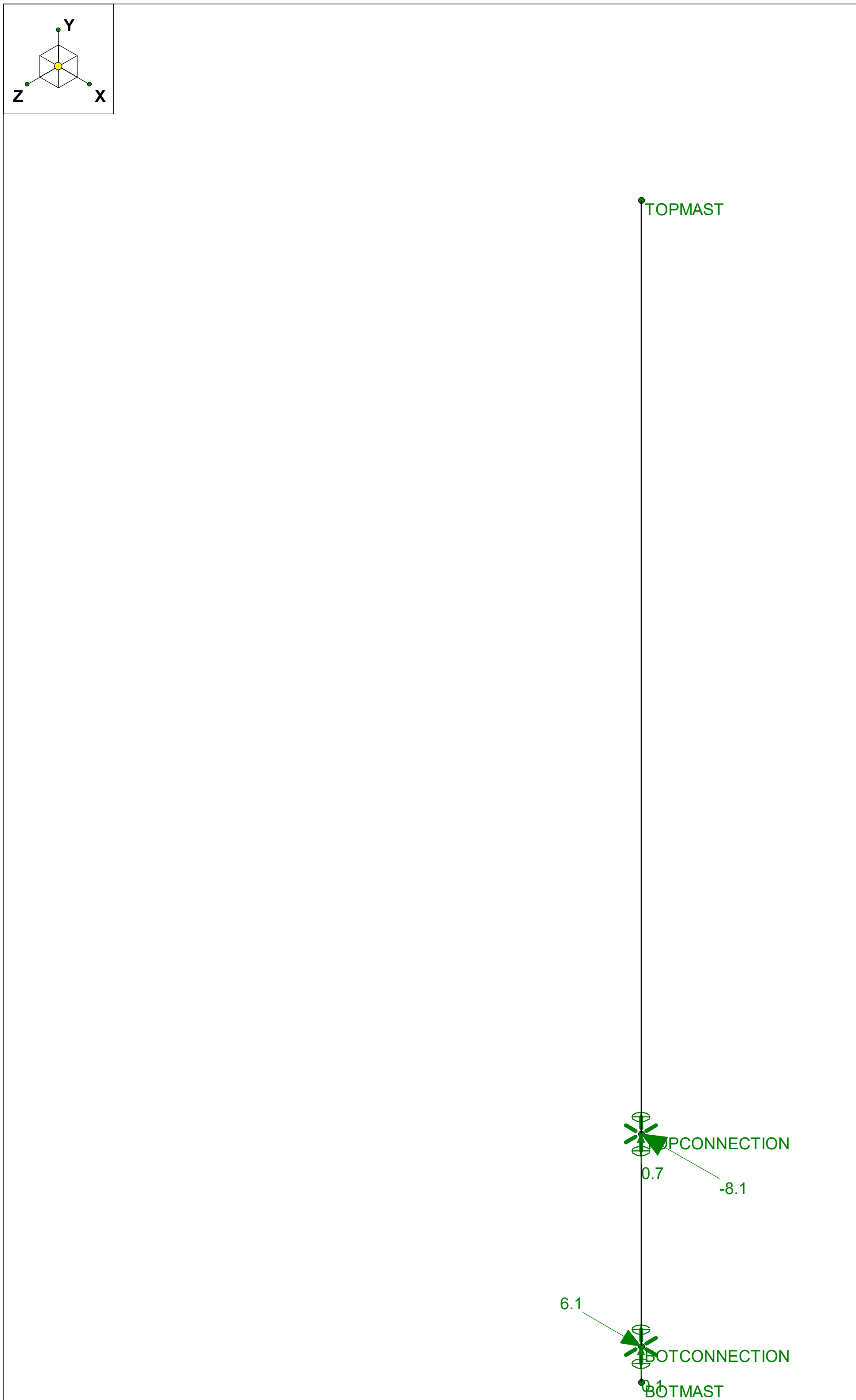
Results for LC 1, NESC Heavy Wind
Z-direction Reaction Units are k and k-ft

CENTEK Engineering, Inc.		
tjl, cfc	Structure # 3308 - Mast	Aug 25, 2016 at 11:26 AM
16071.32 /AT&T CT5068	LC #1 Reactions	NESC.r3d



Loads: LC 2, NESC Extreme Wind

CENTEK Engineering, Inc.		
tjl, cfc	Structure # 3308 - Mast	Aug 25, 2016 at 11:24 AM
16071.32 /AT&T CT5068	LC #2 Loads	NESC.r3d



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

CENTEK Engineering, Inc.		
tjl, cfc	Structure # 3308 - Mast	Aug 25, 2016 at 11:26 AM
16071.32 /AT&T CT5068	LC #2 Reactions	NESC.r3d

Coax Cable on Pole

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 15 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable =	$D_{coax} := 1.98 \cdot in$	*(User Input)*
Weight of Coax Cable =	$W_{coax} := 1.04 \cdot plf$	*(User Input)*
Number of Coax Cables =	$N_{coax} := 12$	*(User Input)*
Number of Projected Coax Cables =	$NP_{coax} := 3$	*(User Input)*
Extreme Wind Pressure =	$qz := 34.8 \cdot psf$	*(User Input)*
Heavy Wind Pressure =	$p := 4 \cdot psf$	*(User Input)*
Radial Ice Thickness =	$Ir := 0.5 \cdot in$	*(User Input)*
Radial Ice Density =	$Id := 56 \cdot pcf$	*(User Input)*
Shape Factor =	$Cd_{coax} := 1.6$	*(User Input)*
Overload Factor for NESC Heavy Wind Load =	$OF_{HW} := 2.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Load =	$OF_{EW} := 1.0$	*(User Input)*
Overload Factor for NESC Heavy Vertical Load =	$OF_{HV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Vertical Load =	$OF_{EV} := 1.0$	*(User Input)*

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 6.94 \cdot in$

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 5.94 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^{\ 2}\right] = 0.027 \, ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 18.179 \cdot plf$

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 =

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

$Heavy_{Vert} =$ (lb)

	0
0	690
1	460
2	460
3	460
4	460
5	460
6	460
7	460
8	460
9	460

$Heavy_{Trans} =$ (lb)

	0
0	139
1	93
2	93
3	93
4	93
5	93
6	93
7	93
8	93
9	93

Extreme Vertical Load =

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

Extreme Transverse Load =

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

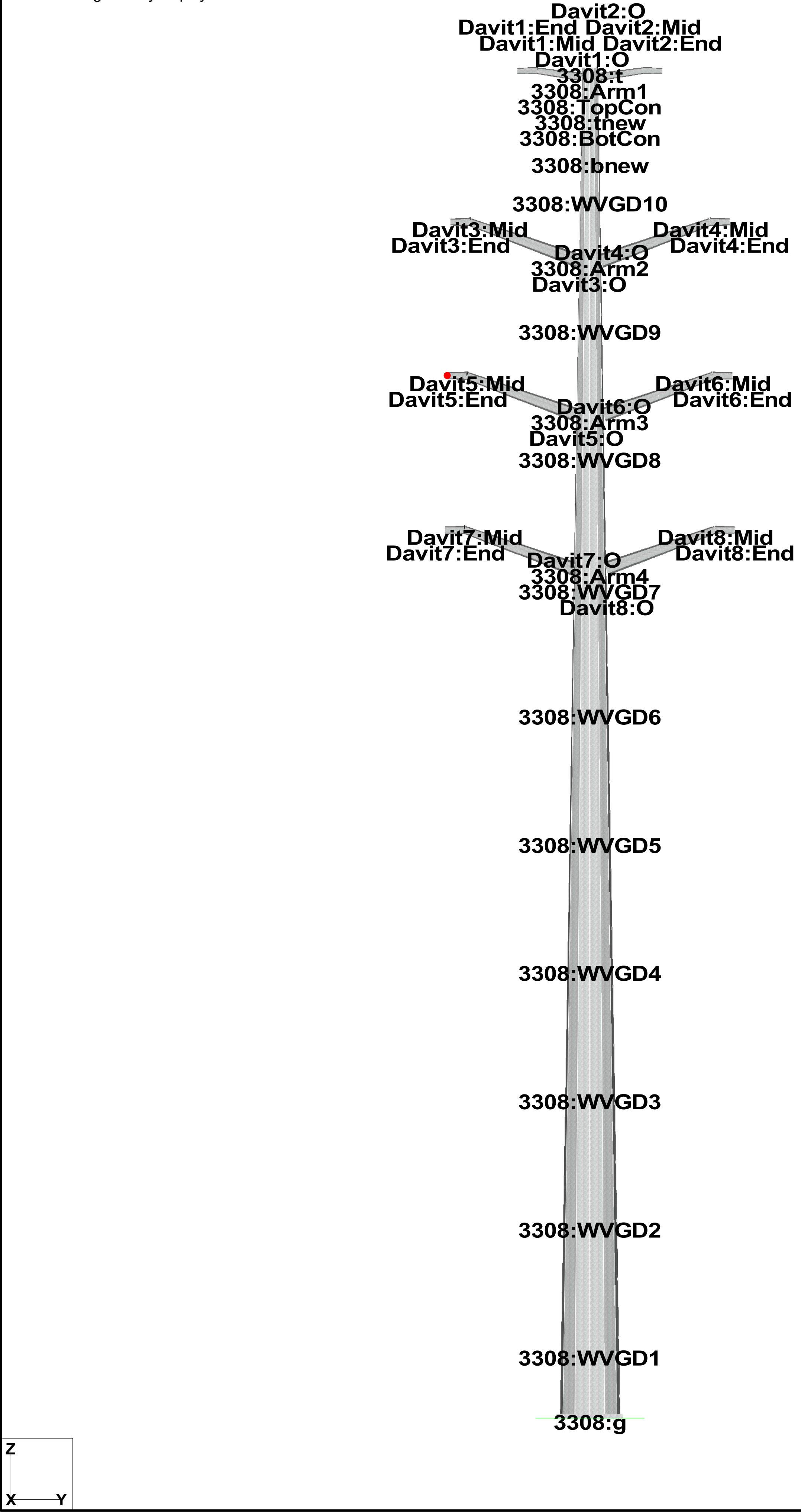
$Extreme_{Vert} =$ (lb)

	0
0	187
1	125
2	125
3	125
4	125
5	125
6	125
7	125
8	125
9	125

$Extreme_{Trans} =$ (lb)

	0
0	413
1	276
2	276
3	276
4	276
5	276
6	276
7	276
8	276
9	276

Centek Engineering Inc, Project: "cl&p structure # 3308"
PLS-POLE Version 12.50, 9:10:08 AM Thursday, August 25, 2016
Undeformed geometry displayed



Project Name : 11021.CO54 - Ridgefield, CT
Project Notes: CL&P - Str # 3308/ AT&T - CT5068
Project File : J:\Jobs\1607100.WI\32_Ridgefield Center CT5068\04_Structural\Backup Documentation\Calcs\PLS Pole\cl&p structure # 3308.pol
Date run : 9:08:39 AM Thursday, August 25, 2016
by : PLS-POLE Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: j:\jobs\1607100.wi\32_ridgefield center ct5068\04_structural\backup documentation\calcs\pls pole\cl&p #3308.lca

*** Analysis Results:

Maximum element usage is 96.95% for Base Plate "3308" in load case "NESC Heavy"
Maximum insulator usage is 10.18% for Clamp "Clamp9" in load case "NESC Extreme"

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	3308:g	-0.11	-55.53	-55.50	55.53	4659.49	-5.05	4659.49	-0.09	0.00
NESC Extreme	3308:g	-0.04	-45.65	-31.66	45.65	3445.97	-1.60	3445.97	-0.02	0.00

Summary of Tip Deflections For All Load Cases:

Note: postive tip load results in positive deflection

Load Case	Joint Label	Long. Defl. (in)	Tran. Defl. (in)	Vert. Defl. (in)	Resultant Defl. (in)	Long. Rot. (deg)	Tran. Rot. (deg)	Twist (deg)
NESC Heavy	3308:t	0.08	69.56	-2.71	69.61	0.01	-6.41	0.00
NESC Extreme	3308:t	0.02	49.86	-1.39	49.88	0.00	-4.64	0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
3308	1	908	NESC Heavy	70.28	323.37
3308	2	1946	NESC Heavy	87.77	1108.93
3308	3	3374	NESC Heavy	79.50	1921.49
3308	4	3856	NESC Heavy	87.94	3010.36
3308	5	3397	NESC Heavy	87.97	3010.36
3308	6	3807	NESC Heavy	86.74	3834.03

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
3308	87.97	NESC Heavy	25	20770.6

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	3.05	NESC Heavy	1	82.5
Davit2	9.13	NESC Heavy	1	82.5
Davit3	8.05	NESC Heavy	2	261.5
Davit4	28.05	NESC Heavy	1	261.5
Davit5	8.40	NESC Heavy	2	261.5
Davit6	28.68	NESC Heavy	1	261.5
Davit7	8.79	NESC Heavy	2	261.5
Davit8	29.36	NESC Heavy	1	261.5

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	96.95	3308	Base Plate
NESC Extreme	71.24	3308	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy	87.97	3308	25
NESC Extreme	62.83	3308	27

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	3308	11	33.000	52.014	4659.492	-5.051	58.169	281.604	4	201.701	3.200	96.95
NESC Extreme	3308	11	33.000	28.175	3445.970	-1.599	42.746	206.938	4	148.478	2.743	71.24

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy	29.36	Davit8	1
NESC Extreme	15.94	Davit8	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)

Clamp1	Clamp	5.91	NESC Heavy	0.0
Clamp2	Clamp	5.91	NESC Heavy	0.0
Clamp3	Clamp	9.05	NESC Heavy	0.0
Clamp4	Clamp	9.05	NESC Heavy	0.0
Clamp5	Clamp	9.05	NESC Heavy	0.0
Clamp6	Clamp	9.05	NESC Heavy	0.0
Clamp7	Clamp	9.05	NESC Heavy	0.0
Clamp8	Clamp	9.05	NESC Heavy	0.0
Clamp9	Clamp	10.18	NESC Extreme	0.0
Clamp10	Clamp	7.60	NESC Extreme	0.0
Clamp11	Clamp	0.59	NESC Heavy	0.0
Clamp12	Clamp	0.59	NESC Heavy	0.0
Clamp13	Clamp	0.59	NESC Heavy	0.0
Clamp14	Clamp	0.59	NESC Heavy	0.0
Clamp15	Clamp	0.59	NESC Heavy	0.0
Clamp16	Clamp	0.59	NESC Heavy	0.0
Clamp17	Clamp	0.59	NESC Heavy	0.0
Clamp18	Clamp	0.59	NESC Heavy	0.0
Clamp19	Clamp	0.59	NESC Heavy	0.0
Clamp20	Clamp	0.88	NESC Heavy	0.0
Clamp21	Clamp	0.00	NESC Heavy	0.0
Clamp22	Clamp	0.00	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	1734.1
Weight of Steel Poles:	20770.6
Total:	22504.7

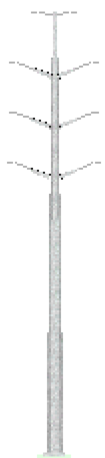
*** End of Report

```
*************************************************************************
*                                                                       *
*                                PLS-POLE                               *
*                    POLE AND FRAME ANALYSIS AND DESIGN                 *
*               Copyright Power Line Systems, Inc. 1999-2011            *
*                                                                       *
*************************************************************************
```

Project Name : 11021.CO54 - Ridgefield, CT
Project Notes: CL&P - Str # 3308/ AT&T - CT5068
Project File : J:\Jobs\1607100.WI\32_Ridgefield Center CT5068\04_Structural\Backup Documentation\Calcs\PLS Pole\cl&p structure # 3308.pol
Date run   : 9:08:38 AM Thursday, August 25, 2016
by   : PLS-POLE Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.



Modeling options:
  Offset Arms from Pole/Mast: Yes
  Offset Braces from Pole/Mast: Yes
  Offset Guys from Pole/Mast: Yes
  Offset Posts from Pole/Mast: Yes
  Offset Strains from Pole/Mast: Yes
  Use Alternate Convergence Process: No
  Steel poles checked with ASCE/SEI 48-05

Default Modulus of Elasticity for Steel = 29000.00 (ksi)
Default Weight Density for Steel = 490.00 (lbs/ft^3)

Steel Pole Properties:

Steel Pole Property	Stock Number	Length	Default Embedded	Base Plate	Shape	Tip Diameter	Base Diameter	Taper	Default Drag	Tubes	Modulus of Elasticity	Weight Density	Shape At	Strength Check	Distance From	Ultimate	Ultimate

Label		(ft)	Length (ft)			(in)	(in)	(in/ft)	Coef.		Override (ksi)	Override (lbs/ft^3)	Base	Type	Tip (ft)	Trans. Load (kips)	Long. Load (kips)
CL&P3308	3308	105.00	0	Yes	129	15	56	0	1.3	6 tubes	0	0		Calculated	0.000	0.0000	0.0000

Steel Tubes Properties:

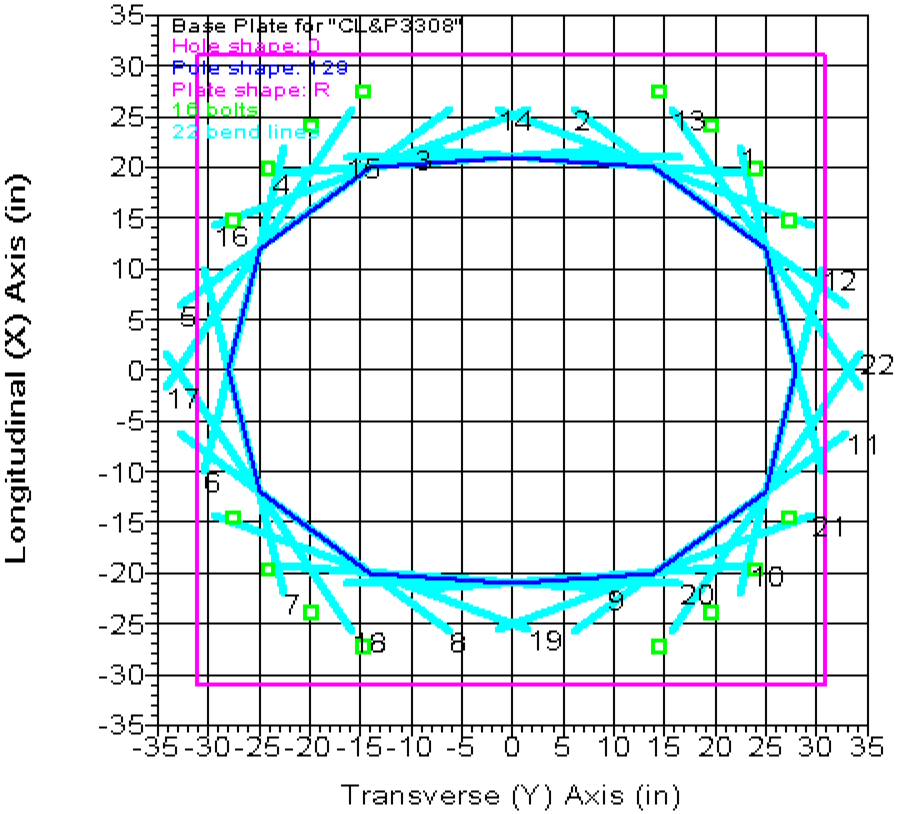
Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
CL&P3308	1	20	0.25	0.000	0.000	0.000	65.000	0.000	908	10.71	0.39524	15.00	22.90	2.801	0.000
CL&P3308	2	20	0.375	0.000	0.000	0.000	65.000	0.000	1946	10.49	0.39524	23.15	31.06	3.789	0.000
CL&P3308	3	20	0.5	4.917	0.000	0.000	65.000	0.000	3374	10.38	0.39524	31.31	39.21	4.777	4.917
CL&P3308	4	20	0.5	0.000	0.000	0.000	65.000	0.000	3856	10.33	0.39524	36.27	44.18	5.397	0.000
CL&P3308	5	15	0.5	0.000	0.000	0.000	65.000	0.000	3397	7.66	0.39524	44.18	50.10	6.138	0.000
CL&P3308	6	14.9167	0.5	0.000	0.000	0.000	65.000	0.000	3807	7.60	0.39524	50.10	56.00	0.000	0.000

Base Plate Properties:

Pole Property	Plate Diam. (in)	Plate Shape	Plate Thick. (in)	Plate Weight (lbs)	Bend Line Length Override (in)	Hole Diam. (in)	Hole Shape	Steel Density (lbs/ft^3)	Steel Yield Stress (ksi)	Bolt Diam. (in)	Bolt Pattern Diam. (in)	Num. Of Bolts	Bolt Cage X Inertia (in^4)	Bolt Cage Y Inertia (in^4)
CL&P3308	62.000	R	3.250	3484	33.000	0.000	0	490.00	60.000	2.250	62.000	16	30686.43	30686.43

Base Plate Bolt Coordinates for Property "CL&P3308":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0.4718	0.8831	0
0.6371	0.7742	0
0.7742	0.6371	0
0.8831	0.4718	0



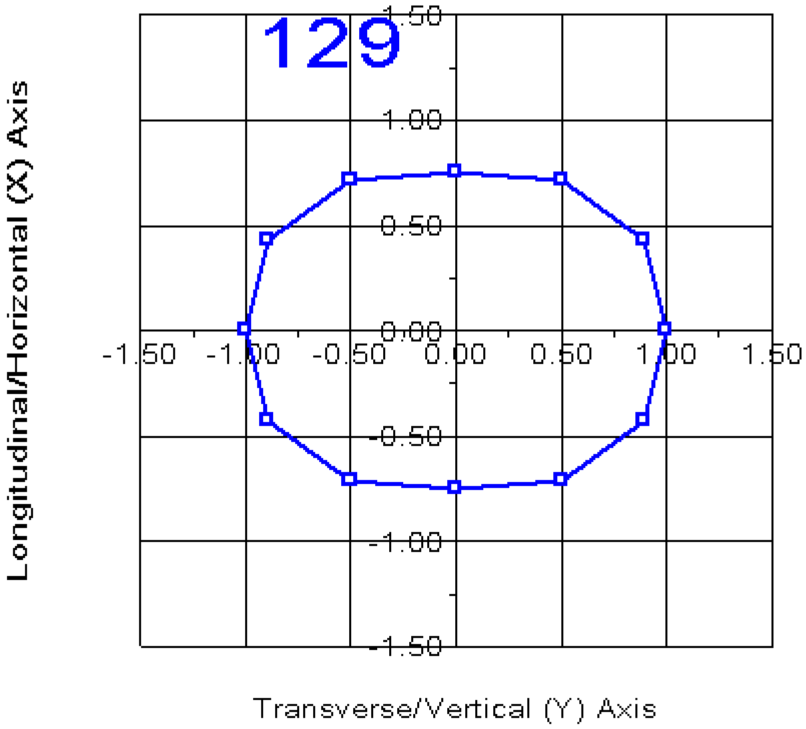
Steel Pole Connectivity:

Pole Label	Tip Joint	Base Joint	X of Base (ft)	Y of Base (ft)	Z of Base (ft)	Inclin. About X (deg)	Inclin. About Y (deg)	Property Set	Attach. Labels	Base Connect	Embed % Override	Embed C. Override (ft)
3308			0	0	0	0	0	CL&P3308	18 labels		0.00	0

Relative Attachment Labels for Steel Pole "3308":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
3308:Arm1	0.00	104.30
3308:Arm2	0.00	89.96
3308:Arm3	0.00	77.96
3308:Arm4	0.00	65.96
3308:TopCon	0.00	104.00

3308:BotCon	0.00	101.00
3308:WVGD1	0.00	5.00
3308:WVGD2	0.00	15.00
3308:WVGD3	0.00	25.00
3308:WVGD4	0.00	35.00
3308:WVGD5	0.00	45.00
3308:WVGD6	0.00	55.00
3308:WVGD7	0.00	65.00
3308:WVGD8	0.00	75.00
3308:WVGD9	0.00	85.00
3308:WVGD10	0.00	95.00
3308:tnew	0.00	103.00
3308:bnew	0.00	98.00



Pole Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	T-Moment Inertia (in^4)	L-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	T-Moment Capacity (ft-k)	L-Moment Capacity (ft-k)
3308	3308:t	3308:t Ori	0.00	15.00	10.51	270.80	181.52	0.00	13.3	65.00	65.00	195.58	174.80
3308	3308:Arm1	3308:Arm1 End	0.70	15.28	10.71	286.35	191.94	0.00	13.5	65.00	65.00	203.07	181.49
3308	3308:Arm1	3308:Arm1 Ori	0.70	15.28	10.71	286.35	191.94	0.00	13.5	65.00	65.00	203.07	181.49
3308	3308:TopCon	3308:TopCon End	1.00	15.40	10.80	293.26	196.56	0.00	13.6	65.00	65.00	206.36	184.42

3308	3308:TopCon	3308:TopCon	Ori	1.00	15.40	10.80	293.26	196.56	0.00	13.6	65.00	65.00	206.36	184.42
3308	3308:tnew	3308:tnew	End	2.00	15.79	11.08	316.92	212.42	0.00	14.0	65.00	65.00	217.43	194.31
3308	3308:tnew	3308:tnew	Ori	2.00	15.79	11.08	316.92	212.42	0.00	14.0	65.00	65.00	217.43	194.31
3308	3308:BotCon	3308:BotCon	End	4.00	16.58	11.64	367.98	246.63	0.00	14.8	65.00	65.00	240.42	214.85
3308	3308:BotCon	3308:BotCon	Ori	4.00	16.58	11.64	367.98	246.63	0.00	14.8	65.00	65.00	240.42	214.85
3308	3308:bnew	3308:bnew	End	7.00	17.77	12.49	454.40	304.56	0.00	16.0	65.00	65.00	277.07	247.61
3308	3308:bnew	3308:bnew	Ori	7.00	17.77	12.49	454.40	304.56	0.00	16.0	65.00	65.00	277.07	247.61
3308	3308:WVGD10	3308:WVGD10	End	10.00	18.95	13.34	553.36	370.91	0.00	17.2	65.00	65.00	316.30	282.69
3308	3308:WVGD10	3308:WVGD10	Ori	10.00	18.95	13.34	553.36	370.91	0.00	17.2	65.00	65.00	316.30	282.69
3308	#3308:0	Tube 1	End	12.52	19.95	14.05	646.84	433.61	0.00	18.2	65.00	65.00	351.27	313.96
3308	#3308:0	Tube 1	Ori	12.52	19.95	14.05	646.84	433.61	0.00	18.2	65.00	65.00	351.27	313.96
3308	3308:Arm2	3308:Arm2	End	15.04	20.95	14.76	750.28	502.99	0.00	19.2	65.00	65.00	388.06	346.88
3308	3308:Arm2	3308:Arm2	Ori	15.04	20.95	14.76	750.28	502.99	0.00	19.2	65.00	65.00	388.06	346.88
3308	3308:WVGD9	3308:WVGD9	End	20.00	22.90	16.16	984.71	660.30	0.00	21.2	65.00	65.00	465.74	416.40
3308	3308:WVGD9	3308:WVGD9	Ori	20.00	23.15	24.36	1496.83	1003.29	0.00	13.7	65.00	65.00	700.32	625.87
3308	#3308:1	Tube 2	End	23.52	24.55	25.85	1789.48	1199.38	0.00	14.6	65.00	65.00	789.77	705.78
3308	#3308:1	Tube 2	Ori	23.52	24.55	25.85	1789.48	1199.38	0.00	14.6	65.00	65.00	789.77	705.78
3308	3308:Arm3	3308:Arm3	End	27.04	25.94	27.34	2117.88	1419.49	0.00	15.5	65.00	65.00	884.56	790.49
3308	3308:Arm3	3308:Arm3	Ori	27.04	25.94	27.34	2117.88	1419.49	0.00	15.5	65.00	65.00	884.56	790.49
3308	3308:WVGD8	3308:WVGD8	End	30.00	27.11	28.59	2422.92	1623.99	0.00	16.3	65.00	65.00	968.31	865.36
3308	3308:WVGD8	3308:WVGD8	Ori	30.00	27.11	28.59	2422.92	1623.99	0.00	16.3	65.00	65.00	968.31	865.36
3308	#3308:2	Tube 2	End	34.52	28.89	30.51	2943.49	1973.05	0.00	17.5	65.00	65.00	1103.61	986.35
3308	#3308:2	Tube 2	Ori	34.52	28.89	30.51	2943.49	1973.05	0.00	17.5	65.00	65.00	1103.61	986.35
3308	3308:Arm4	3308:Arm4	End	39.04	30.68	32.42	3533.63	2368.87	0.00	18.7	65.00	65.00	1247.71	1115.25
3308	3308:Arm4	3308:Arm4	Ori	39.04	30.68	32.42	3533.63	2368.87	0.00	18.7	65.00	65.00	1247.71	1115.25
3308	3308:WVGD7	3308:WVGD7	End	40.00	31.06	32.83	3668.02	2459.03	0.00	19.0	65.00	65.00	1279.38	1143.59
3308	3308:WVGD7	3308:WVGD7	Ori	40.00	31.31	43.93	4938.48	3310.08	0.00	13.9	65.00	65.00	1708.75	1527.08
3308	#3308:3	Tube 3	End	45.00	33.29	46.75	5955.13	3991.35	0.00	14.9	65.00	65.00	1938.18	1732.06
3308	#3308:3	Tube 3	Ori	45.00	33.29	46.75	5955.13	3991.35	0.00	14.9	65.00	65.00	1938.18	1732.06
3308	3308:WVGD6	3308:WVGD6	End	50.00	35.26	49.57	7102.19	4760.22	0.00	15.9	65.00	65.00	2181.97	1949.94
3308	3308:WVGD6	3308:WVGD6	Ori	50.00	35.26	49.57	7102.19	4760.22	0.00	15.9	65.00	65.00	2181.97	1949.94
3308	#3308:4	Tube 3	End	52.54	36.27	51.01	7737.79	5186.35	0.00	16.4	65.00	65.00	2311.39	2065.65
3308	#3308:4	Tube 3	Ori	52.54	36.27	51.01	7737.79	5186.35	0.00	16.4	65.00	65.00	2311.39	2065.65
3308	#3308:5	SpliceT	End	55.08	37.27	52.44	8410.15	5637.17	0.00	16.9	65.00	65.00	2444.52	2184.69
3308	#3308:5	SpliceT	Ori	55.08	37.27	52.44	8410.15	5637.17	0.00	16.9	65.00	65.00	2444.52	2184.69
3308	3308:WVGD5	3308:WVGD5	End	60.00	38.21	53.79	9075.88	6083.60	0.00	17.4	65.00	65.00	2572.91	2299.51
3308	3308:WVGD5	3308:WVGD5	Ori	60.00	38.21	53.79	9075.88	6083.60	0.00	17.4	65.00	65.00	2572.91	2299.51
3308	#3308:6	Tube 4	End	65.00	40.19	56.62	10582.46	7094.04	0.00	18.4	65.00	65.00	2852.49	2549.59
3308	#3308:6	Tube 4	Ori	65.00	40.19	56.62	10582.46	7094.04	0.00	18.4	65.00	65.00	2852.49	2549.59
3308	3308:WVGD4	3308:WVGD4	End	70.00	42.17	59.44	12246.93	8210.59	0.00	19.3	65.00	65.00	3146.44	2812.58
3308	3308:WVGD4	3308:WVGD4	Ori	70.00	42.17	59.44	12246.94	8210.60	0.00	19.3	65.00	65.00	3146.44	2812.58
3308	#3308:7	Tube 4	End	72.54	43.17	60.87	13156.09	8820.55	0.00	19.9	65.00	65.00	3301.37	2951.22
3308	#3308:7	Tube 4	Ori	72.54	43.17	60.87	13156.10	8820.56	0.00	19.9	65.00	65.00	3301.37	2951.22
3308	#3308:8	SpliceT	End	75.08	44.18	62.31	14109.12	9460.00	0.00	20.4	65.00	65.00	3460.01	3093.19
3308	#3308:8	SpliceT	Ori	75.08	44.18	62.31	14109.13	9460.00	0.00	20.4	65.00	65.00	3460.01	3093.19
3308	3308:WVGD3	3308:WVGD3	End	80.00	46.12	65.09	16081.08	10783.26	0.00	21.3	65.00	65.00	3777.43	3377.30
3308	3308:WVGD3	3308:WVGD3	Ori	80.00	46.12	65.09	16081.08	10783.26	0.00	21.3	65.00	65.00	3777.43	3377.30
3308	#3308:9	Tube 5	End	85.00	48.10	67.91	18266.48	12249.97	0.00	22.3	65.00	65.00	4114.47	3679.03
3308	#3308:9	Tube 5	Ori	85.00	48.10	67.91	18266.48	12249.97	0.00	22.3	65.00	65.00	4114.47	3679.03
3308	3308:WVGD2	3308:WVGD2	End	90.00	50.07	70.73	20641.27	13843.99	0.00	23.3	65.00	65.00	4465.89	3993.66
3308	3308:WVGD2	3308:WVGD2	Ori	90.00	50.07	70.73	20641.27	13843.99	0.00	23.3	65.00	65.00	4465.89	3993.66
3308	#3308:10	SpliceT	End	90.08	50.10	70.78	20682.48	13871.65	0.00	23.3	65.00	65.00	4471.86	3999.01
3308	#3308:10	SpliceT	Ori	90.08	50.10	70.78	20682.48	13871.66	0.00	23.3	65.00	65.00	4471.86	3999.01
3308	#3308:11	Tube 6	End	95.04	52.06	73.58	23235.58	15585.58	0.00	24.3	65.00	65.00	4834.78	4323.99
3308	#3308:11	Tube 6	Ori	95.04	52.06	73.58	23235.58	15585.58	0.00	24.3	65.00	65.00	4834.78	4323.99
3308	3308:WVGD1	3308:WVGD1	End	100.00	54.02	76.38	25990.46	17435.17	0.00	25.3	65.00	65.00	5211.83	4661.67
3308	3308:WVGD1	3308:WVGD1	Ori	100.00	54.02	76.38	25990.47	17435.18	0.00	25.3	65.00	65.00	5211.83	4661.67
3308	3308:g	3308:g	End	105.00	56.00	79.21	28980.62	19442.93	0.00	26.3	65.00	65.00	5606.36	5015.03

Tubular Davit Properties:

Davit Property Label	Stock Number	Steel Shape	Thickness (in)	Base Diameter or Depth (in)	Tip Diameter or Depth (in)	Taper (in/ft)	Drag Coef.	Modulus of Elasticity (ksi)	Geometry	Strength Check Type	Vertical Capacity (lbs)	Tension Capacity (lbs)	Compres. Capacity (lbs)	Long. Capacity (lbs)	Yield Stress (ksi)	Weight Density Override (lbs/ft^3)	Steel Shape At End
ARM H	ARM H	8T	0.25	7.125	5	0	1.3	29000	2 points	Calculated	0	0	0	0	65	0	
ARM K	ARM K	8T	0.25	12.13	6	0	1.3	29000	2 points	Calculated	0	0	0	0	65	0	

Intermediate Joints for Davit Property "ARM H":

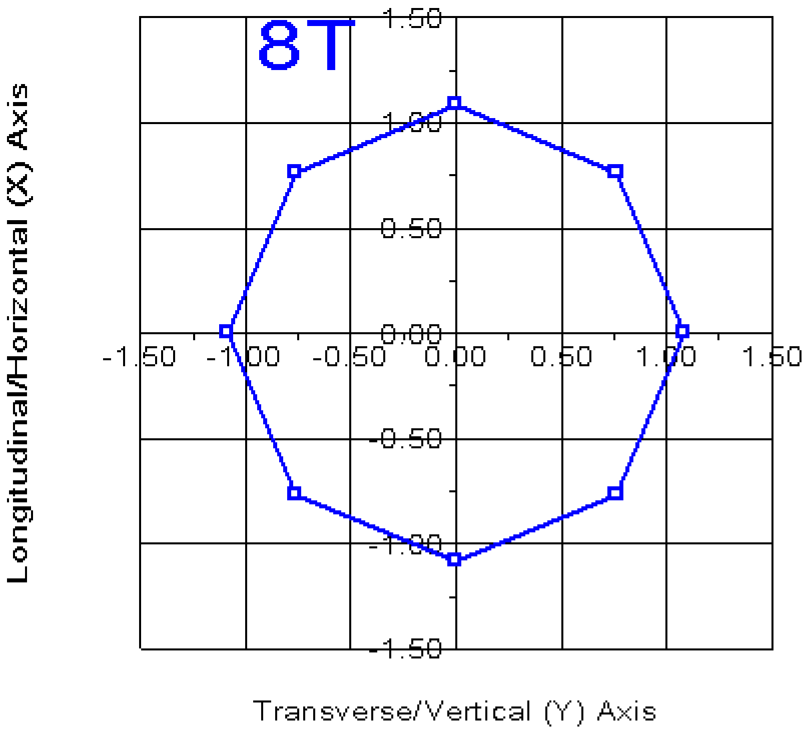
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
Mid	3.5	-0.49
End	5	-0.49

Intermediate Joints for Davit Property "ARM K":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
Mid	8.5	-3.04
End	10	-3.04

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
Davit1	3308:Arm1	ARM H	180
Davit2	3308:Arm1	ARM H	0
Davit3	3308:Arm2	ARM K	180
Davit4	3308:Arm2	ARM K	0
Davit5	3308:Arm3	ARM K	180
Davit6	3308:Arm3	ARM K	0
Davit7	3308:Arm4	ARM K	180
Davit8	3308:Arm4	ARM K	0



Tubular Davit Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
Davit1	Davit1:O	Origin	0.00	7.13	5.70	35.62	35.62	0.00	7.7	65.00	65.00	50.04	50.04
Davit1	Davit1:Mid	End	3.53	5.63	4.46	17.11	17.11	0.00	5.2	65.00	65.00	30.41	30.41
Davit1	Davit1:Mid	Origin	3.53	5.63	4.46	17.11	17.11	0.00	5.2	65.00	65.00	30.41	30.41
Davit1	Davit1:End	End	5.03	5.00	3.94	11.76	11.76	0.00	4.1	65.00	65.00	23.55	23.55
Davit2	Davit2:O	Origin	0.00	7.13	5.70	35.62	35.62	0.00	7.7	65.00	65.00	50.04	50.04
Davit2	Davit2:Mid	End	3.53	5.63	4.46	17.11	17.11	0.00	5.2	65.00	65.00	30.41	30.41
Davit2	Davit2:Mid	Origin	3.53	5.63	4.46	17.11	17.11	0.00	5.2	65.00	65.00	30.41	30.41
Davit2	Davit2:End	End	5.03	5.00	3.94	11.76	11.76	0.00	4.1	65.00	65.00	23.55	23.55
Davit3	Davit3:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit3	#Davit3:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit3	#Davit3:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit3	Davit3:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit3	Davit3:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit3	Davit3:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78

Davit4	Davit4:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit4	#Davit4:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit4	#Davit4:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit4	Davit4:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit4	Davit4:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit4	Davit4:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit5	Davit5:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit5	#Davit5:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit5	#Davit5:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit5	Davit5:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit5	Davit5:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit5	Davit5:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit6	Davit6:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit6	#Davit6:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit6	#Davit6:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit6	Davit6:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit6	Davit6:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit6	Davit6:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit7	Davit7:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit7	#Davit7:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit7	#Davit7:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit7	Davit7:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit7	Davit7:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit7	Davit7:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit8	Davit8:O	Origin	0.00	12.13	9.84	183.40	183.40	0.00	15.9	65.00	65.00	151.39	151.39
Davit8	#Davit8:0	End	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit8	#Davit8:0	Origin	4.51	9.50	7.66	86.68	86.68	0.00	11.6	65.00	65.00	91.33	91.33
Davit8	Davit8:Mid	End	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit8	Davit8:Mid	Origin	9.03	6.87	5.49	31.84	31.84	0.00	7.2	65.00	65.00	46.37	46.37
Davit8	Davit8:End	End	10.53	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
clamp	clamp1	8e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
Clamp1	Davit1:End	clamp	No Limit
Clamp2	Davit2:End	clamp	No Limit
Clamp3	Davit3:End	clamp	No Limit
Clamp4	Davit4:End	clamp	No Limit
Clamp5	Davit5:End	clamp	No Limit
Clamp6	Davit6:End	clamp	No Limit
Clamp7	Davit7:End	clamp	No Limit

Clamp8	Davit8:End	clamp	No Limit
Clamp9	3308:TopCon	clamp	No Limit
Clamp10	3308:BotCon	clamp	No Limit
Clamp11	3308:WVGD1	clamp	No Limit
Clamp12	3308:WVGD2	clamp	No Limit
Clamp13	3308:WVGD3	clamp	No Limit
Clamp14	3308:WVGD4	clamp	No Limit
Clamp15	3308:WVGD5	clamp	No Limit
Clamp16	3308:WVGD6	clamp	No Limit
Clamp17	3308:WVGD7	clamp	No Limit
Clamp18	3308:WVGD8	clamp	No Limit
Clamp19	3308:WVGD9	clamp	No Limit
Clamp20	3308:WVGD10	clamp	No Limit
Clamp21	3308:tnew	clamp	No Limit
Clamp22	3308:bnew	clamp	No Limit

*** Loads Data

Loads from file: j:\jobs\1607100.wi\32_ridgefield center ct5068\04_structural\backup documentation\calcs\pls pole\cl&p #3308.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)	105.00 (ft)	
Structure height	105.00 (ft)	
Structure height above ground	105.00 (ft)	

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Wood Poles	SF for Conc. Ult.	SF for Conc. First Crack	SF for Conc. Zero Tens.	SF for Guys and Cables	SF for Non Tubular Arms	SF for Braces	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)	Pole Deflection Check	Pole Deflection Limit % or (ft)
NESC Heavy	1.5000	2.5000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	20 loads	Wind on All	4	0	0.000	56.000	0.0	No Limit	0
NESC Extreme	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	20 loads	NESC 2007	31	0	0.000	0.000	0.0	No Limit	0

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	797	4659	0	
Davit2:End	797	4659	0	
Davit3:End	2530	6786	0	
Davit4:End	2530	6786	0	
Davit5:End	2530	6786	0	
Davit6:End	2530	6786	0	
Davit7:End	2530	6786	0	
Davit8:End	2530	6786	0	
3308:BotCon	89	-1545	0	
3308:TopCon	1643	2007	0	
3308:WVGD1	460	93	0	
3308:WVGD2	460	93	0	
3308:WVGD3	460	93	0	
3308:WVGD4	460	93	0	
3308:WVGD5	460	93	0	
3308:WVGD6	460	93	0	

3308:WVGD7	460	93	0
3308:WVGD8	460	93	0
3308:WVGD9	460	93	0
3308:WVGD10	690	139	0

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	197	2261	0	
Davit2:End	197	2261	0	
Davit3:End	1077	4384	0	
Davit4:End	1077	4384	0	
Davit5:End	1077	4384	0	
Davit6:End	1077	4384	0	
Davit7:End	1077	4384	0	
Davit8:End	1077	4384	0	
3308:BotCon	51	-6081	0	
3308:TopCon	692	8112	0	
3308:WVGD1	125	276	0	
3308:WVGD2	125	276	0	
3308:WVGD3	125	276	0	
3308:WVGD4	125	276	0	
3308:WVGD5	125	276	0	
3308:WVGD6	125	276	0	
3308:WVGD7	125	276	0	
3308:WVGD8	125	276	0	
3308:WVGD9	125	276	0	
3308:WVGD10	187	413	0	

Detailed Pole Loading Data for Load Case "NESC Extreme":

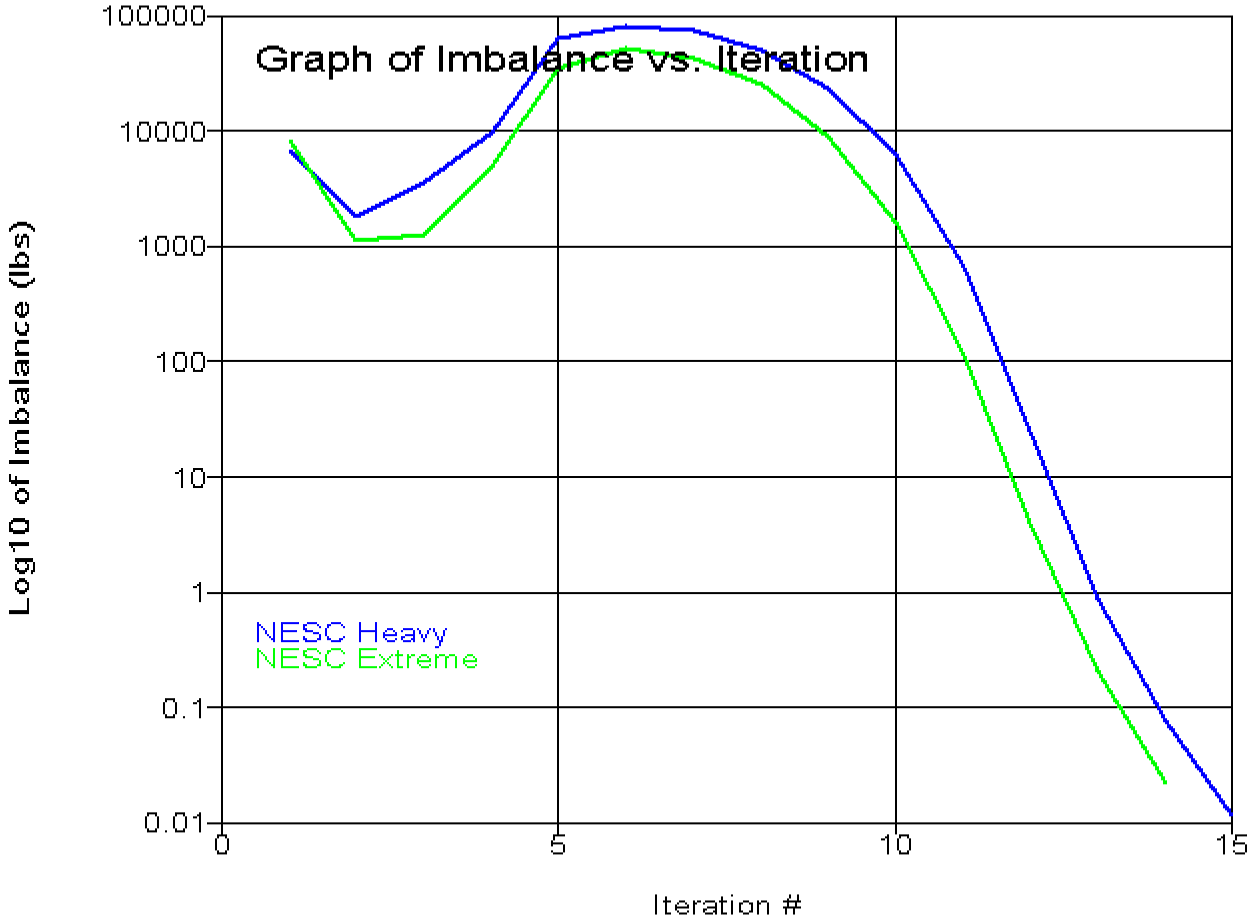
Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
3308	3308:t	3308:Arm1	105.00	104.30	104.65	15.138	1.27e+006	1.000	31.55	0.00	25.21	27.78	0.00	0.00	27.78	0.00
3308	3308:Arm1	3308:TopCon	104.30	104.00	104.15	15.336	1.29e+006	1.000	31.55	0.00	11.05	12.18	0.00	0.00	12.18	0.00
3308	3308:TopCon	3308:tnew	104.00	103.00	103.50	15.593	1.31e+006	1.000	31.55	0.00	37.22	40.99	0.00	0.00	40.99	0.00
3308	3308:tnew	3308:BotCon	103.00	101.00	102.00	16.186	1.36e+006	1.000	31.55	0.00	77.32	85.10	0.00	0.00	85.10	0.00
3308	3308:BotCon	3308:bnew	101.00	98.00	99.50	17.174	1.44e+006	1.000	31.55	0.00	123.18	135.44	0.00	0.00	135.44	0.00
3308	3308:bnew	3308:WVGD10	98.00	95.00	96.50	18.360	1.54e+006	1.000	31.55	0.00	131.83	144.80	0.00	0.00	144.80	0.00
3308	3308:WVGD10		95.00	92.48	93.74	19.451	1.64e+006	1.000	31.55	0.00	117.47	128.91	0.00	0.00	128.91	0.00
3308		3308:Arm2	92.48	89.96	91.22	20.447	1.72e+006	1.000	31.55	0.00	123.57	135.51	0.00	0.00	135.51	0.00
3308	3308:Arm2	3308:WVGD9	89.96	85.00	87.48	21.925	1.84e+006	1.000	31.55	0.00	260.84	285.77	0.00	0.00	285.77	0.00
3308	3308:WVGD9		85.00	81.48	83.24	23.851	2.01e+006	1.000	31.55	0.00	300.77	220.77	0.00	0.00	220.77	0.00
3308		3308:Arm3	81.48	77.96	79.72	25.242	2.12e+006	1.000	31.55	0.00	318.64	233.65	0.00	0.00	233.65	0.00
3308	3308:Arm3	3308:WVGD8	77.96	75.00	76.48	26.523	2.23e+006	1.000	31.55	0.00	281.50	206.25	0.00	0.00	206.25	0.00
3308	3308:WVGD8		75.00	70.48	72.74	28.001	2.35e+006	1.000	31.55	0.00	454.60	332.79	0.00	0.00	332.79	0.00
3308		3308:Arm4	70.48	65.96	68.22	29.787	2.5e+006	1.000	31.55	0.00	484.06	354.03	0.00	0.00	354.03	0.00
3308	3308:Arm4	3308:WVGD7	65.96	65.00	65.48	30.870	2.6e+006	1.000	31.55	0.00	106.38	77.75	0.00	0.00	77.75	0.00
3308	3308:WVGD7		65.00	60.00	62.50	32.298	2.72e+006	1.000	31.55	0.00	771.38	424.53	0.00	0.00	424.53	0.00
3308		3308:WVGD6	60.00	55.00	57.50	34.274	2.88e+006	1.000	31.55	0.00	819.42	450.51	0.00	0.00	450.51	0.00

3308	3308:WVGD6		55.00	52.46	53.73	35.764	3.01e+006	1.000	31.55	0.00	434.95	238.97	0.00	0.00	238.97	0.00
3308			52.46	49.92	51.19	36.769	3.09e+006	1.000	31.55	0.00	447.37	245.68	0.00	0.00	245.68	0.00
3308		3308:WVGD5	49.92	45.00	47.46	37.743	3.17e+006	1.000	31.55	0.00	1777.06	487.84	0.00	0.00	487.84	0.00
3308	3308:WVGD5		45.00	40.00	42.50	39.202	3.3e+006	1.000	31.55	0.00	939.23	515.29	0.00	0.00	515.29	0.00
3308		3308:WVGD4	40.00	35.00	37.50	41.179	3.46e+006	1.000	31.55	0.00	987.27	541.27	0.00	0.00	541.27	0.00
3308	3308:WVGD4		35.00	32.46	33.73	42.669	3.59e+006	1.000	31.55	0.00	520.28	285.10	0.00	0.00	285.10	0.00
3308			32.46	29.92	31.19	43.674	3.67e+006	1.000	31.55	0.00	532.69	291.81	0.00	0.00	291.81	0.00
3308		3308:WVGD3	29.92	25.00	27.46	45.147	3.8e+006	1.000	31.55	0.00	1065.70	583.55	0.00	0.00	583.55	0.00
3308	3308:WVGD3		25.00	20.00	22.50	47.107	3.96e+006	1.000	31.55	0.00	1131.40	619.20	0.00	0.00	619.20	0.00
3308		3308:WVGD2	20.00	15.00	17.50	49.083	4.13e+006	1.000	31.55	0.00	1179.44	645.17	0.00	0.00	645.17	0.00
3308	3308:WVGD2		15.00	14.92	14.96	50.088	4.21e+006	1.000	31.55	0.00	20.06	10.97	0.00	0.00	10.97	0.00
3308			14.92	9.96	12.44	51.084	4.3e+006	1.000	31.55	0.00	1217.85	665.88	0.00	0.00	665.88	0.00
3308		3308:WVGD1	9.96	5.00	7.48	53.044	4.46e+006	1.000	31.55	0.00	1265.10	691.43	0.00	0.00	691.43	0.00
3308	3308:WVGD1	3308:g	5.00	0.00	2.50	55.012	4.63e+006	1.000	31.55	0.00	1323.56	723.10	0.00	0.00	723.10	0.00

*** Analysis Results:

Maximum element usage is 96.95% for Base Plate "3308" in load case "NESC Heavy"
Maximum insulator usage is 10.18% for Clamp "Clamp9" in load case "NESC Extreme"



*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 15

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)
3308:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
3308:t	0.006373	5.796	-0.2255	-6.4119	0.0059	0.0002	0.006373	5.796	104.8
3308:Arm1	0.006301	5.718	-0.2212	-6.4119	0.0059	0.0002	0.006301	5.718	104.1

3308:TopCon	0.00627	5.685	-0.2193	-6.4101	0.0059	0.0002	0.00627	5.685	103.8
3308:tnew	0.006167	5.573	-0.213	-6.3977	0.0059	0.0002	0.006167	5.573	102.8
3308:BotCon	0.005961	5.351	-0.2006	-6.3464	0.0059	0.0002	0.005961	5.351	100.8
3308:bnew	0.005653	5.022	-0.1825	-6.2261	0.0059	0.0002	0.005653	5.022	97.82
3308:WVGD10	0.005347	4.7	-0.1652	-6.0757	0.0058	0.0002	0.005347	4.7	94.83
3308:Arm2	0.004841	4.178	-0.138	-5.7869	0.0057	0.0002	0.004841	4.178	89.82
3308:WVGD9	0.00436	3.694	-0.1143	-5.3612	0.0054	0.0002	0.00436	3.694	84.89
3308:Arm3	0.003709	3.063	-0.08581	-4.9034	0.0051	0.0002	0.003709	3.063	77.87
3308:WVGD8	0.003448	2.815	-0.07537	-4.6809	0.0050	0.0001	0.003448	2.815	74.92
3308:Arm4	0.002702	2.132	-0.0493	-3.9546	0.0044	0.0001	0.002702	2.132	65.91
3308:WVGD7	0.002628	2.067	-0.04703	-3.8726	0.0044	0.0001	0.002628	2.067	64.95
3308:WVGD6	0.00191	1.446	-0.02753	-3.2184	0.0038	0.0001	0.00191	1.446	54.97
3308:WVGD5	0.001291	0.9407	-0.01451	-2.5566	0.0032	0.0001	0.001291	0.9407	44.99
3308:WVGD4	0.000787	0.5514	-0.006676	-1.8967	0.0025	0.0000	0.000787	0.5514	34.99
3308:WVGD3	0.0004047	0.273	-0.002549	-1.2897	0.0018	0.0000	0.0004047	0.273	25
3308:WVGD2	0.0001473	0.09573	-0.0007318	-0.7368	0.0011	0.0000	0.0001473	0.09573	15
3308:WVGD1	1.702e-005	0.01063	-0.0001241	-0.2340	0.0004	0.0000	1.702e-005	0.01063	5
Davit1:O	0.006311	5.722	-0.1501	-6.4119	0.0059	0.0002	0.006311	5.086	104.2
Davit1:Mid	0.006418	5.799	0.238	-6.4164	0.0059	0.0003	0.006418	1.663	105
Davit1:End	0.006442	5.809	0.4055	-6.4100	0.0059	0.0003	0.006442	0.1721	105.2
Davit2:O	0.006291	5.714	-0.2922	-6.4119	0.0059	0.0002	0.006291	6.351	104
Davit2:Mid	0.006286	5.747	-0.6895	-6.4951	0.0059	0.0002	0.006286	9.884	104.1
Davit2:End	0.006262	5.738	-0.8593	-6.5013	0.0059	0.0002	0.006262	11.37	103.9
Davit3:O	0.004853	4.183	-0.05004	-5.7869	0.0057	0.0002	0.004853	3.31	89.91
Davit3:Mid	0.005276	4.533	0.7911	-5.7571	0.0057	0.0003	0.005276	-4.84	93.79
Davit3:End	0.005299	4.54	0.9411	-5.7346	0.0057	0.0003	0.005299	-6.333	93.94
Davit4:O	0.004829	4.174	-0.226	-5.7869	0.0057	0.0002	0.004829	5.046	89.73
Davit4:Mid	0.005012	4.449	-1.147	-6.3448	0.0057	0.0002	0.005012	13.82	91.85
Davit4:End	0.00499	4.44	-1.313	-6.3664	0.0057	0.0002	0.00499	15.31	91.68
Davit5:O	0.00372	3.067	0.006569	-4.9034	0.0051	0.0002	0.00372	1.986	77.96
Davit5:Mid	0.004088	3.357	0.7202	-4.8556	0.0052	0.0002	0.004088	-6.223	81.72
Davit5:End	0.004105	3.363	0.8467	-4.8317	0.0052	0.0002	0.004105	-7.718	81.84
Davit6:O	0.003698	3.059	-0.1782	-4.9034	0.0051	0.0002	0.003698	4.14	77.78
Davit6:Mid	0.00388	3.301	-0.9652	-5.4765	0.0052	0.0001	0.00388	12.88	80.03
Davit6:End	0.003863	3.294	-1.109	-5.4995	0.0052	0.0001	0.003863	14.37	79.89
Davit7:O	0.002711	2.135	0.03887	-3.9546	0.0044	0.0001	0.002711	0.8568	66
Davit7:Mid	0.003015	2.364	0.6145	-3.8873	0.0045	0.0002	0.003015	-7.414	69.61
Davit7:End	0.003028	2.367	0.7157	-3.8620	0.0045	0.0002	0.003028	-8.911	69.71
Davit8:O	0.002693	2.129	-0.1375	-3.9546	0.0044	0.0001	0.002693	3.407	65.82
Davit8:Mid	0.002864	2.333	-0.7813	-4.5439	0.0045	0.0001	0.002864	12.11	68.22
Davit8:End	0.002852	2.328	-0.9006	-4.5682	0.0045	0.0001	0.002852	13.61	68.1

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 %
3308:g	-0.11	0.0	-55.53	0.0	0.0	-55.50	0.0	0.0	78.51	0.0	4659.49	0.0	-5.1	0.0	0.0	-0.09	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
3308	3308:t	Origin	0.00	69.56	0.08	-2.71	-0.00	-0.00	-0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
3308	3308:Arm1	End	0.70	68.62	0.08	-2.65	0.01	-0.00	-0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	2

3308	3308:Arm1	Origin	0.70	68.62	0.08	-2.65	4.62	-0.00	0.0	-0.83	9.48	-0.00	-0.08	0.00	1.66	0.00	2.87	4.4	4
3308	3308:TopCon	End	1.00	68.22	0.08	-2.63	7.48	-0.00	0.0	-0.83	9.48	-0.00	-0.08	0.00	1.65	0.00	2.85	4.4	4
3308	3308:TopCon	Origin	1.00	68.22	0.08	-2.63	7.48	-0.00	0.0	-2.28	11.68	-0.00	-0.21	0.00	2.03	0.00	3.52	5.4	4
3308	3308:tnew	End	2.00	66.88	0.07	-2.56	19.16	-0.00	0.0	-2.28	11.68	-0.00	-0.21	5.73	0.00	0.00	5.93	9.1	1
3308	3308:tnew	Origin	2.00	66.88	0.07	-2.56	19.16	-0.00	0.0	-2.37	11.71	-0.00	-0.21	5.73	0.00	0.00	5.94	9.1	1
3308	3308:BotCon	End	4.00	64.21	0.07	-2.41	42.58	-0.01	0.0	-2.37	11.71	-0.00	-0.20	11.51	0.00	0.00	11.72	18.0	1
3308	3308:BotCon	Origin	4.00	64.21	0.07	-2.41	42.58	-0.01	0.0	-2.79	10.24	-0.00	-0.24	11.51	0.00	0.00	11.75	18.1	1
3308	3308:bnew	End	7.00	60.26	0.07	-2.19	73.31	-0.02	0.0	-2.79	10.24	-0.00	-0.22	17.20	0.00	0.00	17.42	26.8	1
3308	3308:bnew	Origin	7.00	60.26	0.07	-2.19	73.31	-0.02	0.0	-3.01	10.31	-0.00	-0.24	17.20	0.00	0.00	17.44	26.8	1
3308	3308:WVGD10	End	10.00	56.40	0.06	-1.98	104.25	-0.03	0.0	-3.01	10.31	-0.00	-0.23	21.42	0.00	0.00	21.65	33.3	1
3308	3308:WVGD10	Origin	10.00	56.40	0.06	-1.98	104.25	-0.03	0.0	-3.89	10.59	-0.01	-0.29	21.42	0.00	0.00	21.72	33.4	1
3308	Tube 1	End	12.52	53.23	0.06	-1.82	130.96	-0.05	0.0	-3.89	10.59	-0.01	-0.28	24.23	0.00	0.00	24.51	37.7	1
3308	Tube 1	Origin	12.52	53.23	0.06	-1.82	130.96	-0.05	0.0	-4.10	10.65	-0.01	-0.29	24.23	0.00	0.00	24.52	37.7	1
3308	3308:Arm2	End	15.04	50.14	0.06	-1.66	157.82	-0.06	0.0	-4.10	10.65	-0.01	-0.28	26.43	0.00	0.00	26.71	41.1	1
3308	3308:Arm2	Origin	15.04	50.14	0.06	-1.66	200.24	-0.07	0.0	-8.92	24.83	-0.01	-0.60	33.54	0.00	0.00	34.14	52.5	1
3308	3308:WVGD9	End	20.00	44.33	0.05	-1.37	323.37	-0.13	0.0	-8.92	24.83	-0.01	-0.55	45.13	0.00	0.00	45.68	70.3	1
3308	3308:WVGD9	Origin	20.00	44.33	0.05	-1.37	323.37	-0.13	0.0	-9.93	25.06	-0.01	-0.41	30.01	0.00	0.00	30.42	46.8	1
3308	Tube 2	End	23.52	40.46	0.05	-1.19	411.59	-0.18	0.0	-9.93	25.06	-0.01	-0.38	33.88	0.00	0.00	34.26	52.7	1
3308	Tube 2	Origin	23.52	40.46	0.05	-1.19	411.59	-0.18	0.0	-10.50	25.15	-0.02	-0.41	33.88	0.00	0.00	34.28	52.7	1
3308	3308:Arm3	End	27.04	36.76	0.04	-1.03	500.15	-0.24	0.0	-10.50	25.15	-0.02	-0.38	36.75	0.00	0.00	37.14	57.1	1
3308	3308:Arm3	Origin	27.04	36.76	0.04	-1.03	542.36	-0.25	0.0	-15.72	39.26	-0.02	-0.58	39.85	0.00	0.00	40.43	62.2	1
3308	3308:WVGD8	End	30.00	33.78	0.04	-0.90	658.49	-0.31	0.0	-15.72	39.26	-0.02	-0.55	44.20	0.00	0.00	44.75	68.8	1
3308	3308:WVGD8	Origin	30.00	33.78	0.04	-0.90	658.49	-0.31	0.0	-16.92	39.46	-0.02	-0.59	44.20	0.00	0.00	44.79	68.9	1
3308	Tube 2	End	34.52	29.51	0.04	-0.73	836.89	-0.42	0.0	-16.92	39.46	-0.02	-0.55	49.29	0.00	0.00	49.85	76.7	1
3308	Tube 2	Origin	34.52	29.51	0.04	-0.73	836.89	-0.42	0.0	-17.88	39.55	-0.03	-0.59	49.29	0.00	0.00	49.88	76.7	1
3308	3308:Arm4	End	39.04	25.59	0.03	-0.59	1015.67	-0.55	0.0	-17.88	39.55	-0.03	-0.55	52.91	0.00	0.00	53.46	82.3	1
3308	3308:Arm4	Origin	39.04	25.59	0.03	-0.59	1057.64	-0.56	0.0	-23.37	53.54	-0.03	-0.72	55.10	0.00	0.00	55.82	85.9	1
3308	3308:WVGD7	End	40.00	24.80	0.03	-0.56	1108.93	-0.59	0.0	-23.37	53.54	-0.03	-0.71	56.34	0.00	0.00	57.05	87.8	1
3308	3308:WVGD7	Origin	40.00	24.80	0.03	-0.56	1108.93	-0.59	0.0	-24.67	53.73	-0.04	-0.56	42.18	0.00	0.00	42.74	65.8	1
3308	Tube 3	End	45.00	20.90	0.03	-0.44	1377.55	-0.77	0.0	-24.67	53.73	-0.04	-0.53	46.20	0.00	0.00	46.73	71.9	1
3308	Tube 3	Origin	45.00	20.90	0.03	-0.44	1377.55	-0.76	0.0	-26.17	53.83	-0.04	-0.56	46.20	0.00	0.00	46.76	71.9	1
3308	3308:WVGD6	End	50.00	17.35	0.02	-0.33	1646.72	-0.97	0.0	-26.17	53.83	-0.04	-0.53	49.06	0.00	0.00	49.58	76.3	1
3308	3308:WVGD6	Origin	50.00	17.35	0.02	-0.33	1646.72	-0.97	0.0	-27.80	54.03	-0.04	-0.56	49.06	0.00	0.00	49.62	76.3	1
3308	Tube 3	End	52.54	15.68	0.02	-0.28	1784.04	-1.08	0.0	-27.80	54.03	-0.04	-0.54	50.17	0.00	0.00	50.71	78.0	1
3308	Tube 3	Origin	52.54	15.68	0.02	-0.28	1784.04	-1.08	0.0	-28.61	54.08	-0.05	-0.56	50.17	0.00	0.00	50.73	78.0	1
3308	SpliceT	End	55.08	14.10	0.02	-0.24	1921.49	-1.20	0.0	-28.61	54.08	-0.05	-0.55	51.09	0.00	0.00	51.64	79.4	1
3308	SpliceT	Origin	55.08	14.10	0.02	-0.24	1921.49	-1.19	0.0	-30.51	54.19	-0.05	-0.58	51.09	0.00	0.00	51.67	79.5	1
3308	3308:WVGD5	End	60.00	11.29	0.02	-0.17	2187.92	-1.44	0.0	-30.51	54.19	-0.05	-0.57	55.27	0.00	0.00	55.84	85.9	1
3308	3308:WVGD5	Origin	60.00	11.29	0.02	-0.17	2187.92	-1.44	0.0	-33.32	54.41	-0.06	-0.62	55.27	0.00	0.00	55.89	86.0	1
3308	Tube 4	End	65.00	8.78	0.01	-0.12	2459.99	-1.72	0.0	-33.32	54.41	-0.06	-0.59	56.06	0.00	0.00	56.64	87.1	1
3308	Tube 4	Origin	65.00	8.78	0.01	-0.12	2459.99	-1.72	0.0	-35.08	54.49	-0.06	-0.62	56.06	0.00	0.00	56.68	87.2	1
3308	3308:WVGD4	End	70.00	6.62	0.01	-0.08	2732.44	-2.03	0.0	-35.08	54.49	-0.06	-0.59	56.45	0.00	0.00	57.04	87.8	1
3308	3308:WVGD4	Origin	70.00	6.62	0.01	-0.08	2732.44	-2.03	0.0	-36.90	54.66	-0.07	-0.62	56.45	0.00	0.00	57.07	87.8	1
3308	Tube 4	End	72.54	5.65	0.01	-0.06	2871.35	-2.19	0.0	-36.90	54.66	-0.07	-0.61	56.53	0.00	0.00	57.14	87.9	1
3308	Tube 4	Origin	72.54	5.65	0.01	-0.06	2871.35	-2.19	0.0	-37.84	54.69	-0.07	-0.62	56.53	0.00	0.00	57.15	87.9	1
3308	SpliceT	End	75.08	4.76	0.01	-0.05	3010.36	-2.37	0.0	-37.84	54.69	-0.07	-0.61	56.55	0.00	0.00	57.16	87.9	1
3308	SpliceT	Origin	75.08	4.76	0.01	-0.05	3010.36	-2.37	0.0	-39.25	54.76	-0.07	-0.63	56.55	0.00	0.00	57.18	88.0	1
3308	3308:WVGD3	End	80.00	3.28	0.00	-0.03	3279.59	-2.73	0.0	-39.25	54.76	-0.07	-0.60	56.43	0.00	0.00	57.04	87.7	1
3308	3308:WVGD3	Origin	80.00	3.28	0.00	-0.03	3279.59	-2.73	0.0	-41.63	54.94	-0.08	-0.64	56.43	0.00	0.00	57.07	87.8	1
3308	Tube 5	End	85.00	2.07	0.00	-0.02	3554.30	-3.12	0.0	-41.63	54.94	-0.08	-0.61	56.15	0.00	0.00	56.76	87.3	1
3308	Tube 5	Origin	85.00	2.07	0.00	-0.02	3554.30	-3.12	0.1	-43.62	55.03	-0.09	-0.64	56.15	0.00	0.00	56.79	87.4	1
3308	3308:WVGD2	End	90.00	1.15	0.00	-0.01	3829.43	-3.55	0.1	-43.62	55.03	-0.09	-0.62	55.74	0.00	0.00	56.35	86.7	1
3308	3308:WVGD2	Origin	90.00	1.15	0.00	-0.01	3829.43	-3.55	0.1	-45.12	55.17	-0.09	-0.64	55.74	0.00	0.00	56.37	86.7	1
3308	SpliceT	End	90.08	1.14	0.00	-0.01	3834.03	-3.56	0.1	-45.12	55.17	-0.09	-0.64	55.73	0.00	0.00	56.37	86.7	1
3308	SpliceT	Origin	90.08	1.14	0.00	-0.01	3834.03	-3.56	0.1	-46.17	55.22	-0.09	-0.65	55.73	0.00	0.00	56.38	86.7	1
3308	Tube 6	End	95.04	0.50	0.00	-0.00	4107.81	-4.02	0.1	-46.17	55.22	-0.09	-0.63	55.23	0.00	0.00	55.85	85.9	1
3308	Tube 6	Origin	95.04	0.50	0.00	-0.00	4107.81	-4.02	0.1	-48.27	55.31	-0.10	-0.66	55.23	0.00	0.00	55.88	86.0	1
3308	3308:WVGD1	End	100.00	0.13	0.00	-0.00	4382.03	-4.51	0.1	-48.27	55.31	-0.10	-0.63	54.65	0.00	0.00	55.28	85.1	1
3308	3308:WVGD1	Origin	100.00	0.13	0.00	-0.00	4382.03	-4.51	0.1	-50.90	55.49	-0.11	-0.67	54.65	0.00	0.00	55.32	85.1	1

3308	3308:g	End	105.00	0.00	0.00	0.00	4659.49	-5.05	0.1	-50.90	55.49	-0.11	-0.64	54.02	0.00	0.00	54.66	84.1	1

Detailed Tubular Davit Arm Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	68.67	0.08	-1.80	0.67	0.00	0.0	-4.73	-0.31	-0.00	-0.83	0.87	0.00	0.00	1.70	2.6	1
Davit1	Davit1:Mid	End	3.53	69.59	0.08	2.86	-0.43	0.00	0.0	-4.73	-0.31	-0.00	-1.06	0.92	0.00	0.00	1.98	3.1	1
Davit1	Davit1:Mid	Origin	3.53	69.59	0.08	2.86	-0.43	0.00	0.0	-4.72	0.29	-0.00	-1.06	0.92	0.00	0.00	1.98	3.0	1
Davit1	Davit1:End	End	5.03	69.70	0.08	4.87	-0.00	0.00	0.0	-4.72	0.29	-0.00	-1.20	0.00	0.15	0.00	1.23	1.9	3
Davit2	Davit2:O	Origin	0.00	68.57	0.08	-3.51	-3.94	-0.00	-0.0	4.63	1.00	0.00	0.81	5.12	0.00	0.00	5.94	9.1	1
Davit2	Davit2:Mid	End	3.53	68.97	0.08	-8.27	-0.42	-0.00	-0.0	4.63	1.00	0.00	1.04	0.90	0.00	0.00	1.94	3.0	1
Davit2	Davit2:Mid	Origin	3.53	68.97	0.08	-8.27	-0.42	-0.00	-0.0	4.72	0.28	0.00	1.06	0.90	0.00	0.00	1.96	3.0	1
Davit2	Davit2:End	End	5.03	68.85	0.08	-10.31	-0.00	0.00	-0.0	4.72	0.28	0.00	1.20	0.00	0.15	0.00	1.23	1.9	3
Davit3	Davit3:O	Origin	0.00	50.19	0.06	-0.60	1.35	0.01	0.0	-7.34	-0.38	-0.00	-0.75	0.58	0.00	0.00	1.32	2.0	1
Davit3	#Davit3:0	End	4.51	52.29	0.06	4.45	-0.38	0.00	0.0	-7.34	-0.38	-0.00	-0.96	0.27	0.00	0.00	1.23	1.9	1
Davit3	#Davit3:0	Origin	4.51	52.29	0.06	4.45	-0.38	0.00	0.0	-7.26	-0.53	-0.00	-0.95	0.27	0.00	0.00	1.22	1.9	1
Davit3	Davit3:Mid	End	9.03	54.39	0.06	9.49	-2.79	0.00	0.0	-7.26	-0.53	-0.00	-1.32	3.91	0.00	0.00	5.23	8.0	1
Davit3	Davit3:Mid	Origin	9.03	54.39	0.06	9.49	-2.79	0.00	0.0	-7.01	1.86	-0.00	-1.28	3.91	0.00	0.00	5.18	8.0	1
Davit3	Davit3:End	End	10.53	54.48	0.06	11.29	-0.00	0.00	0.0	-7.01	1.86	-0.00	-1.47	0.00	0.81	0.00	2.04	3.1	3
Davit4	Davit4:O	Origin	0.00	50.08	0.06	-2.71	-41.06	-0.01	-0.0	5.92	4.35	0.00	0.60	17.63	0.00	0.00	18.23	28.0	1
Davit4	#Davit4:0	End	4.51	51.70	0.06	-8.10	-21.40	-0.00	-0.0	5.92	4.35	0.00	0.77	15.23	0.00	0.00	16.01	24.6	1
Davit4	#Davit4:0	Origin	4.51	51.70	0.06	-8.10	-21.40	-0.00	-0.0	5.99	4.15	0.00	0.78	15.23	0.00	0.00	16.01	24.6	1
Davit4	Davit4:Mid	End	9.03	53.39	0.06	-13.76	-2.67	-0.00	-0.0	5.99	4.15	0.00	1.09	3.75	0.00	0.00	4.84	7.4	1
Davit4	Davit4:Mid	Origin	9.03	53.39	0.06	-13.76	-2.67	-0.00	0.0	7.03	1.78	0.00	1.28	3.75	0.00	0.00	5.03	7.7	1
Davit4	Davit4:End	End	10.53	53.28	0.06	-15.76	-0.00	0.00	0.0	7.03	1.78	0.00	1.48	0.00	0.78	0.00	2.00	3.1	3
Davit5	Davit5:O	Origin	0.00	36.80	0.04	0.08	0.15	0.01	0.0	-7.34	-0.27	-0.00	-0.75	0.06	0.00	0.00	0.81	1.2	1
Davit5	#Davit5:0	End	4.51	38.55	0.05	4.37	-1.06	0.00	0.0	-7.34	-0.27	-0.00	-0.96	0.76	0.00	0.00	1.72	2.6	1
Davit5	#Davit5:0	Origin	4.51	38.55	0.05	4.37	-1.06	0.00	0.0	-7.27	-0.42	-0.00	-0.95	0.76	0.00	0.00	1.71	2.6	1
Davit5	Davit5:Mid	End	9.03	40.29	0.05	8.64	-2.95	0.00	0.0	-7.27	-0.42	-0.00	-1.33	4.14	0.00	0.00	5.46	8.4	1
Davit5	Davit5:Mid	Origin	9.03	40.29	0.05	8.64	-2.95	0.00	0.0	-6.98	1.97	-0.00	-1.27	4.14	0.00	0.00	5.41	8.3	1
Davit5	Davit5:End	End	10.53	40.35	0.05	10.16	-0.00	0.00	0.0	-6.98	1.97	-0.00	-1.46	0.00	0.86	0.00	2.09	3.2	3
Davit6	Davit6:O	Origin	0.00	36.71	0.04	-2.14	-42.04	-0.00	-0.0	5.86	4.45	0.00	0.60	18.05	0.00	0.00	18.64	28.7	1
Davit6	#Davit6:0	End	4.51	38.12	0.05	-6.72	-21.97	-0.00	-0.0	5.86	4.45	0.00	0.76	15.64	0.00	0.00	16.40	25.2	1
Davit6	#Davit6:0	Origin	4.51	38.12	0.05	-6.72	-21.97	-0.00	-0.0	5.92	4.24	0.00	0.77	15.64	0.00	0.00	16.41	25.2	1
Davit6	Davit6:Mid	End	9.03	39.61	0.05	-11.58	-2.83	-0.00	-0.0	5.92	4.24	0.00	1.08	3.97	0.00	0.00	5.05	7.8	1
Davit6	Davit6:Mid	Origin	9.03	39.61	0.05	-11.58	-2.83	-0.00	0.0	7.00	1.89	0.00	1.28	3.97	0.00	0.00	5.25	8.1	1
Davit6	Davit6:End	End	10.53	39.53	0.05	-13.31	-0.00	0.00	0.0	7.00	1.89	0.00	1.47	0.00	0.83	0.00	2.05	3.2	3
Davit7	Davit7:O	Origin	0.00	25.62	0.03	0.47	-1.14	0.01	0.0	-7.35	-0.15	-0.00	-0.75	0.49	0.00	0.00	1.24	1.9	1
Davit7	#Davit7:0	End	4.51	27.00	0.03	3.93	-1.79	0.00	0.0	-7.35	-0.15	-0.00	-0.96	1.28	0.00	0.00	2.24	3.4	1
Davit7	#Davit7:0	Origin	4.51	27.00	0.03	3.93	-1.79	0.00	0.0	-7.28	-0.30	-0.00	-0.95	1.28	0.00	0.00	2.23	3.4	1
Davit7	Davit7:Mid	End	9.03	28.37	0.04	7.37	-3.13	0.00	0.0	-7.28	-0.30	-0.00	-1.33	4.39	0.00	0.00	5.71	8.8	1
Davit7	Davit7:Mid	Origin	9.03	28.37	0.04	7.37	-3.13	0.00	0.0	-6.94	2.09	-0.00	-1.27	4.39	0.00	0.00	5.65	8.7	1
Davit7	Davit7:End	End	10.53	28.41	0.04	8.59	-0.00	0.00	0.0	-6.94	2.09	-0.00	-1.46	0.00	0.91	0.00	2.15	3.3	3
Davit8	Davit8:O	Origin	0.00	25.55	0.03	-1.65	-43.08	-0.00	-0.0	5.78	4.54	0.00	0.59	18.50	0.00	0.00	19.08	29.4	1
Davit8	#Davit8:0	End	4.51	26.73	0.03	-5.37	-22.58	-0.00	-0.0	5.78	4.54	0.00	0.75	16.07	0.00	0.00	16.82	25.9	1
Davit8	#Davit8:0	Origin	4.51	26.73	0.03	-5.37	-22.58	-0.00	-0.0	5.85	4.34	0.00	0.76	16.07	0.00	0.00	16.83	25.9	1
Davit8	Davit8:Mid	End	9.03	27.99	0.03	-9.38	-3.00	-0.00	-0.0	5.85	4.34	0.00	1.07	4.21	0.00	0.00	5.28	8.1	1
Davit8	Davit8:Mid	Origin	9.03	27.99	0.03	-9.38	-3.00	-0.00	0.0	6.97	2.00	0.00	1.27	4.21	0.00	0.00	5.48	8.4	1

Davit8	Davit8:End	End	10.53	27.94	0.03	-10.81	-0.00	0.00	0.0	6.97	2.00	0.00	1.46	0.00	0.88	0.00	2.11	3.2	3

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	4.727	80.00	80.00	5.91
Clamp2	4.727	80.00	80.00	5.91
Clamp3	7.242	80.00	80.00	9.05
Clamp4	7.242	80.00	80.00	9.05
Clamp5	7.242	80.00	80.00	9.05
Clamp6	7.242	80.00	80.00	9.05
Clamp7	7.242	80.00	80.00	9.05
Clamp8	7.242	80.00	80.00	9.05
Clamp9	2.594	80.00	80.00	3.24
Clamp10	1.548	80.00	80.00	1.93
Clamp11	0.469	80.00	80.00	0.59
Clamp12	0.469	80.00	80.00	0.59
Clamp13	0.469	80.00	80.00	0.59
Clamp14	0.469	80.00	80.00	0.59
Clamp15	0.469	80.00	80.00	0.59
Clamp16	0.469	80.00	80.00	0.59
Clamp17	0.469	80.00	80.00	0.59
Clamp18	0.469	80.00	80.00	0.59
Clamp19	0.469	80.00	80.00	0.59
Clamp20	0.704	80.00	80.00	0.88
Clamp21	0.000	80.00	80.00	0.00
Clamp22	0.000	80.00	80.00	0.00

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 14

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)
3308:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
3308:t	0.00201	4.155	-0.1155	-4.6431	0.0019	0.0001	0.00201	4.155	104.9
3308:Arm1	0.001988	4.098	-0.1132	-4.6431	0.0019	0.0001	0.001988	4.098	104.2
3308:TopCon	0.001978	4.074	-0.1122	-4.6423	0.0019	0.0001	0.001978	4.074	103.9
3308:tnew	0.001945	3.993	-0.1089	-4.6329	0.0019	0.0001	0.001945	3.993	102.9
3308:BotCon	0.001881	3.832	-0.1024	-4.5844	0.0019	0.0001	0.001881	3.832	100.9
3308:bnew	0.001784	3.595	-0.09299	-4.4757	0.0018	0.0001	0.001784	3.595	97.91
3308:WVGD10	0.001688	3.363	-0.08406	-4.3516	0.0018	0.0001	0.001688	3.363	94.92
3308:Arm2	0.001529	2.99	-0.07022	-4.1243	0.0018	0.0000	0.001529	2.99	89.89
3308:WVGD9	0.001378	2.646	-0.05819	-3.8125	0.0017	0.0000	0.001378	2.646	84.94
3308:Arm3	0.001173	2.197	-0.04381	-3.4840	0.0016	0.0000	0.001173	2.197	77.91
3308:WVGD8	0.00109	2.021	-0.03853	-3.3268	0.0016	0.0000	0.00109	2.021	74.96
3308:Arm4	0.0008546	1.534	-0.02535	-2.8163	0.0014	0.0000	0.0008546	1.534	65.93
3308:WVGD7	0.0008313	1.488	-0.0242	-2.7589	0.0014	0.0000	0.0008313	1.488	64.98
3308:WVGD6	0.0006041	1.045	-0.01428	-2.3016	0.0012	0.0000	0.0006041	1.045	54.99
3308:WVGD5	0.0004086	0.6824	-0.007592	-1.8375	0.0010	0.0000	0.0004086	0.6824	44.99
3308:WVGD4	0.0002491	0.4017	-0.003527	-1.3713	0.0008	0.0000	0.0002491	0.4017	35
3308:WVGD3	0.0001281	0.1998	-0.00136	-0.9384	0.0006	0.0000	0.0001281	0.1998	25
3308:WVGD2	4.662e-005	0.0704	-0.0003935	-0.5396	0.0003	0.0000	4.662e-005	0.0704	15
3308:WVGD1	5.388e-006	0.007872	-6.702e-005	-0.1725	0.0001	0.0000	5.388e-006	0.007872	5
Davit1:O	0.00199	4.1	-0.06165	-4.6431	0.0019	0.0001	0.00199	3.464	104.2
Davit1:Mid	0.002019	4.152	0.2207	-4.6589	0.0019	0.0001	0.002019	0.01519	105
Davit1:End	0.002024	4.157	0.3425	-4.6583	0.0019	0.0001	0.002024	-1.48	105.1
Davit2:O	0.001985	4.096	-0.1647	-4.6431	0.0019	0.0001	0.001985	4.733	104.1
Davit2:Mid	0.001988	4.124	-0.4507	-4.6700	0.0019	0.0001	0.001988	8.261	104.3
Davit2:End	0.001983	4.119	-0.5729	-4.6705	0.0019	0.0001	0.001983	9.756	104.2
Davit3:O	0.001532	2.993	-0.007453	-4.1243	0.0018	0.0000	0.001532	2.12	89.95
Davit3:Mid	0.001655	3.235	0.6006	-4.1689	0.0018	0.0001	0.001655	-6.137	93.6
Davit3:End	0.00166	3.239	0.7095	-4.1596	0.0018	0.0001	0.00166	-7.633	93.71
Davit4:O	0.001526	2.988	-0.133	-4.1243	0.0018	0.0000	0.001526	3.861	89.83
Davit4:Mid	0.001595	3.192	-0.7778	-4.4198	0.0018	0.0000	0.001595	12.56	92.22
Davit4:End	0.00159	3.187	-0.8936	-4.4289	0.0018	0.0000	0.00159	14.06	92.1
Davit5:O	0.001175	2.199	0.02187	-3.4840	0.0016	0.0000	0.001175	1.118	77.98
Davit5:Mid	0.001283	2.401	0.5368	-3.5205	0.0016	0.0001	0.001283	-7.18	81.53
Davit5:End	0.001287	2.404	0.6288	-3.5106	0.0016	0.0001	0.001287	-8.677	81.63
Davit6:O	0.00117	2.195	-0.1095	-3.4840	0.0016	0.0000	0.00117	3.275	77.85
Davit6:Mid	0.001236	2.371	-0.6578	-3.7869	0.0016	0.0000	0.001236	11.95	80.34
Davit6:End	0.001233	2.368	-0.757	-3.7965	0.0016	0.0000	0.001233	13.45	80.24
Davit7:O	0.0008567	1.536	0.03746	-2.8163	0.0014	0.0000	0.0008567	0.2575	66
Davit7:Mid	0.0009472	1.697	0.4548	-2.8442	0.0014	0.0000	0.0009472	-8.081	69.45
Davit7:End	0.0009502	1.699	0.529	-2.8336	0.0014	0.0000	0.0009502	-9.579	69.53
Davit8:O	0.0008524	1.533	-0.08816	-2.8163	0.0014	0.0000	0.0008524	2.811	65.87
Davit8:Mid	0.000913	1.68	-0.5361	-3.1266	0.0014	0.0000	0.000913	11.46	68.46
Davit8:End	0.0009105	1.678	-0.6181	-3.1369	0.0014	0.0000	0.0009105	12.96	68.38

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 %

3308:g	-0.04	0.0	-45.65	0.0	0.0	-31.66	0.0	0.0	55.55	0.0	3445.97	0.0	-1.6	0.0	0.0	-0.02	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
3308	3308:t	Origin	0.00	49.86	0.02	-1.39	-0.00	-0.00	-0.0	-0.01	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
3308	3308:Arm1	End	0.70	49.18	0.02	-1.36	0.01	-0.00	-0.0	-0.01	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	3
3308	3308:Arm1	Origin	0.70	49.18	0.02	-1.36	2.25	-0.00	0.0	-0.22	4.59	-0.00	-0.02	0.00	0.80	0.00	1.39	2.1	4
3308	3308:TopCon	End	1.00	48.89	0.02	-1.35	3.63	-0.00	0.0	-0.22	4.59	-0.00	-0.02	0.00	0.80	0.00	1.38	2.1	4
3308	3308:TopCon	Origin	1.00	48.89	0.02	-1.35	3.63	-0.00	0.0	-0.27	12.76	-0.00	-0.03	0.00	2.21	0.00	3.83	5.9	4
3308	3308:tnew	End	2.00	47.91	0.02	-1.31	16.39	-0.00	0.0	-0.27	12.76	-0.00	-0.02	4.90	0.00	0.00	4.92	7.6	1
3308	3308:tnew	Origin	2.00	47.91	0.02	-1.31	16.39	-0.00	0.0	-0.34	12.83	-0.00	-0.03	4.90	0.00	0.00	4.93	7.6	1
3308	3308:BotCon	End	4.00	45.98	0.02	-1.23	42.04	-0.00	0.0	-0.34	12.83	-0.00	-0.03	11.37	0.00	0.00	11.40	17.5	1
3308	3308:BotCon	Origin	4.00	45.98	0.02	-1.23	42.04	-0.00	0.0	-0.99	6.89	-0.00	-0.08	11.37	0.00	0.00	11.45	17.6	1
3308	3308:bnew	End	7.00	43.13	0.02	-1.12	62.70	-0.00	0.0	-0.99	6.89	-0.00	-0.08	14.71	0.00	0.00	14.79	22.8	1
3308	3308:bnew	Origin	7.00	43.13	0.02	-1.12	62.70	-0.00	0.0	-1.13	7.03	-0.00	-0.09	14.71	0.00	0.00	14.80	22.8	1
3308	3308:WVGD10	End	10.00	40.36	0.02	-1.01	83.79	-0.01	0.0	-1.13	7.03	-0.00	-0.08	17.22	0.00	0.00	17.30	26.6	1
3308	3308:WVGD10	Origin	10.00	40.36	0.02	-1.01	83.79	-0.01	0.0	-1.42	7.60	-0.00	-0.11	17.22	0.00	0.00	17.33	26.7	1
3308	Tube 1	End	12.52	38.09	0.02	-0.92	102.96	-0.01	0.0	-1.42	7.60	-0.00	-0.10	19.05	0.00	0.00	19.15	29.5	1
3308	Tube 1	Origin	12.52	38.09	0.02	-0.92	102.96	-0.01	0.0	-1.56	7.74	-0.00	-0.11	19.05	0.00	0.00	19.16	29.5	1
3308	3308:Arm2	End	15.04	35.88	0.02	-0.84	122.46	-0.02	0.0	-1.56	7.74	-0.00	-0.11	20.51	0.00	0.00	20.62	31.7	1
3308	3308:Arm2	Origin	15.04	35.88	0.02	-0.84	149.81	-0.02	0.0	-3.81	16.91	-0.00	-0.26	25.09	0.00	0.00	25.35	39.0	1
3308	3308:WVGD9	End	20.00	31.75	0.02	-0.70	233.66	-0.04	0.0	-3.81	16.91	-0.00	-0.24	32.61	0.00	0.00	32.85	50.5	1
3308	3308:WVGD9	Origin	20.00	31.75	0.02	-0.70	233.66	-0.04	0.0	-4.27	17.45	-0.00	-0.18	21.69	0.00	0.00	21.86	33.6	1
3308	Tube 2	End	23.52	28.99	0.02	-0.61	295.10	-0.06	0.0	-4.27	17.45	-0.00	-0.17	24.29	0.00	0.00	24.45	37.6	1
3308	Tube 2	Origin	23.52	28.99	0.02	-0.61	295.10	-0.06	0.0	-4.63	17.68	-0.01	-0.18	24.29	0.00	0.00	24.47	37.6	1
3308	3308:Arm3	End	27.04	26.36	0.01	-0.53	357.36	-0.07	0.0	-4.63	17.68	-0.01	-0.17	26.26	0.00	0.00	26.43	40.7	1
3308	3308:Arm3	Origin	27.04	26.36	0.01	-0.53	384.65	-0.08	0.0	-7.11	26.84	-0.01	-0.26	28.27	0.00	0.00	28.53	43.9	1
3308	3308:WVGD8	End	30.00	24.25	0.01	-0.46	464.04	-0.10	0.0	-7.11	26.84	-0.01	-0.25	31.15	0.00	0.00	31.40	48.3	1
3308	3308:WVGD8	Origin	30.00	24.25	0.01	-0.46	464.04	-0.10	0.0	-7.68	27.39	-0.01	-0.27	31.15	0.00	0.00	31.42	48.3	1
3308	Tube 2	End	34.52	21.21	0.01	-0.38	587.86	-0.13	0.0	-7.68	27.39	-0.01	-0.25	34.62	0.00	0.00	34.88	53.7	1
3308	Tube 2	Origin	34.52	21.21	0.01	-0.38	587.86	-0.13	0.0	-8.28	27.72	-0.01	-0.27	34.62	0.00	0.00	34.89	53.7	1
3308	3308:Arm4	End	39.04	18.41	0.01	-0.30	713.18	-0.17	0.0	-8.28	27.72	-0.01	-0.26	37.15	0.00	0.00	37.41	57.6	1
3308	3308:Arm4	Origin	39.04	18.41	0.01	-0.30	740.40	-0.17	0.0	-10.88	36.84	-0.01	-0.34	38.57	0.00	0.00	38.91	59.9	1
3308	3308:WVGD7	End	40.00	17.85	0.01	-0.29	775.69	-0.18	0.0	-10.88	36.84	-0.01	-0.33	39.41	0.00	0.00	39.74	61.1	1
3308	3308:WVGD7	Origin	40.00	17.85	0.01	-0.29	775.69	-0.18	0.0	-11.52	37.36	-0.01	-0.26	29.51	0.00	0.00	29.77	45.8	1
3308	Tube 3	End	45.00	15.07	0.01	-0.23	962.50	-0.24	0.0	-11.52	37.36	-0.01	-0.25	32.28	0.00	0.00	32.53	50.0	1
3308	Tube 3	Origin	45.00	15.07	0.01	-0.23	962.50	-0.24	0.0	-12.46	37.79	-0.01	-0.27	32.28	0.00	0.00	32.55	50.1	1
3308	3308:WVGD6	End	50.00	12.54	0.01	-0.17	1151.43	-0.30	0.0	-12.46	37.79	-0.01	-0.25	34.30	0.00	0.00	34.55	53.2	1
3308	3308:WVGD6	Origin	50.00	12.54	0.01	-0.17	1151.43	-0.30	0.0	-13.32	38.40	-0.01	-0.27	34.30	0.00	0.00	34.57	53.2	1
3308	Tube 3	End	52.54	11.34	0.01	-0.15	1249.02	-0.34	0.0	-13.32	38.40	-0.01	-0.26	35.12	0.00	0.00	35.39	54.4	1
3308	Tube 3	Origin	52.54	11.34	0.01	-0.15	1249.02	-0.34	0.0	-13.84	38.63	-0.01	-0.27	35.12	0.00	0.00	35.40	54.5	1
3308	SpliceT	End	55.08	10.21	0.01	-0.13	1347.19	-0.38	0.0	-13.84	38.63	-0.01	-0.26	35.82	0.00	0.00	36.09	55.5	1
3308	SpliceT	Origin	55.08	10.21	0.01	-0.13	1347.19	-0.38	0.0	-15.07	38.99	-0.02	-0.29	35.82	0.00	0.00	36.11	55.6	1
3308	3308:WVGD5	End	60.00	8.19	0.00	-0.09	1538.90	-0.45	0.0	-15.07	38.99	-0.02	-0.28	38.88	0.00	0.00	39.16	60.2	1
3308	3308:WVGD5	Origin	60.00	8.19	0.00	-0.09	1538.90	-0.45	0.0	-16.70	39.75	-0.02	-0.31	38.88	0.00	0.00	39.19	60.3	1
3308	Tube 4	End	65.00	6.38	0.00	-0.06	1737.65	-0.54	0.0	-16.70	39.75	-0.02	-0.30	39.60	0.00	0.00	39.89	61.4	1
3308	Tube 4	Origin	65.00	6.38	0.00	-0.06	1737.65	-0.54	0.0	-17.83	40.23	-0.02	-0.31	39.60	0.00	0.00	39.91	61.4	1
3308	3308:WVGD4	End	70.00	4.82	0.00	-0.04	1938.82	-0.64	0.0	-17.83	40.23	-0.02	-0.30	40.05	0.00	0.00	40.35	62.1	1
3308	3308:WVGD4	Origin	70.00	4.82	0.00	-0.04	1938.82	-0.64	0.0	-18.82	40.89	-0.02	-0.32	40.05	0.00	0.00	40.37	62.1	1
3308	Tube 4	End	72.54	4.12	0.00	-0.03	2042.75	-0.69	0.0	-18.82	40.89	-0.02	-0.31	40.22	0.00	0.00	40.53	62.4	1
3308	Tube 4	Origin	72.54	4.12	0.00	-0.03	2042.75	-0.69	0.0	-19.43	41.15	-0.02	-0.32	40.22	0.00	0.00	40.54	62.4	1
3308	SpliceT	End	75.08	3.48	0.00	-0.03	2147.34	-0.75	0.0	-19.43	41.15	-0.02	-0.31	40.34	0.00	0.00	40.65	62.5	1
3308	SpliceT	Origin	75.08	3.48	0.00	-0.03	2147.34	-0.75	0.0	-20.34	41.55	-0.02	-0.33	40.34	0.00	0.00	40.67	62.6	1

3308	3308:WVGD3	End	80.00	2.40	0.00	-0.02	2351.63	-0.86	0.0	-20.34	41.55	-0.02	-0.31	40.47	0.00	0.00	40.78	62.7	1
3308	3308:WVGD3	Origin	80.00	2.40	0.00	-0.02	2351.63	-0.86	0.0	-21.71	42.37	-0.03	-0.33	40.47	0.00	0.00	40.80	62.8	1
3308	Tube 5	End	85.00	1.52	0.00	-0.01	2563.49	-0.99	0.0	-21.71	42.37	-0.03	-0.32	40.50	0.00	0.00	40.82	62.8	1
3308	Tube 5	Origin	85.00	1.52	0.00	-0.01	2563.49	-0.99	0.0	-23.02	42.94	-0.03	-0.34	40.50	0.00	0.00	40.84	62.8	1
3308	3308:WVGD2	End	90.00	0.84	0.00	-0.00	2778.19	-1.12	0.0	-23.02	42.94	-0.03	-0.33	40.44	0.00	0.00	40.76	62.7	1
3308	3308:WVGD2	Origin	90.00	0.84	0.00	-0.00	2778.19	-1.12	0.0	-23.81	43.51	-0.03	-0.34	40.44	0.00	0.00	40.77	62.7	1
3308	SpliceT	End	90.08	0.84	0.00	-0.00	2781.82	-1.13	0.0	-23.81	43.51	-0.03	-0.34	40.43	0.00	0.00	40.77	62.7	1
3308	SpliceT	Origin	90.08	0.84	0.00	-0.00	2781.82	-1.13	0.0	-24.50	43.82	-0.03	-0.35	40.43	0.00	0.00	40.78	62.7	1
3308	Tube 6	End	95.04	0.37	0.00	-0.00	2999.07	-1.27	0.0	-24.50	43.82	-0.03	-0.33	40.32	0.00	0.00	40.65	62.5	1
3308	Tube 6	Origin	95.04	0.37	0.00	-0.00	2999.07	-1.27	0.0	-25.89	44.42	-0.03	-0.35	40.32	0.00	0.00	40.67	62.6	1
3308	3308:WVGD1	End	100.00	0.09	0.00	-0.00	3219.33	-1.43	0.0	-25.89	44.42	-0.03	-0.34	40.15	0.00	0.00	40.49	62.3	1
3308	3308:WVGD1	Origin	100.00	0.09	0.00	-0.00	3219.33	-1.43	0.0	-27.44	45.33	-0.03	-0.36	40.15	0.00	0.00	40.51	62.3	1
3308	3308:g	End	105.00	0.00	0.00	0.00	3445.97	-1.60	0.0	-27.44	45.33	-0.03	-0.35	39.95	0.00	0.00	40.30	62.0	1

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	49.20	0.02	-0.74	0.86	0.00	0.0	-2.26	-0.25	-0.00	-0.40	1.12	0.00	0.00	1.51	2.3	1
Davit1	Davit1:Mid	End	3.53	49.82	0.02	2.65	-0.03	0.00	0.0	-2.26	-0.25	-0.00	-0.51	0.07	0.00	0.00	0.58	0.9	1
Davit1	Davit1:Mid	Origin	3.53	49.82	0.02	2.65	-0.03	0.00	0.0	-2.27	0.02	-0.00	-0.51	0.07	0.00	0.00	0.58	0.9	1
Davit1	Davit1:End	End	5.03	49.88	0.02	4.11	-0.00	0.00	0.0	-2.27	0.02	-0.00	-0.58	0.00	0.01	0.00	0.58	0.9	3
Davit2	Davit2:O	Origin	0.00	49.15	0.02	-1.98	-1.37	-0.00	-0.0	2.24	0.38	0.00	0.39	1.78	0.00	0.00	2.18	3.4	1
Davit2	Davit2:Mid	End	3.53	49.49	0.02	-5.41	-0.03	-0.00	-0.0	2.24	0.38	0.00	0.50	0.05	0.13	0.00	0.60	0.9	2
Davit2	Davit2:Mid	Origin	3.53	49.49	0.02	-5.41	-0.03	-0.00	-0.0	2.27	0.02	0.00	0.51	0.07	0.00	0.00	0.58	0.9	1
Davit2	Davit2:End	End	5.03	49.43	0.02	-6.87	0.00	0.00	-0.0	2.27	0.02	0.00	0.58	0.00	0.01	0.00	0.58	0.9	3
Davit3	Davit3:O	Origin	0.00	35.91	0.02	-0.09	5.03	0.00	0.0	-4.52	-0.64	-0.00	-0.46	2.16	0.00	0.00	2.62	4.0	1
Davit3	#Davit3:0	End	4.51	37.36	0.02	3.55	2.13	0.00	0.0	-4.52	-0.64	-0.00	-0.59	1.52	0.00	0.00	2.11	3.2	1
Davit3	#Davit3:0	Origin	4.51	37.36	0.02	3.55	2.13	0.00	0.0	-4.48	-0.73	-0.00	-0.58	1.52	0.00	0.00	2.10	3.2	1
Davit3	Davit3:Mid	End	9.03	38.82	0.02	7.21	-1.15	0.00	0.0	-4.48	-0.73	-0.00	-0.82	1.62	0.00	0.00	2.43	3.7	1
Davit3	Davit3:Mid	Origin	9.03	38.82	0.02	7.21	-1.15	0.00	0.0	-4.45	0.77	-0.00	-0.81	1.62	0.00	0.00	2.43	3.7	1
Davit3	Davit3:End	End	10.53	38.87	0.02	8.51	-0.00	0.00	0.0	-4.45	0.77	-0.00	-0.93	0.00	0.34	0.00	1.10	1.7	3
Davit4	Davit4:O	Origin	0.00	35.86	0.02	-1.60	-22.26	-0.00	-0.0	3.89	2.41	0.00	0.40	9.56	0.00	0.00	9.95	15.3	1
Davit4	#Davit4:0	End	4.51	37.06	0.02	-5.39	-11.39	-0.00	-0.0	3.89	2.41	0.00	0.51	8.11	0.00	0.00	8.61	13.2	1
Davit4	#Davit4:0	Origin	4.51	37.06	0.02	-5.39	-11.39	-0.00	-0.0	3.92	2.27	0.00	0.51	8.11	0.00	0.00	8.62	13.3	1
Davit4	Davit4:Mid	End	9.03	38.30	0.02	-9.33	-1.12	-0.00	-0.0	3.92	2.27	0.00	0.72	1.57	0.00	0.00	2.29	3.5	1
Davit4	Davit4:Mid	Origin	9.03	38.30	0.02	-9.33	-1.12	-0.00	-0.0	4.46	0.75	0.00	0.81	1.57	0.00	0.00	2.39	3.7	1
Davit4	Davit4:End	End	10.53	38.25	0.02	-10.72	-0.00	0.00	-0.0	4.46	0.75	0.00	0.94	0.00	0.33	0.00	1.09	1.7	3
Davit5	Davit5:O	Origin	0.00	26.38	0.01	0.26	4.49	0.00	0.0	-4.53	-0.59	-0.00	-0.46	1.93	0.00	0.00	2.39	3.7	1
Davit5	#Davit5:0	End	4.51	27.59	0.01	3.34	1.83	0.00	0.0	-4.53	-0.59	-0.00	-0.59	1.30	0.00	0.00	1.89	2.9	1
Davit5	#Davit5:0	Origin	4.51	27.59	0.01	3.34	1.83	0.00	0.0	-4.48	-0.68	-0.00	-0.59	1.30	0.00	0.00	1.88	2.9	1
Davit5	Davit5:Mid	End	9.03	28.81	0.02	6.44	-1.23	0.00	0.0	-4.48	-0.68	-0.00	-0.82	1.72	0.00	0.00	2.54	3.9	1
Davit5	Davit5:Mid	Origin	9.03	28.81	0.02	6.44	-1.23	0.00	0.0	-4.44	0.82	-0.00	-0.81	1.72	0.00	0.00	2.53	3.9	1
Davit5	Davit5:End	End	10.53	28.85	0.02	7.55	-0.00	0.00	0.0	-4.44	0.82	-0.00	-0.93	0.00	0.36	0.00	1.12	1.7	3
Davit6	Davit6:O	Origin	0.00	26.34	0.01	-1.31	-22.73	-0.00	-0.0	3.86	2.45	0.00	0.39	9.76	0.00	0.00	10.15	15.6	1
Davit6	#Davit6:0	End	4.51	27.37	0.01	-4.53	-11.66	-0.00	-0.0	3.86	2.45	0.00	0.50	8.30	0.00	0.00	8.80	13.5	1
Davit6	#Davit6:0	Origin	4.51	27.37	0.01	-4.53	-11.66	-0.00	-0.0	3.90	2.32	0.00	0.51	8.30	0.00	0.00	8.81	13.5	1
Davit6	Davit6:Mid	End	9.03	28.46	0.01	-7.89	-1.20	-0.00	-0.0	3.90	2.32	0.00	0.71	1.68	0.00	0.00	2.39	3.7	1
Davit6	Davit6:Mid	Origin	9.03	28.46	0.01	-7.89	-1.20	-0.00	-0.0	4.45	0.80	0.00	0.81	1.68	0.00	0.00	2.49	3.8	1
Davit6	Davit6:End	End	10.53	28.42	0.01	-9.08	-0.00	0.00	-0.0	4.45	0.80	0.00	0.93	0.00	0.35	0.00	1.11	1.7	3

Davit7	Davit7:O	Origin	0.00	18.43	0.01	0.45	3.92	0.00	0.0	-4.54	-0.53	-0.00	-0.46	1.68	0.00	0.00	2.14	3.3	1
Davit7	#Davit7:0	End	4.51	19.39	0.01	2.95	1.51	0.00	0.0	-4.54	-0.53	-0.00	-0.59	1.07	0.00	0.00	1.66	2.6	1
Davit7	#Davit7:0	Origin	4.51	19.39	0.01	2.95	1.51	0.00	0.0	-4.49	-0.62	-0.00	-0.59	1.07	0.00	0.00	1.66	2.6	1
Davit7	Davit7:Mid	End	9.03	20.37	0.01	5.46	-1.31	0.00	0.0	-4.49	-0.62	-0.00	-0.82	1.83	0.00	0.00	2.65	4.1	1
Davit7	Davit7:Mid	Origin	9.03	20.37	0.01	5.46	-1.31	0.00	0.0	-4.43	0.87	-0.00	-0.81	1.83	0.00	0.00	2.64	4.1	1
Davit7	Davit7:End	End	10.53	20.39	0.01	6.35	-0.00	0.00	0.0	-4.43	0.87	-0.00	-0.93	0.00	0.38	0.00	1.14	1.8	3
Davit8	Davit8:O	Origin	0.00	18.39	0.01	-1.06	-23.22	-0.00	-0.0	3.83	2.50	0.00	0.39	9.97	0.00	0.00	10.36	15.9	1
Davit8	#Davit8:0	End	4.51	19.25	0.01	-3.67	-11.94	-0.00	-0.0	3.83	2.50	0.00	0.50	8.50	0.00	0.00	9.00	13.8	1
Davit8	#Davit8:0	Origin	4.51	19.25	0.01	-3.67	-11.94	-0.00	-0.0	3.87	2.36	0.00	0.51	8.50	0.00	0.00	9.00	13.9	1
Davit8	Davit8:Mid	End	9.03	20.16	0.01	-6.43	-1.27	-0.00	-0.0	3.87	2.36	0.00	0.71	1.78	0.00	0.00	2.49	3.8	1
Davit8	Davit8:Mid	Origin	9.03	20.16	0.01	-6.43	-1.27	-0.00	-0.0	4.44	0.85	0.00	0.81	1.78	0.00	0.00	2.59	4.0	1
Davit8	Davit8:End	End	10.53	20.13	0.01	-7.42	-0.00	0.00	-0.0	4.44	0.85	0.00	0.93	0.00	0.37	0.00	1.13	1.7	3

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	2.270	80.00	80.00	2.84
Clamp2	2.270	80.00	80.00	2.84
Clamp3	4.514	80.00	80.00	5.64
Clamp4	4.514	80.00	80.00	5.64
Clamp5	4.514	80.00	80.00	5.64
Clamp6	4.514	80.00	80.00	5.64
Clamp7	4.514	80.00	80.00	5.64
Clamp8	4.514	80.00	80.00	5.64
Clamp9	8.141	80.00	80.00	10.18
Clamp10	6.081	80.00	80.00	7.60
Clamp11	0.303	80.00	80.00	0.38
Clamp12	0.303	80.00	80.00	0.38
Clamp13	0.303	80.00	80.00	0.38
Clamp14	0.303	80.00	80.00	0.38
Clamp15	0.303	80.00	80.00	0.38
Clamp16	0.303	80.00	80.00	0.38
Clamp17	0.303	80.00	80.00	0.38
Clamp18	0.303	80.00	80.00	0.38
Clamp19	0.303	80.00	80.00	0.38
Clamp20	0.453	80.00	80.00	0.57
Clamp21	0.000	80.00	80.00	0.00
Clamp22	0.000	80.00	80.00	0.00

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
3308	87.97	NESC Heavy	25	20770.6

Base Plate Results by Bend Line:

Pole Label	Load Case	Bend Line #	Start X (ft)	Start Y (ft)	End X (ft)	End Y (ft)	Length (in)	Bending Stress (ksi)	Bolt Mom. Sum (ft-k)	# Bolts Acting	Bolt Max Load (kips)	Min Plate Thickness (in)	Actual Thickness (in)	Usage %
3308	NESC Heavy	1	1.834	1.875	-0.834	2.542	33.000	12.962	62.752	2	201.471	1.511	3.250	21.60
3308	NESC Heavy	2	2.142	0.513	0.525	2.737	33.000	58.035	280.955	4	201.471	3.196	3.250	96.72
3308	NESC Heavy	3	1.806	-0.788	1.610	1.955	33.000	24.954	120.807	2	146.149	2.096	3.250	41.59
3308	NESC Heavy	4	1.610	-1.955	1.806	0.788	33.000	23.717	114.816	2	-140.024	2.043	3.250	39.53
3308	NESC Heavy	5	0.525	-2.737	2.142	-0.513	33.000	55.690	269.603	4	-195.199	3.131	3.250	92.82
3308	NESC Heavy	6	-0.834	-2.542	1.834	-1.875	33.000	12.548	60.746	2	-195.199	1.486	3.250	20.91
3308	NESC Heavy	7	-1.834	-1.875	0.834	-2.542	33.000	12.531	60.667	2	-194.969	1.485	3.250	20.89
3308	NESC Heavy	8	-2.142	-0.513	-0.525	-2.737	33.000	55.556	268.954	4	-194.969	3.127	3.250	92.59
3308	NESC Heavy	9	-1.806	0.788	-1.610	-1.955	33.000	23.633	114.413	2	-139.647	2.040	3.250	39.39
3308	NESC Heavy	10	-1.610	1.955	-1.806	-0.788	33.000	25.037	121.210	2	146.526	2.099	3.250	41.73
3308	NESC Heavy	11	-0.525	2.737	-2.142	0.513	33.000	58.169	281.604	4	201.701	3.200	3.250	96.95
3308	NESC Heavy	12	0.834	2.542	-1.834	1.875	33.000	12.979	62.831	2	201.701	1.512	3.250	21.63
3308	NESC Heavy	13	2.140	1.314	-0.140	2.852	33.000	28.524	138.087	3	201.471	2.241	3.250	47.54
3308	NESC Heavy	14	2.138	-0.125	1.195	2.458	33.000	37.545	181.759	3	176.973	2.571	3.250	62.57
3308	NESC Heavy	15	1.750	-1.375	1.750	1.375	33.000	23.260	112.603	2	108.997	2.024	3.250	38.77
3308	NESC Heavy	16	1.195	-2.458	2.138	0.125	33.000	35.854	173.572	3	-170.782	2.512	3.250	59.76
3308	NESC Heavy	17	-0.140	-2.852	2.140	-1.314	33.000	27.531	133.280	3	-195.199	2.201	3.250	45.88
3308	NESC Heavy	18	-2.140	-1.314	0.140	-2.852	33.000	27.483	133.049	3	-194.969	2.200	3.250	45.81
3308	NESC Heavy	19	-2.138	0.125	-1.195	-2.458	33.000	35.747	173.054	3	-170.471	2.509	3.250	59.58
3308	NESC Heavy	20	-1.750	1.375	-1.750	-1.375	33.000	23.260	112.603	2	109.427	2.024	3.250	38.77
3308	NESC Heavy	21	-1.195	2.458	-2.138	-0.125	33.000	37.652	182.277	3	177.283	2.575	3.250	62.75
3308	NESC Heavy	22	0.140	2.852	-2.140	1.314	33.000	28.571	138.318	3	201.701	2.243	3.250	47.62
3308	NESC Extreme	1	1.834	1.875	-0.834	2.542	33.000	9.547	46.219	2	148.405	1.296	3.250	15.91
3308	NESC Extreme	2	2.142	0.513	0.525	2.737	33.000	42.703	206.733	4	148.405	2.742	3.250	71.17
3308	NESC Extreme	3	1.806	-0.788	1.610	1.955	33.000	18.342	88.796	2	107.522	1.797	3.250	30.57
3308	NESC Extreme	4	1.610	-1.955	1.806	0.788	33.000	17.653	85.461	2	-104.119	1.763	3.250	29.42
3308	NESC Extreme	5	0.525	-2.737	2.142	-0.513	33.000	41.403	200.438	4	-144.956	2.700	3.250	69.01
3308	NESC Extreme	6	-0.834	-2.542	1.834	-1.875	33.000	9.319	45.115	2	-144.956	1.281	3.250	15.53
3308	NESC Extreme	7	-1.834	-1.875	0.834	-2.542	33.000	9.314	45.090	2	-144.883	1.280	3.250	15.52
3308	NESC Extreme	8	-2.142	-0.513	-0.525	-2.737	33.000	41.361	200.232	4	-144.883	2.698	3.250	68.93
3308	NESC Extreme	9	-1.806	0.788	-1.610	-1.955	33.000	17.627	85.333	2	-104.000	1.762	3.250	29.38
3308	NESC Extreme	10	-1.610	1.955	-1.806	-0.788	33.000	18.368	88.924	2	107.641	1.798	3.250	30.61
3308	NESC Extreme	11	-0.525	2.737	-2.142	0.513	33.000	42.746	206.938	4	148.478	2.743	3.250	71.24
3308	NESC Extreme	12	0.834	2.542	-1.834	1.875	33.000	9.552	46.244	2	148.478	1.297	3.250	15.92
3308	NESC Extreme	13	2.140	1.314	-0.140	2.852	33.000	21.002	101.674	3	148.405	1.923	3.250	35.00
3308	NESC Extreme	14	2.138	-0.125	1.195	2.458	33.000	27.611	133.670	3	130.304	2.205	3.250	46.02
3308	NESC Extreme	15	1.750	-1.375	1.750	1.375	33.000	17.202	83.277	2	80.058	1.740	3.250	28.67
3308	NESC Extreme	16	1.195	-2.458	2.138	0.125	33.000	26.671	129.119	3	-126.881	2.167	3.250	44.45
3308	NESC Extreme	17	-0.140	-2.852	2.140	-1.314	33.000	20.453	99.018	3	-144.956	1.898	3.250	34.09
3308	NESC Extreme	18	-2.140	-1.314	0.140	-2.852	33.000	20.438	98.945	3	-144.883	1.897	3.250	34.06
3308	NESC Extreme	19	-2.138	0.125	-1.195	-2.458	33.000	26.637	128.955	3	-126.783	2.165	3.250	44.40

3308	NESC Extreme	20	-1.750	1.375	-1.750	-1.375	33.000	17.202	83.277		2	80.194	1.740	3.250	28.67
3308	NESC Extreme	21	-1.195	2.458	-2.138	-0.125	33.000	27.645	133.834		3	130.403	2.206	3.250	46.08
3308	NESC Extreme	22	0.140	2.852	-2.140	1.314	33.000	21.017	101.747		3	148.478	1.924	3.250	35.03

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	3.05	NESC Heavy	1	82.5
Davit2	9.13	NESC Heavy	1	82.5
Davit3	8.05	NESC Heavy	2	261.5
Davit4	28.05	NESC Heavy	1	261.5
Davit5	8.40	NESC Heavy	2	261.5
Davit6	28.68	NESC Heavy	1	261.5
Davit7	8.79	NESC Heavy	2	261.5
Davit8	29.36	NESC Heavy	1	261.5

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	96.95	3308	Base Plate
NESC Extreme	71.24	3308	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy	87.97	3308	25
NESC Extreme	62.83	3308	27

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	3308	11	33.000	52.014	4659.492	-5.051	58.169	281.604	4	201.701	3.200	96.95
NESC Extreme	3308	11	33.000	28.175	3445.970	-1.599	42.746	206.938	4	148.478	2.743	71.24

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy	29.36	Davit8	1
NESC Extreme	15.94	Davit8	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	5.91	NESC Heavy	0.0
Clamp2	Clamp	5.91	NESC Heavy	0.0
Clamp3	Clamp	9.05	NESC Heavy	0.0
Clamp4	Clamp	9.05	NESC Heavy	0.0
Clamp5	Clamp	9.05	NESC Heavy	0.0
Clamp6	Clamp	9.05	NESC Heavy	0.0
Clamp7	Clamp	9.05	NESC Heavy	0.0
Clamp8	Clamp	9.05	NESC Heavy	0.0
Clamp9	Clamp	10.18	NESC Extreme	0.0
Clamp10	Clamp	7.60	NESC Extreme	0.0
Clamp11	Clamp	0.59	NESC Heavy	0.0
Clamp12	Clamp	0.59	NESC Heavy	0.0
Clamp13	Clamp	0.59	NESC Heavy	0.0
Clamp14	Clamp	0.59	NESC Heavy	0.0
Clamp15	Clamp	0.59	NESC Heavy	0.0
Clamp16	Clamp	0.59	NESC Heavy	0.0
Clamp17	Clamp	0.59	NESC Heavy	0.0
Clamp18	Clamp	0.59	NESC Heavy	0.0
Clamp19	Clamp	0.59	NESC Heavy	0.0
Clamp20	Clamp	0.88	NESC Heavy	0.0
Clamp21	Clamp	0.00	NESC Heavy	0.0
Clamp22	Clamp	0.00	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	Davit1:End	0.000	4.659	0.797	4.727
NESC Heavy	Clamp2	Clamp	Davit2:End	0.000	4.659	0.797	4.727
NESC Heavy	Clamp3	Clamp	Davit3:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp4	Clamp	Davit4:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp5	Clamp	Davit5:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp6	Clamp	Davit6:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp7	Clamp	Davit7:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp8	Clamp	Davit8:End	0.000	6.786	2.530	7.242
NESC Heavy	Clamp9	Clamp	3308:TopCon	0.000	2.007	1.643	2.594
NESC Heavy	Clamp10	Clamp	3308:BotCon	0.000	-1.545	0.089	1.548
NESC Heavy	Clamp11	Clamp	3308:WVGD1	0.000	0.093	0.460	0.469
NESC Heavy	Clamp12	Clamp	3308:WVGD2	0.000	0.093	0.460	0.469
NESC Heavy	Clamp13	Clamp	3308:WVGD3	0.000	0.093	0.460	0.469
NESC Heavy	Clamp14	Clamp	3308:WVGD4	0.000	0.093	0.460	0.469
NESC Heavy	Clamp15	Clamp	3308:WVGD5	0.000	0.093	0.460	0.469
NESC Heavy	Clamp16	Clamp	3308:WVGD6	0.000	0.093	0.460	0.469
NESC Heavy	Clamp17	Clamp	3308:WVGD7	0.000	0.093	0.460	0.469
NESC Heavy	Clamp18	Clamp	3308:WVGD8	0.000	0.093	0.460	0.469
NESC Heavy	Clamp19	Clamp	3308:WVGD9	0.000	0.093	0.460	0.469
NESC Heavy	Clamp20	Clamp	3308:WVGD10	0.000	0.139	0.690	0.704
NESC Heavy	Clamp21	Clamp	3308:tnew	0.000	0.000	-0.000	0.000
NESC Heavy	Clamp22	Clamp	3308:bnew	0.000	0.000	-0.000	0.000
NESC Extreme	Clamp1	Clamp	Davit1:End	0.000	2.261	0.197	2.270
NESC Extreme	Clamp2	Clamp	Davit2:End	0.000	2.261	0.197	2.270
NESC Extreme	Clamp3	Clamp	Davit3:End	0.000	4.384	1.077	4.514
NESC Extreme	Clamp4	Clamp	Davit4:End	0.000	4.384	1.077	4.514

NESC Extreme	Clamp5	Clamp	Davit5:End	0.000	4.384	1.077	4.514
NESC Extreme	Clamp6	Clamp	Davit6:End	0.000	4.384	1.077	4.514
NESC Extreme	Clamp7	Clamp	Davit7:End	0.000	4.384	1.077	4.514
NESC Extreme	Clamp8	Clamp	Davit8:End	0.000	4.384	1.077	4.514
NESC Extreme	Clamp9	Clamp	3308:TopCon	0.000	8.112	0.692	8.141
NESC Extreme	Clamp10	Clamp	3308:BotCon	0.000	-6.081	0.051	6.081
NESC Extreme	Clamp11	Clamp	3308:WVGD1	0.000	0.276	0.125	0.303
NESC Extreme	Clamp12	Clamp	3308:WVGD2	0.000	0.276	0.125	0.303
NESC Extreme	Clamp13	Clamp	3308:WVGD3	0.000	0.276	0.125	0.303
NESC Extreme	Clamp14	Clamp	3308:WVGD4	0.000	0.276	0.125	0.303
NESC Extreme	Clamp15	Clamp	3308:WVGD5	0.000	0.276	0.125	0.303
NESC Extreme	Clamp16	Clamp	3308:WVGD6	0.000	0.276	0.125	0.303
NESC Extreme	Clamp17	Clamp	3308:WVGD7	0.000	0.276	0.125	0.303
NESC Extreme	Clamp18	Clamp	3308:WVGD8	0.000	0.276	0.125	0.303
NESC Extreme	Clamp19	Clamp	3308:WVGD9	0.000	0.276	0.125	0.303
NESC Extreme	Clamp20	Clamp	3308:WVGD10	0.000	0.413	0.187	0.453
NESC Extreme	Clamp21	Clamp	3308:tnew	0.000	0.000	-0.000	0.000
NESC Extreme	Clamp22	Clamp	3308:bnew	0.000	0.000	-0.000	0.000

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	51.472	0.000	23.336	4377.919	-0.000	-0.000
NESC Extreme	35.754	0.000	8.911	2984.923	-0.000	-0.000

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	1734.1
Weight of Steel Poles:	20770.6
Total:	22504.7

*** End of Report

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force = $T_{Max} := 202 \cdot kips$ (User Input from PLS-Pole)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts = $N := 16$ (User Input)

Bolt "Column" Distance = $l := 3.0 \cdot in$ (User Input)

Bolt Ultimate Strength = $F_u := 100 \cdot ksi$ (User Input)

Bolt Yeild Strength= $F_y := 75 \cdot ksi$ (User Input)

Bolt Modulus = $E := 29000 \cdot ksi$ (User Input)

Diameter of Anchor Bolts = $D := 2.25 \cdot in$ (User Input)

Threads per Inch = $n := 4.5$ (User Input)

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 3.248 \cdot in^2$

Bolt Tension Check:

Allowable Tensile Force (Net Area) = $T_{ALL.Net} := 1.0 \cdot \left(A_n \cdot F_y\right) = 243.576 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 82.93 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Net}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Units:

Angular

$rad \equiv 1$ $\qquad deg \equiv \pi \cdot \frac{rad}{180}$

Weight

$lb \equiv lbf$

$kips \equiv 1000 \cdot lb$ $\qquad k \equiv kips$

$tons \equiv 2000 \cdot lb$

Unit Weight

$plf \equiv \frac{lb}{ft}$ $\qquad klf \equiv \frac{kips}{ft}$

Pressure

$psf \equiv \frac{lb}{ft^2}$ $\qquad psi \equiv \frac{lb}{in^2}$

$ksf \equiv \frac{kips}{ft^2}$ $\qquad ksi \equiv \frac{kips}{in^2}$

Density

$pcf \equiv \frac{lb}{ft^3}$

Foundation:

Input Data:

Tower Data

Overturning Moment =	$OM := 4660 \cdot 1.1 \cdot ft \cdot kips = 5126 \cdot ft \cdot kips$	(User Input from PLS-Pole)
Shear Force =	$Shear := 55.5 \cdot kip \cdot 1.1 = 61.05 \cdot kips$	(User Input from PLS-Pole)
Axial Force =	$Axial := 55.5 \cdot kip \cdot 1.1 = 61.05 \cdot kips$	(User Input from PLS-Pole)
Tower Height =	$H_t := 105 \cdot ft$	(User Input)

Footing Data:

Depth to Bottom of Footing =	$D_f := 27.5 \cdot ft$	(User Input)
Length of Pier =	$L_p := 10 \cdot ft$	(User Input)
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)
Width of Pier =	$W_p := 9 \cdot ft$	(User Input)
Depth of Soil =	$D_{soil} := 10 \cdot ft$	(User Input)
Depth of Rock =	$D_{rock} := 18 \cdot ft$	(User Input)

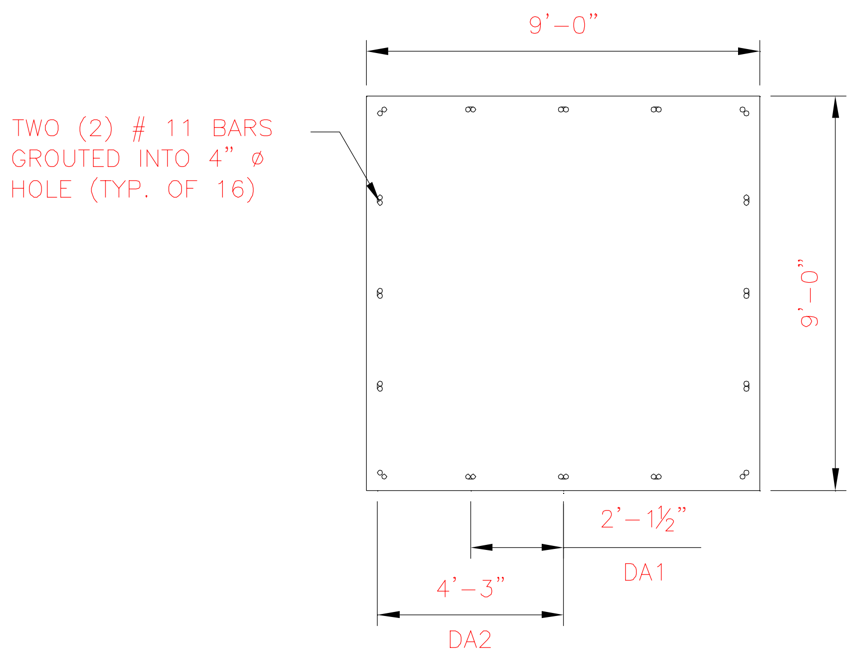
Material Properties:

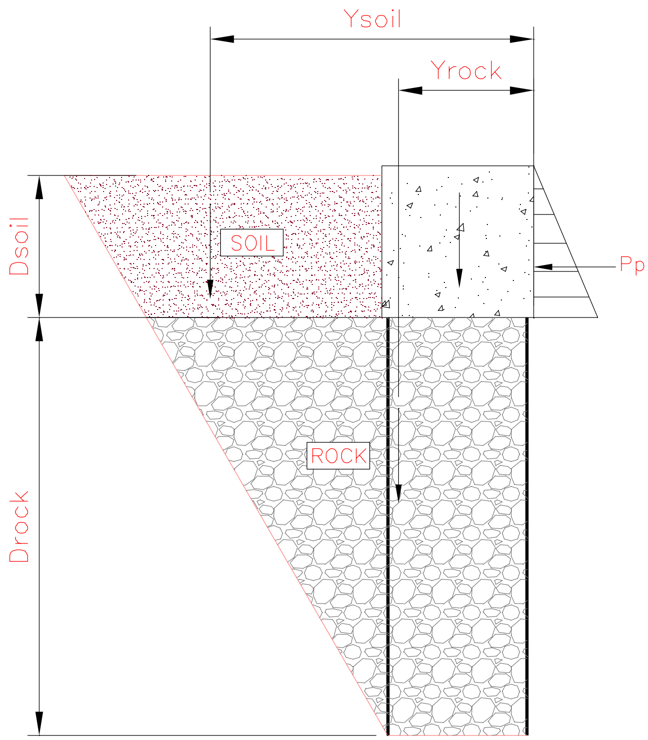
Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Anchor Bolt Yield Strength =	$f_{ya} := 75000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 4000 \cdot psf$	(User Input)	
Allowable Rock Bearing Capacity =	$q_{rock} := 50000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Unit Weight of Rock =	$\gamma_{rock} := 160 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 1.0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Rock Anchor Properties:

ASTM A615 Grade 60

Bolt Ultimate Strength =	$F_u := 90 \cdot ksi$	(User Input)	
Bolt Yield Strength =	$F_y := 60 \cdot ksi$	(User Input)	
Anchor Diameter =	$d_{ra} := 2.82 \cdot in$	(User Input)	(2 # 11 Bars)
Hole Diameter =	$d_{Hole} := 4 \cdot in$	(User Input)	
Grout Strength =	$\tau := 120 \cdot psi$	(User Input)	(Assumed Conservative Value)
Distance to Rock Anchor Group 1 =	$D_{a1} := 25.5 \cdot in$	(User Input)	
Distance to Rock Anchor Group 2 =	$D_{a2} := 51 \cdot in$	(User Input)	
Number of Rock Anchors in Group 1 =	$N_{a1} := 4$	(User Input)	
Number of Rock Anchors in Group 2 =	$N_{a2} := 10$	(User Input)	
Total Number of Rock Anchors =	$N_{atot} := 16$	(User Input)	





Area 1 = $A1 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{soil}{}^2 = 28.868\,ft^2$ sf

Area 2 = $A2 := \tan(\Phi_s) \cdot D_{rock} \cdot D_{soil} = 103.923\,ft^2$ sf

Distance to Centroid 1 = $Y1 := \tan(\Phi_s) \cdot D_{rock} + \frac{1}{3} \cdot \tan(\Phi_s) \cdot D_{soil} = 12.317\,ft$ ft

Distance to Centroid 2 = $Y2 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{rock} = 5.196\,ft$ ft

Distance from Toe to Centroid of Soil = $Y_{soil} := \frac{(A1 \cdot Y1 + A2 \cdot Y2)}{(A1 + A2)} + W_p = 15.74\,ft$ ft

Area 1 = $A1 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{rock}{}^2 = 93.531\,ft^2$ sf

Area 2 = $A2 := W_p \cdot D_{rock} = 162\,ft^2$ sf

Distance to Centroid 1 = $Y1 := W_p + \frac{1}{3} \cdot \tan(\Phi_s) \cdot D_{rock} = 12.464\,ft$ ft

Distance to Centroid 2 = $Y2 := \frac{W_p}{2} = 4.5\,ft$ ft

Distance from Toe to Centroid of Rock = $Y_{rock} := \frac{(A1 \cdot Y1 + A2 \cdot Y2)}{(A1 + A2)} = 7.42\,ft$ ft

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := if(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

Coefficient of Lateral Soil Pressure = $K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$

Passive Pressure = $P_{top} := 0 = 0 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_{soil} + c \cdot 2 \cdot \sqrt{K_p} = 3 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.5 \cdot ksf$

$A_p := W_p \cdot (L_p - L_{pag}) = 85.5ft^2$

Ultimate Shear = $S_u := P_{ave} \cdot A_p = 128.25 \cdot kip$

Weight of Concrete Pad = $WT_c := (W_p^2 \cdot L_p) \cdot \gamma_c = 121.5 \cdot kip$

Weight of Soil Wedge at Back Face = $WT_{s1} := \left[W_p \cdot D_{soil} \cdot \tan(\Phi_s) \cdot \left(\frac{D_{soil}}{2} + D_{rock}\right)\right] \cdot \gamma_s = 119.512 \cdot kip$

Weight of Soil Wedge at Back Face Corners = $WT_{s2} := 2 \cdot \left[\frac{(D_f^3 - D_{rock}^3)}{3} \cdot (\tan(\Phi_s))^2\right] \cdot \gamma_s = 332.553 \cdot kips$

Total Weight of Soil = $WT_{Stot} := WT_{s1} + WT_{s2} = 452.1 \cdot kips$

Weight of Rock Between Rock Anchors = $WT_{R1} := (W_p^2 \cdot D_{rock}) \cdot \gamma_{rock} = 233.28 \cdot kip$

Weight of Rock Wedge at Back Face = $WT_{R2} := \left(\frac{D_{rock}^2 \cdot \tan(\Phi_s)}{2} \cdot W_p\right) \cdot \gamma_{rock} = 134.684 \cdot kip$

Weight of Rock at Back Face Corners = $WT_{R3} := 2 \cdot \left[\frac{D_{rock}}{3} \cdot (\tan(\Phi_s) \cdot D_{rock})^2\right] \cdot \gamma_{rock} = 207.36 \cdot kips$

Total Weight of Rock = $WT_{Rtot} := WT_{R1} + WT_{R2} + WT_{R3} = 575.3 \cdot kips$

Resisting Moment = $M_r := (WT_c + Axial) \cdot \frac{W_p}{2} + S_u \cdot \frac{(L_p - L_{pag})}{3} + WT_{Stot} \cdot Y_{soil} + WT_{Rtot} \cdot Y_{rock} = 12611 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := OM + Shear \cdot L_p = 5737 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 2.2$

Factor of Safety Required = $FS_{req} := 1.0$

OverTurning_Moment_Check := if$(FS \geq FS_{req}$, "Okay" , "No Good")

OverTurning_Moment_Check = "Okay"

Rock Anchor Check:

Polar Moment of Inertia = $I_p := \left(D_{a1}^2 \cdot N_{a1} + D_{a2}^2 \cdot N_{a2}\right) = 28611 \cdot in^2$

$T_2 := \frac{M_{ot} \cdot D_{a2}}{I_p} = 122.7 \cdot kips$

$T_1 := \frac{M_{ot} \cdot D_{a1}}{I_p} = 61.4 \cdot kips$

Maximum Tension Force = $T_{Max} := \max\left(T_2, T_1\right) = 122.7 \cdot kips$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot d_{ra}^2 = 6.246 \cdot in^2$

Allowable Tension = $T_{all} := 0.75 \cdot A_g \cdot F_u = 421.6 \cdot kips$

$\frac{T_{Max}}{T_{all}} = 29.1 \cdot \%$

Condition1 := if($T_{Max} < T_{all}$, "OK", "NG")

Condition1 = "OK"

Check Bond Strength:

Bond Strength = Bond_Strength := $d_{Hole} \cdot \pi \cdot D_{rock} \cdot \tau = 326 \cdot kips$

$\frac{T_{Max}}{Bond\_Strength} = 37.7 \cdot \%$

Condition2 := if($T_{Max} <$ Bond_Strength, "OK", "NG")

Condition2 = "OK"

Bearing Pressure Caused by Footing:

Area of the Mat = $A_{mat} := \frac{\left(W_p \cdot \frac{W_p}{2}\right)}{2} = 20.25 ft^2$

Maximum Pressure in Mat = $P_{max} := \frac{WT_c + Axial + T_1 \cdot \frac{N_{a1}}{2} + T_2 \cdot \frac{N_{a2}}{2}}{A_{mat}} = 45.372 \cdot ksf$

Max_Pressure_Check := if($P_{max} < q_{rock}$, "Okay", "No Good")

Max_Pressure_Check = "Okay"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTV5068	DATE:	03/14/2016	RF DESIGN ENG:	Md Mateen
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	
REVISION:	Final	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	MM093Q@ATT.COM
INITIATIVE /PROJECT:	LTE 2C 1900 w/Bronze Standard configuration - Bottom.				

RF PERF ENG:		RFDS PROGRAM TYPE:	2017 LTE Next Carrier
RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 2C
RF PERF EMAIL:		State:	As Built
TRIDENT:		Status:	In Progress
GSM FREQUENCY:	1900	RFDS ID:	1118624
UMTS FREQUENCY:	850, 1900	RFDS Version:	1.00
LTE FREQUENCY:	700, 1900	Created By:	mm093q
		Date Created:	3/14/2016 11:38:22 AM
		Date Updated:	6/9/2016 10:43:08 AM
		Updated By:	mm093q
I-PLAN JOB # 1:	NER-RCTB-12-04608	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:	16336	FA LOCATION CODE:	10116794	LOCATION NAME:	RIDGEFIELD CENTER 5068
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	95 HALPIN LANE	CITY:	RIDGEFIELD	STATE:	CT
ZIP CODE:	06877	COUNTY:	FAIRFIELD	MSA / RSA:	
LATITUDE (D-M-S):	41d 16m56.97084s	LONGITUDE (D-M-S):	-73d -29m-12.83604s	LAT (DEC. DEG.):	41.2824919
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	NORTH RIDGEFIELD CT-5068 84-EAST DANBURY FOLLOW TO EXIT 3. TAKE ROUTE 7 SOUTH FOR 4.5 MILES.TURN RIGHT ON RT 35 SOUTH. GO 3.1 MILES AND LOOK FOR PROSPECT ST ON LEFT.STAY ON PROSPECT TO END.MAIN GATE IS AT BOTTOM OF HILL STAIGHT IN FRONT OF STOP SIGN.SITE IS ABOUT 100YDS DOWN WALKING PATH.THE ANTENNAS ARE LOCATED ON TOP OF POWER POLE. DEMARC IS IN THE TELCO CABINET.ADDRESS: 95 HALPIN LN.RIDGEFIELD CONNECTICUITACCESS: GATE ACCESS (COMBO 8899) CONTACT: NORTHEAST UTILITIES (800-286-2000) : VINNIE COLENERO (860)665-6633 NU CONTACT FOR ANTENNA PROBLEMS.METER # : 03-841-374 GENERATOR PLUG # AJA20033200RSSECURITY: NO ISSUESPOWER COMPANY: NORTHEAST UTILITIES (800-286-2000)FIRE: (203) 938-2525 POLICE: (203) 938-2564T-1 CIRCUIT NUMBERS HCGS 684270 // HCGS 684271 SNET: (800) 448-1008 AND (203) 420-3131 (24-HR REPAIR)				

ORACLE PTN # 1:		PACE JOB # 1:	MRCTB018155
ORACLE PTN # 2:		PACE JOB # 2:	
ORACLE PTN # 3:		PACE JOB # 3:	
ORACLE PTN # 4:		PACE JOB # 4:	
SEARCH RING NAME:			
SEARCH RING ID:		CASPR INITIATIVE # 1:	
BTA:		CASPR INITIATIVE # 2:	
LONG (DEC. DEG.):	-73.4868989	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 - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	UTILITY
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	116.00	FCC ASR NUMBER:	NR
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	116.00		
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:	
MARKET LOCATION 850 MHz Band:	
MARKET LOCATION 1900 MHz Band:	
MARKET LOCATION AWS Band:	
MARKET LOCATION WCS Band:	
MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	RIDGEFIELD POLICE DEPARTMENT	1386		INTRADO_MIAMI		0		
SECTOR B	RIDGEFIELD POLICE DEPARTMENT	1386		INTRADO_MIAMI		0		
SECTOR C	RIDGEFIELD POLICE DEPARTMENT	1386		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	RIDGEFIELD POLICE DEPARTMENT	1386		INTRADO_MIAMI		0		
SECTOR B	RIDGEFIELD POLICE DEPARTMENT	1386		INTRADO_MIAMI		0		
SECTOR C	RIDGEFIELD POLICE DEPARTMENT	1386		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
RBS ID:	43609	273375	336085	401763	362951							
CTS COMMON ID:	321P5068	CTV5068	CTU5068	CTV4068	CTL05068							
BTA/TID:	321P	321U	321W	321W	321L							
4-DIGIT SITE ID:	5068	8068	7068	04068	05068							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	GROUND	INTERNAL	GROUND	GROUND	INTERNAL							
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	CT SOUTH-WEST	CT-SOUTH	CT-SOUTH	CT-SOUTH	CT-SOUTH							
RF DISTRICT:	NPO TRIAGE	NPO TRIAGE	NPO TRIAGE	NPO TRIAGE	NPO TRIAGE							
OPS ZONE:	NE_CT_S_FRFD_NE_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS							
RF ZONE:	HOTSEAT	HOTSEAT	BBP08	HOTSEAT	HOTSEAT							
BASE STATION TYPE:	BASE	OVERLAY	OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:	RIDGEFIELD CENTER 5068	ERICSSON NODEB	RIDGEFIELD CENTER 5068	RIDGEFIELD CENTER	RIDGEFIELD CENTER 5068							
DISASTER PRIORITY:	1	3	3	0	3							

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
RBS ID:	43609	273375	336085	401763	362951							
CTS COMMON ID:	321P5068	CTV5068	CTU5068	CTV4068	CTL05068							
BTA/TID:	321P	321U	321W	321W	321L							
4-DIGIT SITE ID:	5068	8068	7068	04068	05068							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	GROUND	INTERNAL	GROUND	GROUND	INTERNAL							
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	CT-South	CT-South	CT-South	CT-South	CT-South							
RF DISTRICT:	NPO Triage	NPO Triage	NPO Triage	NPO Triage	NPO Triage							
OPS ZONE:	NE_CT_S_FRFD_NE_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS	NE_CT_S_FRFD_NW_CS							
RF ZONE:	Hotseat	Hotseat	BBP08	Hotseat	Hotseat							
BASE STATION TYPE:	BASE	OVERLAY	OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:	RIDGEFIELD CENTER 5068	ERICSSON NODEB	RIDGEFIELD CENTER 5068	RIDGEFIELD CENTER	RIDGEFIELD CENTER 5068							
DISASTER PRIORITY:	1	3	3	0	3							

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:	BRIDGEPORT BSC 08	BRIDGEPORT RNC03	BRIDGEPORT RNC03	BRIDGEPORT RNC03	FF01							
LAC:	05017	05995	05995	05995								
RAC:												
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	3206 INDOOR	3106 OUTDOOR	6601 MAIN UNIT UMTS	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:	0	0	0	0	5068							
PARENT NAME:	BRIDGEPORT BSC 08	BRIDGEPORT RNC03	BRIDGEPORT RNC03	BRIDGEPORT RNC03	FF01							

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:	BRPTCTBSC08	BRPTCT04CR0R03	BRPTCT04CR0R03	BRPTCT04CR0R03	FF01							
LAC:	05017	05995	05995	05995								
RAC:												
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	3206 INDOOR	3106 OUTDOOR	6601 MAIN UNIT UMTS	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:	0	0	0	0	5068							
PARENT NAME:	BRIDGEPORT BSC 08	BRIDGEPORT RNC03	BRIDGEPORT RNC03	BRIDGEPORT RNC03								

Section 8 - RBS INDIVIDUAL INFORMATION - existing

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
RBS ID:	43609	273375	336085	401763	362951																			
CELL ID/BCF:	321P5068	CTV5068	CTV5068	CTV4068	CTL05068																			
CTS COMMON ID:	321P5068	CTV5068	CTU5068	CTV4068	CTL05068																			

Section 8 - RBS INDIVIDUAL INFORMATION - final

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																		
RBS ID:	43609	273375	336085	401763	362951	362951																		
CELL ID/BCF:	321P5068	CTV5068	CTV5068	CTV4068	CTL05068	CTL05068																		
CTS COMMON ID:	321P5068	CTV5068	CTU5068	CTV4068	CTL05068	CTL05068																		

Section 9 - SOFT SECTOR ID - existing

		GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																				
USEID (excluding Hard Sector)		16336.1900.25G.1	16336.850.3G.1	16336.1900.3G.2	16336.850.3G.2	16336.700.4G.1																					
SECTOR A	SOFT SECTOR ID	321P50681	CTV50681	CTU50687	CTV4068A	CTL05068_7A_1																					
SECTOR B		321P50682	CTV50682	CTU50688	CTV4068B	CTL05068_7B_1																					
SECTOR C		321P50683	CTV50683	CTU50689	CTV4068C	CTL05068_7C_1																					
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 9 - SOFT SECTOR ID - final

		GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																				
USEID (excluding Hard Sector)		16336.1900.25G.1	16336.850.3G.1	16336.1900.3G.2	16336.850.3G.2	16336.700.4G.1	16336.1900.4G.1																				
SECTOR A	SOFT SECTOR ID	321P50681	CTV50681	CTU50687	CTV4068A	CTL05068_7A_1	CTL05068_9A_1																				
SECTOR B		321P50682	CTV50682	CTU50688	CTV4068B	CTL05068_7B_1	CTL05068_9B_1																				
SECTOR C		321P50683	CTV50683	CTU50689	CTV4068C	CTL05068_7C_1	CTL05068_9C_1																				
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 9 - Cell Number - existing

		GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)		16336.1900.25G.1	16336.850.3G.1	16336.1900.3G.2	16336.850.3G.2	16336.700.4G.1	
SECTOR A	CELL NUMBER					15	
SECTOR B						16	
SECTOR C						17	
SECTOR D							
SECTOR E							
SECTOR F							
OMNI							

Section 9 - Cell Number - final

		GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)		16336.1900.25G.1	16336.850.3G.1	16336.1900.3G.2	16336.850.3G.2	16336.700.4G.1	16336.1900.4G.1
SECTOR A	CELL NUMBER					15	8
SECTOR B						16	9
SECTOR C						17	10
SECTOR D							
SECTOR E							
SECTOR F							
OMNI							

Section 10 - CID/SAC - existing

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																					
SECTOR A CID/SAC	50681	50681	50687	40681																							
SECTOR B	50682	50682	50688	40682																							
SECTOR C	50683	50683	50689	40683																							
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 10 - CID/SAC - final

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900																					
SECTOR A CID/SAC	50681	50681	50687	40681																							
SECTOR B	50682	50682	50688	40682																							
SECTOR C	50683	50683	50689	40683																							
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	P65-16-XLH-RR													
ANTENNA VENDOR	Powerwave													
ANTENNA SIZE (H x W x D)	72X12X6													
ANTENNA WEIGHT	64													
AZIMUTH	30													
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	115													
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	2	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	2	Trisax TBC0020F1V24-2 Triplexer												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave / 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		16336.A.850.3G.1	CTV50681	CTV50681		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_08DT	14.8		8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 2		16336.A.850.3G.1	CTV4068A	CTV4068A		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_08DT	14.8		8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 3		16336.A.1900.3G.2	CTU50687	CTU50687		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_08DT	16.29		8	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			NO					
	PORT 4		16336.A.1900.25G.1	321P50681	321P50681		GSM 1900	AM-X-CD-14-65-00T-RET_1920MHz_08DT	16.29		8	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			YES	11.22	274.78			

	PORT 5		16336.A.700.4G.1	CTL05068_7A_1	CTL05068_7A_1		LTE 700	P65-16-XLH-RR_716MHz_03DT	14.8		3	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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	P65-16-XLH-RR													
ANTENNA VENDOR	Powerwave													
ANTENNA SIZE (H x W x D)	72X12X6													
ANTENNA WEIGHT	64													
AZIMUTH	150													
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	115													
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	2	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	2	Trisax TBC0020F1V24-2 Triplexer												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		16336.B.850.3G.1	CTV50682	CTV50682		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_05DT	14.8		5	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 2		16336.B.850.3G.1	CTV4068B	CTV4068B		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_05DT	14.8		5	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 3		16336.B.1900.3G.2	CTU50688	CTU50688		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_05DT	16.29		5	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			NO					
	PORT 4		16336.B.1900.25G.1	321P50682	321P50682		GSM 1900	AM-X-CD-14-65-00T-RET_1920MHz_05DT	16.29		5	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			YES	11.22	274.78			

	PORT 5		16336.B.700.4G.1	CTL05068_7B_1	CTL05068_7B_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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	P65-16-XLH-RR													
ANTENNA VENDOR	Powerwave													
ANTENNA SIZE (H x W x D)	72X12X6													
ANTENNA WEIGHT	64													
AZIMUTH	270													
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	115													
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	2	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	2	Trisax TBC0020F1V24-2 Triplexer												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		16336.C.850.3G.1	CTV50683	CTV50683		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_08DT	14.8		8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 2		16336.C.850.3G.1	CTV4068C	CTV4068C		UMTS 850	AM-X-CD-14-65-00T-RET_850MHz_08DT	14.8		8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO					
	PORT 3		16336.C.1900.3G.2	CTU50689	CTU50689		UMTS 1900	AM-X-CD-14-65-00T-RET_1920MHz_08DT	16.29		8	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			NO					
	PORT 4		16336.C.1900.25G.1	321P50683	321P50683		GSM 1900	AM-X-CD-14-65-00T-RET_1920MHz_08DT	16.29		8	BOTTOM	Andrew 1-5/8 (1900)	115.029443	RxAIT 1900			YES	11.22	274.78			

	PORT 5		16336.C.700.4G.1	CTL05068_7C_1	CTL05068_7C_1		LTE 700	P65-16-XLH-RR_716MHz_07DT	14.8		7	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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)	115													
ANTENNA TIP HEIGHT	118													
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 7		16336.A.1900.4G.1	CTL05068_9A_1	CTL05068_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85	30	2	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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)	115													
ANTENNA TIP HEIGHT	118													
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 7		16336.B.1900.4G.1	CTL05068_9B_1	CTL05068_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_05DT	17.17	150	5	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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)	115													
ANTENNA TIP HEIGHT	118													
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)														
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 7		16336.C.1900.4G.1	CTL05068_9C_1	CTL05068_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_06DT	17.18	270	6	BOTTOM	1 5/8" ANDREW LDF7-50A_700 MHz	115.029443	NO								

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	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)	115						
ANTENNA TIP HEIGHT	118						
MECHANICAL DOWNTILT	0						
FEEDER AMOUNT	4						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave / 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	16336.A.850.3G.1	16336.A.850.3G.1	CTV50681	CTV50681		UMTS 850	HPA-65R-BUU-H6_850MHz_08DT	14.8	30	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		466.66		1	
	PORT 2	16336.A.850.3G.1,16336.A.850.3G.2	16336.A.850.3G.1	CTV4068A	CTV4068A		UMTS 850	HPA-65R-BUU-H6_850MHz_08DT	14.8	30	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		466.66		2	
	PORT 3	16336.A.1900.3G.2	16336.A.1900.3G.2	CTU50687	CTU50687		UMTS 1900	HPA-65R-BUU-H6_1920MHz_08DT	16.29	30	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			NO		543.25		1	
	PORT 4	16336.A.1900.25G.1	16336.A.1900.25G.1	321P50681	321P50681		GSM 1900	HPA-65R-BUU-H6_1920MHz_08DT	16.29	30	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			YES	11.22	274.78		1	

	PORT 5	16336.A.700.4G.1	16336.A.700.4G.1	CTL05068_7A_1	CTL05068_7A_1		LTE 700	HPA-65R-BUU-H6_716MHz_03DT	14.8	30	3	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					827.9421		1	
	PORT 7	16336.A.1900.4G.1	16336.A.1900.4G.1	CTL05068_9A_1	CTL05068_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85	30	2	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					3258.367		1	

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	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)	115													
ANTENNA TIP HEIGHT	118													
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	4													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	16336.B.850.3G.1	16336.B.850.3G.1	CTV50682	CTV50682		UMTS 850	HPA-65R-BUU-H6_850MHz_05DT	14.8	150	5	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		543.25		9	
	PORT 2	16336.B.850.3G.1,16336.B.850.3G.2	16336.B.850.3G.1	CTV4068B	CTV4068B		UMTS 850	HPA-65R-BUU-H6_850MHz_05DT	14.8	150	5	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		543.25		10	
	PORT 3	16336.B.1900.3G.2	16336.B.1900.3G.2	CTU50688	CTU50688		UMTS 1900	HPA-65R-BUU-H6_1920MHz_05DT	16.29	150	5	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			NO		543.25		9	
	PORT 4	16336.B.1900.25G.1	16336.B.1900.25G.1	321P50682	321P50682		GSM 1900	HPA-65R-BUU-H6_1920MHz_05DT	16.29	150	5	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			YES	11.22	274.78		9	

	PORT 5	16336.B.700.4G.1	16336.B.700.4G.1	CTL05068_7B_1	CTL05068_7B_1		LTE 700	HPA-65R-BUU-H6_716MHz_02DT	14.8	150	2	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					827.9421		9	
	PORT 7	16336.B.1900.4G.1	16336.B.1900.4G.1	CTL05068_9B_1	CTL05068_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_05DT	17.17	150	5	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					3258.367		9	

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	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)	115													
ANTENNA TIP HEIGHT	118													
MECHANICAL DOWNTILT	0													
FEEDER AMOUNT	4													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)		Internal												
SURGE ARRESTOR (QTY/MODEL)	4	Andrew / APTDC-BDFDM-DBW Broadband												
DIPLEXER (QTY/MODEL)	4	CCI Pentaplexer 5PX-0726-O												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	CCI DTMABP7819VG12A Twin PCS w/ 700-850BP (700)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	1	Andrew / ABT-DFDM-ADBH												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	RRUS-11												
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)	1	RRUS-12+RRUS-A2												
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component1 (QTY/MODEL)	1	Kathrein 78211055 CILOC BTS side												
Additional Component2 (QTY/MODEL)														
Additional Component3 (QTY/MODEL)														
Local Market Note1	LTE 2C 1900 - Bronze Standard config, Replace the existing LTE Antenna with a Hex port Antenna , Add 2 additional Coax, 1 twin TMA, replace the Triplexers with Penta plexers // Install LTE 1900 RRUS-12+RRUS-A2.													
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)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	16336.C.850.3G.1	16336.C.850.3G.1	CTV50683	CTV50683		UMTS 850	HPA-65R-BUU-H6_850MHz_08DT	14.8	270	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		466.66		17	
	PORT 2	16336.C.850.3G.1,16336.C.850.3G.2	16336.C.850.3G.1	CTV4068C	CTV4068C		UMTS 850	HPA-65R-BUU-H6_850MHz_08DT	14.8	270	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO			NO		466.66		18	
	PORT 3	16336.C.1900.3G.2	16336.C.1900.3G.2	CTU50689	CTU50689		UMTS 1900	HPA-65R-BUU-H6_1920MHz_08DT	16.29	270	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			NO		543.25		17	
	PORT 4	16336.C.1900.25G.1	16336.C.1900.25G.1	321P50683	321P50683		GSM 1900	HPA-65R-BUU-H6_1920MHz_08DT	16.29	270	8	BOTTOM	Andrew 1-5/8 (850)	115.029443	RxAIT 1900			YES	11.22	274.78		17	

	PORT 5	16336.C.700.4G.1	16336.C.700.4G.1	CTL05068_7C_1	CTL05068_7C_1		LTE 700	HPA-65R-BUU-H6_716MHz_07DT	14.8	270	7	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					827.9421		17	
	PORT 7	16336.C.1900.4G.1	16336.C.1900.4G.1	CTL05068_9C_1	CTL05068_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_06DT	17.18	270	6	BOTTOM	Andrew 1-5/8 (850)	115.029443	NO					3258.367		17	

Diagram - Sector	A	Diagram File Name - CT5068_A_B_C_LTE2C_BrnzStand_Rev2.vsd					
Atoll Site Name -	CTV5068	Location Name -	RIDGEFIELD CENTER 5068	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

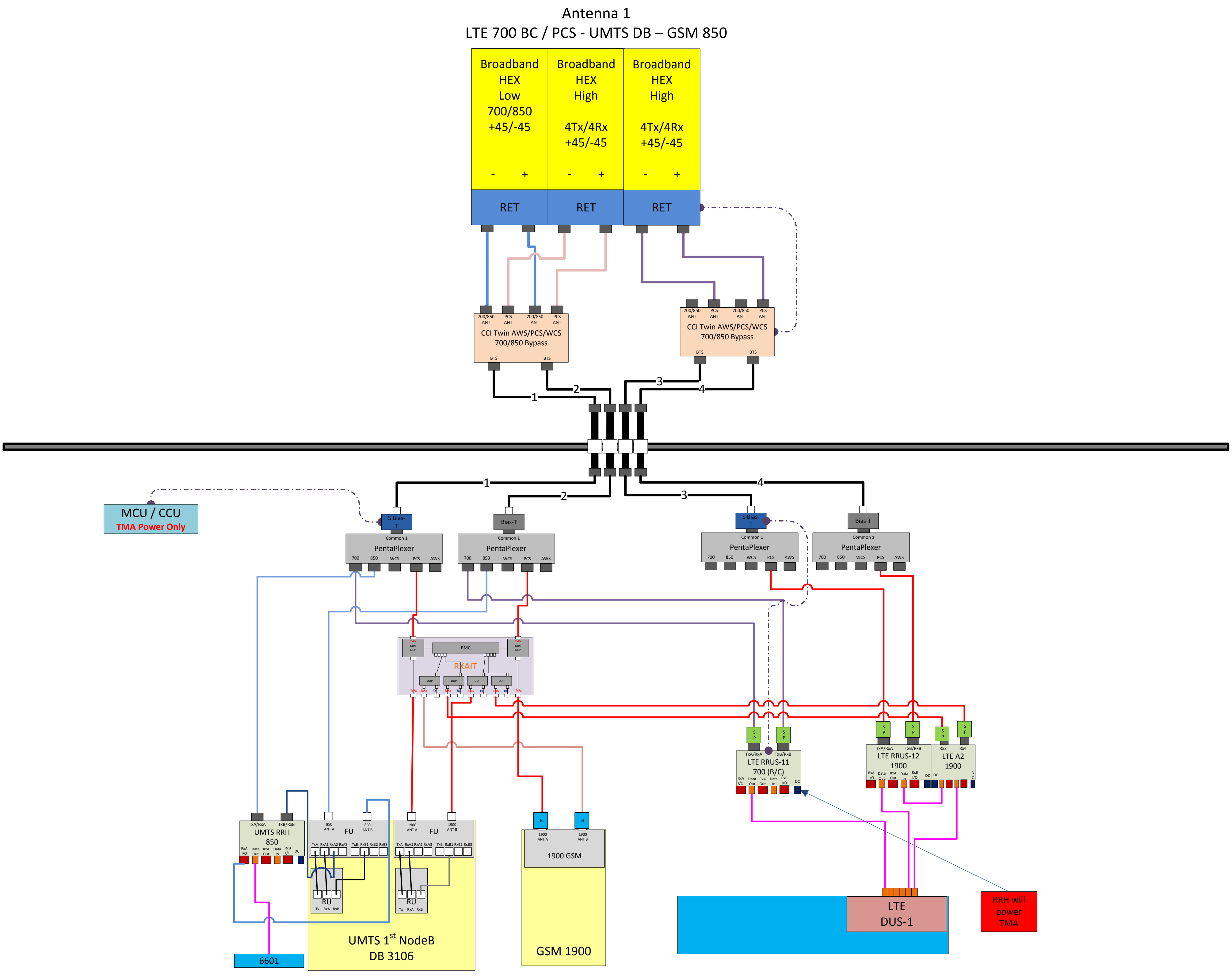


Diagram - Sector	B	Diagram File Name - CT5068_A_B_C_LTE2C_BrnzStand_Rev2.vsd					
Atoll Site Name -	CTV5068	Location Name -	RIDGEFIELD CENTER 5068	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

Antenna 1
LTE 700 BC / PCS - UMTS DB – GSM 850

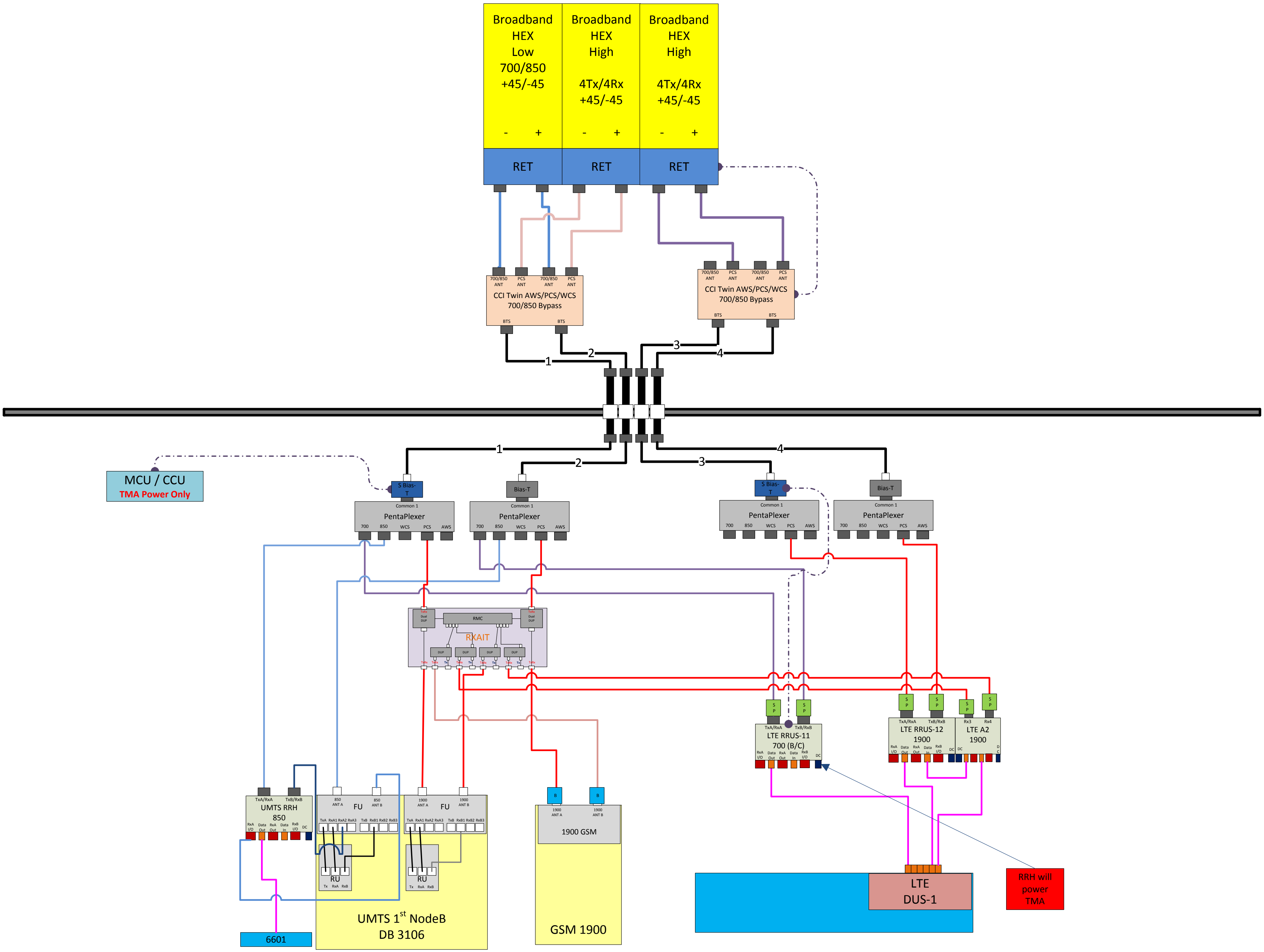
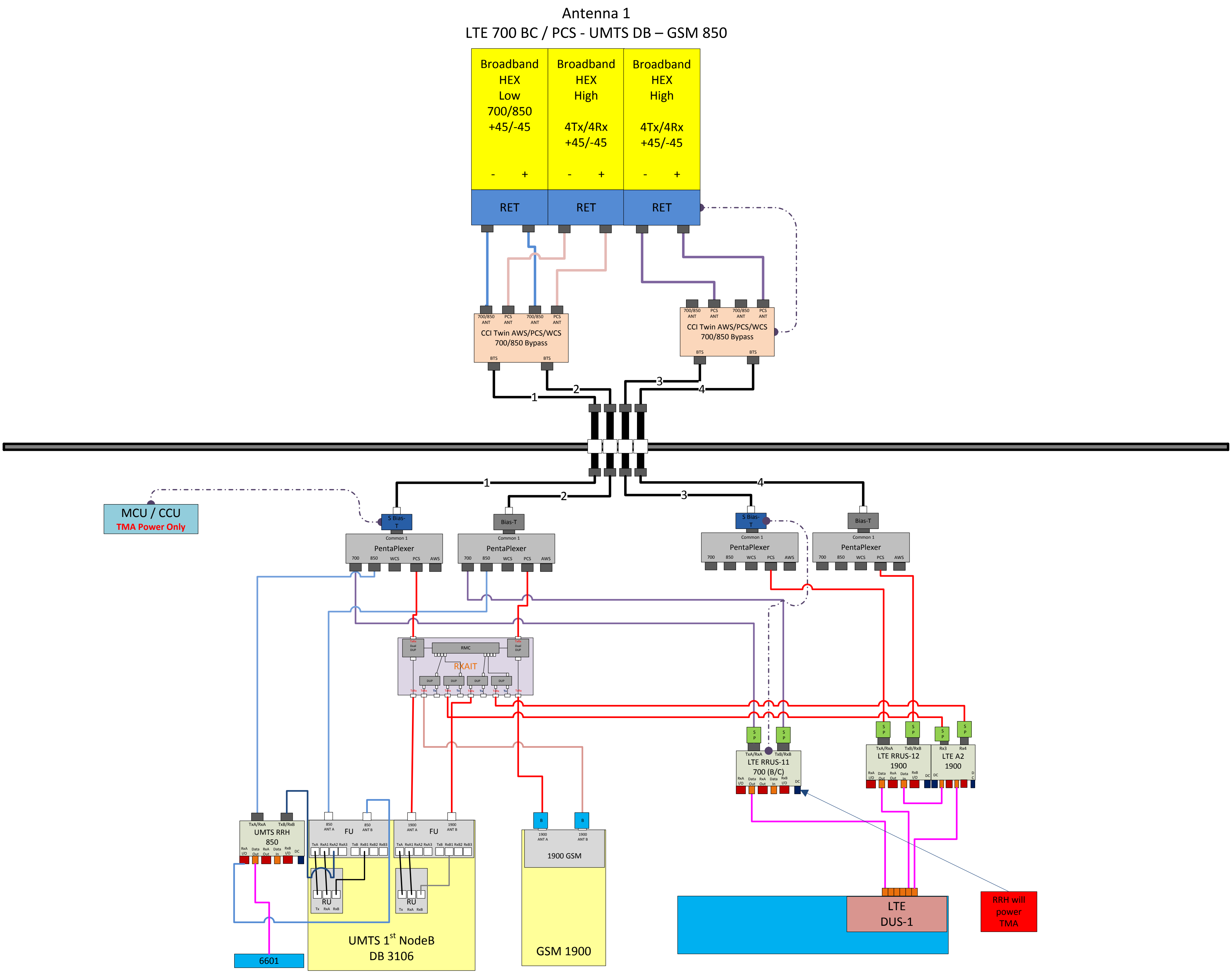


Diagram - Sector	C	Diagram File Name - CT5068_A_B_C_LTE2C_BrnzStand_Rev2.vsd					
Atoll Site Name -	CTV5068	Location Name -	RIDGEFIELD CENTER 5068	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

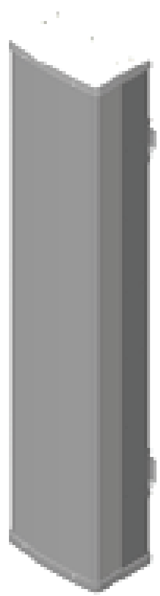


NOTES			
Date Time (Central)	Version	ATTUID	Note
3/22/2016 9:15:15 AM	1.00	dr701e	Updated RFDS with PACE number
6/9/2016 10:54:15 AM	1.00	mm093q	Updated Revision from preliminary to Final, COP - Added missing jumper lines from A2 to Rxait. No changes were made which could effect the scope of site.

WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
03/23/2016	Preliminary / In Progress	mm093q	Preliminary / Submitted for Approval	AB014M	Promote	LTE 2C Preliminary RFDS
04/14/2016	Preliminary / Submitted for Approval	AB014M	Preliminary / Approved	BG144B	Promote	
06/09/2016	Preliminary / Approved	BG144B	Final / RF Approval	MM093Q	Promote	Needs Final
06/09/2016	Final / RF Approval	MM093Q	Final / Approved	BG144B	Promote	LTE FINAL RFDS
06/10/2016	Final / Approved	BG144B	As Built / In Progress	BG144B	Promote	

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6



Hexport Multi-Band Antenna Array

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.

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

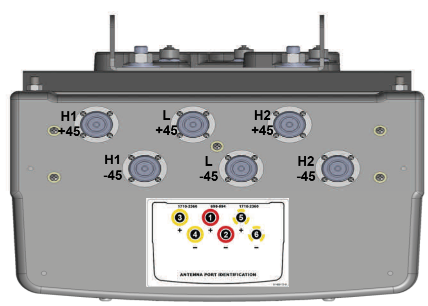
HPA-65R Multi-Band Antenna

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

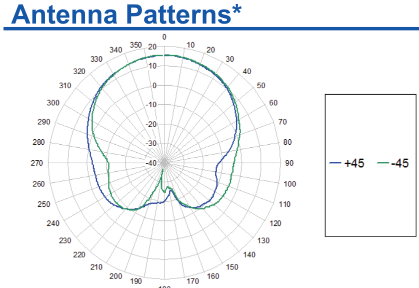
Dimensions (LxWxD)	72.0 x 14.8 x 9.0 inches (1828 x 376 x 229 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph (161 kph)
Side Wind Load	165 lbs (735 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.7 ft^2 (0.90 m^2)
Weight (without Mounting)	51 lbs (23 kg)
RET System Weight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



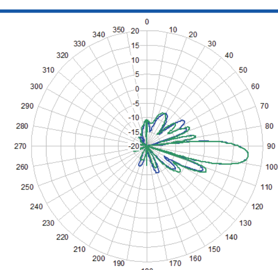
Bottom View

Rear View

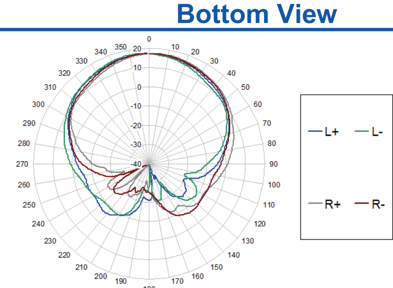
Antenna Patterns*



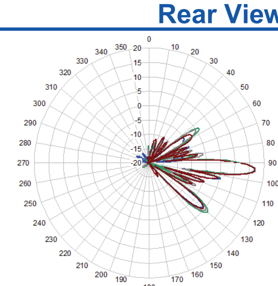
894 MHz Azimuth



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.

www.cciproducts.com

USA HQ: 89 Leuning Street, South Hackensack, NJ 07606 Telephone: 201-342-3338,
Canada: 411 Legget Drive, Suite 104, Ottawa, ON, Canada K2K 3C9 Telephone: 613-591-6696

Twin Triple Band "Active PCS with 700 and 850 Band Pass-thru" Dual Duplexed TMA

Tel: 201-342-3338 Fax: 201-342-3339 www.cciproducts.com

General Information

CCI's Twin Triple Band (700 Band, Cellular and PCS) TMA contains two triple band TMA's in a single housing. The PCS TMA is full band and fully duplexed, while the 700 Band and Cellular RF is bypassed and combined (Diplexed) with the PCS RF signal. High linearity improves the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports EDGE/GSM, UMTS and LTE BTS equipment. It provides a convenient package for sites upgraded to triple or quad antenna configurations. The twin TMA package reduces tower loading, leasing, and installation costs. Unit count on the tower is cut in half. An excellent match for two branch receive diversity applications using triple polarization antennas. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Model
DTMABP7819VG12A

Contents:

Features:

- Small, lightweight, twin unit
- Triple Band Dual Duplexed (PCS with 700 Band & Cellular Bypass)
- Optional AISG 2.0 compatible unit
- AISG TMA detects BTS port that DC voltage and AISG sampling is applied to, and automatically switches to utilize that port
- AISG TMA operates at constant power
- AISG TMA may be powered by a standard PDU
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system consists of a twin outdoor triple band tower mount unit which combine separate PCS, 700 Band & Cellular antennas onto a single BTS port. The PCS path of the tower mount unit is dual duplexed to separate the low-power uplink signals from the high-power downlink signals at the antenna port, amplifies the low-level uplink signals using an ultra-low noise amplifier (LNA), and recombines the two paths at the BTS port. The 700 Band & Cellular path is ultra low loss and passive. Both paths are diplexed at the BTS port. The tower mount units consist of eight band-pass filters, two redundant low-noise amplifiers, bypass failure circuitry, and bias tee's which are all housed in an IP65 moisture proof enclosure, with IP68 Immersion proof connectors suited to long-life masthead mounting. The unit provides protection against lightning strikes via a multi-stage surge protection circuit. DC power and control is provided via the feeder cable from the BTS or a Power Distribution Unit (PDU). Optional AISG 2.0 DC power and control is provided via the feeder cable from the BTS using the AISG 2.0 and 3GPP standard. The optional AISG TMA detects which BTS port has DC Voltage/AISG Sampling applied and automatically switches to utilize that port. Additionally the AISG TMA operates at constant power when powered by an AISG 2.0 Compatible Site Control Unit, but may be powered by a "Standard Power distribution Unit. A separate AISG connector is also provided to allow direct AISG connection or "Daisy Chaining" to multiple AISG products at the top of the tower.

An optional indoor site control unit (SCU) is available to power up to up to 32 AISG modules per sector and to provide the all the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains triple redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

Twin Triple Band "Active AWS with 700 and 850 Band Pass-thru" TMA Typical Specifications

Description	Typical Specifications
Electrical Specifications	
700 Band & Cellular Frequency Range	698 to 894 MHz
PCS Receive Frequency Range	1850 – 1910 MHz
PCS Transmit Frequency Range	1930 - 1990 MHz
PCS Amplifier Gain	6 to 12 dB Adjustable in 0.25 dB steps via AISG
PCS Gain Variation	±1.0 dB
PCS System Noise Figure	1.4 dB (@ +25°C),1.6 dB (@ +65°C), At 1910 MHz: 1.7 dB (@ +25°C), 1.9 dB (@ +65°C)
PCS Input Third Order Intercept Point	+12 dBm Min @ Max. Gain
Input/Output Return Loss	18 dB Min. all ports, 15 dB Min. Bypass Mode
Insertion Loss	
700 Band & Cellular Passband	< 0.2 dB, 0.1 dB typical
PCS Transmit Passband	0.4 dB Typical
PCS Transmit Passband Ripple	±0.2 dB
PCS Bypass Mode, Rx Passband	1.6 dB (@ +25°C),1.8 dB (@ +65°C), At 1910 MHz: 2.3 dB (@ +25°C), 2.5 dB (@ +65°C)
PCS Bypass Mode, Rx Passband Ripple	±1 dB
Filter Characteristics	
700 Band & Cellular Path Rejection	70 dB @ 1850 - 1990 MHz
PCS Path Rejection	80 dB @ 698 - 894 MHz
Continuous Average Power	200 Watts max
Peak Envelope Power	2 kW max
Intermodulation Performance	
IMD at ANT port in Rx Band	-112 dBm Min. (2 x +43 dBm tones)
Operating Voltage	+10V to +30V DC provided via coax or AISG
Power Consumption	≤ 2.1 Watts
Mechanical Specifications	
Connectors	DIN 7-16 Female (Long Neck) x 6, AISG x 1
Dimensions (Body Only)	10.63" (H) x 11.02" (W) x 3.78" (D); (270 (H) x 280 (W) x 96 (D) mm)
Dimensions (with Bracket)	14.25" (H) x 11.46" (W) x 4.17" (D); (362 (H) x 291 (W) x 106 (D) mm)
Weight (w/o Bracket)	19.18 Lbs. (8.7 Kg)
Mounting	Pole/Wall Mounting Bracket
Environmental Specifications	
Operating Temperature	-40° C to +65°C
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5
Enclosure	IP65 (Unit Body), IP68 (Connector)
MTBF	>500,000 hours

All specifications are subject to change. The latest specifications are available at www.cciproducts.com

EBI Consulting

environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT5068

Ridgefield Center
95 Halpin Lane
Ridgefield, CT 06877

September 26, 2016

EBI Project Number: 6216004303

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general public allowable limit:	**3.98 %**

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

EBI Consulting
environmental | engineering | due diligence

September 26, 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: **CT5068 – Ridgefield Center**

EBI Consulting was directed to analyze the proposed AT&T facility located at **95 Halpin Lane, Ridgefield, 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 **95 Halpin Lane, Ridgefield, 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 **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 **115 feet** above ground level (AGL) for **Sector A**, **115 feet** above ground level (AGL) for **Sector B** and **115 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:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	12.65 / 14.75 / 11.95 dBd	Gain:	12.65 / 14.75 / 11.95 dBd	Gain:	12.65 / 14.75 / 11.95 dBd
Height (AGL):	**115 feet**	Height (AGL):	**115 feet**	Height (AGL):	**115 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS) / 700 MHz	Frequency Bands	850 MHz / 1900 MHz (PCS) / 700 MHz	Frequency Bands	850 MHz / 1900 MHz (PCS) / 700 MHz
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	420 Watts	Total TX Power(W):	420 Watts	Total TX Power(W):	420 Watts
ERP (W):	10,149.48	ERP (W):	10,149.48	ERP (W):	10,149.48
Antenna A1 MPE%	**3.98 %**	Antenna B1 MPE%	**3.98 %**	Antenna C1 MPE%	**3.98 %**

Site Composite MPE%

Carrier	**MPE%**
AT&T – Max per sector	**3.98 %**
No Additional Carriers On Site	NA
Site Total MPE %:	**3.98 %**

AT&T Sector A Total:	3.98 %
AT&T Sector B Total:	3.98 %
AT&T Sector C Total:	3.98 %
Site Total:	3.98 %

AT&T _ Frequency Band / Technology Per Sector	**# Channels**	**Watts ERP (Per Channel)**	**Height (feet)**	**Total Power Density ($\mu W/cm^2$)**	**Frequency (MHz)**	**Allowable MPE ($\mu W/cm^2$)**	**Calculated % MPE**
AT&T 850 MHz UMTS	2	552.23	115	3.34	850 MHz	567	0.59%
AT&T 1900 MHz (PCS) UMTS	2	895.61	115	5.42	1900 MHz (PCS)	1000	0.54%
AT&T 1900 MHz (PCS) GSM	2	895.61	115	5.42	1900 MHz (PCS)	1000	0.54%
AT&T 700 MHz LTE	2	940.05	115	5.69	700 MHz	467	1.22%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	115	10.84	1900 MHz (PCS)	1000	1.08%
						Total:	3.98%

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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:	3.98 %
Sector B:	3.98 %
Sector C:	3.98 %
AT&T Maximum Total (per sector):	3.98 %
Site Total:	3.98 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.98 %** 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.