QC Development
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Storrs, CT 06268
860-670-9068
QCDevelopment9068@gmail.com

September 9, 2016

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T)
Bartholomew Road, Middletown, CT 06457 (AT&T # CT5436)
N 41-31-14.79
W 72-36-29.80

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 93-foot level of the existing 95-foot Utility Structure at Bartholomew Road, Middletown, CT. The tower is owned by Eversource. The property is also owned by Eversource (CONN LIGHT & POWER CO). AT&T now intends to replace three (3) of its existing KMW antennas with three (3) new CCI antennas. These antennas would be installed at the 93-foot level of the structure. AT&T also intends to install six (6) new Kaelus TMAs for a total of twelve (12) TMAs.

This facility was approved by the Connecticut Siting Council, Petition No. 606 on June 19, 2003. This approval included no condition(s) that could feasibly be violated by this modification. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2).

In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Daniel Drew, Mayor of the City of Middletown, as well as the property and structure owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

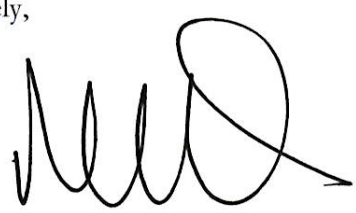
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

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

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: The Honorable Daniel Drew - as elected official (via e-mail)
Eversource - as structure and property owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.70%
AT&T GSM	2	565	93	0.0537	880	0.5867	0.92%
AT&T GSM	2	875	93	0.0831	1900	1.0000	0.83%
AT&T UMTS	1	283	93	0.0134	880	0.5867	0.23%
AT&T UMTS	4	525	93	0.0998	1900	1.0000	1.00%
AT&T LTE	1	1313	93	0.0624	734	0.4893	1.27%
Site Total							6.95%

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

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

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.70%
AT&T GSM	1	256	93	0.0122	1900	1.0000	0.12%
AT&T UMTS	2	271	93	0.0258	880	0.5867	0.44%
AT&T UMTS	2	630	93	0.0599	1900	1.0000	0.60%
AT&T LTE	1	828	93	0.0393	734	0.4893	0.80%
AT&T LTE	1	3258	93	0.1548	1900	1.0000	1.55%
Site Total							6.21%

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

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

Note: Proposed Loading may also include corrections to certain Existing Loading values

WIRELESS COMMUNICATIONS FACILITY
CT5436 - LTE 2C
MIDDLETOWN SOUTH
EVERSOURCE UTILITY STRUCT. NO. 14027
BARTHOLOMEW ROAD
MIDDLETOWN, CT 06457

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

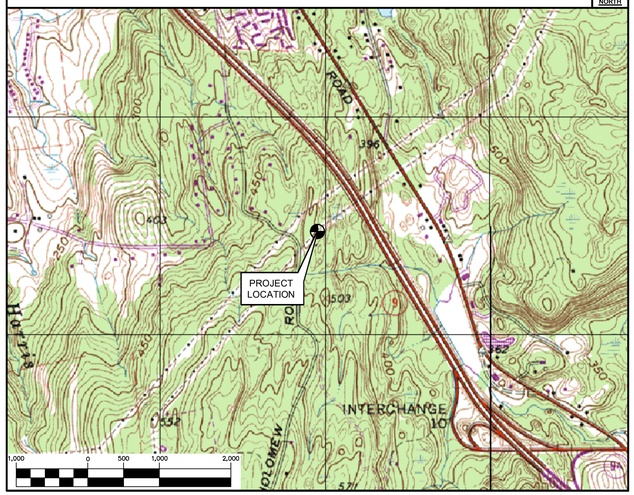
TO: BARTHOLOMEW ROAD
MIDDLETOWN, CONNECTICUT

1.	TAKE RAMP LEFT FOR I–91 SOUTH	1.4 mi
2.	AT EXIT 22S, TAKE RAMP LEFT FOR CT–9 SOUTH TOWARD OLD SAYBROOK / MIDDLETOWN	5.5 mi
3.	KEEP STRAIGHT ONTO CT–9 SOUTH / CT–17 SOUTH	0.8 mi
4.	KEEP STRAIGHT ONTO CT–9 SOUTH	2.2 mi
5.	AT EXIT 11, TAKE RAMP RIGHT FOR CT–155 TOWARD DURHAM	0.3 mi
6.	TURN RIGHT ONTO CT–155 / RANDOLPH RD	0.3 mi
7.	TURN RIGHT ONTO SAYBROOK RD, AND THEN IMMEDIATELY BEAR RIGHT ONTO BARTHOLOMEW RD	1.2 mi
8.	ARRIVE AT 1154 BARTHOLOMEW RD, MIDDLETOWN, CT 06457	

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING POSITION 3 LTE ANTENNA FOR PROPOSED HEXPORT ANTENNA, (1) PER SECTOR.
   B. INSTALL (3) NEW RRUS–12+A2 WITHIN EXISTING EQUIPMENT COMPOUND
   C. REMOVE AND REPLACE (3) EXISTING TMA'S IN POSITION 3, FOR (6) TWIN TMA'S, (2) PER SECTOR MOUNTED BEHIND ANTENNA.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5436
AT&T SITE NAME:	MIDDLETOWN SOUTH
SITE ADDRESS:	EVERSOURCE UTILITY STRUCT. NO. 14027 BARTHOLOMEW ROAD MIDDLETOWN, CT 06457
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°–31'–14.90"N LONGITUDE: 72°–36'–29.45"W GROUND ELEVATION: ±500' AMSL COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	1
N–1	NOTES AND SPECIFICATIONS	0
C–1	PLANS, ELEVATION AND DETAILS	1
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
1	08/08/16	CAG	LVP	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION
0	07/07/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT · LICENSED PROFESSIONAL ENGINEER · 27317

at&t

SAI communications

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

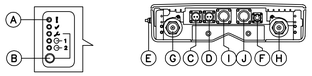
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MIDDLETOWN SOUTH
CT5436 - LTE 2C
BARTHOLOMEW ROAD
MIDDLETOWN, CT 06457

DATE: 06/28/16
SCALE: AS NOTED
JOB NO. 16034.03

TITLE SHEET

T–1

Sheet No. 1 of 7



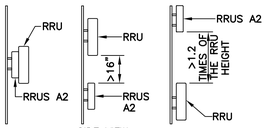
SIDE PANEL

BOTTOM VIEW

CONNECTION INTERFACE

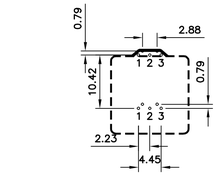
POSITION (ID)	DESCRIPTION	MARKING
A	OPTICAL INDICATORS	I, ↙, ↗, O-1, O-2
B	MAINTENANCE	↗
C	-48V DC POWER SUPPLY	POW IN
D	-48V DC POWER SUPPLY TO RRU	POW OUT
E	GROUNDING	⏚
F	RET	RET
G	ANTENNA B	▼ - B
H	ANTENNA A	▼ - A
I	OPTICAL CABLE 1	O-1
J	OPTICAL CABLE 2	O-2

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.



SIDE VIEW

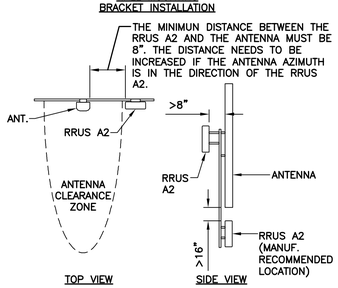
RRUS A2 MANUFACTURER INSTALLATION REQUIREMENTS



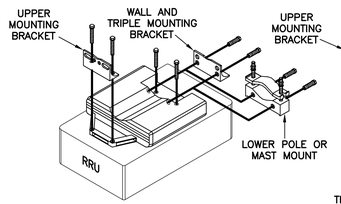
THE NUMBER OF BOLT HOLES DEPENDS ON THE WALL MATERIAL, AS SPECIFIED BY THE SITE ENGINEER. A MINIMUM OF TWO BOLT HOLES ARE RECOMMENDED FOR EACH BRACKET.

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

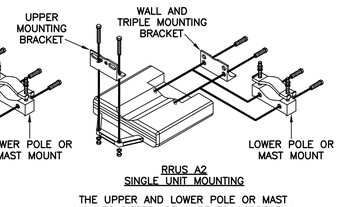
WALL MOUNTING BRACKET INSTALLATION



TOP VIEW SIDE VIEW



RRUS A2 W/ASSOCIATED RRU MOUNTING

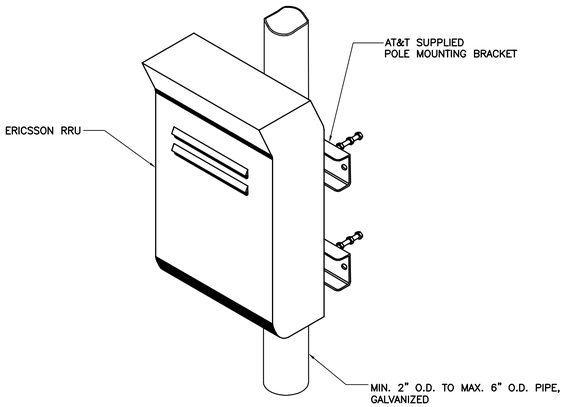


RRUS A2 SINGLE UNIT MOUNTING

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.
2. 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 CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   - WIND LOAD: PER EIA/TIA 222 F-96 & NU CRITERIA (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST).
   - 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 BUILDINGS 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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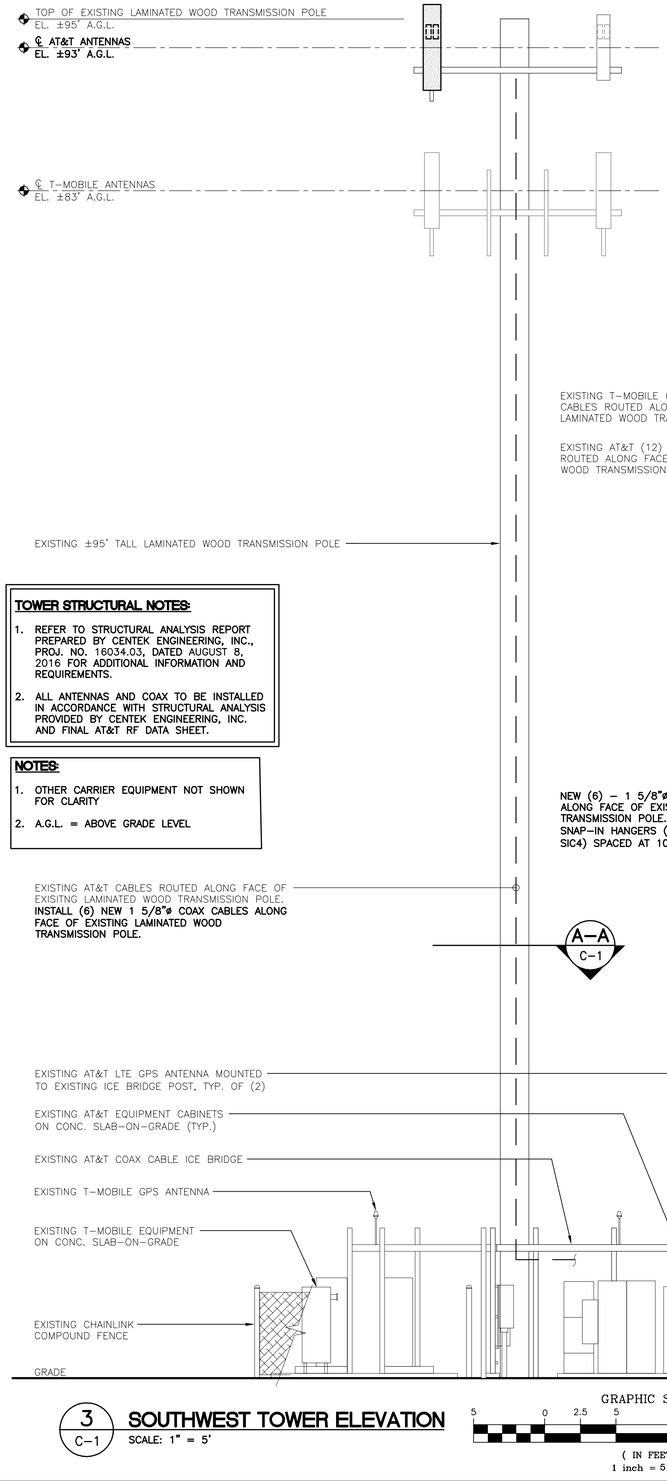
NOTES AND SPECIFICATIONS

N-1

Sheet No. 2 of 7



TOWER STRUCTURAL NOTES:

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 16034.03, DATED AUGUST 8, 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.

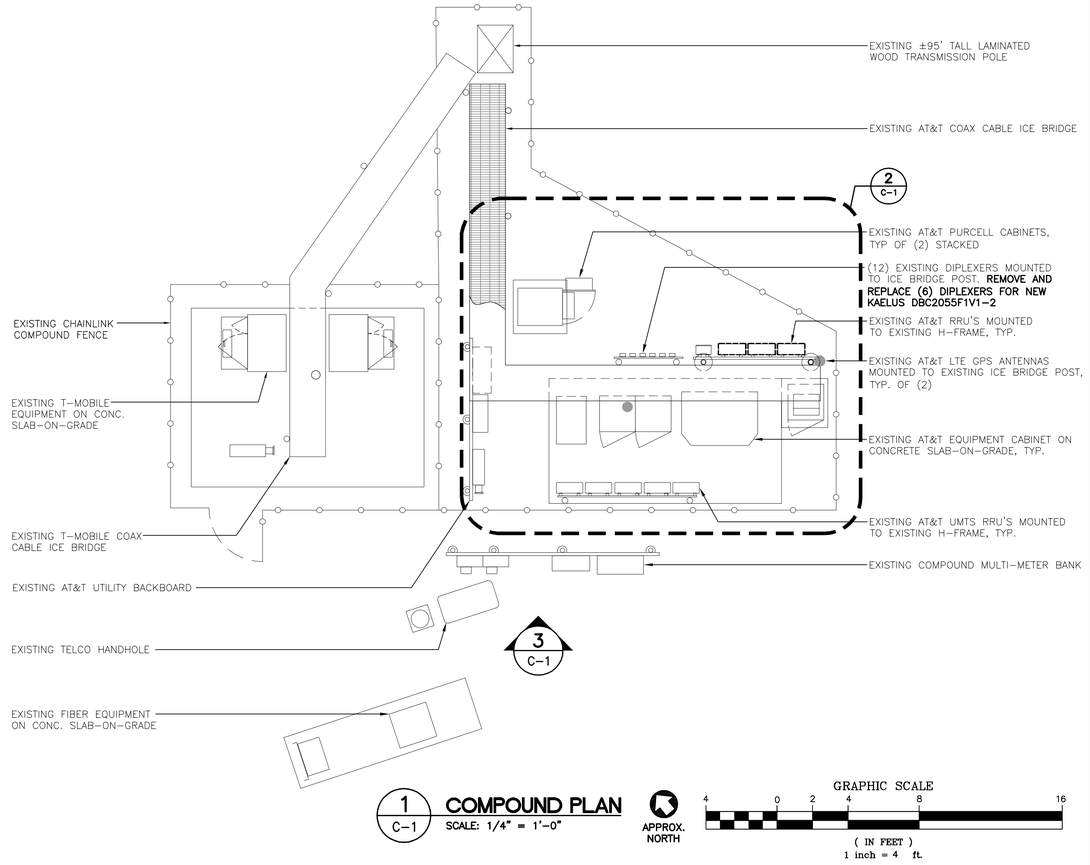
NOTES:

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

DETAIL A–A

3 / C–1 **SOUTHWEST TOWER ELEVATION**
SCALE: 1" = 5'

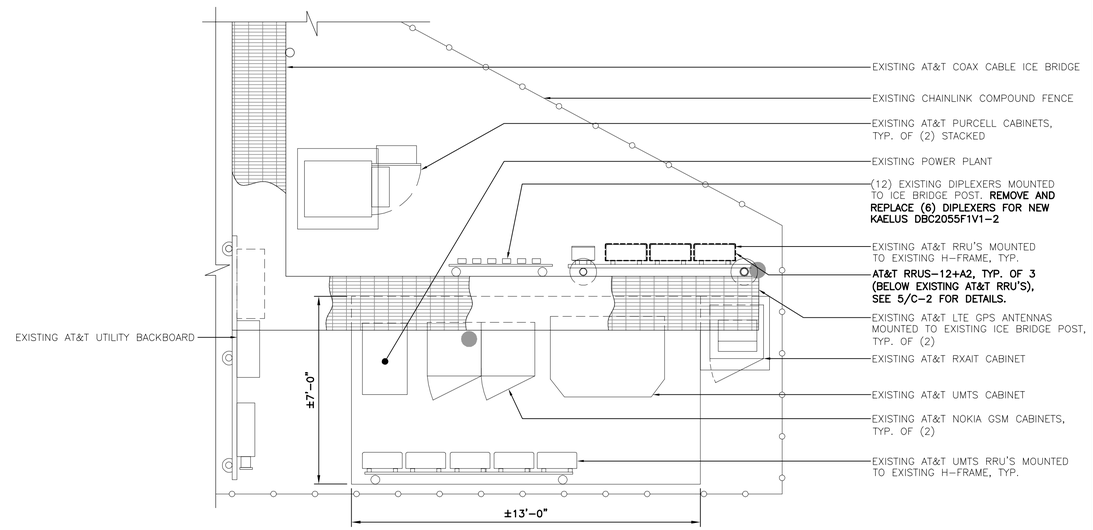
GRAPHIC SCALE
5 0 2.5 5 10 20
(IN FEET)
1 inch = 5 ft.



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

APPROX. NORTH

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



2 / C–1 **EQUIPMENT LAYOUT PLAN**
SCALE: 3/8" = 1'

APPROX. NORTH

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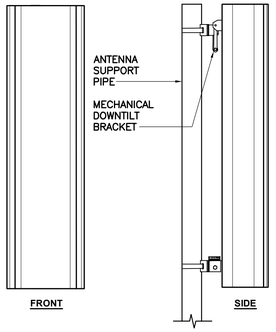
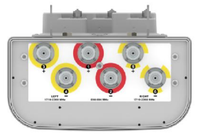
PLANS, ELEVATION AND DETAILS

C–1

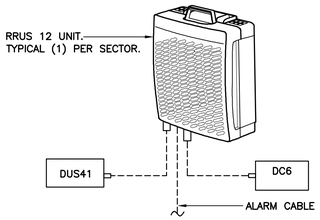
Sheet No. 3 of 7




BOTTOM

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6	72"L x 14.8"W x 9"D	51 LBS.

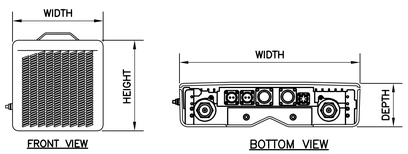
6 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

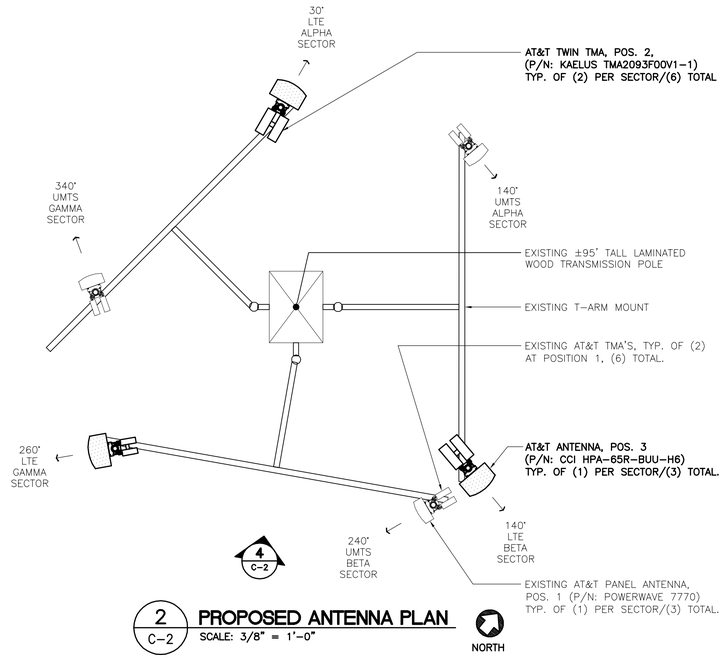
7 C-2 ERICSSON RRUS 12 DETAIL
SCALE: 1" = 1'-0"



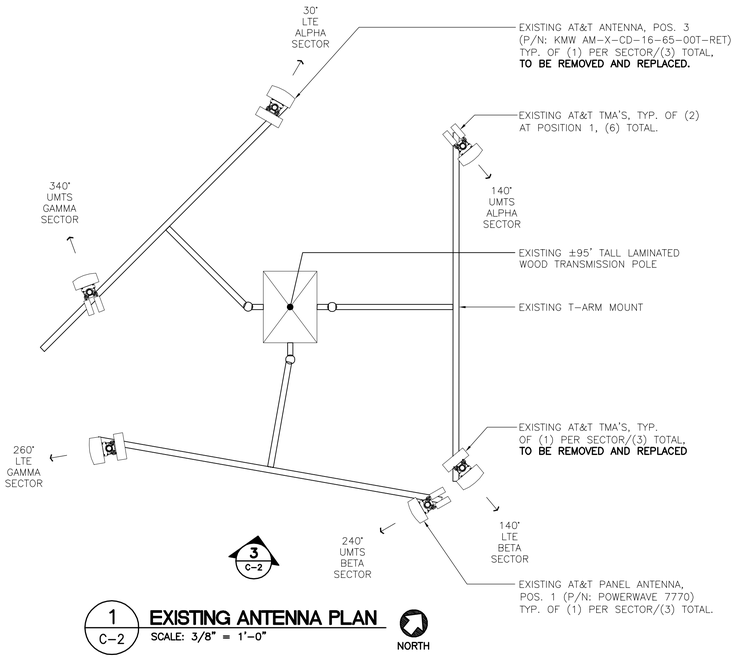
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS A2	16.42"L x 15.19"W x 3.35"D	22.05 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

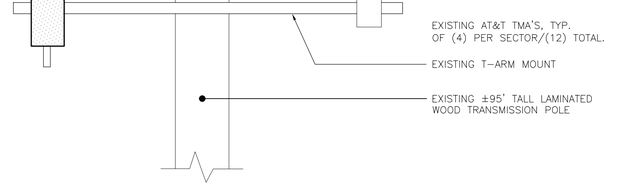
8 C-2 ERICSSON RRUS A2 DETAIL
SCALE: 1" = 1'-0"



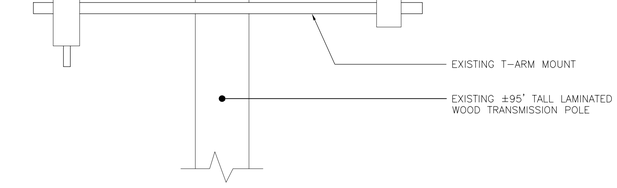
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 3/8" = 1'-0"



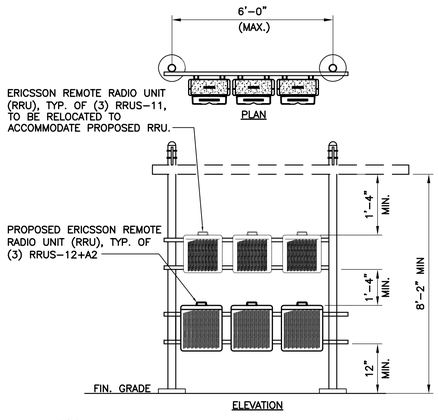
1 C-2 EXISTING ANTENNA PLAN
SCALE: 3/8" = 1'-0"



4 C-2 PROPOSED ANTENNA ELEVATION
SCALE: 3/8" = 1'-0"



3 C-2 EXISTING ANTENNA ELEVATION
SCALE: 3/8" = 1'-0"



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

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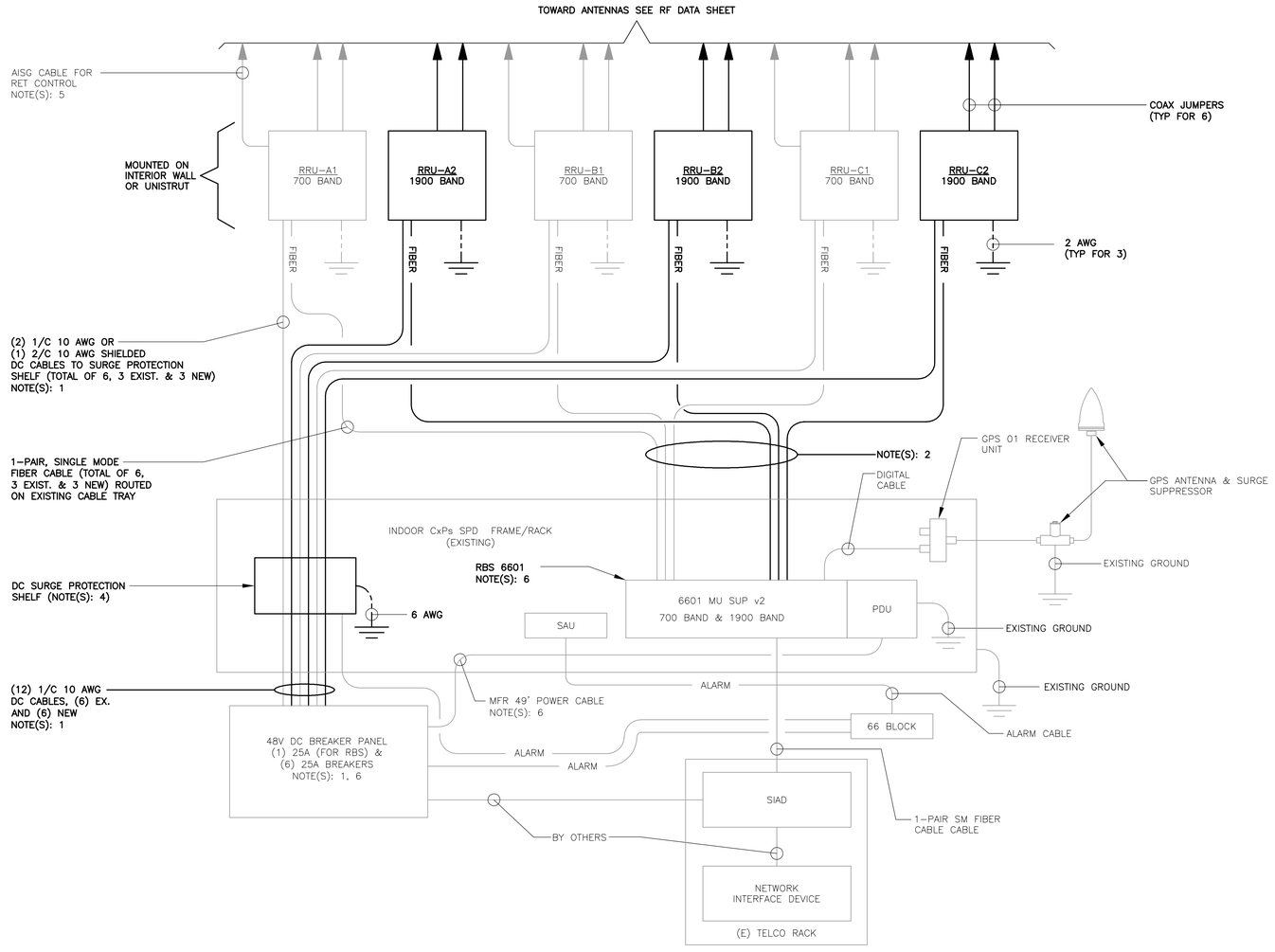
LTE 2C EQUIPMENT DETAILS

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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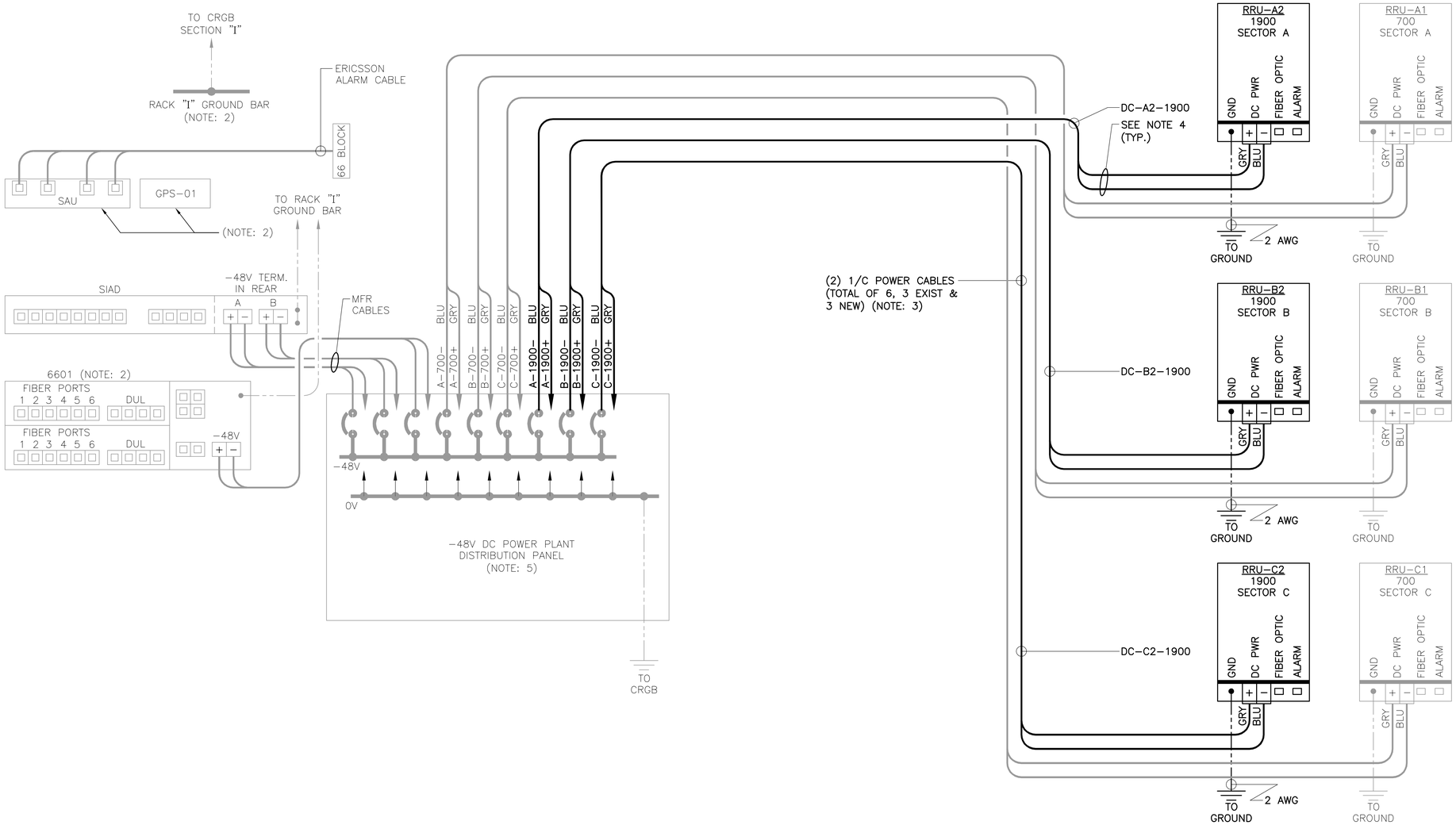
LTE SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 5 of 7



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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/07/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CLIENT REVIEW

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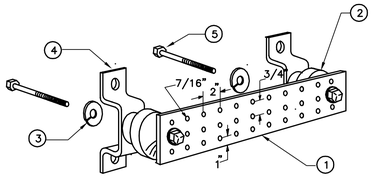
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MIDDLETOWN SOUTH
CT5436 - LTE 2C
BARTHOLOMEW ROAD
MIDDLETOWN, CT 06457

DATE: 06/28/16
SCALE: AS NOTED
JOB NO. 16034.03

LTE WIRING DIAGRAM

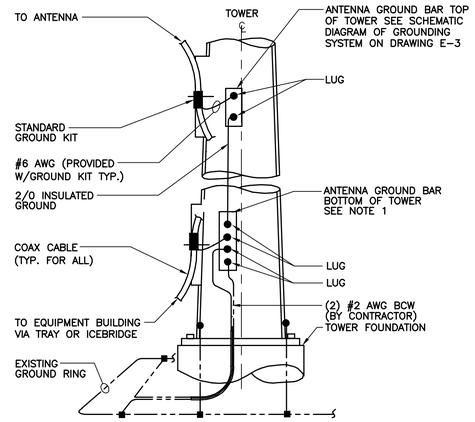
E-2



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.

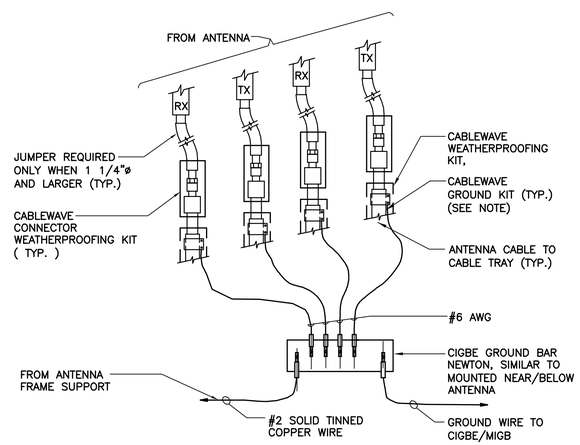
3 E-3 **GROUND BAR DETAIL**
NOT TO SCALE



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.

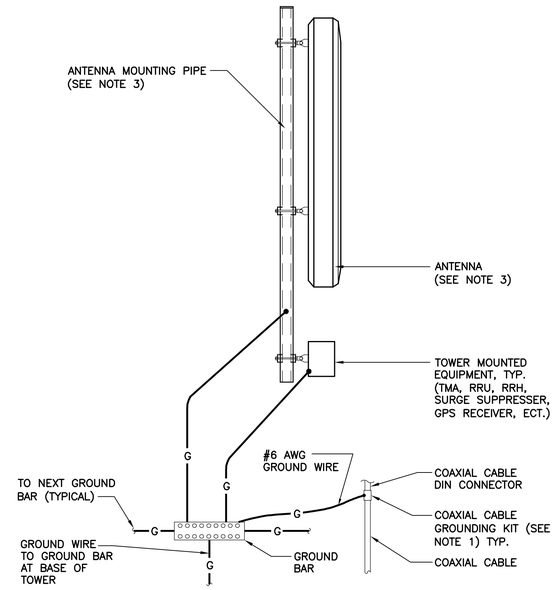
2 E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTE:

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

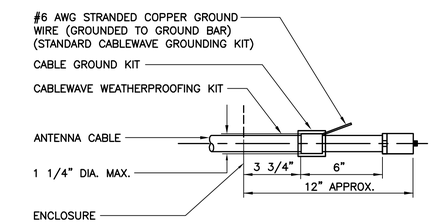
5 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



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 GROUND BAR.

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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ELECTRICAL DETAILS

E-3
Sheet No. 7 of 7

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Structural Analysis of Eversource Pole

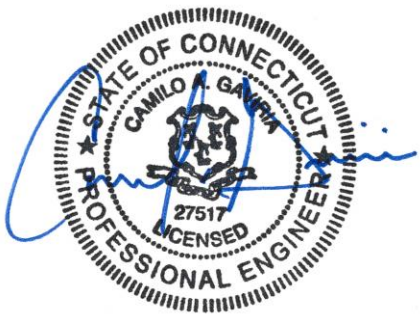
At&t: CT5436

Eversource Structure No. 14027
95' Laminated Wood Transmission Pole

Bartholomew Road,
Middletown, CT

CENTEK Project No. 16034.03

Date: August 8, 2016



Prepared for:
SAI Communications
500 Enterprise Drive
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to analyze the existing 95' Eversource laminated wood pole located at Bartholomew Rd., Middletown, CT for the proposed antenna and equipment upgrade by At&t Mobility.

The proposed loads consist of the following:

- AT&T (Existing):

  Antennas: Three (3) Powerwave 7770 panel antennas, and three (3) KMW AM-X-CD-16-65-00T-RET panel antennas supported on a tri-sector T-arm mount assembly mounted to the Eversource laminated wood pole at a RAD center elevation of 93-ft above tower base.
  Appurtenances: Six (6) Powerwave LGP 21401 tower mounted amplifiers (TMAs), and three (3) CCI DTMABP7819 TMAs mounted behind existing antennas.
  Coax: Twelve (12) 1-5/8" ∅ coax cables mounted to the exterior of the Eversource pole as indicated in Section 4 of this report.

- *AT&T (Existing to be removed):*

  Antennas: Three (3)) KMW AM-X-CD-16-65-00T-RET panel antennas supported on a tri-sector T-arm mount assembly mounted to the Eversource laminated wood pole at a RAD center elevation of 93-ft above tower base.
  Appurtenances: Three (1) CCI DTMABP7819 TMA mounted behind existing antennas.

- **AT&T (Proposed):**
  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas supported on a tri-sector T-arm mount assembly mounted to the Eversource laminated wood pole at a RAD center elevation of 93-ft above tower base.
  Appurtenances: Six (6) Kaelus TMA2093F00V1-1 TMAs mounted behind proposed antenna (position number 2).
  Coax Cables: Six (6) 1-5/8" ∅ coax cables mounted to the outside of the Eversource pole as indicated in Section 4 of this report.

Primary assumptions used in the analysis

- All proposed antenna mounts are modeled as listed above.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All utility pole 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.

D e s i g n B a s i s

Our analysis was performed in accordance with NESC C2-2007 and Northeast Utilities Design Criteria.

The Eversource laminated wood pole structure, considering existing and future conductor and shield wire loading, with the proposed At&t equipment was analyzed as follows:

- LAMINATED WOOD 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
  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
  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)

- 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 ANSI 05.2-1996/2001, “Structural Glued Laminated Timber for Utility Structures”, 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 **99.11%** occurs in the utility pole under the **NESC Extreme** loading condition.

  POLE SECTION:

  The utility pole was found to be within allowable limits.

Section	Stress Ratio (% of capacity)	Result
AP950I180T17P	99.11%	**PASS**

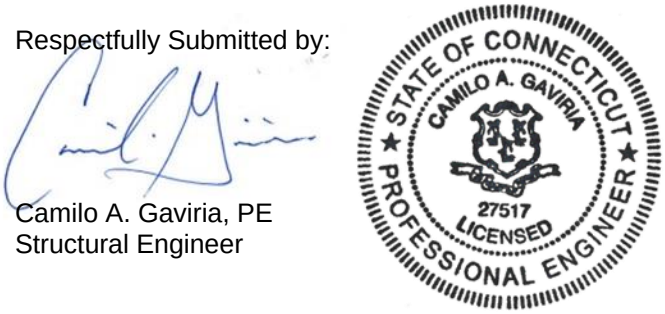
C o n c l u s i o n

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Northeast Utilities, At&t Mobility and existing structural design by Laminated Wood Systems, Inc. (LWS) dated Auguts 28th, 2003. 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:



Camilo A. Gaviria, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in a structurally adequate 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 ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and 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
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- 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
- Automatic tracking of part numbers and costs

Criteria for Design of PCS Facilities On or Extending Above Electric Transmission Poles & Analysis of Laminated Wood Utility Transmission Poles Supporting PCS Masts (1)

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

L A M I N A T E D W O O D U T I L I T Y P O L E

The laminated wood utility pole 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:

- Laminated wood utility pole for its total height above ground level, including the initial and planned future support platforms, antennas, etc.
- Conductors are related devices and hardware.
- Laminated wood utility pole. 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 pole.

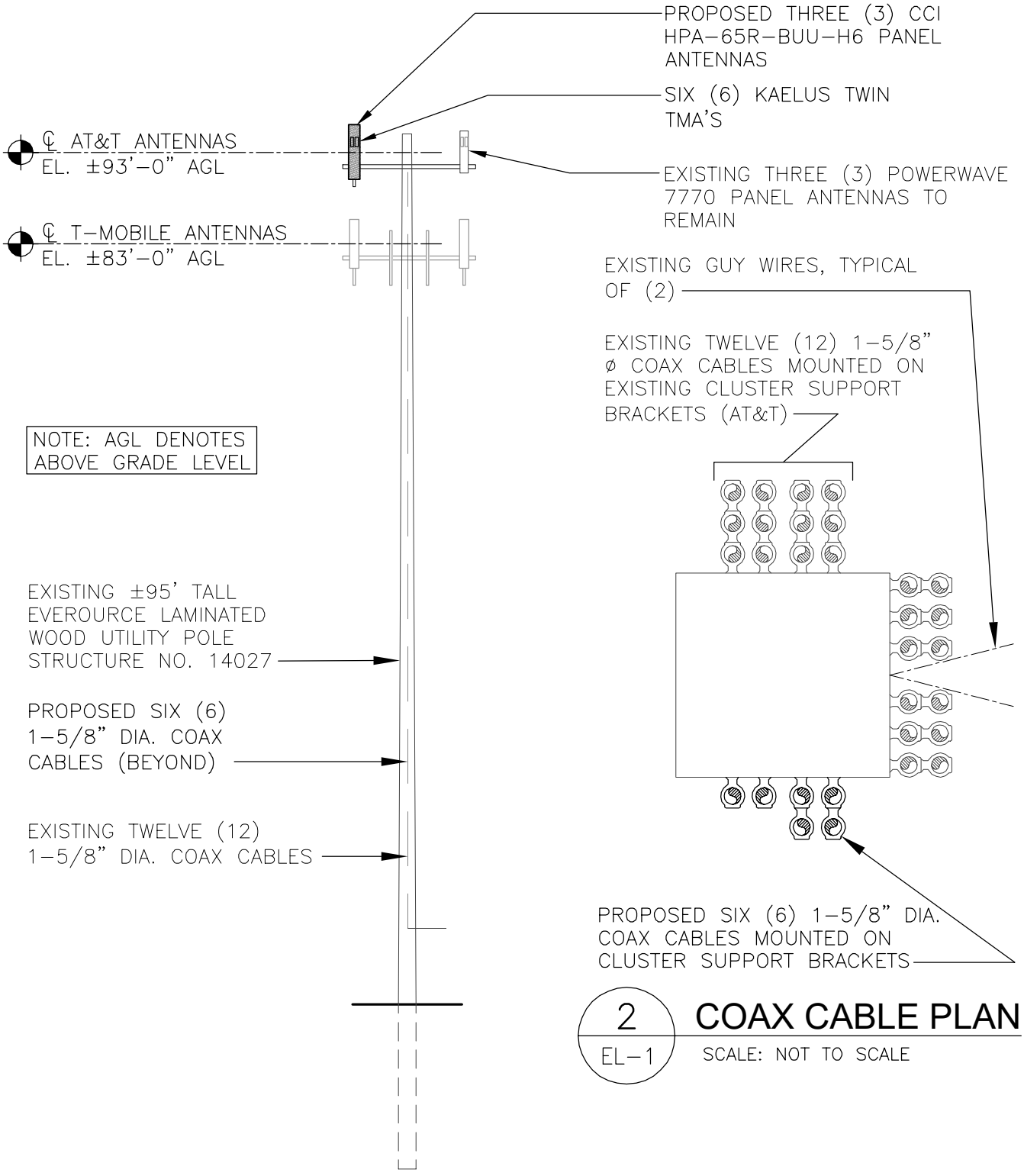
The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with 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 laminated wood utility pole is not sufficient to support the additional loadings of the PCS installation, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A

NU Design Criteria

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



2 / EL-1 COAX CABLE PLAN

SCALE: NOT TO SCALE

1 / EL-1 LAMINATED WOOD POLE ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	8/8/16	ISSUED FOR NU REVIEW

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PROJECT NO:	16034.03
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	8/8/16

at&t

POLE ELEVATION & FEEDLINE PLAN

EL-1

DWG. 1 OF 1

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

Subject: Load Analysis of At&t and T-Mobile Equipment on Eversource Pole #14027

Location: Middletown, CT

Rev. 0: 8/5/16

Prepared by: CAG Checked by: TJL
Job No. 16034.03

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 := 95	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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.252$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.315$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.861$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.875$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 33.9$ 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 =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

NESC Heavy Wind Loading =	**2.5**	(User Input)	Apply in PLS-Pole Analysis
NESC Extreme Wind Loading =	**1.0**	(User Input)	Apply in PLS-Pole Analysis

Overload Factors for Vertical Loads:

NESC Heavy Wind Loading =	**1.5**	(User Input)	Apply in PLS-Pole Analysis
NESC Extreme Wind Loading =	**1.0**	(User Input)	Apply in PLS-Pole Analysis

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

Subject: Load Analysis of At&t and T-Mobile Equipment on Eversource Pole #14027

Location: Middletown, CT

Rev. 0: 8/5/16

Prepared by: CAG Checked by: TJL
Job No. 16034.03

Development of Wind & Ice Load on Antennas: At&t

Antenna Data:

Antenna Model =	Powerwave 7770		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55$	in	(User Input)
Antenna Width =	$W_{ant} := 11$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 35$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wgt_{ant1} := WT_{ant} \cdot N_{ant} = 105$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot lr\right)\left(W_{ant} + 2 \cdot lr\right)\left(T_{ant} + 2 \cdot lr\right) - V_{ant} = 1007$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 33$ lbs

Weight of Ice on All Antennas = $Wgt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 98$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot lr\right) \cdot \left(W_{ant} + 2 \cdot lr\right)}{144} = 4.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 90$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 12.6$ sf

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} = 684$ lbs

Development of Wind & Ice Load on Antennas: At&t

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)

Gravity Load (without ice)

Weight of All Antennas =	$Wgt_{ant2} := WT_{ant} \cdot N_{ant} = 153$	lbs

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 =	$V_{ice} := \left(L_{ant} + 2 \cdot lr\right)\left(W_{ant} + 2 \cdot lr\right)\left(T_{ant} + 2 \cdot lr\right) - V_{ant} = 1944$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 63$	lbs
Weight of Ice on All Antennas =	$Wgt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 189$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot lr\right) \cdot \left(W_{ant} + 2 \cdot lr\right)}{144} = 8$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 24$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 154$	lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 22.2$	sf
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} = 1205$	lbs

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Subject: Load Analysis of At&t and T-Mobile Equipment on Eversource Pole #14027

Location: Middletown, CT

Rev. 0: 8/5/16

Prepared by: CAG Checked by: TJL
Job No. 16034.03

Development of Wind & Ice Load on Antennas: T-Mobile

Antenna Data:

Antenna Model =	Unknown		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56$	in	(User Input)
Antenna Width =	$W_{ant} := 8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 35$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wgt_{ant3} := WT_{ant} \cdot N_{ant} = 105$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1254$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 695$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 23$ lbs

Weight of Ice on All Antennas = $Wgt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 68$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 3.6$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 10.7$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 68$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.1$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 9.3$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} = 507$ lbs

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Subject: Load Analysis of At&t and T-Mobile Equipment on Eversource Pole #14027

Location: Middletown, CT

Rev. 0: 8/5/16

Prepared by: CAG Checked by: TJL
Job No. 16034.03

Development of Wind & Ice Load on Antennas: T-Mobile

Antenna Data:

Antenna Model =	Unknown		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96.4$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 50$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wgt_{ant4} := WT_{ant} \cdot N_{ant} = 150$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8145$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot lr\right)\left(W_{ant} + 2 \cdot lr\right)\left(T_{ant} + 2 \cdot lr\right) - V_{ant} = 2032$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 66$ lbs

Weight of Ice on All Antennas = $Wgt_{ice.ant4} := W_{ICEant} \cdot N_{ant} = 198$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot lr\right) \cdot \left(W_{ant} + 2 \cdot lr\right)}{144} = 8.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 26.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant4} := p \cdot Cd_F \cdot A_{ICEant} = 168$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 8$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 23.9$ sf

Total Antenna Wind Force = $F_{ant4} := qz \cdot Cd_F \cdot A_{ant} = 1297$ lbs

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model =	Triple T-ARM		(User Input)
Platform Shape =	Flat		(User Input)
Platform Area =	$CdA_{mnt} := 9$	sq ft	(User Input)
Platform Area w/ Ice =	$CdA_{ICEmnt} := 11$	sq ft	(User Input)
Platform Weight =	$WT_{mnt} := 1115$	lbs	(User Input)
Platform Weight w/ Ice =	$WT_{ICEmnt} := 1210$	lbs	(User Input)

Gravity Load (without ice)

Weight of Platform = $Wgt_{mnt} := WT_{mnt} = 1115$ lbs

Gravity Load (ice only)

Weight of Ice on Platform = $Wgt_{ice.mnt} := WT_{ICEmnt} - WT_{mnt} = 95$ lbs

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt} := p \cdot CdA_{ICEmnt} = 44$ lbs

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt} := qz \cdot CdA_{mnt} \cdot m = 382$ lbs

Total Weights:

@ 93-ft AGL

NESC Heavy Wind Vertical =	$\left(Wgt_{ant1} + Wgt_{ice.ant1} + Wgt_{ant2} + Wgt_{ice.ant2} + Wgt_{mnt} + Wgt_{ice.mnt}\right)\cdot 1.5 = 2632$	lbs
NESC Heavy Wind Trasnsverse =	$\left(Fi_{ant1} + Fi_{ant2} + Fi_{mnt}\right)\cdot 2.5 = 718$	lbs
NESC Extreme Wind Vertical =	$\left(Wgt_{ant1} + Wgt_{ant2} + Wgt_{mnt}\right) = 1373$	lbs
NESC Extreme Wind Trasnsverse =	$\left(F_{ant1} + F_{ant2} + F_{mnt}\right) = 2271$	lbs

@ 83-ft AGL

NESC Heavy Wind Vertical =	$\left(Wgt_{ant3} + Wgt_{ice.ant3} + Wgt_{ant4} + Wgt_{ice.ant4} + Wgt_{mnt} + Wgt_{ice.mnt}\right)\cdot 1.5 = 2595$	lbs
NESC Heavy Wind Trasnsverse =	$\left(Fi_{ant3} + Fi_{ant4} + Fi_{mnt}\right)\cdot 2.5 = 700$	lbs
NESC Extreme Wind Vertical =	$\left(Wgt_{ant3} + Wgt_{ant4} + Wgt_{mnt}\right) = 1370$	lbs
NESC Extreme Wind Trasnsverse =	$\left(F_{ant3} + F_{ant4} + F_{mnt}\right) = 2186$	lbs

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Subject:	Coax Cable on Eversource Pole #14027
Location:	Middletown, CT
Rev. 0: 8/5/16	Prepared by: CAG Checked by: TJL Job No. 16034.03

Coax Cable on Eversource Pole: Transverse

Distance Between Coax Cable Attach Points =

Coaxial Cable Span $Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix} \cdot ft$ *(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 =	$N_{coax} := 18$	*(User Input)*
Number of Projected Coax Cables =	$NP_{coax} := 5$	*(User Input)*
Extreme Wind Pressure =	$qz := 31 \cdot psf$	*(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 Transverse Load =	$OF_{HWT} := 2.5$	*(User Input)*
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	*(User Input)*
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	*(User Input)*

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Subject:	Coax Cable on Eversource Pole #14027
Location:	Middletown, CT
Rev. 0: 8/5/16	Prepared by: CAG Checked by: TJL Job No. 16034.03

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 9.9 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 10.9 \cdot in$

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 27.269 \cdot plf$

Heavy Wind Vertical Load =

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

Heavy Wind Transverse Load =

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

$$Heavy\_WInd_{Vert} = \begin{pmatrix} 690 \\ 690 \\ 690 \\ 690 \\ 690 \\ 690 \\ 690 \\ 690 \\ 690 \end{pmatrix} lb \qquad Heavy\_Wind_{Trans} = \begin{pmatrix} 145 \\ 145 \\ 145 \\ 145 \\ 145 \\ 145 \\ 145 \\ 145 \\ 145 \end{pmatrix} lb$$

Extreme Wind Vertical Load =

$$\overrightarrow{Extreme\_Wind_{Vert} := \left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$$

Extreme Wind Transverse Load =

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

$$Extreme\_Wind_{Vert} = \begin{pmatrix} 187 \\ 187 \\ 187 \\ 187 \\ 187 \\ 187 \\ 187 \\ 187 \\ 187 \end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix} 409 \\ 409 \\ 409 \\ 409 \\ 409 \\ 409 \\ 409 \\ 409 \\ 409 \end{pmatrix} lb$$

Coax Cable on Eversource Pole: Longitudinal

Distance Between Coax Cable Attach Points =

Coaxial Cable Span $Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix} \cdot ft$ *(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 =	$NP_{coax} := 2$	*(User Input)*
Extreme Wind Pressure =	$qz := 31 \cdot psf$	*(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 Transverse Load =	$OF_{HWT} := 2.5$	*(User Input)*
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	*(User Input)*
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	*(User Input)*

Wind Area without Ice =

$$A := \left(NP_{coax} \cdot D_{coax}\right) = 3.96 \cdot in$$

Wind Area with Ice =

$$A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.96 \cdot in$$

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 Wind Vertical Load =

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

Heavy Wind Transverse Load =

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

$$Heavy\_WInd_{Vert} = \begin{pmatrix} 460 \\ 460 \\ 460 \\ 460 \\ 460 \\ 460 \\ 460 \\ 460 \\ 460 \end{pmatrix} lb \qquad Heavy\_Wind_{Trans} = \begin{pmatrix} 66 \\ 66 \\ 66 \\ 66 \\ 66 \\ 66 \\ 66 \\ 66 \\ 66 \end{pmatrix} lb$$

Extreme Wind Vertical Load =

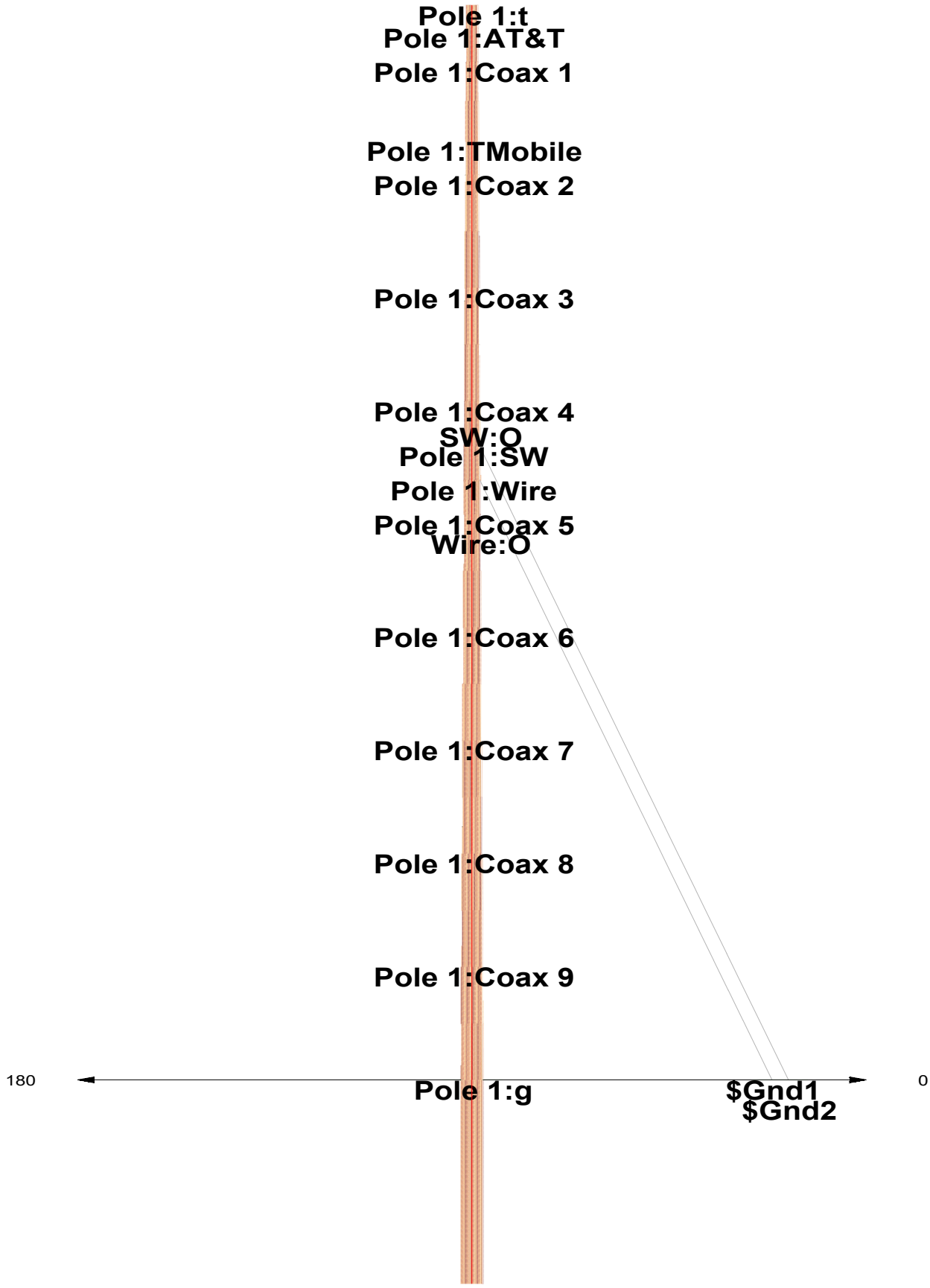
$$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$$

Extreme Wind Transverse Load =

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

$$Extreme\_WInd_{Vert} = \begin{pmatrix} 125 \\ 125 \\ 125 \\ 125 \\ 125 \\ 125 \\ 125 \\ 125 \\ 125 \end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix} 164 \\ 164 \\ 164 \\ 164 \\ 164 \\ 164 \\ 164 \\ 164 \\ 164 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "16034.03 ct5436 middletown south"
PLS-POLE Version 14.21, 11:00:31 AM Monday, August 08, 2016
Undeformed geometry displayed



Project Name : CT5436 Middletown South
Project Notes:
Project File : J:\Jobs\1603400.WI\03_Middletown South\04_Structural\Backup Documentation\PLS Pole - Laminated\16034.03 ct5436 middletown south.pol
Date run : 4:36:44 PM Monday, August 08, 2016
by : PLS-POLE Version 14.21
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Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: j:\jobs\1603400.wi\03_middletown south\04_structural\backup documentation\pls pole - laminated \eversource struct no. 14027.lca

*** Analysis Results:

Maximum element usage is 99.11% for Laminated Wood Pole "Pole 1" in load case "Ext. Wind L"
Maximum insulator usage is 35.11% for Clamp "C2" in load case "NESC Heavy T"

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. Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
Ext. Wind T	Pole 1:g	-0.07	-4.29	-31.90	4.29	44.84	-7.24	45.42	-0.01	0.00
Ext. Wind T	$Gnd1	-0.95	3.53	7.25	3.65	0.00	0.00	0.00	0.00	0.00
Ext. Wind T	$Gnd2	0.99	3.71	7.63	3.84	0.00	0.00	0.00	0.00	0.00
Ext. Wind L	Pole 1:g	-11.94	-2.96	-22.62	12.30	173.74	-767.79	787.20	1.03	0.00
Ext. Wind L	$Gnd1	-1.09	2.86	5.98	3.06	0.00	0.00	0.00	0.00	0.00
Ext. Wind L	$Gnd2	-0.02	0.07	0.12	0.07	0.00	0.00	0.00	0.00	0.00
NESC Heavy T	Pole 1:g	-0.02	-0.89	-44.05	0.89	-8.24	-4.30	9.30	-0.00	0.00
NESC Heavy T	$Gnd1	-0.85	3.16	6.47	3.27	0.00	0.00	0.00	0.00	0.00
NESC Heavy T	$Gnd2	0.85	3.17	6.49	3.28	0.00	0.00	0.00	0.00	0.00
NESC Heavy L	Pole 1:g	-3.90	-1.34	-31.72	4.12	81.61	-260.37	272.86	0.19	0.00
NESC Heavy L	$Gnd1	-0.40	1.27	2.62	1.33	0.00	0.00	0.00	0.00	0.00
NESC Heavy L	$Gnd2	-0.00	0.04	0.07	0.04	0.00	0.00	0.00	0.00	0.00

Summary of Tip Deflections For All Load Cases:

Note: positive 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)

Ext. Wind T	Pole 1:t	0.79	-13.37	-0.18	13.39	0.06	1.76	-0.00
Ext. Wind L	Pole 1:t	76.16	15.33	-3.17	77.75	5.61	-1.02	-0.03
NESC Heavy T	Pole 1:t	0.54	-5.92	-0.05	5.94	0.04	0.67	-0.00
NESC Heavy L	Pole 1:t	26.11	7.45	-0.41	27.15	1.92	-0.50	-0.00

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

Summary of Laminated Wood Pole Usages:

Laminated Wood Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Pole 1	99.11	Ext. Wind L	22	14933.6

Summary of Guy Usages:

Guy Label	Maximum Usage %	Load Case	Weight (lbs)	Unstressed Length (ft)
Wire	43.50	Ext. Wind T	23.1	59.30
SW	45.74	Ext. Wind T	24.4	62.66

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
Ext. Wind T	45.74	SW	Guy
Ext. Wind L	99.11	Pole 1	Laminated Wood
NESC Heavy T	38.96	SW	Guy
NESC Heavy L	42.52	Pole 1	Laminated Wood

Summary of Laminated Wood Pole Usages by Load Case:

Load Case	Maximum Usage %	Laminated Wood Pole Segment Label	Number
Ext. Wind T	22.47	Pole 1	10
Ext. Wind L	99.11	Pole 1	22
NESC Heavy T	9.52	Pole 1	10
NESC Heavy L	42.52	Pole 1	22

Summary of Guy Usages by Load Case:

Load Case	Maximum Usage %	Guy Label
Ext. Wind T	45.74	SW
Ext. Wind L	35.97	Wire
NESC Heavy T	38.96	SW
NESC Heavy L	15.80	Wire

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	21.26	NESC Heavy T	0.0
C2	Clamp	35.11	NESC Heavy T	0.0
C3	Clamp	27.64	Ext. Wind L	0.0
C4	Clamp	27.35	Ext. Wind L	0.0
C5	Clamp	6.92	NESC Heavy T	0.0
C6	Clamp	6.91	NESC Heavy T	0.0
C7	Clamp	6.90	NESC Heavy T	0.0
C8	Clamp	6.90	NESC Heavy T	0.0
C9	Clamp	6.91	NESC Heavy T	0.0
C10	Clamp	6.90	NESC Heavy T	0.0
C11	Clamp	6.90	NESC Heavy T	0.0
C12	Clamp	6.90	NESC Heavy T	0.0
C13	Clamp	6.90	NESC Heavy T	0.0

*** Weight of structure (lbs):
Weight of Guys: 47.6
Weight of Laminated Wood Poles: 14933.6
Total: 14981.2

*** End of Report

```
*****************************************************************************
*                                                                           *
*                                PLS-POLE                                   *
*                    POLE AND FRAME ANALYSIS AND DESIGN                     *
*                Copyright Power Line Systems, Inc. 1999-2016               *
*                                                                           *
*****************************************************************************

Project Name : CT5436 Middletown South
Project Notes:
Project File : J:\Jobs\1603400.WI\03_Middletown South\04_Structural\Backup Documentation\PLS Pole - Laminated\16034.03
ct5436 middletown south.pol
Date run     : 2:18:04 PM Monday, August 08, 2016
by           : PLS-POLE Version 14.21
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
```

Laminated Wood Pole Properties:

Laminated Pole Property Label	Stock Number	Pole Type	Length (ft)	Default Embedded Length (ft)	Taper Stop Dist. From Butt (ft)	Trans. Tip Dim. (in)	Long. Tip Dim. (in)	Trans. Base Dim. (in)	Long. Base Dim. (in)	Default Drag Coef.	Modulus of Elasticity (ksi)	Density (lbs/ft^3)	Trans. MOR (ksi)	Long. MOR (ksi)
AP950I180T17P		SYP (LWS)	113.00	18	18.00	12	22.25	23.38	22.25	1.60	2400	46	7.6	8

Laminated Wood 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)
Pole 1			0	0	0	0	0	AP950I180T17P	13 labels	Fixed	0.00	0

Relative Attachment Labels for Laminated Wood Pole "Pole 1":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
Pole 1:Wire	42.00	0.00
Pole 1:SW	39.00	0.00
Pole 1:AT&T	2.00	0.00
Pole 1:TMobile	12.00	0.00
Pole 1:Coax 1	5.00	0.00
Pole 1:Coax 2	15.00	0.00
Pole 1:Coax 3	25.00	0.00
Pole 1:Coax 4	35.00	0.00
Pole 1:Coax 5	45.00	0.00
Pole 1:Coax 6	55.00	0.00
Pole 1:Coax 7	65.00	0.00
Pole 1:Coax 8	75.00	0.00
Pole 1:Coax 9	85.00	0.00

Detailed Laminated Wood Properties:

Element	Pole	Dist.	Dist.	Trans.	Long.	Area	Trans.	Long.	Trans.	Long.	Trans.	Long.	Trans.

Label	Feature	Above Ground (ft)	From Tip (ft)	Dim. (in)	Dim. (in)	Section (in^2)	Section Modulus (in^3)	Section Modulus (in^3)	Inertia (in^4)	Inertia (in^4)	MOR (ksi)	MOR (ksi)	Moment Capacity (ft-k)	Long. Moment Capacity (ft-k)
Pole 1	Pole 1:t	95.00	0.00	12.00	22.25	267.00	534.00	990.13	3204.00	11015.14	7.600	8.000	338.199	660.082
Pole 1	Pole 1:AT&T	93.00	2.00	12.24	22.25	272.33	555.53	1009.88	3399.67	11234.96	7.600	8.000	351.832	673.255
Pole 1	Pole 1:Coax 1	90.00	5.00	12.60	22.25	280.32	588.61	1039.52	3707.87	11564.69	7.600	8.000	372.787	693.014
Pole 1		86.50	8.50	13.02	22.25	289.65	628.42	1074.10	4090.33	11949.37	7.600	8.000	398.000	716.066
Pole 1	Pole 1:TMobile	83.00	12.00	13.44	22.25	298.97	669.53	1108.68	4498.22	12334.06	7.600	8.000	424.038	739.118
Pole 1	Pole 1:Coax 2	80.00	15.00	13.80	22.25	306.96	705.81	1138.32	4868.70	12663.79	7.600	8.000	447.013	758.878
Pole 1		75.00	20.00	14.39	22.25	320.28	768.40	1187.72	5530.44	13213.34	7.600	8.000	486.651	791.809
Pole 1	Pole 1:Coax 3	70.00	25.00	14.99	22.25	333.60	833.64	1237.11	6249.58	13762.89	7.600	8.000	527.973	824.741
Pole 1		65.00	30.00	15.59	22.25	346.92	901.55	1286.51	7028.51	14312.44	7.600	8.000	570.979	857.673
Pole 1	Pole 1:Coax 4	60.00	35.00	16.19	22.25	360.25	972.11	1335.91	7869.60	14861.99	7.591	8.000	614.938	890.604
Pole 1	Pole 1:SW	56.00	39.00	16.67	22.25	370.90	1030.47	1375.43	8588.85	15301.62	7.569	8.000	649.961	916.950
Pole 1	Pole 1:Wire	53.00	42.00	17.03	22.25	378.89	1075.36	1405.07	9156.13	15631.35	7.553	8.000	676.829	936.709
Pole 1	Pole 1:Coax 5	50.00	45.00	17.39	22.25	386.89	1121.21	1434.70	9747.86	15961.08	7.537	8.000	704.213	956.468
Pole 1		45.00	50.00	17.99	22.25	400.21	1199.74	1484.10	10789.80	16510.63	7.512	8.000	750.995	989.400
Pole 1	Pole 1:Coax 6	40.00	55.00	18.59	22.25	413.53	1280.94	1533.50	11903.46	17060.18	7.487	8.000	799.199	1022.331
Pole 1		35.00	60.00	19.18	22.25	426.85	1364.79	1582.90	13091.23	17609.73	7.463	8.000	848.821	1055.263
Pole 1	Pole 1:Coax 7	30.00	65.00	19.78	22.25	440.17	1451.30	1632.29	14355.50	18159.28	7.440	8.000	899.856	1088.195
Pole 1		25.00	70.00	20.38	22.25	453.49	1540.47	1681.69	15698.65	18708.83	7.418	8.000	952.301	1121.127
Pole 1	Pole 1:Coax 8	20.00	75.00	20.98	22.25	466.81	1632.30	1731.09	17123.07	19258.38	7.397	8.000	1006.151	1154.058

Pole 1		15.00	80.00	21.58	22.25	480.13	1726.79	1780.49	18631.14	19807.93	7.376	8.000	1061.402	1186.990
Pole 1	Pole 1:Coax 9	10.00	85.00	22.18	22.25	493.45	1823.93	1829.89	20225.27	20357.48	7.356	8.000	1118.050	1219.922
Pole 1		5.00	90.00	22.78	22.25	506.77	1923.74	1879.28	21907.82	20907.03	7.336	8.000	1176.091	1252.854
Pole 1	Pole 1:g	0.00	95.00	23.38	22.25	520.09	2026.20	1928.68	23681.20	21456.58	7.317	8.000	1235.522	1285.785

Cable Properties:

Label	Stock Number	Area (in^2)	Modulus of Elasticity (psi)	Diameter (in)	Unit Weight (lbs/ft)	Drag Coef.	Thermal Expansion Coeff. (/deg F)	Ultimate Tension (kips)	Allowable % of Ultimate
7/16 EHS		0.1372	2.9e+007	0.435	0.39	1	6.5e-006	20.8	90

Guy Connectivity:

Guy Label	Attach Label	Property Set	Anchor Type	Anchor X or Offset (ft)	Anchor Y (ft)	Anchor Z (ft)	Anchor Lead Length (ft)	Azimuth (deg)	Slope (deg)	Reference Anchor	Installed Tension At Top (% of Ult.)	Design Tension Capacity (kips)	Ultimate Tension Capacity (kips)
Wire	Pole 1:Wire	7/16 EHS	XYZ	-7.11	26.53	0.00	26.73	-15	63.24		20	18.72	20.8
SW	Pole 1:SW	7/16 EHS	XYZ	7.50	27.98	0.00	28.25	15	63.23		20	18.72	20.8

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
Clamp 1		1e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)

C1	Pole 1:SW	Clamp 1	No Limit
C2	Pole 1:Wire	Clamp 1	No Limit
C3	Pole 1:AT&T	Clamp 1	No Limit
C4	Pole 1:TMobile	Clamp 1	No Limit
C5	Pole 1:Coax 1	Clamp 1	No Limit
C6	Pole 1:Coax 2	Clamp 1	No Limit
C7	Pole 1:Coax 3	Clamp 1	No Limit
C8	Pole 1:Coax 4	Clamp 1	No Limit
C9	Pole 1:Coax 5	Clamp 1	No Limit
C10	Pole 1:Coax 6	Clamp 1	No Limit
C11	Pole 1:Coax 7	Clamp 1	No Limit
C12	Pole 1:Coax 8	Clamp 1	No Limit
C13	Pole 1:Coax 9	Clamp 1	No Limit

*** Loads Data

Loads from file: j:\jobs\1603400.wi\03_middletown south\04_structural\backup documentation\pls pole - laminated \eversource struct no. 14027.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) 95.00 (ft)
  Structure height 95.00 (ft)
  Structure height above ground 95.00 (ft)

Vector Load Cases:

Load Case Description	Dead Load	Wind Area	Wind Thick.	SF for Steel Poles	SF for Wood Poles	SF for Conc. Poles	SF for Conc. Ult.	SF for Pole Deflection First Check	SF for Pole Deflection Zero Crack	SF for Guys and Towers	SF For Non Tens.	Point Loads Braces Cables	Wind/Ice Model	Trans. Wind Factor	Longit. Ice Factor	Ice Density	Ice Temperature	Tubular Arms	Tubular Poles	Tubular Found.	Point Loads Insuls.	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)
Ext. Wind T	1.0000	1.0000	1.00000	0.7500	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000	1.0000	13 loads	NESC 2012	31	0	0.000	0.000	0.0	No Limit	0						
Ext. Wind L	1.0000	1.0000	1.00000	0.7500	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000	1.0000	13 loads	NESC 2012	0	31	0.000	0.000	0.0	No Limit	0						
NESC Heavy T	1.5000	2.5000	1.00000	0.6500	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000	1.0000	13 loads	Wind on All	4	0	0.000	0.000	0.0	No Limit	0						
NESC Heavy L	1.5000	2.5000	1.00000	0.6500	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000	1.0000	13 loads	Wind on All	0	4	0.000	0.000	0.0	No Limit	0						

Point Loads for Load Case "Ext. Wind T":

Joint Label	Vertical Load	Transverse Load	Longitudinal Load	Comment

	(lbs)	(lbs)	(lbs)
Pole 1:SW	194	-1185	0
Pole 1:Wire	458	-2508	0
Pole 1:AT&T	1373	-2271	0
Pole 1:TMobile	1370	-2186	0
Pole 1:Coax 1	187	-409	0
Pole 1:Coax 2	187	-409	0
Pole 1:Coax 3	187	-409	0
Pole 1:Coax 4	187	-409	0
Pole 1:Coax 5	187	-409	0
Pole 1:Coax 6	187	-409	0
Pole 1:Coax 7	187	-409	0
Pole 1:Coax 8	187	-409	0
Pole 1:Coax 9	187	-409	0

Detailed Pole Loading Data for Load Case "Ext. Wind T":

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 Pole Ice Joint Wind Load (lbs)	Top Pole Wind Load (lbs)	Bottom Tran. Joint Wind Load (lbs)	Bottom Long. Joint Wind Load (lbs)	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 1	Pole 1:t	Pole 1:AT&T	185.02	0.00	95.00	93.00	94.00	12.120	1.01e+006	1.600	31.18	0.00	172.29
Pole 1	Pole 1:AT&T	Pole 1:Coax 1	277.52	0.00	93.00	90.00	91.50	12.419	1.04e+006	1.600	31.18	0.00	264.81
Pole 1	Pole 1:Coax 1		323.78	0.00	90.00	86.50	88.25	12.808	1.07e+006	1.600	31.18	0.00	318.63
Pole 1		Pole 1:TMobile	323.78	0.00	86.50	83.00	84.75	13.227	1.11e+006	1.600	31.18	0.00	329.05
Pole 1	Pole 1:TMobile	Pole 1:Coax 2	277.52	0.00	83.00	80.00	81.50	13.616	1.14e+006	1.600	31.18	0.00	290.34
Pole 1	Pole 1:Coax 2		462.54	0.00	80.00	75.00	77.50	14.095	1.18e+006	1.600	31.18	0.00	500.92
Pole 1		Pole 1:Coax 3	462.54	0.00	75.00	70.00	72.50	14.694	1.23e+006	1.600	31.18	0.00	522.20
Pole 1	Pole 1:Coax 3		462.54	0.00	70.00	65.00	67.50	15.293	1.28e+006	1.600	31.18	0.00	543.48

Pole 1		Pole 1:Coax 4	65.00	60.00	62.50	15.891	1.33e+006	1.600	31.18	0.00	564.75
462.54	0.00	0.00 462.54 1.27									
Pole 1	Pole 1:Coax 4	Pole 1:SW	60.00	56.00	58.00	16.430	1.37e+006	1.600	31.18	0.00	467.12
370.03	0.00	0.00 370.03 1.05									
Pole 1	Pole 1:SW	Pole 1:Wire	56.00	53.00	54.50	16.849	1.41e+006	1.600	31.18	0.00	359.28
277.52	0.00	0.00 277.52 0.81									
Pole 1	Pole 1:Wire	Pole 1:Coax 5	53.00	50.00	51.50	17.209	1.44e+006	1.600	31.18	0.00	366.94
277.52	0.00	0.00 277.52 0.83									
Pole 1	Pole 1:Coax 5		50.00	45.00	47.50	17.688	1.48e+006	1.600	31.18	0.00	628.58
462.54	0.00	0.00 462.54 1.42									
Pole 1		Pole 1:Coax 6	45.00	40.00	42.50	18.286	1.53e+006	1.600	31.18	0.00	649.86
462.54	0.00	0.00 462.54 1.46									
Pole 1	Pole 1:Coax 6		40.00	35.00	37.50	18.885	1.58e+006	1.600	31.18	0.00	671.13
462.54	0.00	0.00 462.54 1.51									
Pole 1		Pole 1:Coax 7	35.00	30.00	32.50	19.484	1.63e+006	1.600	31.18	0.00	692.41
462.54	0.00	0.00 462.54 1.56									
Pole 1	Pole 1:Coax 7		30.00	25.00	27.50	20.082	1.68e+006	1.600	31.18	0.00	713.69
462.54	0.00	0.00 462.54 1.61									
Pole 1		Pole 1:Coax 8	25.00	20.00	22.50	20.681	1.73e+006	1.600	31.18	0.00	734.96
462.54	0.00	0.00 462.54 1.66									
Pole 1	Pole 1:Coax 8		20.00	15.00	17.50	21.280	1.78e+006	1.600	31.18	0.00	756.24
462.54	0.00	0.00 462.54 1.70									
Pole 1		Pole 1:Coax 9	15.00	10.00	12.50	21.878	1.83e+006	1.600	31.18	0.00	777.51
462.54	0.00	0.00 462.54 1.75									
Pole 1	Pole 1:Coax 9		10.00	5.00	7.50	22.250	1.86e+006	1.600	31.18	0.00	798.79
462.54	0.00	0.00 462.54 1.80									
Pole 1		Pole 1:g	5.00	0.00	2.50	22.250	1.86e+006	1.600	31.18	0.00	820.07
462.54	0.00	0.00 462.54 1.85									

Point Loads for Load Case "Ext. Wind L":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Pole 1:SW	194	0	0	
Pole 1:Wire	458	0	0	
Pole 1:AT&T	1373	0	2271	
Pole 1:TMobile	1370	0	2186	
Pole 1:Coax 1	125	0	164	
Pole 1:Coax 2	125	0	164	
Pole 1:Coax 3	125	0	164	
Pole 1:Coax 4	125	0	164	
Pole 1:Coax 5	125	0	164	
Pole 1:Coax 6	125	0	164	
Pole 1:Coax 7	125	0	164	
Pole 1:Coax 8	125	0	164	
Pole 1:Coax 9	125	0	164	

Detailed Pole Loading Data for Load Case "Ext. Wind L":

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 Pole Ice Wind Load (lbs)	Pole Ice Wind Load (lbs)	Pole Tran. Wind Load (lbs)	Pole Long. Wind Load (lbs)
Pole 1	Pole 1:t		Pole 1:AT&T	95.00	93.00	94.00	12.120	1.01e+006	1.600	31.18	0.00	172.29	100.78	0.00	0.00	0.71 100.78
Pole 1	Pole 1:AT&T		Pole 1:Coax 1	93.00	90.00	91.50	12.419	1.04e+006	1.600	31.18	0.00	264.81	154.91	0.00	0.00	1.07 154.90
Pole 1	Pole 1:Coax 1			90.00	86.50	88.25	12.808	1.07e+006	1.600	31.18	0.00	318.63	186.39	0.00	0.00	1.25 186.38
Pole 1			Pole 1:TMobile	86.50	83.00	84.75	13.227	1.11e+006	1.600	31.18	0.00	329.05	192.48	0.00	0.00	1.25 192.48
Pole 1	Pole 1:TMobile		Pole 1:Coax 2	83.00	80.00	81.50	13.616	1.14e+006	1.600	31.18	0.00	290.34	169.84	0.00	0.00	1.07 169.84
Pole 1	Pole 1:Coax 2			80.00	75.00	77.50	14.095	1.18e+006	1.600	31.18	0.00	500.92	293.02	0.00	0.00	1.78 293.02
Pole 1			Pole 1:Coax 3	75.00	70.00	72.50	14.694	1.23e+006	1.600	31.18	0.00	522.20	305.47	0.00	0.00	1.78 305.46
Pole 1	Pole 1:Coax 3			70.00	65.00	67.50	15.293	1.28e+006	1.600	31.18	0.00	543.48	317.91	0.00	0.00	1.78 317.91
Pole 1			Pole 1:Coax 4	65.00	60.00	62.50	15.891	1.33e+006	1.600	31.18	0.00	564.75	330.36	0.00	0.00	1.78 330.35
Pole 1	Pole 1:Coax 4		Pole 1:SW	60.00	56.00	58.00	16.430	1.37e+006	1.600	31.18	0.00	467.12	273.25	0.00	0.00	1.43 273.24
Pole 1	Pole 1:SW		Pole 1:Wire	56.00	53.00	54.50	16.849	1.41e+006	1.600	31.18	0.00	359.28	210.16	0.00	0.00	1.07 210.16
Pole 1	Pole 1:Wire		Pole 1:Coax 5	53.00	50.00	51.50	17.209	1.44e+006	1.600	31.18	0.00	366.94	214.64	0.00	0.00	1.07 214.64
Pole 1	Pole 1:Coax 5			50.00	45.00	47.50	17.688	1.48e+006	1.600	31.18	0.00	628.58	367.70	0.00	0.00	1.78 367.69
Pole 1			Pole 1:Coax 6	45.00	40.00	42.50	18.286	1.53e+006	1.600	31.18	0.00	649.86	380.14	0.00	0.00	1.78 380.14
Pole 1	Pole 1:Coax 6			40.00	35.00	37.50	18.885	1.58e+006	1.600	31.18	0.00	671.13	392.59	0.00	0.00	1.78 392.58
Pole 1			Pole 1:Coax 7	35.00	30.00	32.50	19.484	1.63e+006	1.600	31.18	0.00	692.41				

405.03	0.00	0.00	1.78	405.03									
Pole 1	Pole 1:Coax 7				30.00	25.00	27.50	20.082	1.68e+006	1.600	31.18	0.00	713.69
417.48	0.00	0.00	1.78	417.47									
Pole 1		Pole 1:Coax 8			25.00	20.00	22.50	20.681	1.73e+006	1.600	31.18	0.00	734.96
429.92	0.00	0.00	1.78	429.92									
Pole 1	Pole 1:Coax 8				20.00	15.00	17.50	21.280	1.78e+006	1.600	31.18	0.00	756.24
442.37	0.00	0.00	1.78	442.36									
Pole 1		Pole 1:Coax 9			15.00	10.00	12.50	21.878	1.83e+006	1.600	31.18	0.00	777.51
454.81	0.00	0.00	1.78	454.81									
Pole 1	Pole 1:Coax 9				10.00	5.00	7.50	22.250	1.86e+006	1.600	31.18	0.00	798.79
467.26	0.00	0.00	1.78	467.26									
Pole 1		Pole 1:g			5.00	0.00	2.50	22.250	1.86e+006	1.600	31.18	0.00	820.07
479.70	0.00	0.00	1.78	479.70									

Point Loads for Load Case "NESC Heavy T":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Pole 1:SW	590	-2146	0	
Pole 1:Wire	1115	-3418	0	
Pole 1:AT&T	2632	-718	0	
Pole 1:TMobile	2595	-700	0	
Pole 1:Coax 1	690	-145	0	
Pole 1:Coax 2	690	-145	0	
Pole 1:Coax 3	690	-145	0	
Pole 1:Coax 4	690	-145	0	
Pole 1:Coax 5	690	-145	0	
Pole 1:Coax 6	690	-145	0	
Pole 1:Coax 7	690	-145	0	
Pole 1:Coax 8	690	-145	0	
Pole 1:Coax 9	690	-145	0	

Detailed Pole Loading Data for Load Case "NESC Heavy T":

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 Pole Z (ft)	Bottom Pole Z (ft)	Section Ice Thickness (in)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Wind Load (lbs)	Vertical Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)

Pole 1	Pole 1:t	Pole 1:AT&T	95.00	93.00	94.00	12.120	5.74e+005	1.600	10.00	0.00	258.43	59.33	0.00	0.00	59.33	0.34
Pole 1	Pole 1:AT&T	Pole 1:Coax 1	93.00	90.00	91.50	12.419	5.88e+005	1.600	10.00	0.00	397.22	89.00	0.00	0.00	89.00	0.52
Pole 1	Pole 1:Coax 1		90.00	86.50	88.25	12.808	6.06e+005	1.600	10.00	0.00	477.94	103.84	0.00	0.00	103.83	0.62
Pole 1		Pole 1:TMobile	86.50	83.00	84.75	13.227	6.26e+005	1.600	10.00	0.00	493.58	103.84	0.00	0.00	103.83	0.64
Pole 1	Pole 1:TMobile	Pole 1:Coax 2	83.00	80.00	81.50	13.616	6.45e+005	1.600	10.00	0.00	435.51	89.00	0.00	0.00	89.00	0.57
Pole 1	Pole 1:Coax 2		80.00	75.00	77.50	14.095	6.67e+005	1.600	10.00	0.00	751.39	148.34	0.00	0.00	148.33	0.98
Pole 1		Pole 1:Coax 3	75.00	70.00	72.50	14.694	6.96e+005	1.600	10.00	0.00	783.30	148.34	0.00	0.00	148.33	1.02
Pole 1	Pole 1:Coax 3		70.00	65.00	67.50	15.293	7.24e+005	1.600	10.00	0.00	815.22	148.34	0.00	0.00	148.33	1.06
Pole 1		Pole 1:Coax 4	65.00	60.00	62.50	15.891	7.52e+005	1.600	10.00	0.00	847.13	148.34	0.00	0.00	148.33	1.11
Pole 1	Pole 1:Coax 4	Pole 1:SW	60.00	56.00	58.00	16.430	7.78e+005	1.600	10.00	0.00	700.68	118.67	0.00	0.00	118.67	0.92
Pole 1	Pole 1:SW	Pole 1:Wire	56.00	53.00	54.50	16.849	7.98e+005	1.600	10.00	0.00	538.92	89.00	0.00	0.00	89.00	0.70
Pole 1	Pole 1:Wire	Pole 1:Coax 5	53.00	50.00	51.50	17.209	8.15e+005	1.600	10.00	0.00	550.40	89.00	0.00	0.00	89.00	0.72
Pole 1	Pole 1:Coax 5		50.00	45.00	47.50	17.688	8.37e+005	1.600	10.00	0.00	942.87	148.34	0.00	0.00	148.33	1.23
Pole 1		Pole 1:Coax 6	45.00	40.00	42.50	18.286	8.66e+005	1.600	10.00	0.00	974.79	148.34	0.00	0.00	148.33	1.27
Pole 1	Pole 1:Coax 6		40.00	35.00	37.50	18.885	8.94e+005	1.600	10.00	0.00	1006.70	148.34	0.00	0.00	148.33	1.31
Pole 1		Pole 1:Coax 7	35.00	30.00	32.50	19.484	9.22e+005	1.600	10.00	0.00	1038.62	148.34	0.00	0.00	148.33	1.36
Pole 1	Pole 1:Coax 7		30.00	25.00	27.50	20.082	9.51e+005	1.600	10.00	0.00	1070.53	148.34	0.00	0.00	148.33	1.40
Pole 1		Pole 1:Coax 8	25.00	20.00	22.50	20.681	9.79e+005	1.600	10.00	0.00	1102.44	148.34	0.00	0.00	148.33	1.44
Pole 1	Pole 1:Coax 8		20.00	15.00	17.50	21.280	1.01e+006	1.600	10.00	0.00	1134.36	148.34	0.00	0.00	148.33	1.48
Pole 1		Pole 1:Coax 9	15.00	10.00	12.50	21.878	1.04e+006	1.600	10.00	0.00	1166.27	148.34	0.00	0.00	148.33	1.52
Pole 1	Pole 1:Coax 9		10.00	5.00	7.50	22.250	1.05e+006	1.600	10.00	0.00	1198.19	148.34	0.00	0.00	148.33	1.56
Pole 1		Pole 1:g	5.00	0.00	2.50	22.250	1.05e+006	1.600	10.00	0.00	1230.10	148.34	0.00	0.00	148.33	1.61

Point Loads for Load Case "NESC Heavy L":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Pole 1:SW	590	0	0	
Pole 1:Wire	1115	0	0	
Pole 1:AT&T	2632	0	718	
Pole 1:TMobile	2595	0	700	
Pole 1:Coax 1	460	0	66	
Pole 1:Coax 2	460	0	66	
Pole 1:Coax 3	460	0	66	
Pole 1:Coax 4	460	0	66	
Pole 1:Coax 5	460	0	66	
Pole 1:Coax 6	460	0	66	
Pole 1:Coax 7	460	0	66	
Pole 1:Coax 8	460	0	66	
Pole 1:Coax 9	460	0	66	

Detailed Pole Loading Data for Load Case "NESC Heavy L":

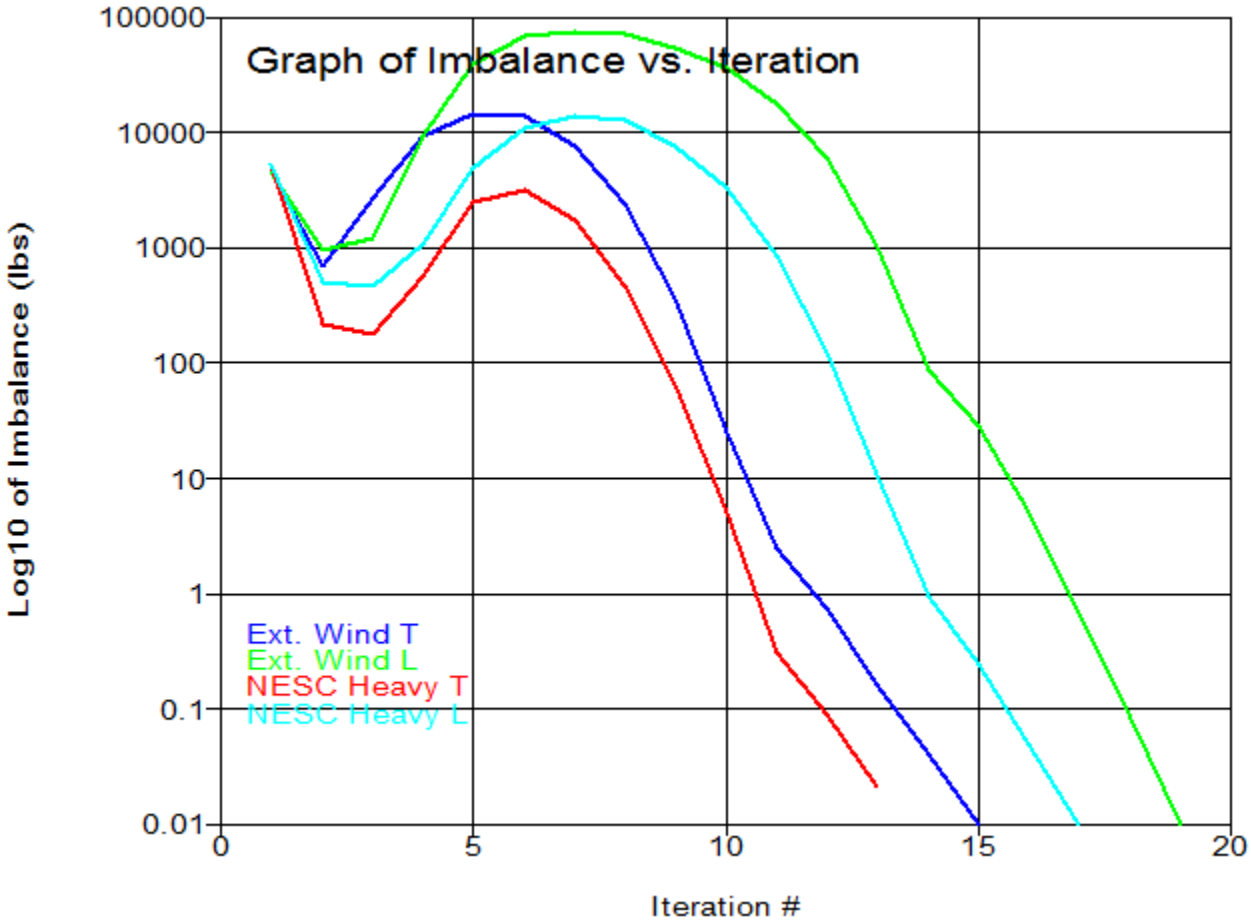
Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

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 Ice Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Tran. Wind Load (lbs)	Pole Long. Wind Load (lbs)
Pole 1	Pole 1:t	Pole 1:AT&T	95.00	93.00	94.00	12.120	5.74e+005	1.600	10.00	0.00	258.43	32.33	0.00	0.00	0.62
Pole 1	Pole 1:AT&T	Pole 1:Coax 1	93.00	90.00	91.50	12.419	5.88e+005	1.600	10.00	0.00	397.22	49.68	0.00	0.00	0.93
Pole 1	Pole 1:Coax 1		90.00	86.50	88.25	12.808	6.06e+005	1.600	10.00	0.00	477.94	59.78	0.00	0.00	1.08
Pole 1		Pole 1:TMobile	86.50	83.00	84.75	13.227	6.26e+005	1.600	10.00	0.00	493.58	61.74	0.00	0.00	1.08
Pole 1	Pole 1:TMobile	Pole 1:Coax 2	83.00	80.00	81.50	13.616	6.45e+005	1.600	10.00	0.00	435.51	54.47	0.00	0.00	0.93
Pole 1	Pole 1:Coax 2		80.00	75.00	77.50	14.095	6.67e+005	1.600	10.00	0.00	751.39	93.98	0.00	0.00	1.55
Pole 1		Pole 1:Coax 3	75.00	70.00	72.50	14.694	6.96e+005	1.600	10.00	0.00	783.30				

97.97	0.00	0.00	1.55	97.96								
Pole 1	Pole 1:Coax 3				70.00	65.00	67.50	15.293	7.24e+005	1.600	10.00	0.00	815.22
101.96	0.00	0.00	1.55	101.95									
Pole 1		Pole 1:Coax 4			65.00	60.00	62.50	15.891	7.52e+005	1.600	10.00	0.00	847.13
105.95	0.00	0.00	1.55	105.94									
Pole 1	Pole 1:Coax 4		Pole 1:SW		60.00	56.00	58.00	16.430	7.78e+005	1.600	10.00	0.00	700.68
87.64	0.00	0.00	1.24	87.63									
Pole 1	Pole 1:SW		Pole 1:Wire		56.00	53.00	54.50	16.849	7.98e+005	1.600	10.00	0.00	538.92
67.40	0.00	0.00	0.93	67.40									
Pole 1	Pole 1:Wire		Pole 1:Coax 5		53.00	50.00	51.50	17.209	8.15e+005	1.600	10.00	0.00	550.40
68.84	0.00	0.00	0.93	68.83									
Pole 1	Pole 1:Coax 5				50.00	45.00	47.50	17.688	8.37e+005	1.600	10.00	0.00	942.87
117.93	0.00	0.00	1.55	117.92									
Pole 1		Pole 1:Coax 6			45.00	40.00	42.50	18.286	8.66e+005	1.600	10.00	0.00	974.79
121.92	0.00	0.00	1.55	121.91									
Pole 1	Pole 1:Coax 6				40.00	35.00	37.50	18.885	8.94e+005	1.600	10.00	0.00	1006.70
125.91	0.00	0.00	1.55	125.90									
Pole 1		Pole 1:Coax 7			35.00	30.00	32.50	19.484	9.22e+005	1.600	10.00	0.00	1038.62
129.90	0.00	0.00	1.55	129.89									
Pole 1	Pole 1:Coax 7				30.00	25.00	27.50	20.082	9.51e+005	1.600	10.00	0.00	1070.53
133.89	0.00	0.00	1.55	133.88									
Pole 1		Pole 1:Coax 8			25.00	20.00	22.50	20.681	9.79e+005	1.600	10.00	0.00	1102.44
137.88	0.00	0.00	1.55	137.87									
Pole 1	Pole 1:Coax 8				20.00	15.00	17.50	21.280	1.01e+006	1.600	10.00	0.00	1134.36
141.87	0.00	0.00	1.55	141.86									
Pole 1		Pole 1:Coax 9			15.00	10.00	12.50	21.878	1.04e+006	1.600	10.00	0.00	1166.27
145.86	0.00	0.00	1.55	145.86									
Pole 1	Pole 1:Coax 9				10.00	5.00	7.50	22.250	1.05e+006	1.600	10.00	0.00	1198.19
149.85	0.00	0.00	1.55	149.85									
Pole 1			Pole 1:g		5.00	0.00	2.50	22.250	1.05e+006	1.600	10.00	0.00	1230.10
153.85	0.00	0.00	1.55	153.84									

*** Analysis Results:

Maximum element usage is 99.11% for Laminated Wood Pole "Pole 1" in load case "Ext. Wind L"
Maximum insulator usage is 35.11% for Clamp "C2" in load case "NESC Heavy T"



*** Analysis Results for Load Case No. 1 "Ext. Wind T" - Number of iterations in SAPS 15

Equilibrium Joint Positions and Rotations for Load Case "Ext. Wind T":

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)

Pole 1:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
Pole 1:t	0.06591	-1.114	-0.01472	1.7563	0.0553	-0.0013	0.06591	-1.114	94.99
Pole 1:AT&T	0.06398	-1.053	-0.01378	1.7565	0.0553	-0.0013	0.06398	-1.053	92.99
Pole 1:Coax 1	0.06109	-0.9609	-0.01236	1.7483	0.0553	-0.0013	0.06109	-0.9609	89.99
Pole 1:TMobile	0.05434	-0.7511	-0.009194	1.6730	0.0552	-0.0012	0.05434	-0.7511	82.99
Pole 1:Coax 2	0.05146	-0.6649	-0.007935	1.6176	0.0552	-0.0012	0.05146	-0.6649	79.99
Pole 1:Coax 3	0.04185	-0.4064	-0.004517	1.3155	0.0549	-0.0009	0.04185	-0.4064	70
Pole 1:Coax 4	0.0323	-0.2104	-0.002503	0.9160	0.0544	-0.0005	0.0323	-0.2104	60
Pole 1:SW	0.02851	-0.1523	-0.002046	0.7454	0.0542	-0.0004	0.02851	-0.1523	56
Pole 1:Wire	0.02572	-0.1164	-0.001778	0.6265	0.0520	-0.0003	0.02572	-0.1164	53
Pole 1:Coax 5	0.02306	-0.08635	-0.001549	0.5228	0.0497	-0.0002	0.02306	-0.08635	50
Pole 1:Coax 6	0.0151	-0.02038	-0.001066	0.2490	0.0413	-0.0000	0.0151	-0.02038	40
Pole 1:Coax 7	0.008671	0.006516	-0.0007701	0.0736	0.0321	0.0000	0.008671	0.006516	30
Pole 1:Coax 8	0.003929	0.01023	-0.0005134	-0.0180	0.0221	0.0000	0.003929	0.01023	20
Pole 1:Coax 9	0.001001	0.004272	-0.0002567	-0.0387	0.0113	0.0000	0.001001	0.004272	10
Wire:O	0.02573	-0.1164	0.006152	0.6265	0.0520	-0.0003	-0.1644	0.5931	53.01
$Gnd1	0	0	0	0.0000	0.0000	0.0000	-7.109	26.53	0
SW:O	0.02853	-0.1524	0.006814	0.7454	0.0542	-0.0004	0.2147	0.5422	56.01
$Gnd2	0	0	0	0.0000	0.0000	0.0000	7.498	27.98	0

Joint Support Reactions for Load Case "Ext. Wind T":

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 %
Pole 1:g	-0.07	0.0	-4.29	0.0	0.0	-31.90	0.0	0.0	32.19	0.0	44.84	0.0	-7.2	0.0	0.0	-0.01	0.0	0.0
$Gnd1	-0.95	0.0	3.53	0.0	0.0	7.25	0.0	0.0	8.12	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
$Gnd2	0.99	0.0	3.71	0.0	0.0	7.63	0.0	0.0	8.54	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0

Detailed Laminated Wood Pole Usages for Load Case "Ext. Wind T":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Pole 1	Pole 1:t	Origin	0.00	-13.37	0.79	-0.18	-0.00	-0.00	-0.0	-0.09	0.09	-0.00	0.0
Pole 1	Pole 1:AT&T	End	2.00	-12.63	0.77	-0.17	0.18	-0.00	-0.0	-0.09	0.09	-0.00	0.1
Pole 1	Pole 1:AT&T	Origin	2.00	-12.63	0.77	-0.17	0.18	-0.00	0.0	-1.62	-2.00	-0.00	0.2

Pole 1	Pole 1:Coax 1	End	5.00	-11.53	0.73	-0.15	-5.81	-0.01	0.0	-1.62	-2.00	-0.00	2.2
Pole 1	Pole 1:Coax 1	Origin	5.00	-11.53	0.73	-0.15	-5.81	-0.01	0.0	-2.09	-2.12	-0.00	2.2
Pole 1	#Pole 1:0	End	8.50	-10.26	0.69	-0.13	-13.23	-0.02	0.0	-2.09	-2.12	-0.00	4.6
Pole 1	#Pole 1:0	Origin	8.50	-10.26	0.69	-0.13	-13.23	-0.02	0.0	-2.43	-1.80	-0.00	4.6
Pole 1	Pole 1:TMobile	End	12.00	-9.01	0.65	-0.11	-19.55	-0.04	0.0	-2.43	-1.80	-0.00	6.3
Pole 1	Pole 1:TMobile	Origin	12.00	-9.01	0.65	-0.11	-19.55	-0.04	0.0	-4.05	-3.74	-0.01	6.4
Pole 1	Pole 1:Coax 2	End	15.00	-7.98	0.62	-0.10	-30.75	-0.06	0.0	-4.05	-3.74	-0.01	9.4
Pole 1	Pole 1:Coax 2	Origin	15.00	-7.98	0.62	-0.10	-30.75	-0.06	0.0	-4.64	-3.78	-0.01	9.4
Pole 1	#Pole 1:1	End	20.00	-6.35	0.56	-0.07	-49.67	-0.10	0.0	-4.64	-3.78	-0.01	13.9
Pole 1	#Pole 1:1	Origin	20.00	-6.35	0.56	-0.07	-49.67	-0.10	0.0	-5.17	-3.32	-0.01	13.9
Pole 1	Pole 1:Coax 3	End	25.00	-4.88	0.50	-0.05	-66.28	-0.15	0.0	-5.17	-3.32	-0.01	17.0
Pole 1	Pole 1:Coax 3	Origin	25.00	-4.88	0.50	-0.05	-66.28	-0.15	0.0	-5.91	-3.27	-0.01	17.1
Pole 1	#Pole 1:2	End	30.00	-3.60	0.44	-0.04	-82.61	-0.21	0.0	-5.91	-3.27	-0.01	19.6
Pole 1	#Pole 1:2	Origin	30.00	-3.60	0.44	-0.04	-82.61	-0.21	0.0	-6.48	-2.79	-0.01	19.6
Pole 1	Pole 1:Coax 4	End	35.00	-2.53	0.39	-0.03	-96.58	-0.27	0.0	-6.48	-2.79	-0.01	21.3
Pole 1	Pole 1:Coax 4	Origin	35.00	-2.53	0.39	-0.03	-96.58	-0.27	0.0	-7.19	-2.78	-0.02	21.3
Pole 1	Pole 1:SW	End	39.00	-1.83	0.34	-0.02	-107.68	-0.33	0.0	-7.19	-2.78	-0.02	22.5
Pole 1	Pole 1:SW	Origin	39.00	-1.83	0.34	-0.02	-102.35	-1.76	-0.0	-15.47	0.05	-1.01	22.0
Pole 1	Pole 1:Wire	End	42.00	-1.40	0.31	-0.02	-102.21	-4.80	-0.0	-15.47	0.05	-1.01	21.5
Pole 1	Pole 1:Wire	Origin	42.00	-1.40	0.31	-0.02	-97.04	-3.42	-0.0	-23.56	1.34	-0.07	20.7
Pole 1	Pole 1:Coax 5	End	45.00	-1.04	0.28	-0.02	-93.02	-3.64	-0.0	-23.56	1.34	-0.07	19.2
Pole 1	Pole 1:Coax 5	Origin	45.00	-1.04	0.28	-0.02	-93.02	-3.64	0.0	-24.24	1.35	-0.07	19.2
Pole 1	#Pole 1:3	End	50.00	-0.57	0.23	-0.02	-86.29	-4.00	0.0	-24.24	1.35	-0.07	16.9
Pole 1	#Pole 1:3	Origin	50.00	-0.57	0.23	-0.02	-86.29	-4.00	0.0	-24.88	1.86	-0.07	16.9
Pole 1	Pole 1:Coax 6	End	55.00	-0.24	0.18	-0.01	-76.97	-4.37	0.0	-24.88	1.86	-0.07	14.4
Pole 1	Pole 1:Coax 6	Origin	55.00	-0.24	0.18	-0.01	-76.97	-4.37	0.0	-25.72	1.96	-0.07	14.5
Pole 1	#Pole 1:4	End	60.00	-0.04	0.14	-0.01	-67.15	-4.73	0.0	-25.72	1.96	-0.07	12.2
Pole 1	#Pole 1:4	Origin	60.00	-0.04	0.14	-0.01	-67.15	-4.73	0.0	-26.40	2.46	-0.07	12.2
Pole 1	Pole 1:Coax 7	End	65.00	0.08	0.10	-0.01	-54.83	-5.10	0.0	-26.40	2.46	-0.07	9.8
Pole 1	Pole 1:Coax 7	Origin	65.00	0.08	0.10	-0.01	-54.83	-5.10	0.0	-27.29	2.55	-0.07	9.8
Pole 1	#Pole 1:5	End	70.00	0.12	0.07	-0.01	-42.10	-5.46	0.0	-27.29	2.55	-0.07	7.6
Pole 1	#Pole 1:5	Origin	70.00	0.12	0.07	-0.01	-42.10	-5.46	0.0	-28.01	3.03	-0.07	7.6
Pole 1	Pole 1:Coax 8	End	75.00	0.12	0.05	-0.01	-26.94	-5.83	0.0	-28.01	3.03	-0.07	5.3
Pole 1	Pole 1:Coax 8	Origin	75.00	0.12	0.05	-0.01	-26.94	-5.83	0.0	-28.94	3.10	-0.07	5.3
Pole 1	#Pole 1:6	End	80.00	0.09	0.03	-0.00	-11.45	-6.19	0.0	-28.94	3.10	-0.07	3.2
Pole 1	#Pole 1:6	Origin	80.00	0.09	0.03	-0.00	-11.45	-6.19	0.0	-29.71	3.57	-0.07	3.2
Pole 1	Pole 1:Coax 9	End	85.00	0.05	0.01	-0.00	6.39	-6.54	0.0	-29.71	3.57	-0.07	2.5
Pole 1	Pole 1:Coax 9	Origin	85.00	0.05	0.01	-0.00	6.39	-6.54	0.0	-30.68	3.62	-0.07	2.6
Pole 1	#Pole 1:7	End	90.00	0.02	0.00	-0.00	24.48	-6.90	0.0	-30.68	3.62	-0.07	4.6
Pole 1	#Pole 1:7	Origin	90.00	0.02	0.00	-0.00	24.48	-6.90	0.0	-31.49	4.07	-0.07	4.6
Pole 1	Pole 1:g	End	95.00	0.00	0.00	0.00	44.84	-7.24	0.0	-31.49	4.07	-0.07	6.6

Summary of Guy Tensions and Usages for Load Case "Ext. Wind T":

Guy Label	Max. Tension (kips)	Allowable Tension (kips)	Factored Usage Allowable (kips)	%

Wire	8.14	18.72	18.72	43.50
SW	8.56	18.72	18.72	45.74

Summary of Clamp Capacities and Usages for Load Case "Ext. Wind T":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	0.883	10.00	10.00	8.83
C2	2.277	10.00	10.00	22.77
C3	2.459	10.00	10.00	24.59
C4	2.331	10.00	10.00	23.31
C5	0.216	10.00	10.00	2.16
C6	0.191	10.00	10.00	1.91
C7	0.195	10.00	10.00	1.95
C8	0.187	10.00	10.00	1.87
C9	0.191	10.00	10.00	1.91
C10	0.195	10.00	10.00	1.95
C11	0.195	10.00	10.00	1.95
C12	0.195	10.00	10.00	1.95
C13	0.195	10.00	10.00	1.95

*** Analysis Results for Load Case No. 2 "Ext. Wind L" - Number of iterations in SAPS 19

Equilibrium Joint Positions and Rotations for Load Case "Ext. Wind L":

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)
Pole 1:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
Pole 1:t	6.347	1.277	-0.2643	-1.0157	5.6088	-0.0283	6.347	1.277	94.74
Pole 1:AT&T	6.151	1.242	-0.2544	-1.0157	5.6087	-0.0283	6.151	1.242	92.75
Pole 1:Coax 1	5.858	1.189	-0.2396	-1.0155	5.6051	-0.0282	5.858	1.189	89.76
Pole 1:TMobile	5.176	1.065	-0.2051	-1.0142	5.5680	-0.0277	5.176	1.065	82.79
Pole 1:Coax 2	4.886	1.012	-0.1906	-1.0132	5.5365	-0.0272	4.886	1.012	79.81
Pole 1:Coax 3	3.936	0.8366	-0.1437	-1.0069	5.3348	-0.0243	3.936	0.8366	69.86
Pole 1:Coax 4	3.034	0.662	-0.1014	-0.9970	4.9864	-0.0190	3.034	0.662	59.9
Pole 1:SW	2.692	0.5927	-0.08612	-0.9922	4.8063	-0.0163	2.692	0.5927	55.91
Pole 1:Wire	2.445	0.5409	-0.07541	-0.9880	4.6559	-0.0139	2.445	0.5409	52.92
Pole 1:Coax 5	2.205	0.4895	-0.06536	-0.9740	4.4936	-0.0120	2.205	0.4895	49.93
Pole 1:Coax 6	1.474	0.3276	-0.03709	-0.8680	3.8639	-0.0083	1.474	0.3276	39.96
Pole 1:Coax 7	0.8646	0.1902	-0.01733	-0.6970	3.0988	-0.0065	0.8646	0.1902	29.98
Pole 1:Coax 8	0.4	0.0865	-0.005746	-0.4850	2.1989	-0.0046	0.4	0.0865	19.99
Pole 1:Coax 9	0.1041	0.02203	-0.0008793	-0.2488	1.1654	-0.0023	0.1041	0.02203	9.999
Wire:O	2.444	0.5408	-0.07217	-0.9880	4.6559	-0.0139	2.254	1.25	52.93
$Gnd1	0	0	0	0.0000	0.0000	0.0000	-7.109	26.53	0
SW:O	2.691	0.5925	-0.1137	-0.9922	4.8063	-0.0163	2.877	1.287	55.89
$Gnd2	0	0	0	0.0000	0.0000	0.0000	7.498	27.98	0

Joint Support Reactions for Load Case "Ext. Wind L":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Comp. Force (kips)	Uplift Usage %	Result. Usage %	Result. Force (kips)	X Usage %	X-M. Moment (ft-k)	Y Usage %	Y-M. Moment (ft-k)	H-Bend-M Usage %	Z Usage %	Z-M. Moment (ft-k)	Max. Usage %
Pole 1:g	-11.94	0.0	-2.96	0.0	0.0	-22.62	0.0	0.0	25.74	0.0	173.74	0.0	-767.8	0.0	0.0	1.03	0.0
$Gnd1	-1.09	0.0	2.86	0.0	0.0	5.98	0.0	0.0	6.71	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0
$Gnd2	-0.02	0.0	0.07	0.0	0.0	0.12	0.0	0.0	0.14	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0

Detailed Laminated Wood Pole Usages for Load Case "Ext. Wind L":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Pole 1	Pole 1:t	Origin	0.00	15.33	76.16	-3.17	0.00	-0.00	0.0	-0.08	0.00	-0.06	0.0
Pole 1	Pole 1:AT&T	End	2.00	14.91	73.82	-3.05	0.00	-0.12	0.0	-0.08	0.00	-0.06	0.0
Pole 1	Pole 1:AT&T	Origin	2.00	14.91	73.82	-3.05	0.00	-0.12	-0.0	-1.43	0.03	-2.60	0.1
Pole 1	Pole 1:Coax 1	End	5.00	14.27	70.30	-2.87	0.09	-7.92	-0.0	-1.43	0.03	-2.60	1.6
Pole 1	Pole 1:Coax 1	Origin	5.00	14.27	70.30	-2.87	0.09	-7.92	-0.0	-1.81	0.04	-2.97	1.7
Pole 1	#Pole 1:0	End	8.50	13.53	66.20	-2.67	0.21	-18.33	-0.0	-1.81	0.04	-2.97	3.6
Pole 1	#Pole 1:0	Origin	8.50	13.53	66.20	-2.67	0.21	-18.33	-0.0	-2.12	0.04	-3.19	3.6
Pole 1	Pole 1:TMobile	End	12.00	12.78	62.11	-2.46	0.36	-29.51	-0.0	-2.12	0.04	-3.19	5.6
Pole 1	Pole 1:TMobile	Origin	12.00	12.78	62.11	-2.46	0.36	-29.51	-0.0	-3.56	0.07	-5.71	5.6
Pole 1	Pole 1:Coax 2	End	15.00	12.15	58.63	-2.29	0.57	-46.65	-0.0	-3.56	0.07	-5.71	8.6
Pole 1	Pole 1:Coax 2	Origin	15.00	12.15	58.63	-2.29	0.57	-46.65	-0.0	-4.05	0.08	-6.15	8.6
Pole 1	#Pole 1:1	End	20.00	11.09	52.88	-2.00	0.98	-77.41	-0.0	-4.05	0.08	-6.15	13.5
Pole 1	#Pole 1:1	Origin	20.00	11.09	52.88	-2.00	0.98	-77.41	-0.0	-4.54	0.09	-6.49	13.5
Pole 1	Pole 1:Coax 3	End	25.00	10.04	47.23	-1.72	1.43	-109.87	-0.0	-4.54	0.09	-6.49	18.4
Pole 1	Pole 1:Coax 3	Origin	25.00	10.04	47.23	-1.72	1.43	-109.87	-0.0	-5.17	0.10	-7.01	18.4
Pole 1	#Pole 1:2	End	30.00	8.99	41.73	-1.46	1.94	-144.94	-0.0	-5.17	0.10	-7.01	23.2
Pole 1	#Pole 1:2	Origin	30.00	8.99	41.73	-1.46	1.95	-144.94	-0.0	-5.71	0.11	-7.37	23.3
Pole 1	Pole 1:Coax 4	End	35.00	7.94	36.41	-1.22	2.51	-181.79	-0.0	-5.71	0.11	-7.37	28.0
Pole 1	Pole 1:Coax 4	Origin	35.00	7.94	36.41	-1.22	2.52	-181.79	-0.0	-6.33	0.13	-7.87	28.1
Pole 1	Pole 1:SW	End	39.00	7.11	32.31	-1.03	3.02	-213.27	-0.0	-6.33	0.13	-7.87	31.9
Pole 1	Pole 1:SW	Origin	39.00	7.11	32.31	-1.03	3.11	-213.30	-0.1	-7.08	0.20	-8.20	32.0
Pole 1	Pole 1:Wire	End	42.00	6.49	29.34	-0.90	3.72	-237.90	-0.1	-7.08	0.20	-8.20	34.9
Pole 1	Pole 1:Wire	Origin	42.00	6.49	29.34	-0.90	8.00	-236.76	-0.3	-13.92	3.18	-7.91	35.9
Pole 1	Pole 1:Coax 5	End	45.00	5.87	26.46	-0.78	17.54	-260.50	-0.3	-13.92	3.18	-7.91	40.3
Pole 1	Pole 1:Coax 5	Origin	45.00	5.87	26.46	-0.78	17.55	-260.50	-0.3	-14.54	3.19	-8.36	40.3
Pole 1	#Pole 1:3	End	50.00	4.88	21.91	-0.60	33.49	-302.30	-0.3	-14.54	3.19	-8.36	47.3
Pole 1	#Pole 1:3	Origin	50.00	4.88	21.91	-0.60	33.52	-302.30	-0.4	-15.20	3.19	-8.70	47.3
Pole 1	Pole 1:Coax 6	End	55.00	3.93	17.69	-0.45	49.45	-345.79	-0.4	-15.20	3.19	-8.70	54.0
Pole 1	Pole 1:Coax 6	Origin	55.00	3.93	17.69	-0.45	49.48	-345.78	-0.5	-16.01	3.18	-9.20	54.0
Pole 1	#Pole 1:4	End	60.00	3.06	13.83	-0.31	65.38	-391.80	-0.5	-16.01	3.18	-9.20	60.4
Pole 1	#Pole 1:4	Origin	60.00	3.06	13.83	-0.31	65.42	-391.80	-0.7	-16.73	3.17	-9.53	60.5
Pole 1	Pole 1:Coax 7	End	65.00	2.28	10.37	-0.21	81.25	-439.47	-0.7	-16.73	3.17	-9.53	66.5
Pole 1	Pole 1:Coax 7	Origin	65.00	2.28	10.37	-0.21	81.30	-439.46	-0.8	-17.60	3.15	-10.03	66.6
Pole 1	#Pole 1:5	End	70.00	1.60	7.35	-0.13	97.04	-489.61	-0.8	-17.60	3.15	-10.03	72.5
Pole 1	#Pole 1:5	Origin	70.00	1.60	7.35	-0.13	97.09	-489.60	-1.0	-18.39	3.13	-10.34	72.5
Pole 1	Pole 1:Coax 8	End	75.00	1.04	4.80	-0.07	112.72	-541.32	-1.0	-18.39	3.13	-10.34	78.2
Pole 1	Pole 1:Coax 8	Origin	75.00	1.04	4.80	-0.07	112.77	-541.31	-1.1	-19.34	3.10	-10.82	78.2
Pole 1	#Pole 1:6	End	80.00	0.59	2.75	-0.03	128.26	-595.40	-1.1	-19.34	3.10	-10.82	83.7
Pole 1	#Pole 1:6	Origin	80.00	0.59	2.75	-0.03	128.31	-595.39	-1.2	-20.19	3.07	-11.11	83.7
Pole 1	Pole 1:Coax 9	End	85.00	0.26	1.25	-0.01	143.62	-650.95	-1.2	-20.19	3.07	-11.11	89.0
Pole 1	Pole 1:Coax 9	Origin	85.00	0.26	1.25	-0.01	143.66	-650.94	-1.2	-21.21	3.03	-11.56	89.0
Pole 1	#Pole 1:7	End	90.00	0.07	0.32	-0.00	158.79	-708.72	-1.2	-21.21	3.03	-11.56	94.2

Pole 1	#Pole 1:7	Origin	90.00	0.07	0.32	-0.00	158.82	-708.71	-1.1	-22.14	2.99	-11.82	94.2
Pole 1	Pole 1:g	End	95.00	0.00	0.00	0.00	173.73	-767.79	-1.1	-22.14	2.99	-11.82	99.1

Summary of Guy Tensions and Usages for Load Case "Ext. Wind L":

Guy Label	Max. Tension (kips)	Allowable Tension (kips)	Factored Allowable (kips)	Usage %
Wire	6.73	18.72	18.72	35.97
SW	0.16	18.72	18.72	0.88

Summary of Clamp Capacities and Usages for Load Case "Ext. Wind L":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	0.310	10.00	10.00	3.10
C2	0.505	10.00	10.00	5.05
C3	2.764	10.00	10.00	27.64
C4	2.735	10.00	10.00	27.35
C5	0.357	10.00	10.00	3.57
C6	0.415	10.00	10.00	4.15
C7	0.492	10.00	10.00	4.92
C8	0.482	10.00	10.00	4.82
C9	0.472	10.00	10.00	4.72
C10	0.564	10.00	10.00	5.64
C11	0.589	10.00	10.00	5.89
C12	0.613	10.00	10.00	6.13
C13	0.637	10.00	10.00	6.37

*** Analysis Results for Load Case No. 3 "NESC Heavy T" - Number of iterations in SAPS 13

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

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)
Pole 1:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
Pole 1:t	0.04483	-0.4933	-0.004392	0.6720	0.0388	-0.0003	0.04483	-0.4933	95
Pole 1:AT&T	0.04347	-0.4699	-0.004254	0.6721	0.0388	-0.0003	0.04347	-0.4699	93
Pole 1:Coax 1	0.04144	-0.4347	-0.004033	0.6694	0.0388	-0.0003	0.04144	-0.4347	90
Pole 1:TMobile	0.0367	-0.3542	-0.003524	0.6444	0.0388	-0.0003	0.0367	-0.3542	83
Pole 1:Coax 2	0.03467	-0.3209	-0.003306	0.6259	0.0387	-0.0002	0.03467	-0.3209	80
Pole 1:Coax 3	0.02793	-0.2196	-0.002668	0.5243	0.0385	-0.0002	0.02793	-0.2196	70
Pole 1:Coax 4	0.02126	-0.1395	-0.002202	0.3887	0.0379	-0.0001	0.02126	-0.1395	60
Pole 1:SW	0.01862	-0.1144	-0.00206	0.3304	0.0376	-0.0001	0.01862	-0.1144	56
Pole 1:Wire	0.01669	-0.09806	-0.001944	0.2930	0.0357	-0.0000	0.01669	-0.09806	53
Pole 1:Coax 5	0.01487	-0.0835	-0.001812	0.2631	0.0337	-0.0000	0.01487	-0.0835	50
Pole 1:Coax 6	0.009553	-0.04547	-0.001411	0.1750	0.0272	-0.0000	0.009553	-0.04547	40
Pole 1:Coax 7	0.005391	-0.02124	-0.001048	0.1053	0.0205	0.0000	0.005391	-0.02124	30
Pole 1:Coax 8	0.002403	-0.00759	-0.0006996	0.0538	0.0137	0.0000	0.002403	-0.00759	20
Pole 1:Coax 9	0.0006027	-0.001455	-0.0003523	0.0192	0.0069	0.0000	0.0006027	-0.001455	10
Wire:O	0.01669	-0.09806	0.001803	0.2930	0.0357	-0.0000	-0.1734	0.6115	53
$Gnd1	0	0	0	0.0000	0.0000	0.0000	-7.109	26.53	0
SW:O	0.01863	-0.1144	0.001823	0.3304	0.0376	-0.0001	0.2048	0.5802	56
$Gnd2	0	0	0	0.0000	0.0000	0.0000	7.498	27.98	0

Joint Support Reactions for Load Case "NESC Heavy T":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Comp. Force (kips)	Uplift Usage %	Result. Usage %	Result. Force (kips)	X Usage %	X-M. Moment (ft-k)	Y Usage %	Y-M. Moment (ft-k)	H-Bend-M Usage %	Z Usage %	Z-M. Max. Moment (ft-k)
Pole 1:g	-0.02	0.0	-0.89	0.0	0.0	-44.05	0.0	0.0	44.06	0.0	-8.24	0.0	-4.3	0.0	0.0	-0.00
$Gnd1	-0.85	0.0	3.16	0.0	0.0	6.47	0.0	0.0	7.25	0.0	0.00	0.0	0.0	0.0	0.0	0.00
$Gnd2	0.85	0.0	3.17	0.0	0.0	6.49	0.0	0.0	7.27	0.0	0.00	0.0	0.0	0.0	0.0	0.00

Detailed Laminated Wood Pole Usages for Load Case "NESC Heavy T":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Pole 1	Pole 1:t	Origin	0.00	-5.92	0.54	-0.05	-0.00	-0.00	-0.0	-0.13	0.03	-0.00	0.0
Pole 1	Pole 1:AT&T	End	2.00	-5.64	0.52	-0.05	0.06	-0.00	-0.0	-0.13	0.03	-0.00	0.0
Pole 1	Pole 1:AT&T	Origin	2.00	-5.64	0.52	-0.05	0.06	-0.00	0.0	-3.08	-0.65	-0.00	0.2
Pole 1	Pole 1:Coax 1	End	5.00	-5.22	0.50	-0.05	-1.89	-0.01	0.0	-3.08	-0.65	-0.00	1.0
Pole 1	Pole 1:Coax 1	Origin	5.00	-5.22	0.50	-0.05	-1.89	-0.01	0.0	-4.21	-0.71	-0.00	1.1
Pole 1	#Pole 1:0	End	8.50	-4.73	0.47	-0.05	-4.39	-0.02	0.0	-4.21	-0.71	-0.00	2.0
Pole 1	#Pole 1:0	Origin	8.50	-4.73	0.47	-0.05	-4.39	-0.02	0.0	-4.70	-0.61	-0.00	2.0
Pole 1	Pole 1:TMobile	End	12.00	-4.25	0.44	-0.04	-6.53	-0.04	0.0	-4.70	-0.61	-0.00	2.7
Pole 1	Pole 1:TMobile	Origin	12.00	-4.25	0.44	-0.04	-6.53	-0.04	0.0	-7.75	-1.25	-0.01	2.9
Pole 1	Pole 1:Coax 2	End	15.00	-3.85	0.42	-0.04	-10.27	-0.06	0.0	-7.75	-1.25	-0.01	4.0
Pole 1	Pole 1:Coax 2	Origin	15.00	-3.85	0.42	-0.04	-10.27	-0.06	0.0	-9.03	-1.28	-0.01	4.1
Pole 1	#Pole 1:1	End	20.00	-3.22	0.38	-0.04	-16.70	-0.11	0.0	-9.03	-1.28	-0.01	5.9
Pole 1	#Pole 1:1	Origin	20.00	-3.22	0.38	-0.04	-16.70	-0.11	0.0	-9.80	-1.14	-0.01	5.9
Pole 1	Pole 1:Coax 3	End	25.00	-2.64	0.34	-0.03	-22.37	-0.16	0.0	-9.80	-1.14	-0.01	7.1
Pole 1	Pole 1:Coax 3	Origin	25.00	-2.64	0.34	-0.03	-22.37	-0.16	0.0	-11.29	-1.13	-0.01	7.2
Pole 1	#Pole 1:2	End	30.00	-2.12	0.29	-0.03	-28.05	-0.23	0.0	-11.29	-1.13	-0.01	8.2
Pole 1	#Pole 1:2	Origin	30.00	-2.12	0.29	-0.03	-28.05	-0.23	0.0	-12.13	-0.98	-0.01	8.3
Pole 1	Pole 1:Coax 4	End	35.00	-1.67	0.26	-0.03	-32.94	-0.30	0.0	-12.13	-0.98	-0.01	9.0
Pole 1	Pole 1:Coax 4	Origin	35.00	-1.67	0.26	-0.03	-32.94	-0.30	0.0	-13.59	-0.99	-0.02	9.0
Pole 1	Pole 1:SW	End	39.00	-1.37	0.22	-0.02	-36.88	-0.36	0.0	-13.59	-0.99	-0.02	9.5
Pole 1	Pole 1:SW	Origin	39.00	-1.37	0.22	-0.02	-32.35	-1.58	-0.0	-21.31	0.13	-0.87	9.1
Pole 1	Pole 1:Wire	End	42.00	-1.18	0.20	-0.02	-31.96	-4.18	-0.0	-21.31	0.13	-0.87	9.1
Pole 1	Pole 1:Wire	Origin	42.00	-1.18	0.20	-0.02	-27.35	-2.95	-0.0	-29.46	-0.05	-0.03	8.2
Pole 1	Pole 1:Coax 5	End	45.00	-1.00	0.18	-0.02	-27.51	-3.02	-0.0	-29.46	-0.05	-0.03	8.0
Pole 1	Pole 1:Coax 5	Origin	45.00	-1.00	0.18	-0.02	-27.51	-3.02	-0.0	-30.89	-0.07	-0.03	8.1
Pole 1	#Pole 1:3	End	50.00	-0.75	0.14	-0.02	-27.83	-3.16	-0.0	-30.89	-0.07	-0.03	7.7
Pole 1	#Pole 1:3	Origin	50.00	-0.75	0.14	-0.02	-27.83	-3.16	-0.0	-31.85	0.10	-0.03	7.8
Pole 1	Pole 1:Coax 6	End	55.00	-0.55	0.11	-0.02	-27.32	-3.29	-0.0	-31.85	0.10	-0.03	7.3
Pole 1	Pole 1:Coax 6	Origin	55.00	-0.55	0.11	-0.02	-27.32	-3.29	0.0	-33.53	0.12	-0.03	7.4
Pole 1	#Pole 1:4	End	60.00	-0.38	0.09	-0.01	-26.69	-3.42	0.0	-33.53	0.12	-0.03	6.9
Pole 1	#Pole 1:4	Origin	60.00	-0.38	0.09	-0.01	-26.69	-3.42	0.0	-34.56	0.29	-0.03	6.9
Pole 1	Pole 1:Coax 7	End	65.00	-0.25	0.06	-0.01	-25.24	-3.55	0.0	-34.56	0.29	-0.03	6.4
Pole 1	Pole 1:Coax 7	Origin	65.00	-0.25	0.06	-0.01	-25.24	-3.55	0.0	-36.30	0.31	-0.03	6.5
Pole 1	#Pole 1:5	End	70.00	-0.16	0.04	-0.01	-23.69	-3.68	0.0	-36.30	0.31	-0.03	5.9
Pole 1	#Pole 1:5	Origin	70.00	-0.16	0.04	-0.01	-23.69	-3.68	0.0	-37.39	0.47	-0.03	6.0
Pole 1	Pole 1:Coax 8	End	75.00	-0.09	0.03	-0.01	-21.32	-3.81	0.0	-37.39	0.47	-0.03	5.4
Pole 1	Pole 1:Coax 8	Origin	75.00	-0.09	0.03	-0.01	-21.32	-3.81	0.0	-39.19	0.49	-0.03	5.4
Pole 1	#Pole 1:6	End	80.00	-0.05	0.02	-0.01	-18.88	-3.94	0.0	-39.19	0.49	-0.03	4.9
Pole 1	#Pole 1:6	Origin	80.00	-0.05	0.02	-0.01	-18.88	-3.94	0.0	-40.35	0.65	-0.02	4.9
Pole 1	Pole 1:Coax 9	End	85.00	-0.02	0.01	-0.00	-15.63	-4.07	0.0	-40.35	0.65	-0.02	4.3
Pole 1	Pole 1:Coax 9	Origin	85.00	-0.02	0.01	-0.00	-15.63	-4.07	0.0	-42.22	0.66	-0.02	4.4
Pole 1	#Pole 1:7	End	90.00	-0.00	0.00	-0.00	-12.33	-4.19	0.0	-42.22	0.66	-0.02	3.8

Pole 1	#Pole 1:7	Origin	90.00	-0.00	0.00	-0.00	-12.33	-4.19	0.0	-43.43	0.82	-0.02	3.8
Pole 1	Pole 1:g	End	95.00	0.00	0.00	0.00	-8.24	-4.30	0.0	-43.43	0.82	-0.02	3.2

Summary of Guy Tensions and Usages for Load Case "NESC Heavy T":

Guy Label	Max. Tension (kips)	Allowable Tension (kips)	Factored Allowable (kips)	Usage %
Wire	7.27	18.72	18.72	38.83
SW	7.29	18.72	18.72	38.96

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	2.126	10.00	10.00	21.26
C2	3.511	10.00	10.00	35.11
C3	2.710	10.00	10.00	27.10
C4	2.664	10.00	10.00	26.64
C5	0.692	10.00	10.00	6.92
C6	0.691	10.00	10.00	6.91
C7	0.690	10.00	10.00	6.90
C8	0.690	10.00	10.00	6.90
C9	0.691	10.00	10.00	6.91
C10	0.690	10.00	10.00	6.90
C11	0.690	10.00	10.00	6.90
C12	0.690	10.00	10.00	6.90
C13	0.690	10.00	10.00	6.90

*** Analysis Results for Load Case No. 4 "NESC Heavy L" - Number of iterations in SAPS 17

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

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)
Pole 1:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
Pole 1:t	2.176	0.6205	-0.03375	-0.5028	1.9248	-0.0044	2.176	0.6205	94.97
Pole 1:AT&T	2.108	0.6029	-0.03255	-0.5028	1.9247	-0.0044	2.108	0.6029	92.97
Pole 1:Coax 1	2.008	0.5766	-0.03073	-0.5027	1.9235	-0.0044	2.008	0.5766	89.97
Pole 1:TMobile	1.773	0.5153	-0.02649	-0.5014	1.9108	-0.0044	1.773	0.5153	82.97
Pole 1:Coax 2	1.673	0.4891	-0.02469	-0.5004	1.9000	-0.0043	1.673	0.4891	79.98
Pole 1:Coax 3	1.347	0.4022	-0.01887	-0.4944	1.8304	-0.0039	1.347	0.4022	69.98
Pole 1:Coax 4	1.037	0.3167	-0.01357	-0.4850	1.7096	-0.0031	1.037	0.3167	59.99
Pole 1:SW	0.9202	0.283	-0.01165	-0.4806	1.6471	-0.0027	0.9202	0.283	55.99
Pole 1:Wire	0.8353	0.2579	-0.0103	-0.4768	1.5948	-0.0024	0.8353	0.2579	52.99
Pole 1:Coax 5	0.7532	0.2332	-0.009014	-0.4686	1.5385	-0.0021	0.7532	0.2332	49.99
Pole 1:Coax 6	0.5029	0.1555	-0.005368	-0.4145	1.3209	-0.0015	0.5029	0.1555	39.99
Pole 1:Coax 7	0.2946	0.09003	-0.002757	-0.3310	1.0577	-0.0012	0.2946	0.09003	30
Pole 1:Coax 8	0.1361	0.04083	-0.001141	-0.2294	0.7492	-0.0008	0.1361	0.04083	20
Pole 1:Coax 9	0.03535	0.01037	-0.0003347	-0.1173	0.3962	-0.0004	0.03535	0.01037	10
Wire:O	0.8352	0.2579	-0.01091	-0.4768	1.5948	-0.0024	0.6451	0.9675	52.99
$Gnd1	0	0	0	0.0000	0.0000	0.0000	-7.109	26.53	0
SW:O	0.92	0.283	-0.02282	-0.4806	1.6471	-0.0027	1.106	0.9775	55.98
$Gnd2	0	0	0	0.0000	0.0000	0.0000	7.498	27.98	0

Joint Support Reactions for Load Case "NESC Heavy L":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Comp. Force (kips)	Uplift Usage %	Result. Usage %	Result. Force (kips)	X Usage %	X-M. Moment (ft-k)	Y Usage %	Y-M. Moment (ft-k)	H-Bend-M Usage %	Z Usage %	Z-M. Max. Moment (ft-k)
Pole 1:g	-3.90	0.0	-1.34	0.0	0.0	-31.72	0.0	0.0	31.99	0.0	81.61	0.0	-260.4	0.0	0.0	0.19
$Gnd1	-0.40	0.0	1.27	0.0	0.0	2.62	0.0	0.0	2.94	0.0	0.00	0.0	0.0	0.0	0.0	0.00
$Gnd2	-0.00	0.0	0.04	0.0	0.0	0.07	0.0	0.0	0.08	0.0	0.00	0.0	0.0	0.0	0.0	0.00

Detailed Laminated Wood Pole Usages for Load Case "NESC Heavy L":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Pole 1	Pole 1:t	Origin	0.00	7.45	26.11	-0.41	0.00	-0.00	0.0	-0.13	0.00	-0.02	0.0
Pole 1	Pole 1:AT&T	End	2.00	7.24	25.30	-0.39	0.00	-0.04	0.0	-0.13	0.00	-0.02	0.0
Pole 1	Pole 1:AT&T	Origin	2.00	7.24	25.30	-0.39	0.00	-0.04	0.0	-3.06	0.03	-0.88	0.2
Pole 1	Pole 1:Coax 1	End	5.00	6.92	24.09	-0.37	0.09	-2.68	0.0	-3.06	0.03	-0.88	0.8
Pole 1	Pole 1:Coax 1	Origin	5.00	6.92	24.09	-0.37	0.09	-2.68	-0.0	-3.95	0.04	-1.03	0.9
Pole 1	#Pole 1:0	End	8.50	6.55	22.68	-0.34	0.22	-6.28	-0.0	-3.95	0.04	-1.03	1.7
Pole 1	#Pole 1:0	Origin	8.50	6.55	22.68	-0.34	0.22	-6.28	-0.0	-4.44	0.04	-1.11	1.7
Pole 1	Pole 1:TMobile	End	12.00	6.18	21.28	-0.32	0.36	-10.15	-0.0	-4.44	0.04	-1.11	2.5
Pole 1	Pole 1:TMobile	Origin	12.00	6.18	21.28	-0.32	0.36	-10.15	-0.0	-7.47	0.07	-1.96	2.7
Pole 1	Pole 1:Coax 2	End	15.00	5.87	20.08	-0.30	0.57	-16.04	-0.0	-7.47	0.07	-1.96	3.9
Pole 1	Pole 1:Coax 2	Origin	15.00	5.87	20.08	-0.30	0.57	-16.04	-0.0	-8.52	0.08	-2.14	4.0
Pole 1	#Pole 1:1	End	20.00	5.35	18.11	-0.26	0.97	-26.72	-0.0	-8.52	0.08	-2.14	6.0
Pole 1	#Pole 1:1	Origin	20.00	5.35	18.11	-0.26	0.97	-26.72	-0.0	-9.28	0.09	-2.25	6.1
Pole 1	Pole 1:Coax 3	End	25.00	4.83	16.17	-0.23	1.41	-37.99	-0.0	-9.28	0.09	-2.25	8.0
Pole 1	Pole 1:Coax 3	Origin	25.00	4.83	16.17	-0.23	1.41	-37.99	-0.0	-10.54	0.10	-2.45	8.1
Pole 1	#Pole 1:2	End	30.00	4.31	14.28	-0.19	1.91	-50.24	-0.0	-10.54	0.10	-2.45	10.1
Pole 1	#Pole 1:2	Origin	30.00	4.31	14.28	-0.19	1.91	-50.24	-0.0	-11.37	0.11	-2.57	10.2
Pole 1	Pole 1:Coax 4	End	35.00	3.80	12.45	-0.16	2.44	-63.08	-0.0	-11.37	0.11	-2.57	12.1
Pole 1	Pole 1:Coax 4	Origin	35.00	3.80	12.45	-0.16	2.44	-63.08	-0.0	-12.60	0.12	-2.75	12.2
Pole 1	Pole 1:SW	End	39.00	3.40	11.04	-0.14	2.91	-74.09	-0.0	-12.60	0.12	-2.75	13.8
Pole 1	Pole 1:SW	Origin	39.00	3.40	11.04	-0.14	2.97	-74.11	-0.0	-13.90	0.17	-2.88	13.9
Pole 1	Pole 1:Wire	End	42.00	3.10	10.02	-0.12	3.47	-82.74	-0.0	-13.90	0.17	-2.88	15.1
Pole 1	Pole 1:Wire	Origin	42.00	3.10	10.02	-0.12	5.34	-82.23	-0.1	-18.20	1.47	-2.67	15.7
Pole 1	Pole 1:Coax 5	End	45.00	2.80	9.04	-0.11	9.76	-90.26	-0.1	-18.20	1.47	-2.67	17.6
Pole 1	Pole 1:Coax 5	Origin	45.00	2.80	9.04	-0.11	9.76	-90.26	-0.1	-19.41	1.48	-2.84	17.6
Pole 1	#Pole 1:3	End	50.00	2.32	7.48	-0.08	17.15	-104.45	-0.1	-19.41	1.48	-2.84	20.7
Pole 1	#Pole 1:3	Origin	50.00	2.32	7.48	-0.08	17.15	-104.45	-0.1	-20.37	1.48	-2.95	20.8
Pole 1	Pole 1:Coax 6	End	55.00	1.87	6.04	-0.06	24.53	-119.18	-0.1	-20.37	1.48	-2.95	23.6
Pole 1	Pole 1:Coax 6	Origin	55.00	1.87	6.04	-0.06	24.54	-119.18	-0.1	-21.82	1.48	-3.12	23.7
Pole 1	#Pole 1:4	End	60.00	1.45	4.72	-0.05	31.92	-134.81	-0.1	-21.82	1.48	-3.12	26.5
Pole 1	#Pole 1:4	Origin	60.00	1.45	4.72	-0.05	31.92	-134.81	-0.1	-22.85	1.47	-3.22	26.5
Pole 1	Pole 1:Coax 7	End	65.00	1.08	3.53	-0.03	39.26	-150.92	-0.1	-22.85	1.47	-3.22	29.1
Pole 1	Pole 1:Coax 7	Origin	65.00	1.08	3.53	-0.03	39.26	-150.92	-0.2	-24.37	1.46	-3.39	29.2
Pole 1	#Pole 1:5	End	70.00	0.76	2.50	-0.02	46.56	-167.87	-0.2	-24.37	1.46	-3.39	31.6
Pole 1	#Pole 1:5	Origin	70.00	0.76	2.50	-0.02	46.56	-167.87	-0.2	-25.47	1.44	-3.48	31.7
Pole 1	Pole 1:Coax 8	End	75.00	0.49	1.63	-0.01	53.78	-185.24	-0.2	-25.47	1.44	-3.48	34.0
Pole 1	Pole 1:Coax 8	Origin	75.00	0.49	1.63	-0.01	53.78	-185.24	-0.2	-27.05	1.43	-3.63	34.1
Pole 1	#Pole 1:6	End	80.00	0.28	0.94	-0.01	60.92	-203.37	-0.2	-27.05	1.43	-3.63	36.3
Pole 1	#Pole 1:6	Origin	80.00	0.28	0.94	-0.01	60.92	-203.37	-0.2	-28.21	1.41	-3.70	36.4
Pole 1	Pole 1:Coax 9	End	85.00	0.12	0.42	-0.00	67.95	-221.85	-0.2	-28.21	1.41	-3.70	38.5
Pole 1	Pole 1:Coax 9	Origin	85.00	0.12	0.42	-0.00	67.95	-221.85	-0.2	-29.87	1.38	-3.83	38.5
Pole 1	#Pole 1:7	End	90.00	0.03	0.11	-0.00	74.85	-240.99	-0.2	-29.87	1.38	-3.83	40.6

Pole 1	#Pole 1:7	Origin	90.00	0.03	0.11	-0.00	74.85	-240.99	-0.2	-31.10	1.35	-3.88	40.6
Pole 1	Pole 1:g	End	95.00	0.00	0.00	0.00	81.61	-260.37	-0.2	-31.10	1.35	-3.88	42.5

Summary of Guy Tensions and Usages for Load Case "NESC Heavy L":

Guy Label	Max. Tension (kips)	Allowable Tension (kips)	Factored Allowable (kips)	Usage %
Wire	2.96	18.72	18.72	15.80
SW	0.10	18.72	18.72	0.52

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
C1	0.595	10.00	10.00	5.95
C2	1.117	10.00	10.00	11.17
C3	2.739	10.00	10.00	27.39
C4	2.703	10.00	10.00	27.03
C5	0.476	10.00	10.00	4.76
C6	0.481	10.00	10.00	4.81
C7	0.489	10.00	10.00	4.89
C8	0.488	10.00	10.00	4.88
C9	0.487	10.00	10.00	4.87
C10	0.498	10.00	10.00	4.98
C11	0.501	10.00	10.00	5.01
C12	0.504	10.00	10.00	5.04
C13	0.507	10.00	10.00	5.07

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

Summary of Laminated Wood Pole Usages:

Laminated Wood Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Pole 1	99.11	Ext. Wind L	22	14933.6

Summary of Guy Usages:

Guy Label	Maximum Usage %	Load Case	Weight (lbs)	Unstressed Length (ft)
Wire	43.50	Ext. Wind T	23.1	59.30
SW	45.74	Ext. Wind T	24.4	62.66

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
Ext. Wind T	45.74	SW	Guy
Ext. Wind L	99.11	Pole 1	Laminated Wood
NESC Heavy T	38.96	SW	Guy
NESC Heavy L	42.52	Pole 1	Laminated Wood

Summary of Laminated Wood Pole Usages by Load Case:

Load Case	Maximum Usage %	Laminated Wood Pole Segment Label	Segment Number
Ext. Wind T	22.47	Pole 1	10
Ext. Wind L	99.11	Pole 1	22
NESC Heavy T	9.52	Pole 1	10
NESC Heavy L	42.52	Pole 1	22

Summary of Guy Usages by Load Case:

Load Case	Maximum	Guy

	Usage %	Label
Ext. Wind T	45.74	SW
Ext. Wind L	35.97	Wire
NESC Heavy T	38.96	SW
NESC Heavy L	15.80	Wire

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
C1	Clamp	21.26	NESC Heavy T	0.0
C2	Clamp	35.11	NESC Heavy T	0.0
C3	Clamp	27.64	Ext. Wind L	0.0
C4	Clamp	27.35	Ext. Wind L	0.0
C5	Clamp	6.92	NESC Heavy T	0.0
C6	Clamp	6.91	NESC Heavy T	0.0
C7	Clamp	6.90	NESC Heavy T	0.0
C8	Clamp	6.90	NESC Heavy T	0.0
C9	Clamp	6.91	NESC Heavy T	0.0
C10	Clamp	6.90	NESC Heavy T	0.0
C11	Clamp	6.90	NESC Heavy T	0.0
C12	Clamp	6.90	NESC Heavy T	0.0
C13	Clamp	6.90	NESC Heavy T	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)
Ext. Wind T	C1	Clamp	Pole 1:SW	0.001	-0.861	0.194	0.883
Ext. Wind T	C2	Clamp	Pole 1:Wire	0.001	-2.230	0.458	2.277
Ext. Wind T	C3	Clamp	Pole 1:AT&T	0.000	-2.040	1.373	2.459
Ext. Wind T	C4	Clamp	Pole 1:TMobile	0.001	-1.885	1.370	2.331
Ext. Wind T	C5	Clamp	Pole 1:Coax 1	0.001	-0.108	0.187	0.216
Ext. Wind T	C6	Clamp	Pole 1:Coax 2	0.001	-0.039	0.187	0.191
Ext. Wind T	C7	Clamp	Pole 1:Coax 3	0.001	0.054	0.187	0.195
Ext. Wind T	C8	Clamp	Pole 1:Coax 4	0.001	0.007	0.187	0.187
Ext. Wind T	C9	Clamp	Pole 1:Coax 5	0.001	-0.039	0.187	0.191
Ext. Wind T	C10	Clamp	Pole 1:Coax 6	0.001	0.054	0.187	0.195
Ext. Wind T	C11	Clamp	Pole 1:Coax 7	0.002	0.054	0.187	0.195
Ext. Wind T	C12	Clamp	Pole 1:Coax 8	0.002	0.054	0.187	0.195
Ext. Wind T	C13	Clamp	Pole 1:Coax 9	0.002	0.054	0.187	0.195

Ext. Wind L	C1	Clamp	Pole 1:SW	0.242	0.001	0.194	0.310
Ext. Wind L	C2	Clamp	Pole 1:Wire	0.212	0.001	0.458	0.505
Ext. Wind L	C3	Clamp	Pole 1:AT&T	2.399	0.001	1.373	2.764
Ext. Wind L	C4	Clamp	Pole 1:TMobile	2.367	0.001	1.370	2.735
Ext. Wind L	C5	Clamp	Pole 1:Coax 1	0.335	0.001	0.125	0.357
Ext. Wind L	C6	Clamp	Pole 1:Coax 2	0.395	0.001	0.125	0.415
Ext. Wind L	C7	Clamp	Pole 1:Coax 3	0.476	0.002	0.125	0.492
Ext. Wind L	C8	Clamp	Pole 1:Coax 4	0.466	0.002	0.125	0.482
Ext. Wind L	C9	Clamp	Pole 1:Coax 5	0.455	0.001	0.125	0.472
Ext. Wind L	C10	Clamp	Pole 1:Coax 6	0.550	0.002	0.125	0.564
Ext. Wind L	C11	Clamp	Pole 1:Coax 7	0.575	0.002	0.125	0.589
Ext. Wind L	C12	Clamp	Pole 1:Coax 8	0.600	0.002	0.125	0.613
Ext. Wind L	C13	Clamp	Pole 1:Coax 9	0.625	0.002	0.125	0.637
NESC Heavy T	C1	Clamp	Pole 1:SW	0.001	-2.042	0.590	2.126
NESC Heavy T	C2	Clamp	Pole 1:Wire	0.001	-3.329	1.115	3.511
NESC Heavy T	C3	Clamp	Pole 1:AT&T	0.000	-0.644	2.632	2.710
NESC Heavy T	C4	Clamp	Pole 1:TMobile	0.001	-0.604	2.595	2.664
NESC Heavy T	C5	Clamp	Pole 1:Coax 1	0.001	-0.049	0.690	0.692
NESC Heavy T	C6	Clamp	Pole 1:Coax 2	0.001	-0.026	0.690	0.691
NESC Heavy T	C7	Clamp	Pole 1:Coax 3	0.001	0.003	0.690	0.690
NESC Heavy T	C8	Clamp	Pole 1:Coax 4	0.001	-0.012	0.690	0.690
NESC Heavy T	C9	Clamp	Pole 1:Coax 5	0.001	-0.026	0.690	0.691
NESC Heavy T	C10	Clamp	Pole 1:Coax 6	0.001	0.003	0.690	0.690
NESC Heavy T	C11	Clamp	Pole 1:Coax 7	0.001	0.003	0.690	0.690
NESC Heavy T	C12	Clamp	Pole 1:Coax 8	0.001	0.003	0.690	0.690
NESC Heavy T	C13	Clamp	Pole 1:Coax 9	0.002	0.003	0.690	0.690
NESC Heavy L	C1	Clamp	Pole 1:SW	0.078	0.001	0.590	0.595
NESC Heavy L	C2	Clamp	Pole 1:Wire	0.068	0.001	1.115	1.117
NESC Heavy L	C3	Clamp	Pole 1:AT&T	0.759	0.001	2.632	2.739
NESC Heavy L	C4	Clamp	Pole 1:TMobile	0.758	0.001	2.595	2.703
NESC Heavy L	C5	Clamp	Pole 1:Coax 1	0.121	0.001	0.460	0.476
NESC Heavy L	C6	Clamp	Pole 1:Coax 2	0.140	0.001	0.460	0.481
NESC Heavy L	C7	Clamp	Pole 1:Coax 3	0.166	0.002	0.460	0.489
NESC Heavy L	C8	Clamp	Pole 1:Coax 4	0.163	0.001	0.460	0.488
NESC Heavy L	C9	Clamp	Pole 1:Coax 5	0.159	0.001	0.460	0.487
NESC Heavy L	C10	Clamp	Pole 1:Coax 6	0.190	0.002	0.460	0.498
NESC Heavy L	C11	Clamp	Pole 1:Coax 7	0.198	0.002	0.460	0.501
NESC Heavy L	C12	Clamp	Pole 1:Coax 8	0.206	0.002	0.460	0.504
NESC Heavy L	C13	Clamp	Pole 1:Coax 9	0.214	0.002	0.460	0.507

Loads At Guy Attachments For All Load Cases:

Note: Loads on the structure from guys have same sign convention as LCA file.

Load Case	Guy Label	Structure Attach Label	Structure Attach Vert. Load (kips)	Structure Attach Tran. Load (kips)	Structure Attach Long. Load (kips)	Structure Attach Load Res. (kips)

Ext. Wind T	Wire	Pole 1:Wire	7.255	3.574	-0.949	8.143
Ext. Wind T	SW	Pole 1:SW	7.627	3.763	0.990	8.562
Ext. Wind L	Wire	Pole 1:Wire	6.008	2.864	-1.028	6.734
Ext. Wind L	SW	Pole 1:SW	0.145	0.063	0.047	0.165
NESC Heavy T	Wire	Pole 1:Wire	6.484	3.175	-0.847	7.269
NESC Heavy T	SW	Pole 1:SW	6.506	3.187	0.846	7.294
NESC Heavy L	Wire	Pole 1:Wire	2.645	1.271	-0.375	2.958
NESC Heavy L	SW	Pole 1:SW	0.088	0.037	0.020	0.098

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)
Ext. Wind T	-11.831	0.000	5.078	-775.975	0.000	0.000
Ext. Wind L	0.000	5.933	4.520	0.000	466.441	0.000
NESC Heavy T	-8.287	0.000	13.142	-491.454	0.000	0.000
NESC Heavy L	0.000	2.012	11.072	0.000	154.574	0.000

*** Weight of structure (lbs):

Weight of Guys:	47.6
Weight of Laminated Wood Poles:	14933.6
Total:	14981.2

*** End of Report

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTV5436	DATE:	3/22/2016	RF DESIGN ENG:	Omair Mohammed	RF PERF ENG:		RFDS PROGRAM TYPE:	2017 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	860-721-4315	RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 2C
REVISION:	Preliminary	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	OM636A@US.ATT.COM	RF PERF EMAIL:		State:	Final
INITIATIVE / PROJECT:	LTE 2C w/ Bronze Standard Configuration					TRIDENT:		Status:	Approved
						GSM FREQUENCY:	1900	RFDS ID:	1123256
						UMTS FREQUENCY:	850,1900	Version	1.00
						LTE FREQUENCY:	700,1900	Created By:	om636a
								Date Created:	3/16/2016
								Date Updated:	5/11/2016
								Updated By:	om636a
						I-PLAN JOB # 1:	NER-RCTB-12-04229	Product Group || Sub Group #1	LTE Next Carrier || LTE 2C
						I-PLAN JOB # 2:		Product Group || Sub Group #2	
						I-PLAN JOB # 3:		Product Group || Sub Group #3	
						I-PLAN JOB # 4:		Product Group || Sub Group #4	

Section 2 - LOCATION INFORMATION

USID:	26992	FA LOCATION CODE:	10071126	LOCATION NAME:	MIDDLETOWN SOUTH	ORACLE PRJT # 1:		PACE JOB #1:	MRCTB018173
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:		PACE JOB #2:	
ADDRESS:	1114 AND 1176 BARTHOLOMEW ROAD	CITY:	MIDDLETOWN	STATE:	CT	ORACLE PRJT # 3:		PACE JOB #3:	
ZIP CODE:	06457	COUNTY:	MIDDLESEX	MSA / RSA:		ORACLE PRJT # 4:		PACE JOB #4:	
LATITUDE (D-M-S):	41d 31m 14.49084s	LONGITUDE (D-M-S):	-72d -36m -29.51604s	LAT (DEC. DEG.):	41.5206919	SEARCH RING NAME:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	UPDATED 10/10 CT-436_GSM MIDDLETOWN SOUTH I-95 TO EXIT FOR ROUTE 9 NORTH'S. GET ON ROUTE 9 NORTH AND GET OFF EXIT 11, AT THE END OF RAMP MAKE RIGHT ONTO RT 155 TAKE THIS TO SAY BROOK RD MAKE RIGHT THEN ANOTHER RIGHT ONTO BARTHOLOMEW RD FOLLOW THIS ROAD FOR APPROXIMATELY 2 MILES TO ADDRESS SITE IS ON A MONOPOLE ON THE LEFT. SITE COMPOUND COMBO:8899. DEMARC IN COMPOUND TELCO BOX. ADDRESS: 1176 BARTHOLOMEW ROAD, MIDDLETOWN, CT 06457 ACCESS: 24/7 GATE 5509 COMPOUND COMBO: 8899 SECURITY: NO POWER COMPANY SITE IS ON GENERATOR T-1 CIRCUIT NUMBERS HCGS - 788763 SNET: (800) 448-1008 AND (203) 420-3131 (24-HR REPAIR) METER:					SEARCH RING ID:		CASPR INITIATIVE #1:	
						BTA:		CASPR INITIATIVE #2:	
						LONG (DEC. DEG.):	-72.6081989	CASPR INITIATIVE #3:	
						BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE #4:	
						AM STUDY REQ'D (Y/N):	No		
						FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

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

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	UTILITY	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	95.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	95.00			MARKET LOCATION 1900 MHz Band:	
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:	
						MARKET LOCATION WCS Band:	
						MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR B	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR C	MIDDLETOWN CENTRAL COMMUNICATIONS	1356		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	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR B	VALLEY SHORE EMER CC	1406		INTRADO_MIAMI		0		
SECTOR C	MIDDLETOWN CENTRAL COMMUNICATIONS	1356		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	LTE 1ST RBS
RBS ID:	27257	218858	290924	367003
CTS COMMON ID:	184P5436	CTV5436	CTU5436	CTL05436
BTA/TID:	184P	184U	184W	184L
4-DIGIT SITE ID:	5436	5436	5436	5436
COW OR TOY?:	No	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	GROUND	GROUND	GROUND	INTERNAL
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD
OPS DISTRICT:	CT SOUTH-EAST	CT-SOUTH	CT-SOUTH	CT-SOUTH
RF DISTRICT:	NPO TRIAGE	MIDDLETOWN	NPO TRIAGE	NPO TRIAGE
OPS ZONE:	NE_CT_S_MDSX_N_CS	NE_CT_S_MDSX_N_CS	NE_CT_S_MDSX_N_CS	NE_CT_S_MDSX_N_CS
RF ZONE:	HOTSEAT	BCT07	HOTSEAT	HOTSEAT
BASE STATION TYPE:	BASE	BASE	OVERLAY	BASE
EQUIPMENT NAME:	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH
DISASTER PRIORITY:	3	1	0	3

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS
RBS ID:	27257	218858	290924	367003
CTS COMMON ID:	184P5436	CTV5436	CTU5436	CTL05436
BTA/TID:	184P	184U	184W	184L
4-DIGIT SITE ID:	5436	5436	5436	5436
COW OR TOY?:	No	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	GROUND	GROUND	GROUND	INTERNAL
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD
OPS DISTRICT:		CT-South	CT-South	CT-South
RF DISTRICT:	NPO Triage	Middletown	NPO Triage	NPO Triage
OPS ZONE:		NE_CT_S_MDSX_N_CS	NE_CT_S_MDSX_N_CS	NE_CT_S_MDSX_N_CS
RF ZONE:	Hotseat	BCT07	Hotseat	Hotseat
BASE STATION TYPE:	BASE	BASE	OVERLAY	BASE
EQUIPMENT NAME:	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH	MIDDLETOWN SOUTH
DISASTER PRIORITY:	3	1	0	3

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS
MSC:				
BSC/RNC/MME POOL ID:	BCT07	MDTWCTNICRBR06	MDTWCTNICRBR06	FF01
LAC:	05007	05986	05986	
RAC:				
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE:	ULTRASITE	3106 OUTDOOR	3106 OUTDOOR	6601 INDOOR MU
BASEBAND CONFIGURATION:				
LOCATION:				
CABINET LOCATION:				
MARKET STATE CODE:				CT
AGPS:	Yes	Yes	Yes	Yes
NODE B NUMBER:	0	0	0	5436
PARENT NAME:	MIDDLETOWN-GSM MTSO-BSC-7	MIDDLETOWN RNC06	MIDDLETOWN RNC06	FF01

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS
MSC:				
BSC/RNC/MME POOL ID:	BCT07	MDTWCTNICRBR06	MDTWCTNICRBR06	FF01
LAC:	05007	05986	05986	
RAC:				
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE:	ULTRASITE	3106 OUTDOOR	3106 OUTDOOR	6601 INDOOR MU
BASEBAND CONFIGURATION:				
LOCATION:				
CABINET LOCATION:				
MARKET STATE CODE:				CT
AGPS:	Yes	Yes	Yes	Yes
NODE B NUMBER:	0	0	0	5436
PARENT NAME:	MIDDLETOWN-GSM MTSO-BSC-7	MIDDLETOWN RNC06	MIDDLETOWN RNC06	

Section 8 - RBS INDIVIDUAL INFORMATION - existing																										
	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900																			
RBS ID:	27257	218858	290924	218858	290924	367003																				
CELL ID/BCF:	NYNYCT5436	CTV5436	CTV5436	CTV5436	CTV5436	CTL05436																				
CTS COMMON ID:	184P5436	CTV5436	CTU5436	CTV5436	CTU5436	CTL05436																				

Section 8 - RBS INDIVIDUAL INFORMATION - final																										
	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900																			
RBS ID:	27257	218858	290924	218858	290924	367003	367003																			
CELL ID/BCF:	NYNYCT5436	CTV5436	CTV5436	CTV5436	CTV5436	CTL05436	CTL05436																			
CTS COMMON ID:	184P5436	CTV5436	CTU5436	CTV5436	CTU5436	CTL05436	CTL05436																			

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
USEID (excluding Hard Sector)	26992.1900.25G.1	26992.850.3G.1	26992.1900.3G.1	26992.850.3G.2	26992.1900.3G.2	26992.700.4G.1			
SECTOR A SOFT SECTOR ID	184P54361	CTV54361	CTU54364	CTV5436A	CTU54367	CTL05436_7A_1			
SECTOR B	184P54362	CTV54362	CTU54365	CTV5436B	CTU54368	CTL05436_7B_1			
SECTOR C	184P54363	CTV54363	CTU54366	CTV5436C	CTU54369	CTL05436_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	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
USEID (excluding Hard Sector)	26992.1900.25G.1	26992.850.3G.1	26992.1900.3G.1	26992.850.3G.2	26992.1900.3G.2	26992.700.4G.1		26992.1900.4G.tmp:	
SECTOR A SOFT SECTOR ID	184P54361	CTV54361	CTU54364	CTV5436A	CTU54367	CTL05436_7A_1	CTL05436_8A_1	CTL05436_9A_1	CTL05436_3A_1
SECTOR B	184P54362	CTV54362	CTU54365	CTV5436B	CTU54368	CTL05436_7B_1	CTL05436_8B_1	CTL05436_9B_1	CTL05436_3B_1
SECTOR C	184P54363	CTV54363	CTU54366	CTV5436C	CTU54369	CTL05436_7C_1	CTL05436_8C_1	CTL05436_9C_1	CTL05436_3C_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	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
USEID (excluding Hard Sector)	26992.1900.25G.1	26992.850.3G.1	26992.1900.3G.1	26992.850.3G.2	26992.1900.3G.2	26992.700.4G.1			
SECTOR A CELL NUMBER	0	0	0	0	0	15			
SECTOR B	0	0	0	0	0	16			
SECTOR C	0	0	0	0	0	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	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
USEID (excluding Hard Sector)	26992.1900.25G.1	26992.850.3G.1	26992.1900.3G.1	26992.850.3G.2	26992.1900.3G.2	26992.700.4G.1		26992.1900.4G.tmp:	
SECTOR A CELL NUMBER	0	0	0	0	0	15		8	
SECTOR B	0	0	0	0	0	16		9	
SECTOR C	0	0	0	0	0	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	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
SECTOR A CID/SAC	54361	54361	54364	44361	54367				
SECTOR B	54362	54362	54365	44362	54368				
SECTOR C	54363	54363	54366	44363	54369				
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 10 - CID/SAC - final

	GSM 1ST 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS
SECTOR A CID/SAC	54361	54361	54364	44361	54367				
SECTOR B	54362	54362	54365	44362	54368				
SECTOR C	54363	54363	54366	44363	54369				
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 11 - CURRENT RADIO COUNTS existing

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

Section 12 - CURRENT T1 COUNTS existing

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

Section 13 - NEW/PROPOSED RADIO COUNTS

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

Section 14 - NEW/PROPOSED T1 COUNTS

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

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET									
ANTENNA VENDOR	Powerwave				KMW									
ANTENNA SIZE (H x W x D)	55X11X5				72X11.8X5.9									
ANTENNA WEIGHT	35				48.5									
AZIMUTH	140				30									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93				93.02									
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0									
FEEDER AMOUNT	2				2									
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020				Internal								
SURGE ARRESTOR (QTY/MODEL)					2	BDFDM-DBW Broadband								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901			2	CM1007-DBPXBC-003								
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070				LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)			1	DTMABP7819VG 12A Twin PCS w/								
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860				AISG Diplexer								
PDU FOR TMAS (QTY/MODEL)	1	AND 850 Bypass TMA)												
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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		26992.A.850.3G.1	CTV54361	CTV54361		UMTS 850	7770.00.850.06	13.5		6	None	Andrew 1-5/8 (850)	140.035847									
	PORT 2		26992.A.850.3G.1	CTV54361	CTV5436A		UMTS 850	7770.00.850.06	13.5		6	Bottom	Andrew 1-5/8 (850)	140.035847									
	PORT 3		26992.A.1900.3G.2	CTU54367	CTU54367		UMTS 1900	7770.00.1900.00	15.5		0	None	Andrew 1-5/8 (1900)	140.035847									
	PORT 4		26992.A.1900.3G.1	CTU54367	CTU54364		UMTS 1900	7770.00.1900.00	15.5		0	Bottom	Andrew 1-5/8 (1900)	140.035847									
	PORT 7		26992.A.1900.25G.1	184P54361	184P54361		GSM 1900	7770.00.1900.00	16.79		0	None	7/8 at 1900 MHz	140.035847	RxAIT 1900	1	LLC 1900		11.22	228.03			
ANTENNA POSITION 3	PORT 1		26992.A.700.4G.1	CTL05436_7A_1	CTL05436_7A_1		LTE 700	00T-RET_725MHz_07	15.6		7	Bottom	FXL 780_700 MHz	120.030726									

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET									
ANTENNA VENDOR	Powerwave				KMW									
ANTENNA SIZE (H x W x D)	55X11X5				72X11.8X5.9									
ANTENNA WEIGHT	35				48.5									
AZIMUTH	240				140									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93				93.02									
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0									
FEEDER AMOUNT	2				2									
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020				Internal								
SURGE ARRESTOR (QTY/MODEL)					2	BDFDM-DBW Broadband								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901			2	CM1007-DBPXBC-003								
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)			1	DTMABP7819VG 12A Twin PCS w/								
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860				AiSG Diplexer								
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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		26992.B.850.3G.1	CTV54362	CTV54362		UMTS 850	7770.00.850.06	13.5		6	None	Andrew 1-5/8 (850)	140.035847									
	PORT 2		26992.B.850.3G.1	CTV54362	CTV5436B		UMTS 850	7770.00.850.06	13.5		6	Bottom	Andrew 1-5/8 (850)	140.035847									
	PORT 3		26992.B.1900.3G.2	CTU54368	CTU54368		UMTS 1900	7770.00.1900.00	15.5		0	None	Andrew 1-5/8 (1900)	140.035847									
	PORT 4		26992.B.1900.3G.1	CTU54368	CTU54365		UMTS 1900	7770.00.1900.00	15.5		0	Bottom	Andrew 1-5/8 (1900)	140.035847									
	PORT 7		26992.B.1900.25G.1	184P54362	184P54362		GSM 1900	7770.00.1900.00	16.79		0	None	7/8 at 1900 MHz	140.035847	RxAIT 1900	1	LLC 1900		12.58	255.85			
ANTENNA POSITION 3	PORT 1		26992.B.700.4G.1	CTL05436_7B_1	CTL05436_7B_1		LTE 700	00T-RET_725MHz_04	15.6		4	Bottom	FXL 780_700 MHz	120.030726									

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET									
ANTENNA VENDOR	Powerwave				KMW									
ANTENNA SIZE (H x W x D)	55X11X5				72X11.8X5.9									
ANTENNA WEIGHT	35				48.5									
AZIMUTH	340				260									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93				93.02									
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0									
FEEDER AMOUNT	2				2									
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020				Internal								
SURGE ARRESTOR (QTY/MODEL)					2	BDFDM-DBW Broadband								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901			2	CM1007-DBPXBC-003								
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)			1	DTMABP7819VG 12A Twin PCS w/								
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860				AiSG Diplexer								
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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		26992.C.850.3G.1	CTV54363	CTV54363		UMTS 850	7770.00.850.06	13.5		6	None	Andrew 1-5/8 (850)	140.035847									
	PORT 2		26992.C.850.3G.1	CTV54363	CTV5436C		UMTS 850	7770.00.850.06	13.5		6	Bottom	Andrew 1-5/8 (850)	140.035847									
	PORT 3		26992.C.1900.3G.2	CTU54369	CTU54369		UMTS 1900	7770.00.1900.04	15.5		4	None	Andrew 1-5/8 (1900)	140.035847									
	PORT 4		26992.C.1900.3G.1	CTU54369	CTU54366		UMTS 1900	7770.00.1900.04	15.5		4	Bottom	Andrew 1-5/8 (1900)	140.035847									
	PORT 7		26992.C.1900.25G.1	184P54363	184P54363		GSM 1900	7770.00.1900.04	16.79		4	None	7/8 at 1900 MHz	140.035847	RxAIT 1900	1	LLC 1900		12.58	255.85			
ANTENNA POSITION 3	PORT 1		26992.C.700.4G.1	CTL05436_7C_1	CTL05436_7C_1		LTE 700	00T-RET_725MHz_10	15.6		10	Bottom	FXL 780_700 MHz	120.030726									

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		HPA-65R-BUU-H6					
ANTENNA VENDOR		CCI Products					
ANTENNA SIZE (H x W x D)		72X14.8X9					
ANTENNA WEIGHT		51					
AZIMUTH		30					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		93.02					
ANTENNA TIP HEIGHT		96.02					
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 BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		2 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 1 (Twin AWS-PCS w/ 700/850					
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer					
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-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 Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	- Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2						
Local Market Note 2							
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C: : : : : : : : :D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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 2	PORT 3		26992.A.1900.4G.1	CTL05436_9A_1	CTL05436_9A_1		LTE 1900	H6_1930MHz_04DT	17.15	30	4	Bottom	FXL 780_1900 MHz	120.030726						3258.367		3	

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		HPA-65R-BUU-H6					
ANTENNA VENDOR		CCI Products					
ANTENNA SIZE (H x W x D)		72X14.8X9					
ANTENNA WEIGHT		51					
AZIMUTH		140					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		93.02					
ANTENNA TIP HEIGHT		96.02					
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 BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		2 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 1 (Twin AWS-PCS w/ 700/850					
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer					
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-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 Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	- Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2						
Local Market Note 2							
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2: XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C: : : : : : : : :D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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 2	PORT 3		26992.B.1900.4G.1	CTL05436_9B_1	CTL05436_9B_1		LTE 1900	H6_1930MHz_06DT	17.18	140	6	Bottom	FXL 780_1900 MHz	120.030726						3258.367		11	

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		HPA-65R-BUU-H6					
ANTENNA VENDOR		CCI Products					
ANTENNA SIZE (H x W x D)		72X14.8X9					
ANTENNA WEIGHT		51					
AZIMUTH		260					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		93.02					
ANTENNA TIP HEIGHT		96.02					
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 BDFDM-DBW Broadband					
DIPLEXER (QTY/MODEL)		2 Kaelus DBC2055F1V1-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		2 1 (Twin AWS-PCS w/ 700/850					
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer					
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-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 Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	- Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2						
Local Market Note 2							
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2:_ XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C: : : : : : : : :D1E:D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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 2	PORT 3		26992.C.1900.4G.1	CTL05436_9C_1	CTL05436_9C_1		LTE 1900	H6_1930MHz_06DT	17.18	260	6	Bottom	FXL 780_1900 MHz	120.030726						3258.367		19	

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		HPA-65R-BUU-H6											
ANTENNA VENDOR	Powerwave		CCI Products											
ANTENNA SIZE (H x W x D)	55X11X5		72X14.8X9											
ANTENNA WEIGHT	35		51											
AZIMUTH	140		30											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93		93.02											
ANTENNA TIP HEIGHT	95		96.02											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	2		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal										
SURGE ARRESTOR (QTY/MODEL)			4	BDFDM-DBW Broadband										
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Kaelus DBC2055F1V1-2										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070		LTE RRH										
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)	2	1 (Twin AWS-PCS w/ 700/850										
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860		AiSG Diplexer										
PDU FOR TMAS (QTY/MODEL)	1	AND 850 Bypass TMA)												
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	RRUS-11										
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE 2C Bronze Standard													
Local Market Note 2	- Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2													
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2:; XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C:;:D1E:D1D													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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	26992.A.850.3G.1	26992.A.850.3G.1	CTV54361	CTV54361		UMTS 850	7770.00.850.06	13.5	140	6	None	Andrew 1-5/8 (850)	140.035847						271.02		1	
	PORT 2	1, 26992.A.850.3G.	26992.A.850.3G.1	CTV54361	CTV5436A		UMTS 850	7770.00.850.06	13.5	140	6	Bottom	Andrew 1-5/8 (850)	140.035847						271.02		1	
	PORT 3	26992.A.1900.3G.2	26992.A.1900.3G.2	CTU54367	CTU54367		UMTS 1900	7770.00.1900.00	15.5	140	0	None	Andrew 1-5/8 (1900)	140.035847						362.24		2	
	PORT 4	26992.A.1900.3G.1	26992.A.1900.3G.1	CTU54367	CTU54364		UMTS 1900	7770.00.1900.00	15.5	140	0	Bottom	Andrew 1-5/8 (1900)	140.035847						629.51		2	
	PORT 7	26992.A.1900.25G.1	26992.A.1900.25G.1	184P54361	184P54361		GSM 1900	7770.00.1900.00	16.79	140	0	None	Andrew 1-5/8 (1900)	140.035847	RxAIT 1900	1	LLC 1900		11.22	228.03		2	
ANTENNA POSITION 2	PORT 1	26992.A.700.4G.1	26992.A.700.4G.1	CTL05436_7A_1	CTL05436_7A_1		LTE 700	H6_719MHz_07DT	14.03	30	7	Bottom	FXL 780_1900 MHz	120.030726						827.9421		3	
	PORT 3	26992.A.1900.4G.tmp1	26992.A.1900.4G.1	CTL05436_9A_1	CTL05436_9A_1		LTE 1900	H6_1930MHz_04DT	17.15	30	4	Bottom	FXL 780_1900 MHz	120.030726						3258.367		3	

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		HPA-65R-BUU-H6											
ANTENNA VENDOR	Powerwave		CCI Products											
ANTENNA SIZE (H x W x D)	55X11X5		72X14.8X9											
ANTENNA WEIGHT	35		51											
AZIMUTH	240		140											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93		93.02											
ANTENNA TIP HEIGHT	95		96.02											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	2		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal										
SURGE ARRESTOR (QTY/MODEL)			4	BDFDM-DBW Broadband										
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Kaelus DBC2055F1V1-2										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH										
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)	2	1 (Twin AWS-PCS w/ 700/850										
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860		AiSG Diplexer										
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	RRUS-11										
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE 2C Bronze Standard - Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2													
Local Market Note 2														
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2:; XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C:;:D1E:D1D													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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	26992.B.850.3G.1	26992.B.850.3G.1	CTV54362	CTV54362		UMTS 850	7770.00.850.06	13.5	240	6	None	Andrew 1-5/8 (850)	140.035847						271.02		9	
	PORT 2	1, 26992.B.850.3G.	26992.B.850.3G.1	CTV54362	CTV5436B		UMTS 850	7770.00.850.06	13.5	240	6	Bottom	Andrew 1-5/8 (850)	140.035847						271.02		9	
	PORT 3	26992.B.1900.3G.2	26992.B.1900.3G.2	CTU54368	CTU54368		UMTS 1900	7770.00.1900.00	15.5	240	0	None	Andrew 1-5/8 (1900)	140.035847						415.91		10	
	PORT 4	26992.B.1900.3G.1	26992.B.1900.3G.1	CTU54368	CTU54365		UMTS 1900	7770.00.1900.00	15.5	240	0	Bottom	Andrew 1-5/8 (1900)	140.035847						629.51		10	
	PORT 7	26992.B.1900.25G.1	26992.B.1900.25G.1	184P54362	184P54362		GSM 1900	7770.00.1900.00	16.79	240	0	None	Andrew 1-5/8 (1900)	140.035847	RxAIT 1900	1	LLC 1900		12.58	255.85		10	
ANTENNA POSITION 2	PORT 1	26992.B.700.4G.1	26992.B.700.4G.1	CTL05436_7B_1	CTL05436_7B_1		LTE 700	H6_719MHz_04DT	14.16	140	4	Bottom	FXL 780_1900 MHz	120.030726						827.9421		11	
	PORT 3	26992.B.1900.4G.tmp1	26992.B.1900.4G.1	CTL05436_9B_1	CTL05436_9B_1		LTE 1900	H6_1930MHz_06DT	17.18	140	6	Bottom	FXL 780_1900 MHz	120.030726						3258.367		11	

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

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		HPA-65R-BUU-H6											
ANTENNA VENDOR	Powerwave		CCI Products											
ANTENNA SIZE (H x W x D)	55X11X5		72X14.8X9											
ANTENNA WEIGHT	35		51											
AZIMUTH	340		260											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	93		93.02											
ANTENNA TIP HEIGHT	95		96.02											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	2		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Internal										
SURGE ARRESTOR (QTY/MODEL)			4	BDFDM-DBW Broadband										
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Kaelus DBC2055F1V1-2										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH										
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	21401 (DB - 850 Bypass)	2	1 (Twin AWS-PCS w/ 700/850										
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860		AiSG Diplexer										
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)			1	RRUS-11										
RRH - 850 band (QTY/MODEL)														
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 Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE 2C Bronze Standard - Replace existing LTE Antenna with Hex por Antenna and Install at Pos 2													
Local Market Note 2	[illegible]													
Local Market Note 3	DUS-1 - 7A:7B:7C:X1P1:X1P2:, XMU-1 - PA:PA2A:PB:PA2B:PC:PA2C:,:,:,:,:,:,:,:,:D1E:D1D													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	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	26992.C.850.3G.1	26992.C.850.3G.1	CTV54363	CTV54363		UMTS 850	7770.00.850.06	13.5	340	6	None	Andrew 1-5/8 (850)	140.035847						271.02		17	
	PORT 2	1,26992.C.850.3G.	26992.C.850.3G.1	CTV54363	CTV5436C		UMTS 850	7770.00.850.06	13.5	340	6	Bottom	Andrew 1-5/8 (850)	140.035847						271.02		17	
	PORT 3	26992.C.1900.3G.2	26992.C.1900.3G.2	CTU54369	CTU54369		UMTS 1900	7770.00.1900.04	15.5	340	4	None	Andrew 1-5/8 (1900)	140.035847						415.91		18	
	PORT 4	26992.C.1900.3G.1	26992.C.1900.3G.1	CTU54369	CTU54366		UMTS 1900	7770.00.1900.04	15.5	340	4	Bottom	Andrew 1-5/8 (1900)	140.035847						629.51		18	
	PORT 7	26992.C.1900.25G.1	26992.C.1900.25G.1	184P54363	184P54363		GSM 1900	7770.00.1900.04	16.79	340	4	None	Andrew 1-5/8 (1900)	140.035847	RxAIT 1900	1	LLC 1900		12.58	255.85		18	
ANTENNA POSITION 2	PORT 1	26992.C.700.4G.1	26992.C.700.4G.1	CTL05436_7C_1	CTL05436_7C_1		LTE 700	H6_719MHz_10DT	13.9	260	10	Bottom	FXL 780_1900 MHz	120.030726						827.9421		19	
	PORT 3	26992.C.1900.4G.tmp1	26992.C.1900.4G.1	CTL05436_9C_1	CTL05436_9C_1		LTE 1900	H6_1930MHz_06DT	17.18	260	6	Bottom	FXL 780_1900 MHz	120.030726						3258.367		19	

DATA SHEET

HexPort Multi-Band Antenna

HPA-65R-BUU-H6

- Six foot (1.8 m), six port antenna with a 65° azimuth beamwidth covering 698-894 MHz and 1710-2360 MHz frequencies
- Four high band and two low band ports including the WCS band in a single antenna
- Sharp elevation beamwidth aides in network planning
- Optimal elevation sidelobe performance
- Enhanced array spacing ensures optimal MIMO performance
- Exceeds minimum PIM performance requirements
- Multi-network solution in one radome with six ports
- Reduces tower load and increases space for tower mounted remote radio heads
- Multi-band design improves site radio resource management
- Field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) system with independent tilt control for each paired port

Overview

The CCI HexPort multi-band array is a six port antenna with full Wireless Communication Service (WCS) band coverage. With four high band ports covering 1710-2360 MHz and two low band ports covering 698-894 MHz, this six foot (1.8 m) CCI HexPort provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band. The HexPort allows separate tilt control for each pair of ports enabling maximum flexibility in network deployment.

CCI has engineered its antennas using new and innovative design techniques to provide optimal sidelobe performance, sharp elevation beams, and high front to back ratio.

Multiple technologies can now be connected to a single antenna, reducing tower load, lease expense, deployment time and installation cost.

CCI antennas are designed and produced to ISO 9001:2008 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- 4x4 MIMO for the high band and 2x2 MIMO for the low band
- Increase capacity without adding antennas
- Deploy WCS band without increasing antenna count
- Cosite current, and next-generation basestation technologies on the same antenna

MultiPort Series

HexPort Multi-Band Antenna

HPA-65R-BUU-H6

SPECIFICATIONS

Electrical

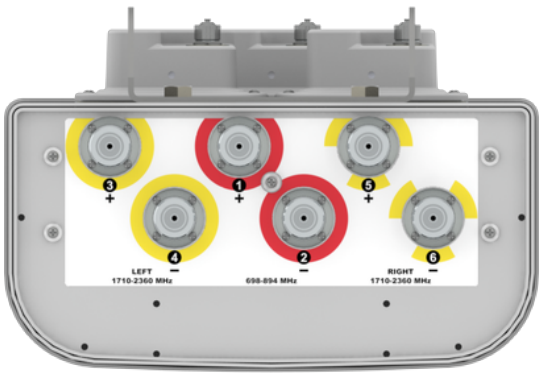
Ports	2 x Low Band Ports for 698-894 MHz		4 x High Band Ports for 1710-2360 MHz			
Frequency Range	698-806 MHz	824-894 MHz	1850-1990 MHz	1710-1755/2110-2170 MHz		2305-2360 MHz
Gain	14.1 dBi	14.8 dBi	16.9 dBi	16.3 dBi	17.2 dBi	17.4 dBi
Azimuth Beamwidth (-3dB)	66°	65°	61°	66°	62°	57°
Elevation Beamwidth (-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
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts	300 watts	300 watts	300 watts	300 watts
Polarization (Pol)	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

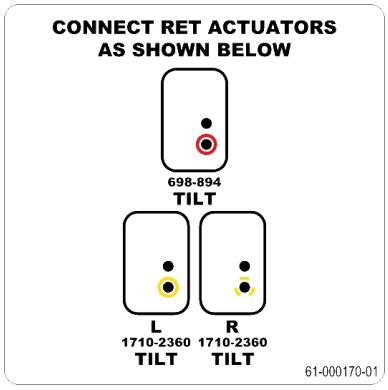
Dimensions (LxWxD)	72.3x14.4x7.3 in (1836x366x185 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	243 lbs (1081 N) @ 100 mph (161 kph)
Side Wind Load	140 lbs (622 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.5 ft^2 (0.9 m^2)
Weight *	42.9 lbs (19.5 kg)
RET System Weight	5.0 lbs (2.3 kg)
Connector	6 x 7-16 DIN female long neck
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting and RET*

Bottom View

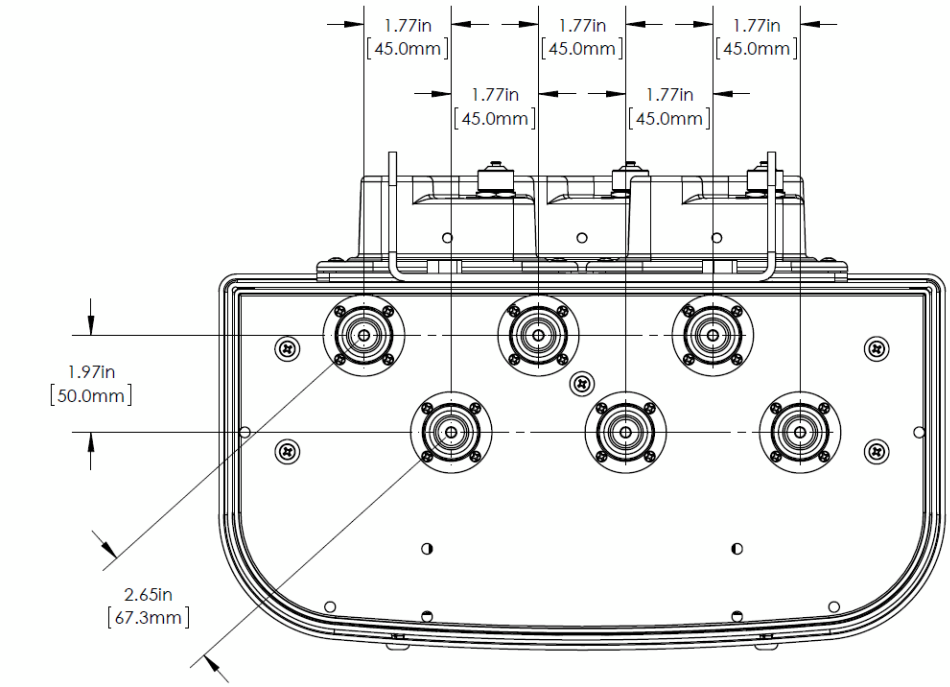


RET Connection Diagram



Mechanical

Connector Spacing



TMA2093F00V1-1

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

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

PRODUCT FEATURES

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

TECHNICAL SPECIFICATIONS

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

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

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

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

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

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

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

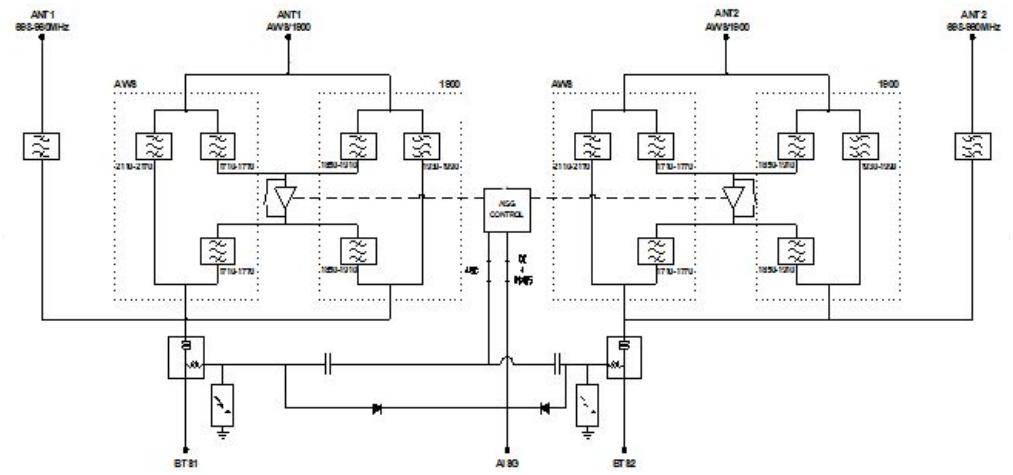
ENVIRONMENTAL

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

MECHANICAL

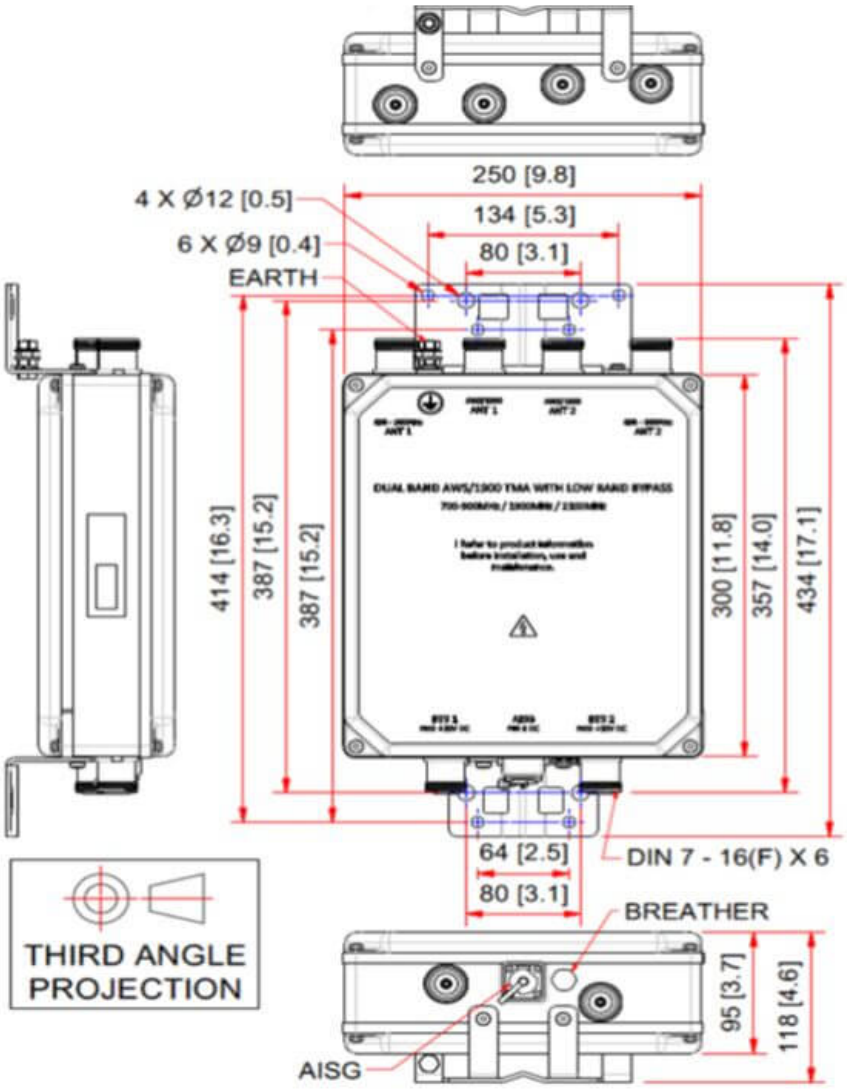
Connectors	DIN 7-16 (F) x 6 long neck, AISG (F) x 1
Dimensions, H x D x W	300 x 95 x 250mm | 11.8 x 3.7 x 9.8 in
Finish	Painted, light grey (RAL7035)
Weight	10.5kg | 23.1lbs
Mounting	Pole/wall bracket supplied with two metal clamps 45-178mm diameter poles

ELECTRICAL BLOCK DIAGRAM



TMA2093F001-1 Electrical Block Diagram

MECHANICAL BLOCK DIAGRAM



TMA2093F00V1-1 Mechanical Block Diagram

EVERSOURCE ENERGY

107 Selden Street
Berlin, CT 06037
(860) 665-6926
michael.green@eversource.com

September 2, 2016

Mr. Tim Burks
Site Acquisition Manager- New England
SAI Communications, Consultant for
AT&T Mobility (a/k/a New Cingular Wireless
500 Enterprise Drive
Rocky Hill, CT 06067

Re: Site Permitting Authorization
Bartholomew Road, Middletown, CT
Telecommunications Site

Dear Mr. Burks:

Authorization is hereby given to New Cingular Wireless PCS, LLC (New Cingular), its employees and its duly authorized agents and independent contractors (hereinafter collectively referred to as "New Cingular"), to apply for any and all local municipal, state and federal licenses, permits and approvals, including but not limited to Connecticut Siting Council, building permits, zoning variances, zoning special exceptions, site plan and subdivision approvals, driveway, wetlands and terrain alteration permits, which are or may be necessary or required for New Cingular to construct, operate and maintain a wireless communications system (PCS System), and/or antenna site on the following property over which The Connecticut Light & Power Company (CL&P) has easement rights:

CL&P Structure #14027, FA #10071126
Bartholomew Road
Middletown, Connecticut

The foregoing authorization is given subject to the following conditions:

1. This authorization shall be nonexclusive. Nothing herein shall prevent or restrict CL&P from authorizing any other person or entity to apply for any similar licenses, permits or approvals to construct, operate and maintain any other communication system or facility of any type on the property at any time.

2. This authorization shall not obligate CL&P to pay for or reimburse any costs or expenses or to provide any assistance of any kind in connection with any applications, or bind or obligate CL&P to agree or be responsible for any on-site or off-site improvements, development restrictions, impact fees or assessments, capital improvement charges, bonds or other security, or any other fee, assessment, charge or expense imposed or required as a condition of any license, permit or approval. New Cingular shall be solely and fully responsible for all fees, charges costs and expenses of any kind in connection with any applications. CL&P agrees to reasonably cooperate with New Cingular in signing such applications or other similar documents as may be required in order for New Cingular to apply for any license, permit or approval.

3. This authorization shall not be deemed or construed to grant or transfer to New Cingular any interest in the property, whatsoever, and shall not in any respect obligate or require CL&P to sell, lease or license the Property to New Cingular or otherwise allow New Cingular to use or occupy the property for any purpose, regardless of whether any licenses, permits and approvals applied for by New Cingular for the property are granted. New

Cingular understands and acknowledges that any and all applications filed by New Cingular for the property at New Cingular's sole risk and without any enforceable expectation that the property will be made available for New Cingular's use.

4. New Cingular shall be required to supply to CL&P, free of charge and contemporaneous with New Cingular's filing of same, a complete copy of any and all applications, plans, reports and other public filings made by New Cingular with any local, municipal, state or federal governmental or regulatory officer, agency board, bureau, commission or other person or body for any licenses, permits or approvals for the property, and to keep CL&P fully informed on a regular basis of the status of New Cingualr's applications.

5. This authorization shall automatically expire six (6) months after the date of this letter, unless extended in writing by mutual agreement of CL&P and New Cingular.

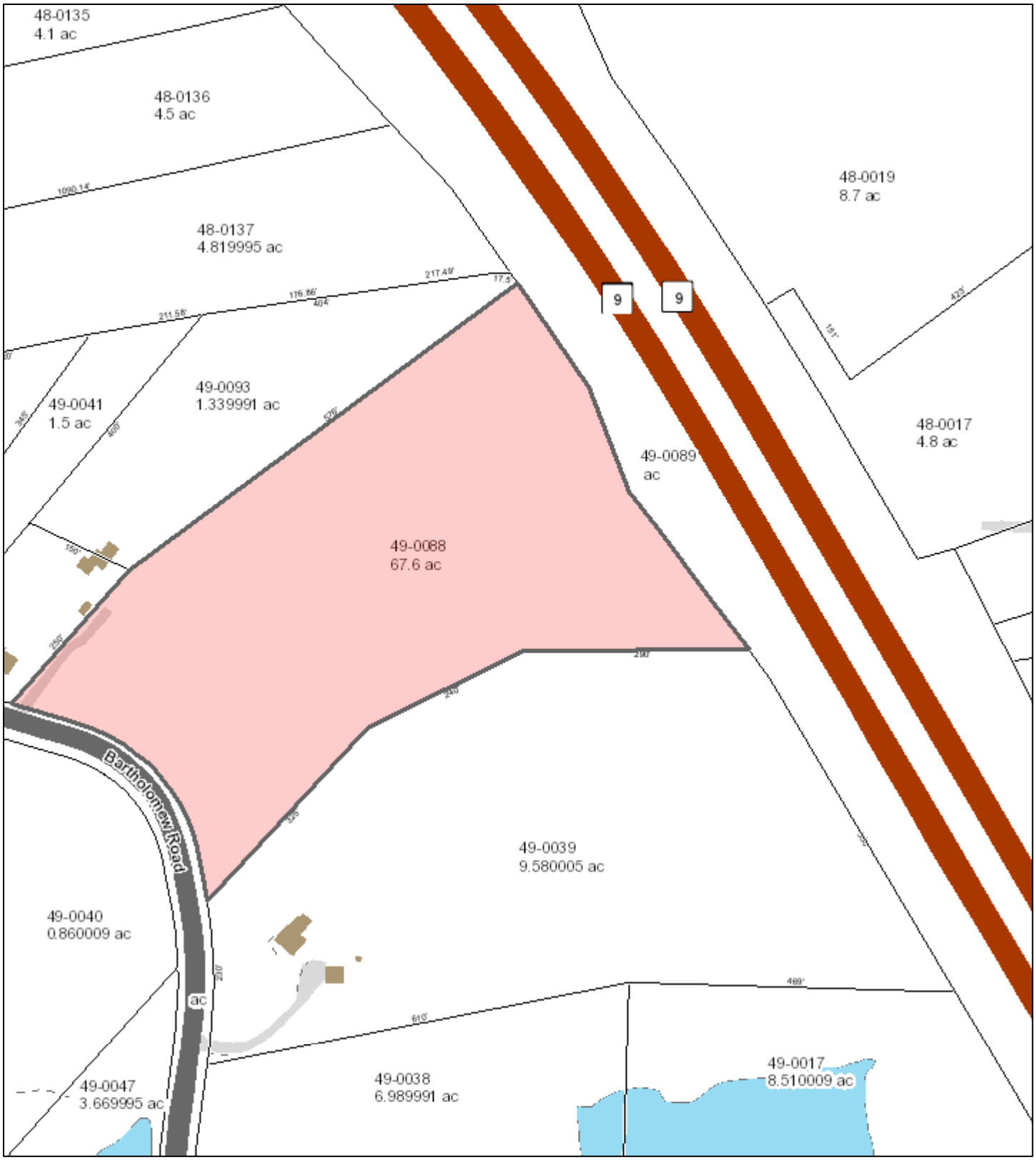
Very truly yours,

Michael J. Green, Senior Real Estate Analyst
Transmission & Distribution ROW & Survey Engineering

AGREED TO ON BEHALF OF New Cingular Wireless PCS, LLC

By: Timothy M. Burke
Duly Authorized

Date: 9/5/2016



City of Middletown, Connecticut

Map generated 9/9/2016

Map Legend: http://gis.cityofmiddletown.com/middletownct/legend.pdf
Property Card: http://gis.vgsi.com/MiddletownCT/Parcel.aspx?pid=543

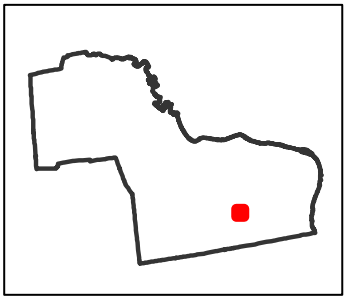
N

0 62.5 125 250 375 500 Feet

1 in = 192 ft

MAP FOR REFERENCE ONLY - NOT A LEGAL DOCUMENT

Because of different update schedules, current property assessments may not reflect recent changes to property boundaries. Check with the Board of Assessors to confirm boundaries uses at the time of assessment.



BARTHOLOMEW RD

Location	BARTHOLOMEW RD	**Mblu**	49/ / 0088/ /
Acct#	R02256	**Owner**	CONN LIGHT & POWER CO
Assessment	$6,150	**Appraisal**	$500,220
PID	543	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$0	$500,220	$500,220

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$0	$6,150	$6,150

Owner of Record

Owner	CONN LIGHT & POWER CO	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 270 HARTFORD, CT 06141	**Book & Page**	624/ 211
		Sale Date	07/02/1982
		Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CONN LIGHT & POWER CO	$0		624/ 211	29	07/02/1982

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	

Building Photo

Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Bath Remodel	
Kitchen Remodel	
Extra Kitchens	
Fireplaces	
Extra Openings	
Gas Fireplace	
Int vs Ext	
A/C Type	
A/C %	
Fin Bsmt Area	
Bsmt Garage	

(http://images.vgsi.com/photos/MiddletownCTPhotos//\00\00\05/41.JPG)

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	610
Description	Forest
Zone	R-60
Neighborhood	12
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	67.6
Frontage	0
Depth	0
Assessed Value	$6,150
Appraised Value	$500,220

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$0	$500,220	$500,220
2014	$0	$500,220	$500,220
2013	$0	$500,220	$500,220

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$0	$6,150	$6,150
2014	$0	$6,150	$6,150
2013	$0	$6,150	$6,150

DIV. SITE ACQUISITION, LLC
27 NORTHWESTERN DRIVE
SALEM, NH 03079

BANK OF AMERICA 54-49/114

54213

Pay: **********Six hundred twenty-five dollars and no cents

DATE	CHECK NO.	AMOUNT
July 1, 2016	54213	$********625.00

PAY TO THE ORDER OF

Connecticut Siting Council
10 Franklin Sq
New Britain, CT 06051

⑈054213⑈ ⑆011400495⑆ 00008987?441⑈

SAI
DIV. SITE ACQUISITION, LLC

54213

CONN03 Connecticut Siting Council

DATE	INVOICE NO.	DESCRIPTION	INVOICE AMOUNT	DEDUCTION	BALANCE
7-01-16	CR070116A	CT5436-CSC Filing Fe	625.00		625.00
CHECK DATE	7-01-16	CHECK NUMBER 54213	TOTALS	625.00		625.00