



Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

September 26, 2014

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

RE: Sprint PCS-Exempt Modification - Crown Site BU: 876405
Sprint PCS Site ID: CT54XC771
Located at: 186 Minortown Road, Woodbury, CT 06798

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of Sprint PCS (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mr. William J. Butterly, Jr., First Selectman for Town of Woodbury, and to Mr. Raymond Hardisty, Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **186 Minortown Road, Woodbury, CT 06798**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint’s operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the 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 tower. Sprint’s additional antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. A Structural Modification Report confirming that the tower and foundation can support Sprint's proposed modifications is included as Exhibit-2.
5. The operation of the additional antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for Sprint's modified facility is included as Exhibit-3.

For the foregoing reasons, Sprint respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Donna Neal.

Sincerely,



Raymond Perry
Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. William J. Butterly, Jr., First Selectman
Town of Woodbury
281 Main Street South
Woodbury, CT 06798

Mr. Raymond Hardisty
200 Minortown Road
Woodbury, CT 06798



2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

CROWN ID#: 876405
CROWN SITE NAME: WOODBURY NORTH

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251



TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
www.tectonicengineering.com

SHEET INFORMATION

SITE NUMBER:	CT54XC771	LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
SITE NAME:	WOODBURY NORTH	LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 288-2000
SITE ADDRESS:	186 MINORTOWN ROAD WOODBURY, CT 06798	APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KA 66251
COUNTY:	LITCHFIELD	ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 jquicksell@tectonicengineering.com
COORDINATES: (NAD 83)	41° 34' 4.79"N 73° 10' 46.85"W	SPRINT CM:	GARY WOOD (860) 940-9188 gary.wood@sprint.com
GROUND ELEV:	456'± AMSL	CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico@crowncastle.com
STRUCTURE TYPE:	MONOPOLE	AAV:	CHARTER
STRUCTURE HEIGHT:	110'-0"± AGL		
STRUCTURE RAD CENTER:	103'-0"± AGL		
ZONING CLASSIFICATION:	OS80		
PARCEL ID:	025-036		

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

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T-1	TITLE SHEET
SP-1	GENERAL NOTES
SP-2	GENERAL NOTES
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SUBMITTALS

PROJECT NO: 7225.CT54XC771

NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
1	7/29/14	FOR CONSTRUCTION	KA
2	8/1/14	PER COMMENTS	KA

DATE	REVIEWED BY
8/1/14	JMG

GENERAL NOTES

- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED. FACILITY HAS NO PLUMBING OR REFRIGERANTS. THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
- DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
 - BUILDING CODE OF CONNECTICUT, LATEST EDITION.
 - ANSI/TIA/EIA-222-F-1996.
 - NATIONAL ELECTRICAL CODE, LATEST EDITION.

AERIAL VIEW (NOT TO SCALE)



APPROVALS

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

CONSTRUCTION: _____ DATE: _____
 LEASING/SITE ACQUISITION: _____ DATE: _____
 LANDLORD/PROPERTY OWNER: _____ DATE: _____
 R.F. ENGINEER: _____ DATE: _____



PROJECT DESCRIPTION

- (1) NEW ALU 9929 EXPANSION CABINET
- (3) NEW RFS APXVM14-C-120 ANTENNAS.
- (3) NEW TD-RRH8x20-25 RRH.
- (1) NEW 5/8" FIBER CABLE.

SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1

CALL TOLL FREE FOR CONNECTICUT
1-800-322-4455 OR 800-811
CALL TWO FULL WORKING DAYS IN ADVANCE TO LOCATE BURIED UTILITY PIPES AND CABLES

DIVISION 01000—GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED TO CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATION OF ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER.
14. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
16. THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
17. THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS-BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
18. REFER TO: CONSTRUCTION STANDARDS—SPRINT DOCUMENT EXHIBIT A—STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0— 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A—WIHRPRF—STD CONSTR SPECS_157201110421855492.DOCM.
20. REFER TO: COLOR CODING—SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000—CONCRETE

- 1.03 APPLICABLE STANDARDS (USE LATEST EDITIONS)
- A. ACI-301 — SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
 - B. ACI-347 GUIDE TO FORM WORK FOR CONCRETE.
 - C. ASTM C33— CONCRETE AGGREGATE
 - D. ASTM C94 — READY MIXED CONCRETE e. ASTM C150 — PORTLAND CEMENT.
 - E. ASTM C260 — AIR-ENTRAINING ADMIXTURES FOR CONCRETE
 - F. ASTM C309— LIQUID MEMBRANE FORMING COMPOUNDS FOR CURING CONCRETE.
 - H. ASTM C494 — CHEMICAL ADMIXTURES FOR CONCRETE
 - I. ASTM A615— DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT
 - J. ASTM A185— STEEL WELDED WIRE FABRIC (PLAIN) FOR CONCRETE REINFORCEMENT
- 1.04 QUALITY ASSURANCE
- CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.
- 3.04 SURFACE FINISHES
- A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.
 - B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINIS AND THE FILLING HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.
 - C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSED TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OR SURFACES SUCH AS STAIR TREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 1/4" PER FOOT.
 - D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.
 - E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREENED, FLOATED, AND STEEL TROWELED. HAND OR POWER-DRIVEN EQUIPMENT MAY BE USED FOR FLOATING. FLOATING SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. OPERATIONS. ALL EDGES MUST HAVE A 3/4" CHAMFER.
- 1.04 QUALITY ASSURANCE CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.
- 3.05 PATCHING
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON REMOVAL OF THE FORMS TO OBSERVE CONCRETE SURFACE CONDITIONS. IMPERFECTIONS SHALL BE PATCHED ACCORDING TO THE ENGINEER'S DIRECTION.
- 3.06 DEFECTIVE CONCRETE
- THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.
- 3.07 PROTECTION
- A. IMMEDIATELY AFTER PLACEMENT. THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.
 - B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
 - C. ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE (LATEST EDITION)

DIVISION 05000 — METALS

- PART 1 — GENERAL
- 1.01 WORK INCLUDED
- A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED. AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDING ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK AND ALL ITEMS INCIDENTAL AS SPECIFIED AND AS SHOWN ON THE DRAWINGS:
1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES. WELDING AND BOLTING OF ATTACHMENTS.
- 1.02 REFERENCE STANDARDS
- A. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
1. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES" OR LATEST EDITION.
 2. AWS: AMERICAN WELDING SOCIETY CODE OR LATEST EDITION.
 3. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
- PART 2 — PRODUCTS
- 2.01 MATERIALS
- A. STRUCTURAL STEEL: SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A36 AND A992 FOR STRUCTURAL STEEL.
- ALL PROPOSED STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC CODE AND ASTM SPECIFICATIONS (LATEST EDITION) ALL NEW STEEL SHALL CONFORM TO THE FOLLOWING.
1. STRUCTURAL WIDE FLANGE: ASTM A992 Fy=50KSI.
 2. MISCELLANEOUS STEEL (PLATES), CHANNELS, ANGLES, ETC): ASTM A36 (Fy=36KSI).
 3. STRUCTURAL TUBING: ASTM A500 Gr. B (Fy=46KSI).
 4. STEEL PIPE: ASTM A53 Gr B (Fy=35KSI).
- 2.02 WELDING
- A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.
 - B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM 1-233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.
 - C. FIELD WELDING SHALL BE DONE AS PER AWS D1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.
 - D. STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING CAPACITOR DISCHARGE STUD WELDER.
 - E. PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.
 - F. FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.
- 2.03 BOLTING
- A. BOLTS SHALL BE CONFORMING TO ASTM A35 HIGH STRENGTH HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - B. BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED, ASTM A153 NUTS SHALL BE HEAVY HEX TYPE.
 - C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
 - D. EXCEPT WHERE SHOWN, ALL BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS TO BE DOUBLE ANGLED CONNECTIONS WITH HIGH STRENGTH BOLTS (THREADS EXCLUDED FROM SHEAR PLANE) AND HARDENED WASHERS.
 - E. STANDARD, OVERSIZED OR HORIZONTAL SHORT SLOTTED HOLES.
 - F. SNUG-TIGHT STRENGTH BEARING BOLTS MAY BE USED IN STANDARD HOLES CONFORMING TO ACIS, USING THE TURN OF THE NUT METHOD.
 - H. FULLY-TENSIONED HIGH STRENGTH (SLIP CRITICAL) SHALL BE USED IN OVERSIZED SLOT HOLES (RESPECTIVE OF SLOT ORIENTATION).
 - I. ALL BRACED CONNECTION, MOMENT CONNECTION AND CONNECTIONS NOTED AS "SLIP CRITICAL" SHALL BE BE SLIP CRITICAL JOINTS WITH CLASS A SURFACE CONDITIONS, UNLESS OTHERWISE NOTED.
 - J. EPOXY ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:
- | BASE MATERIAL | ANCHOR SYSTEM |
|-------------------------------|------------------|
| CONCRETE | HILTI HIT-HY 200 |
| HOLLOW & GROUTED CMU OR BRICK | HILTI HIT-HY 70 |
- 2.04 FABRICATION
- A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS

- 2.05 FINISH
- A. STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. (LATEST EDITION) UNLESS OTHERWISE NOTED.
- 2.06 PROTECTION
- A. UPON COMPLETION OF ERECTION, INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS OR GALVANIZED BREAKS WITH (2) COATS OF ZINC-RICH COLD GALVANIZING PAINT.
- PART 3 — ERECTION
- A. PROVIDE ALL ERECTION, EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION, BUT ARE NECESSARY FOR ITS PROPER ERECTION.
 - B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING
 - C. TEMPORARY BRACING, GUYING, AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SET AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.



TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550
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Fax: (845) 567-8703
www.tectonicengineering.com

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PROJECT NO: 7225.CT54XC771			
NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
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DATE	REVIEWED BY
8/1/14	SMG



SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
GENERAL NOTES

SHEET NO:
SP-1

DIVISION 13000--SPECIAL CONSTRUCTION ANTENNA INSTALLATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. ANTENNAS AND HYBRIFLEX CABLES ARE FURNISHED BY CLIENT'S REPRESENTATIVE UNDER SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPERTY.

B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.

C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT RESULT

F. INSTALL HYBRIFLEX CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.

G. ANTENNA AND HYBRIFLEX CABLE GROUNDING:

1. ALL EXTERIOR #6 GREEN GROUND WIRE DAISY CHAIN CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE 3221213 OR EQUIVALENT.

2. ALL HYBRIFLEX CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF HYBRIFLEX CABLE (NOT WITHIN BENDS). 1.02 RELATED WORK FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH QOTHER TRADES PRIOR TO BID:

1. FLASHING OF OPENING INTO OUTSIDE WALLS.
2. SEALING AND CAULKING ALL OPENINGS.
3. PAINTING.
4. CUTTING AND PATCHING.

1.03 REQUIREMENTS OF REGULATOR AGENCIES

A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. EIA - ELECTRONIC INDUSTRIES ASSOCIATION RS-22. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7480-IH, CONSTRUCTION MARKING AND LIGHTING.
3. FCC - FEDERAL COMMUNICATION COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES
4. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION FOR STRUCTURAL JOINTS USING ASTM 1325 OR A490 BOLTS.
5. NEC - NATIONAL ELECTRIC CODE - ON TOWER LIGHTING KITS.
6. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
7. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
8. LIFE SAFETY CODE NFPA, LATEST EDITION.

DIVISION 13000--EARTHWORK

PART 1 GENERAL

1.01 WORK INCLUDED: REFER TO SURVEY AND SITE PLAN FOR WORK INCLUDED.

1.02 RELATED WORK

A. CONSTRUCTION OF EQUIPMENT FOUNDATIONS
B. INSTALLATION OF ANTENNA SYSTEM

PART 2 PRODUCTS

2.01 MATERIALS

A. ROAD AND SITE MATERIALS; FILL MATERIAL SHALL BE ACCEPTABLE, SELECT FILL SHALL BE IN ACCORDANCE WITH LOCAL DEPARTMENT OF HIGHWAY AND PUBLIC TRANSPORTATION STANDARD SPECIFICATIONS.

B. SOIL STERILIZER SHALL BE EPA REGISTERED OF LIQUID COMPOSITION AND OF PRE-EMERGENCE DESIGN.

C. SOIL STABILIZER FABRIC SHALL BE MIRAFI OR EQUAL - 600X AT ACCESS ROAD AND COMPOUND.

D. GRAVEL FILL; WELL GRADED, HARD, DURABLE, NATURAL SAND AND GRAVEL, FREE FROM ICE AND SNOW, ROOTS, SOD RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATTER.

MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS.

GRAVEL FILL TO BE PLACED IN LIFTS OF 9" MAXIMUM THICKNESS AND 90 % DENSITY. COMPACTED TO 95

E. NO FILL OR EMBANKMENT MATERIALS SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OF EMBANKMENT

2.02 EQUIPMENT

A. COMPACTION SHALL BE ACCOMPLISHED BY MECHANICAL MEANS. LARGER AREAS SHALL BE COMPACTED BY SHEEPS FOOT, VIBRATORY OR RUBBER TIED ROLLERS WEIGHING AT LEAST FIVE TONS. SMALLER AREAS SHALL BE COMPACTED BY POWER-DRIVER, HAND HELD TAMPERS.

B. PRIOR TO OTHER EXCAVATION AND CONSTRUCTION EFFORTS GRUB ORGANIC MATERIAL TO A MINIMUM OF 6" BELOW ORIGINAL GROUND LEVEL.

C. UNLESS OTHERWISE INSTRUCTED BY CLIENT'S REPRESENTATIVE. REMOVE TREES, BRUSH AND DEBRIS FROM THE PROPERTY TO AN AUTHORIZED DISPOSAL LOCATION.

D. PRIOR TO PLACEMENT OF FILL OR BASE MATERIALS, ROLL THE SOIL.

E. WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, LINE THE GRUBBED AREAS WITH STABILIZER MAT PRIOR TO PLACEMENT OF FILL OR BASE MATERIAL.

3.03 INSTALLATION

A. THE SITE AND TURNAROUND AREAS SHALL BE AT THE SUB-BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS. GRADE OR FILL THE SITE AND ACCESS ROAD AS REQUIRED TO PRODUCE EVEN DISTRIBUTION OF SPOILS RESULTING FROM FOUNDATION EXCAVATIONS. THE RESULTING GRADE SHALL CORRESPOND WITH SAID SUB-BASE COURSE, ELEVATIONS ARE TO BE CALCULATED FROM FINISHED GRADES OR SLOPES INDICATED.

B. THE ACCESS ROAD SHALL BE BROUGHT TO BASE COURSE ELEVATION PRIOR TO FOUNDATION CONSTRUCTION.

C. DO NOT CREATE DEPRESSIONS WHERE WATER MAY POND.

D. THE CONTRACT INCLUDES ALL NECESSARY GRADING, BANKING, DITCHING AND COMPLETE SURFACE COURSE FOR ACCESS ROAD. ALL ROADS OR ROUTES UTILIZED FOR ACCESS TO PUBLIC THOROUGHFARE IS INCLUDED IN SCOPE OF WORK UNLESS OTHERWISE INDICATED.

E. WHEN IMPROVING AN EXISTING ACCESS ROAD, GRADE THE EXISTING ROAD TO REMOVE ANY ORGANIC MATTER AND SMOOTH THE SURFACE BEFORE PLACING FILL OR STONE.

F. PLACE FILL OR STONE IN 3" MAXIMUM LIFTS AND COMPACT BEFORE PLACING NEXT LIFT.

G. THE FINISH GRADE, INCLUDING TOP SURFACE COURSE, SHALL EXTEND A MINIMUM OF 12" BEYOND THE SITE FENCE AND SHALL COVER THE AREA AS INDICATED.

H. RIPRAP SHALL BE APPLIED TO THE SIDE SLOPES OF ALL FENCED AREAS, PARKING AREAS AND TO ALL OTHER SLOPES GREATER THAN 2:1.

I. RIPRAP SHALL BE APPLIED TO THE SIDES OF DITCHES OR DRAINAGE SWALES AS INDICATED ON PLANS.

J. RIPRAP ENTIRE DITCH FOR 6'-0" IN ALL DIRECTIONS AT CULVERT OPENINGS.

K. SEED, FERTILIZER AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS AND DITCHES, DRAINAGE, SWALES, NOT OTHERWISE RIP-RAPPED.

L. UNDER NO CIRCUMSTANCES SHALL DITCHES, SWALES OR CULVERTS BE PLACED SO THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SITE. IF OWNER DESIGNS OR IF DESIGN ELEVATIONS CONFLICT WITH THIS GUIDANCE ADVISE THE OWNER IMMEDIATELY.

M. IF A DITCH LIES WITH SLOPE GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALL IN THE DITCH AT CULVERT ENTRANCES. RIP-RAP THE UPSTREAM SIDE OF THE HEADWALL AS WELL AS THE DITCH FOR 6'-0" ABOVE THE CULVERT.

N. IF A DITCH LIES WITH SLOPES GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALLS IN THE DITCH FOR 6'-0" ABOVE THE CULVERT ENTRANCE.

O. SEED AND FERTILIZER SHALL BE APPLIED TO SURFACE CONDITIONS WHICH WILL ENCOURAGE ROOTING. RAKE AREAS TO BE SEEDED TO EVEN THE SURFACE AND TO LOOSEN THE SOIL.

P. SOW SEED IN TWO DIRECTIONS IN TWICE THE QUANTITY RECOMMENDED BY THE SEED PRODUCER.

Q. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE GROWTH OF SEEDED AND LANDSCAPED AREAS BY WATERING UP TO THE POINT OF RELEASE FROM THE CONTRACT. CONTINUE TO REWORK BARE AREAS UNTIL COMPLETE COVERAGE IS OBTAINED.

3.04 FIELD QUALITY CONTROL

A. COMPACTION SHALL BE D-1557 FOR SITE WORK AND 95 % MAXIMUM DENSITY UNDER SLAB AREAS. AREAS OF SETTLEMENT WILL BE EXCAVATED AND REFILLED AT CONTRACTOR'S EXPENSE. REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET SHALL BE AN ACCEPTABLE ALTERNATIVE.

B. THE COMPACTION TEST RESULTS SHALL BE AVAILABLE PRIOR TO THE CONCRETE POUR.

3.05 PROTECTION

A. PROTECT SEEDED AREAS FORM EROSION BY SPREADING STRAW TO A UNIFORM LOOSE DEPTH OF 1"-2". STAKE AND TIE DOWN AS REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET SHALL BE AN ACCEPTABLE ALTERNATIVE.

B. ALL TREES PLACED IN CONJUNCTION WITH A LANDSCAPE CONTRACT SHALL BE WRAPPED, TIED WITH HOSE PROTECTED WIRE AND SECURED TO STAKES EXTENDING 2'-0" INTO THE GROUND ON FOUR SIDES OF THE TREE.

C. ALL EXPOSED AREAS SHALL BE PROTECTED AGAINST WASHOUTS AND SOIL EROSION. STRAW BALES SHALL BE PLACED AT THE INLET APPROACH TO ALL NEW OR EXISTING CULVERTS. REFER TO DETAILS ON DRAWINGS

SYMBOLS	ABBREVIATIONS
--- g --- g ---	GROUND WIRE
--- E --- E ---	ELECTRIC
--- T --- T ---	TELEPHONE
--- O --- O --- O --- O ---	OVERHEAD WIRE
---	PROPERTY LINE
-x-x-x-	CHAIN LINK FENCE
A-1	ANTENNA MARK
(E)	EXISTING
(P)	PROPOSED DETAIL
	REFERENCE
	SURFACE ELEVATION

2.5 EQUIPMENT DEPLOYMENT
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SUBMITTALS			
PROJECT NO: 7225.CT54XC771			
NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
1	7/29/14	FOR CONSTRUCTION	KA
2	8/1/14	PER COMMENTS	KA

DATE: 8/1/14
REVIEWED BY: JMG

SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

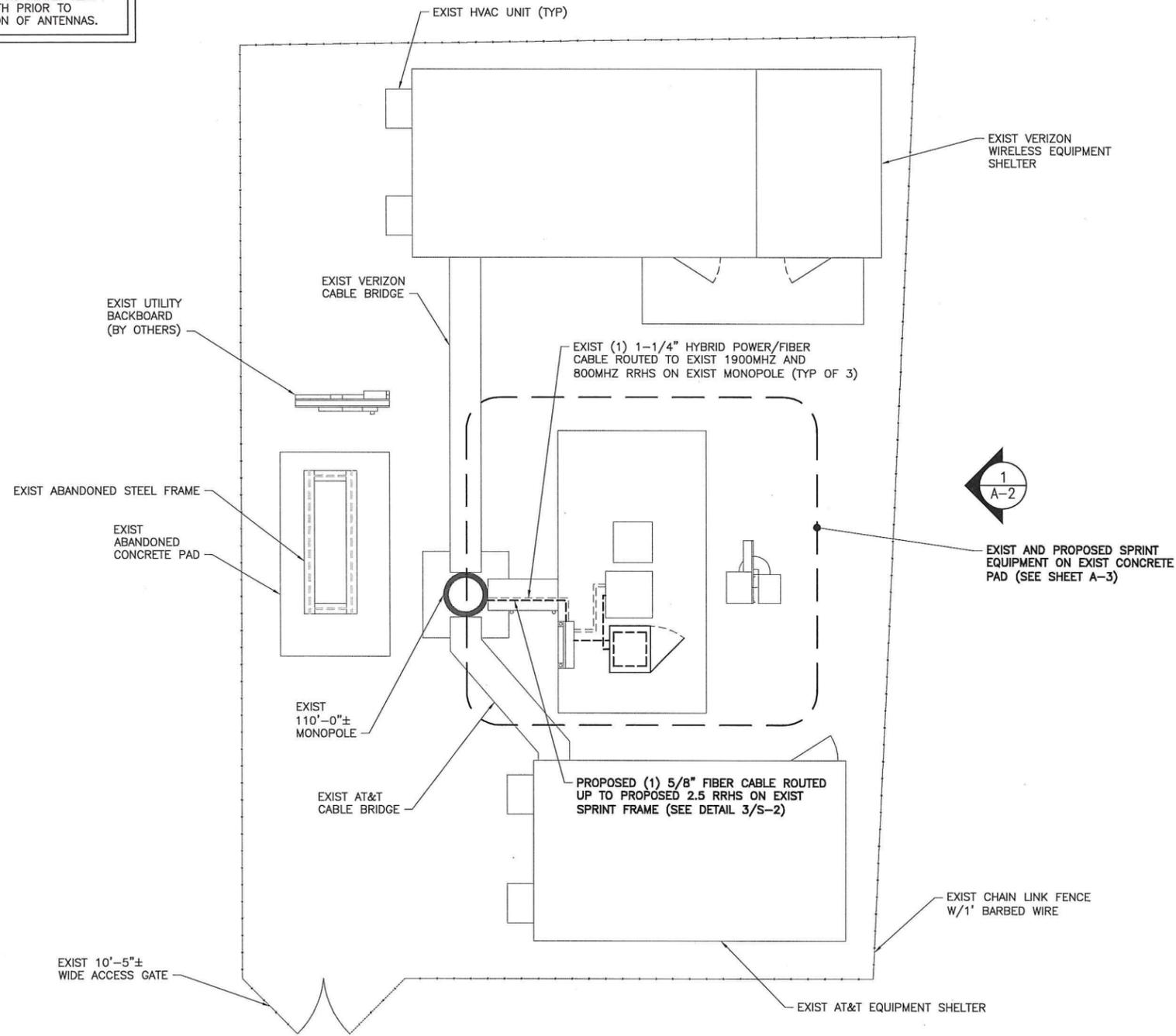
SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
GENERAL NOTES

SHEET NO:
SP-2



NORTH NOTE:
 NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



1
A-1 **SITE PLAN**
 SCALE: 1/4" = 1'-0"

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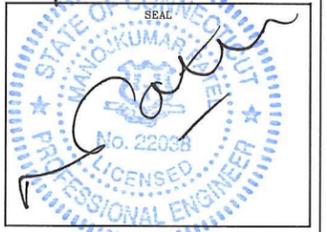
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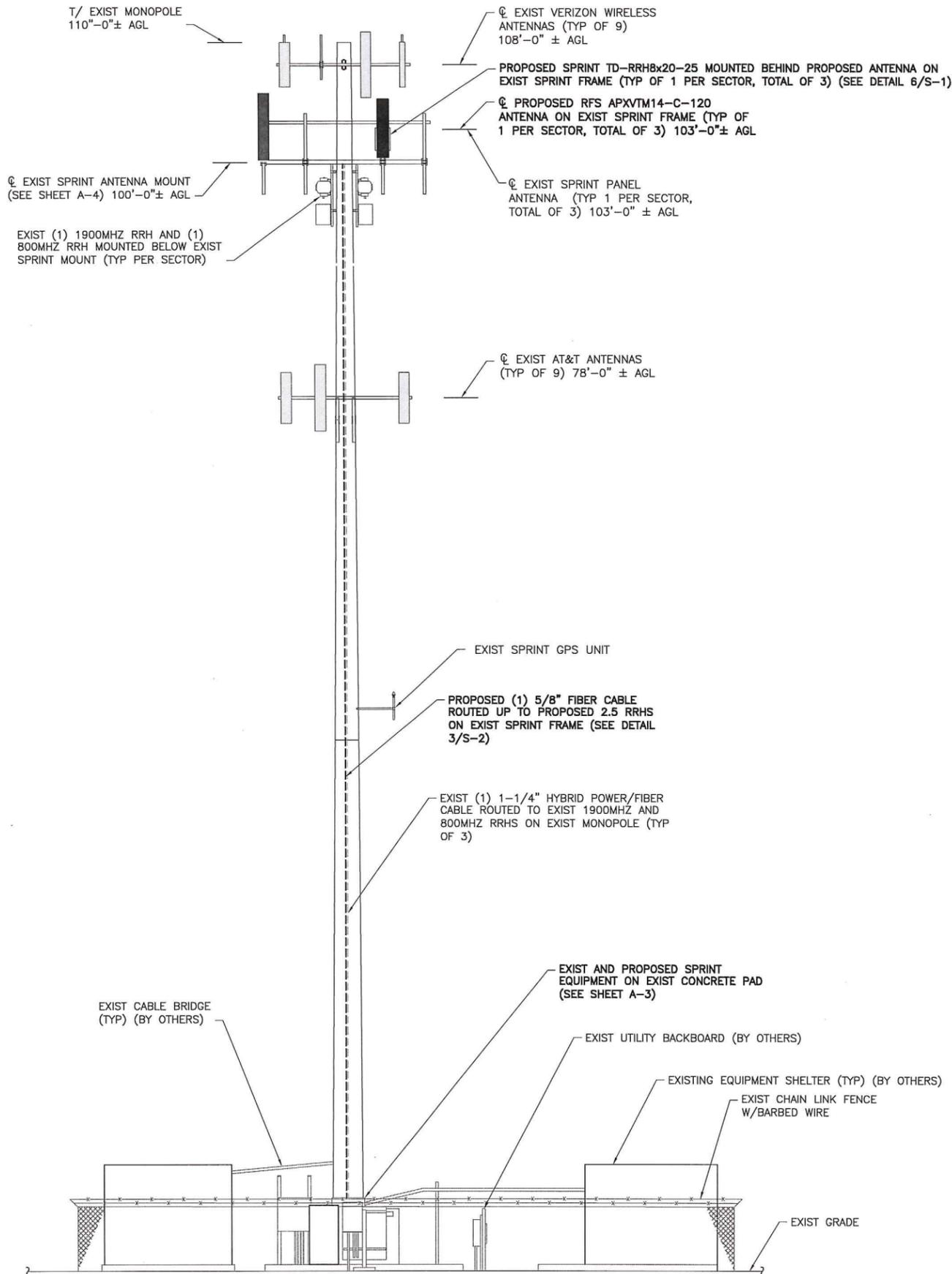
SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
**186 MINORTOWN ROAD
 WOODBURY, CT 06798**

SHEET TITLE:
SITE PLAN

SHEET NO:
A-1



THE EXISTING MOUNT HAS BEEN ANALYZED BY TECTONIC ENGINEERING AND FOUND TO BE ADEQUATE TO SUPPORT THE PROPOSED SPRINT UPGRADE AS DETAILED IN THE STRUCTURAL ANALYSIS EVALUATION LETTER DATED 7/29/14.

THE MONOPOLE SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS)



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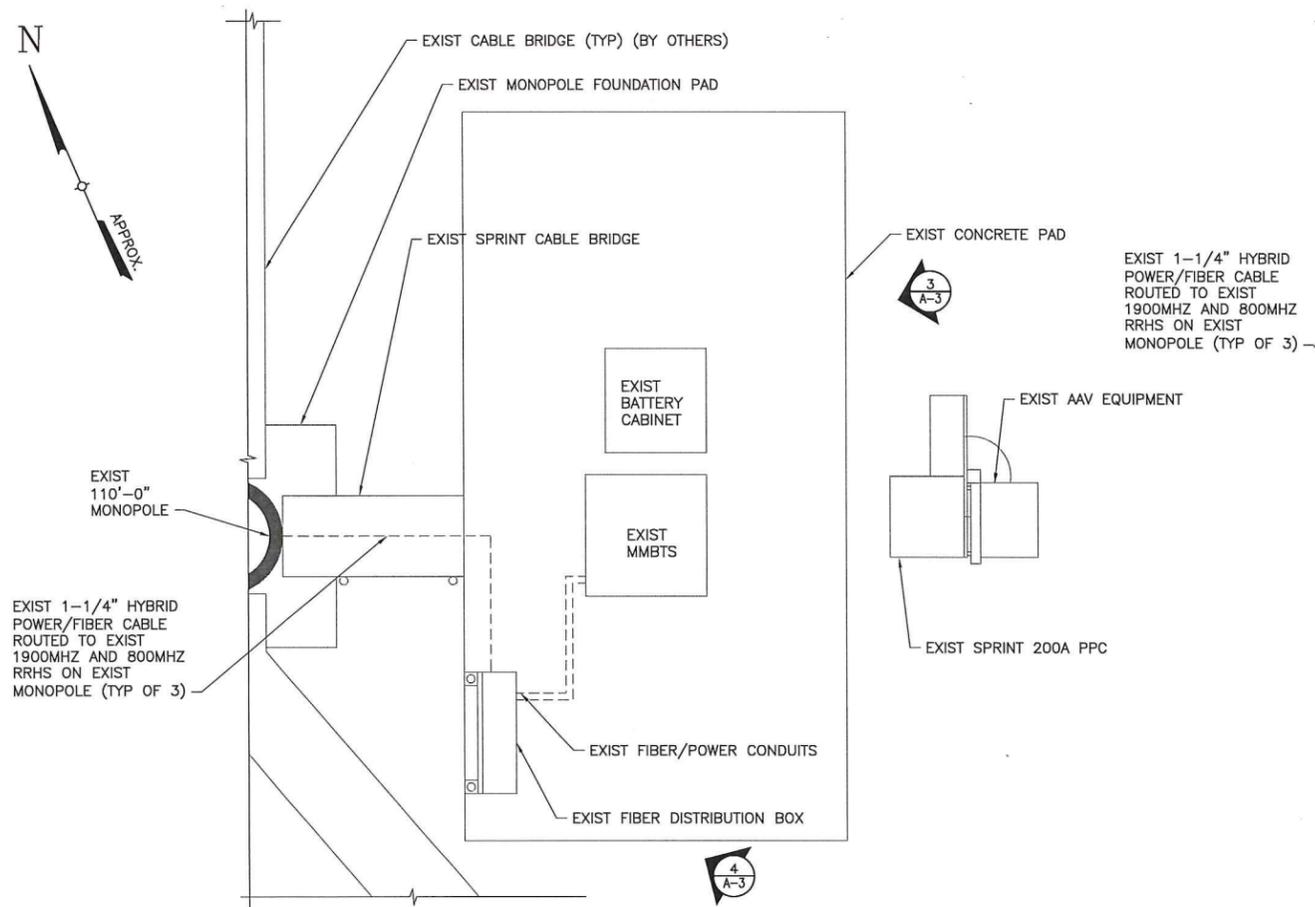
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WOODBURY NORTH

SITE ADDRESS:
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WOODBURY, CT 06798

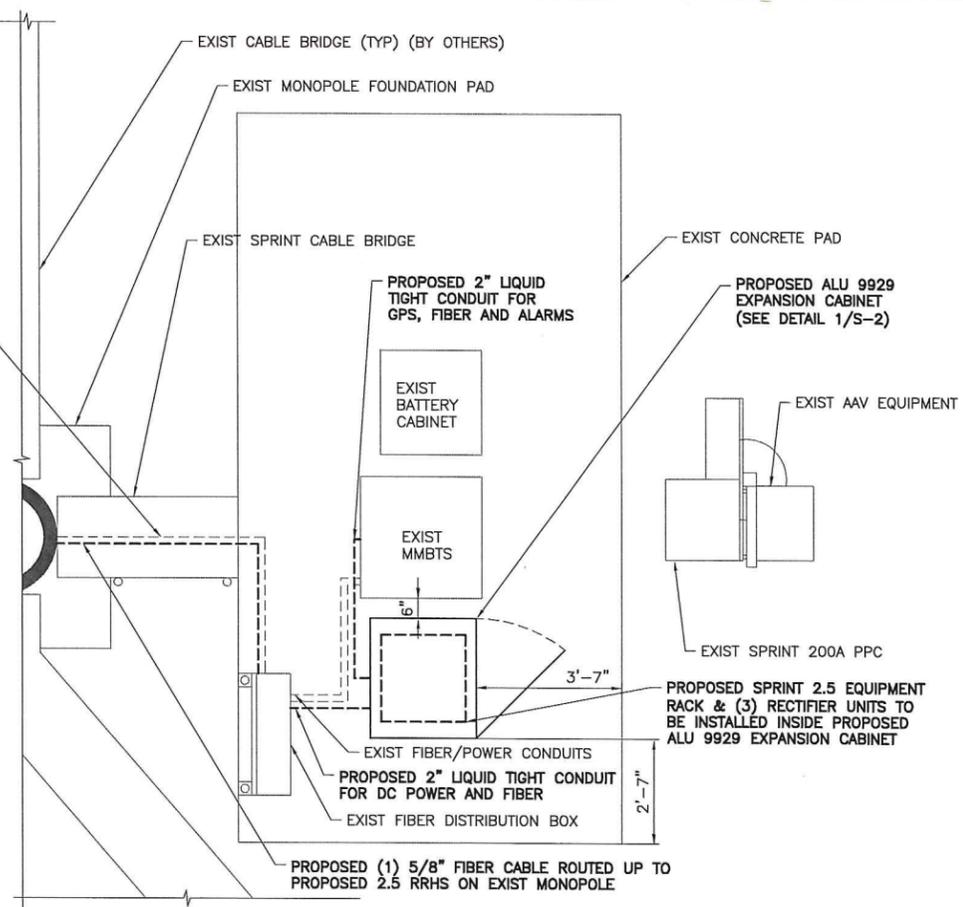
SHEET TITLE:
ELEVATION

SHEET NO:
A-2

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



1 EQUIPMENT PLAN (EXIST)
 A-3 SCALE: 1/2" = 1'-0"



2 EQUIPMENT PLAN (FINAL)
 A-3 SCALE: 1/2" = 1'-0"



3 EXIST EQUIPMENT PAD
 A-3 SCALE: N.T.S.



4 EXIST FIBER DISTRIBUTION BOX
 A-3 SCALE: N.T.S.

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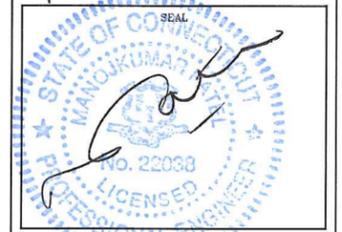
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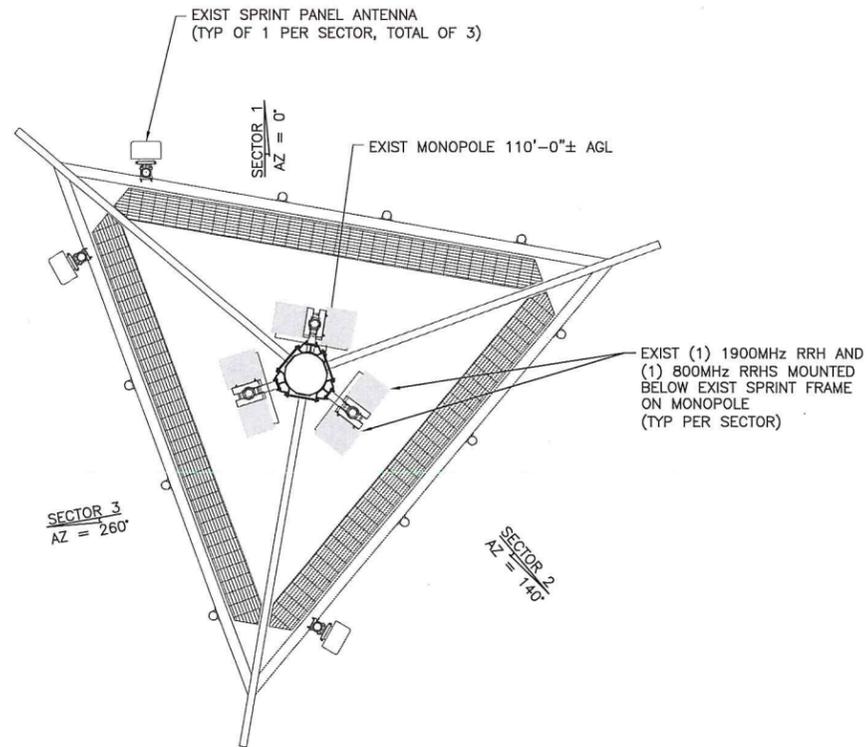


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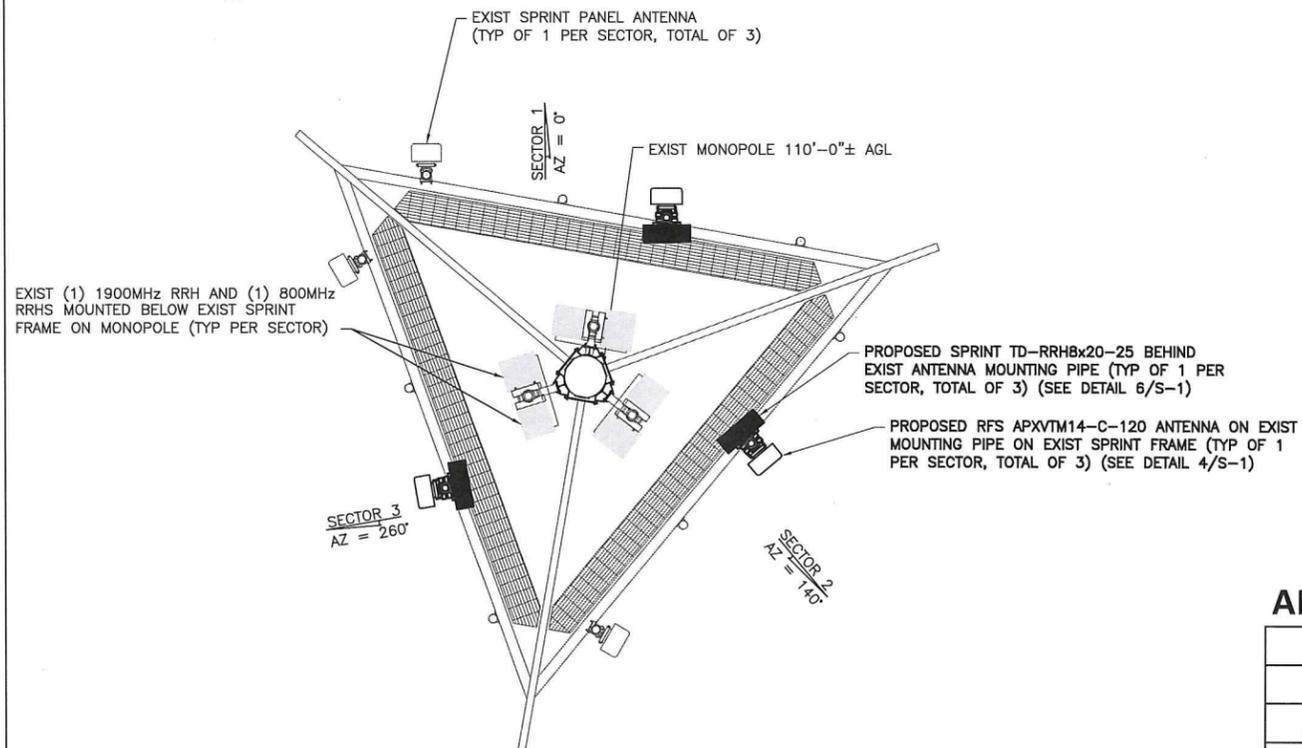
SHEET TITLE:
 ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO:
 A-3

N
APPROX.



1 ANTENNA LAYOUT PLAN (EXIST)
SCALE: 3/8" = 1'-0"



2 ANTENNA LAYOUT PLAN (FINAL)
SCALE: 3/8" = 1'-0"

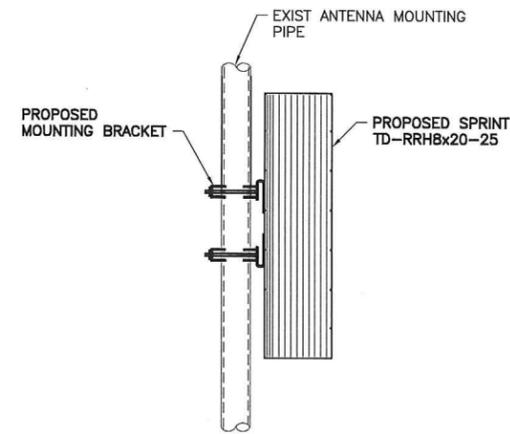
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EXIST SPRINT PANEL ANTENNA TO REMAIN (TYP OF 1 PER SECTOR, TOTAL OF 3)



EXIST (1) 1900MHz RRH AND (1) 800MHz RRH MOUNTED BELOW ON EXIST SPRINT FRAME ON MONOPOLE (TYP PER SECTOR)



3 RRH MOUNTING DETAIL
SCALE: 1 1/2" = 1'-0"

ANTENNA DATA

Status	Exist	Proposed
Antenna Manufacturer	RFS-CELWAVE	RFS-CELWAVE
Antenna Model Number	APXVSP18-C-A20/APXV9ERR18-C-A20	APXV9TM14-ALV-120
Number of Antennas	3	3
Antenna RAD Center	103'	103'
Antenna Azimuth	0/140/260	0/140/160
Antenna RRH Model Number	800MHz/1900MHz	TD-RRH8x20-25
Number of RRH	6	3

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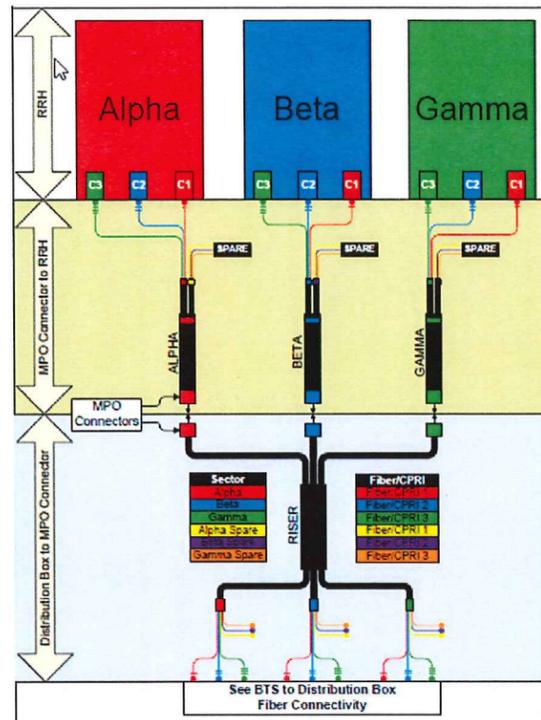
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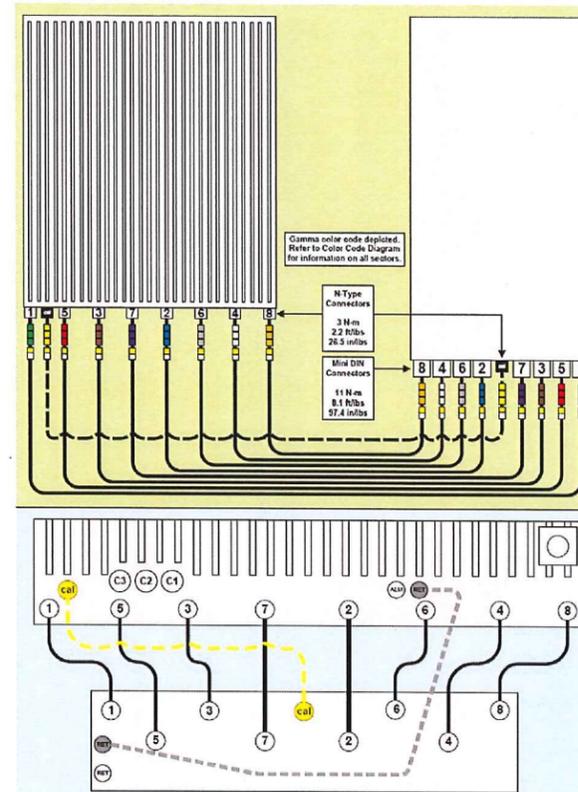
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SHEET TITLE:
ANTENNA LAYOUT PLANS

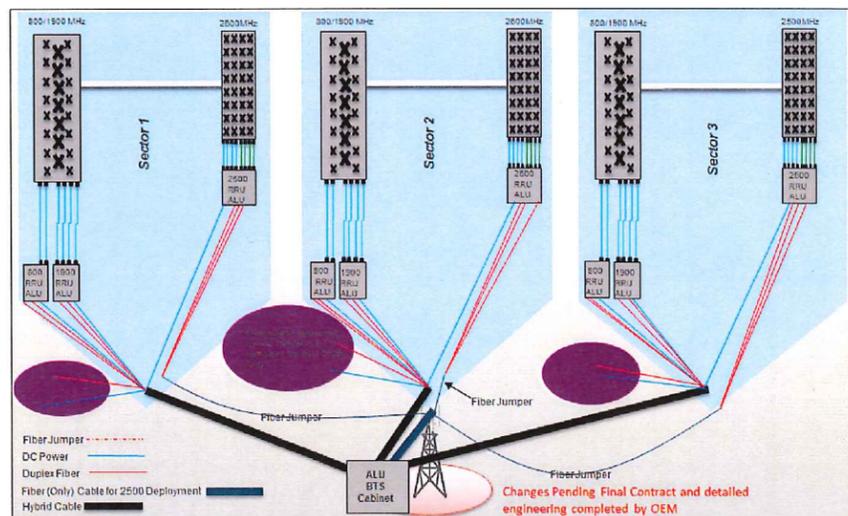
SHEET NO:
A-4



1 2.5 CABLE COLOR CODING
A-5 SCALE: N.T.S.



2 RRH CONNECTIVITY
A-5 SCALE: N.T.S.



3 RAN WIRING
A-5 SCALE: N.T.S.



4 CABLE SCENARIO
A-5 SCALE: N.T.S.

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8/1/14	SMG



SITE NUMBER:
CT54XC771
SITE NAME:
WOODBURY NORTH
SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
RAN WIRING DIAGRAM

SHEET NO:
A-5

IMPORTANT!! LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAINST THE RED SEAL ON THE RISER CONNECTION

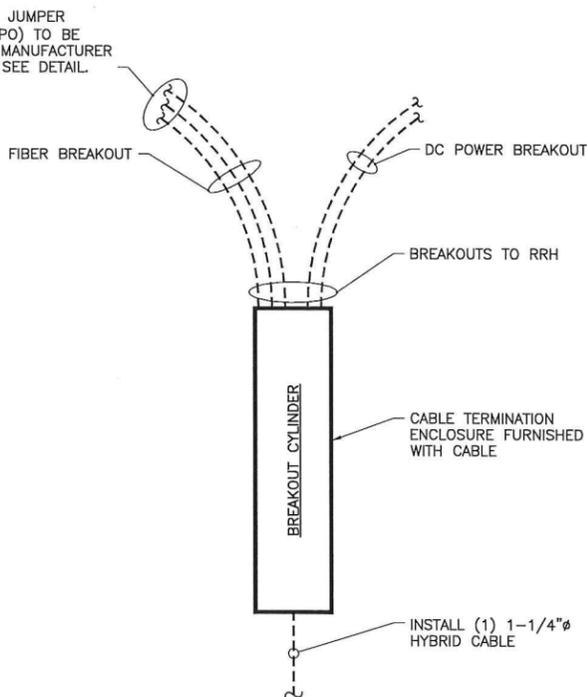


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

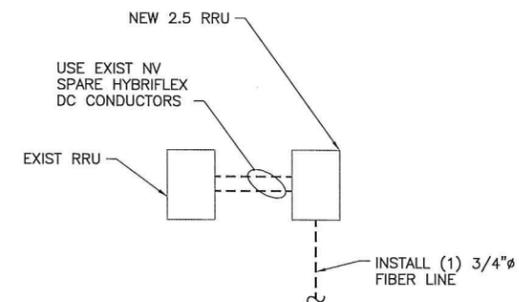


1 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS
A-6 SCALE: N.T.S.

TRUNK-LINE TO JUMPER CONNECTION (MPO) TO BE INSTALLED PER MANUFACTURER REQUIREMENTS. SEE DETAIL.



2.5 HYBRID CABLE W/FIBER & DC FEEDERS



FIBER ONLY TRUNK LINES

2 TRUNK LINE DETAILS (TYPICAL)
A-6 SCALE: N.T.S.

SPECIAL NOTES: CABLE MARKINGS AT RAD CENTER AND ALL WALL/BLDG. PENETRATIONS

- ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE.
- ALL COLOR BANDS INSTALLED AT THE TOWER TOP SHALL BE A MINIMUM OF 3" WIDE AND SHALL HAVE A MINIMUM OF 3/4" OF SPACING BETWEEN EACH COLOR.
- ALL COLOR BANDS INSTALLED AT OR NEAR THE GROUND MAY BE ONLY 3/4" WIDE. EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
- EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH 3/4" COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
- ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" BANDS ON EACH END OF THE BOTTOM JUMPER.
- ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
- EACH COLOR BAND SHALL HAVE A MINIMUM OF (3) WRAPS AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT AS TO AVOID UNRAVELING.
- X-POLE ANTENNAS SHOULD USE "XX-1" FOR THE "+45" PORT, "XX-2" FOR THE "-45" PORT.
- COLOR BAND #4 REFERS TO THE FREQUENCY BAND: ORANGE=850, VIOLET=1900. USED ON JUMPERS ONLY.
- RF FEEDLINE SHALL BE IDENTIFIED WITH A METAL TAG (STAINLESS OR BRASS) AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER.
- ANTENNAS MUST BE IDENTIFIED, USING THE SECTOR LETTER AND ANTENNA NUMBER, WITH A BLACK MARKER PRIOR TO INSTALLATION.

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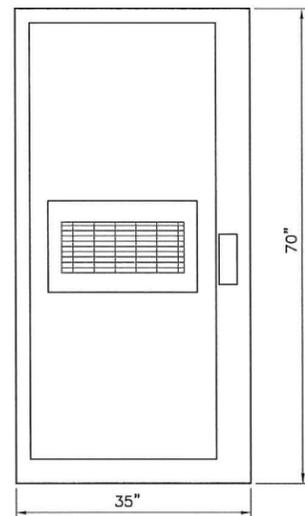
DATE	REVIEWED BY
8/1/14	JMA



SITE NUMBER:
CT54XC771
SITE NAME:
WOODBURY NORTH
SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
CABLE DETAILS

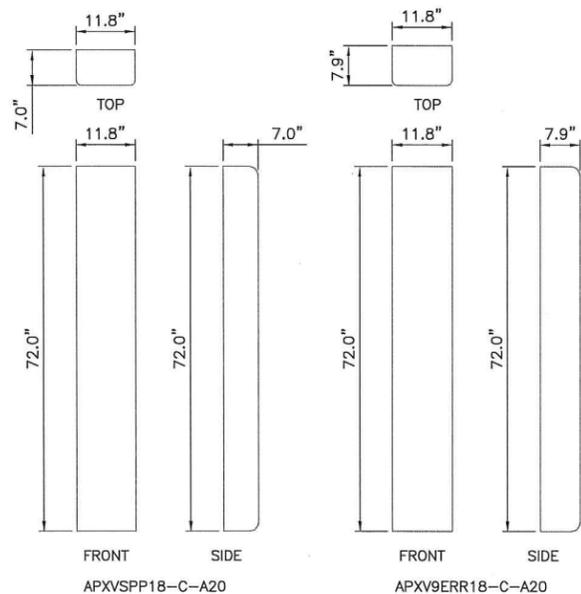
SHEET NO:
A-6



CABINET FRONT 9928 MMBTS MODULAR CELL	
SPECIFICATIONS:	
HEIGHT:	70"
WIDTH:	35"
DEPTH:	37.8"
WEIGHT:	1090 LBS.

FRONT

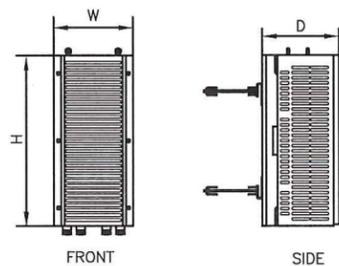
1 (EXIST) MMBTS CABINET
S-1 SCALE: 1" = 1'-0"



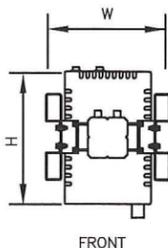
APXVSP18-C-A20

APXV9ERR18-C-A20

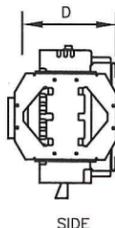
3 (EXIST) ANTENNA DETAILS
S-1 SCALE: 3/4"=1'-0"



TYPE:	1900 MHz 4x45W
MODEL #:	RRH 1900 4X45 65MHz
HEIGHT:	25.0"
WIDTH:	11.1"
DEPTH:	11.4"
WEIGHT:	±60 LBS.



FRONT

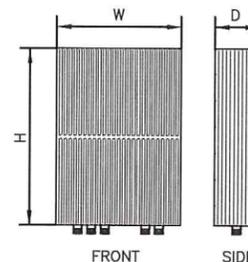


SIDE

5 (EXIST) RRH DETAILS
S-1 SCALE: 1 1/2"=1'-0"

4 (PROPOSED) ANTENNA DETAIL
S-1 SCALE: 3/4"=1'-0"

TYPE:	800 MHz 2x50W
MODEL #:	FD-RRH-2x50-800
HEIGHT:	19.7"
WIDTH:	13"
DEPTH:	10.8"
WEIGHT:	±53 LBS

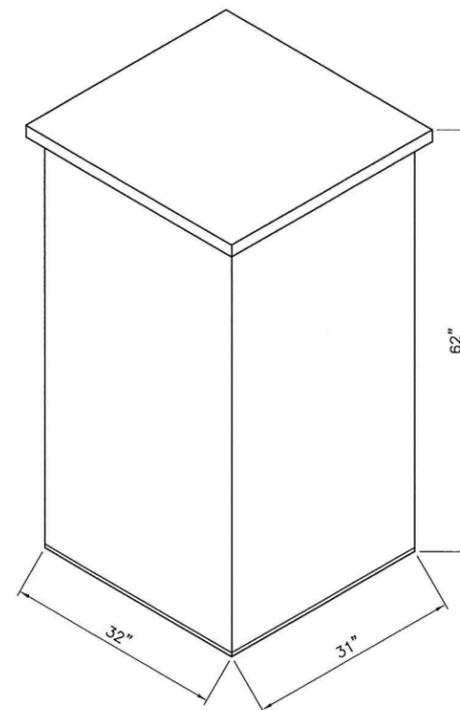


FRONT

SIDE

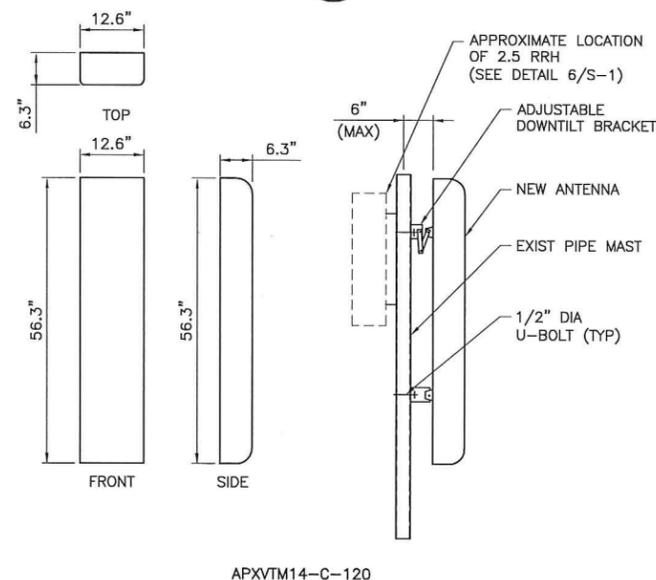
TYPE:	2.5 RRH
MODEL #:	TD-RRH8x20-25
HEIGHT:	26.1"
WIDTH:	18.6"
DEPTH:	6.71"
WEIGHT:	±70 LBS

6 (PROPOSED) RRH DETAIL
S-1 SCALE: N.T.S.



ANDREW 60ECv2	
SPECIFICATIONS:	
HEIGHT:	60"
WIDTH:	31"
DEPTH:	30"
WEIGHT:	2430 LBS.

2 (EXIST) BATTERY CABINET
S-1 SCALE: 1" = 1'-0"



APXVTM14-C-120

Sprint
2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251

CROWN CASTLE

TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
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SUBMITTALS			
PROJECT NO: 7225.CT54XC771			
NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
1	7/29/14	FOR CONSTRUCTION	KA
2	8/1/14	PER COMMENTS	KA

DATE REVIEWED BY
8/1/14 JMG



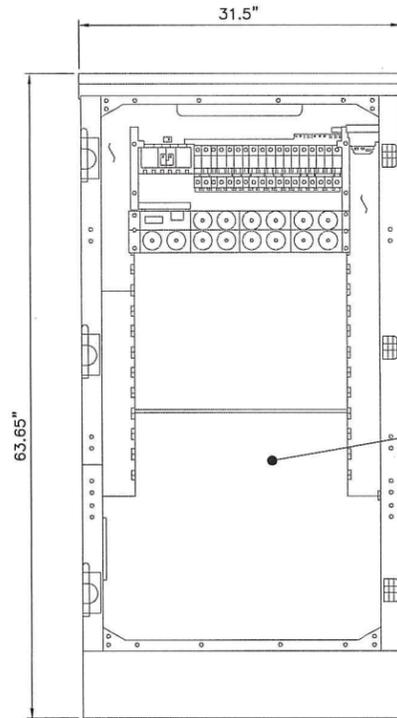
SITE NUMBER:
CT54XC771

SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
EQUIPMENT DETAILS

SHEET NO:
S-1



9929 EXPANSION CABINET	
CABINET SPECIFICATIONS	
EXPANSION CABINET:	
- HEIGHT -	63.65"
- WIDTH -	31.5"
- DEPTH -	35.5"
WEIGHT: 1,600 LBS.	

INSTALL NEW 2.5 EQUIPMENT IN PROPOSED 9929 EXPANSION CABINET INCLUDING BUT NOT LIMITED TO BASE BAND UNIT, CELL SITE ROUTER AND SURGE ARRESTORS. GROUND EQUIPMENT TO PROPOSED INTERIOR CABINET GROUND BAR

FRONT ELEVATION
(CABINET INTERIOR)

1 9929 INTERIOR DETAIL
S-2 SCALE: N.T.S.

RFS HYBRIFLEX RISER CABLES SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom:LC Connectors, 5/8 cable, 50ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
MN: HB058-M12-200F	200 ft	

8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
MN: HB114-08U3M12-200F	200 ft	

6 AWG Power	Hybrid cable MN: HB114-13U3M12-225F 3x 6 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft

4 AWG Power	Hybrid cable MN: HB114-21U3M12-225F 3x 4 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225ft	325 ft
	MN: HB114-21U3M12-250F	350 ft
	MN: HB114-21U3M12-275F	375 ft
	MN: HB114-21U3M12-300F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft

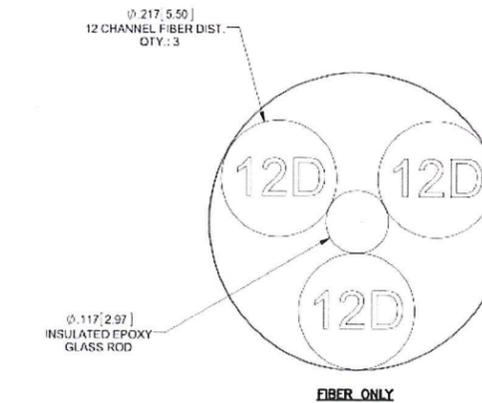
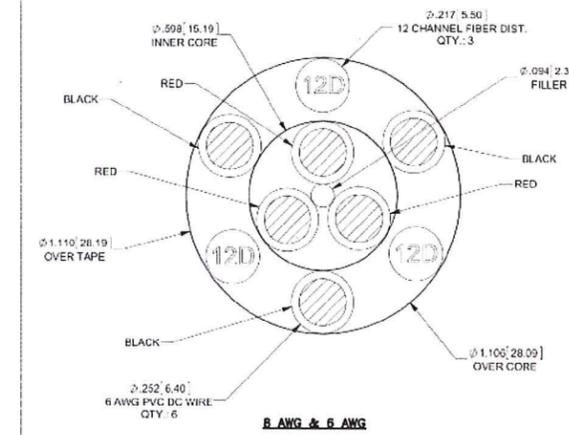
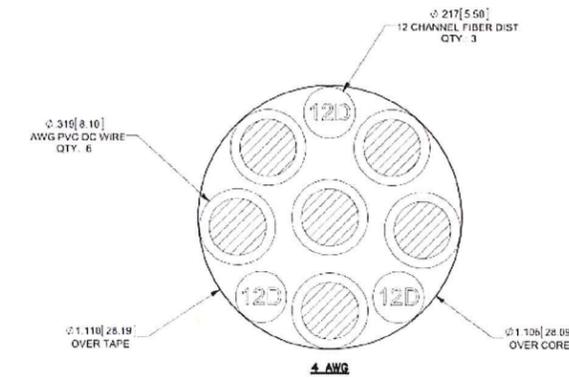
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft

6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft

4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

MANUF:	RFS		
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"



Sprint
2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251

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SUBMITTALS

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NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
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DATE	REVIEWED BY
8/1/14	JMA



SITE NUMBER:
CT54XC771

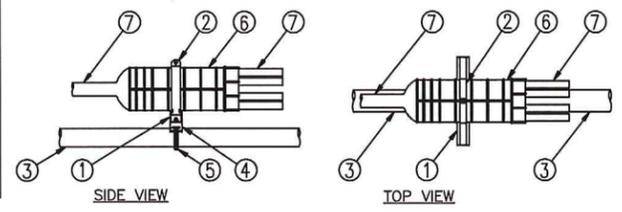
SITE NAME:
WOODBURY NORTH

SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
EQUIPMENT
SCHEMATIC DETAILS

SHEET NO:
S-2

- LEGEND:**
- P1000T-HG UNISTRUT, 12" LONG.
 - 6" PIPE HANGER.
 - EXISTING SUPPORT PIPE.
 - NEW STANDOFF BRACKET, ANDREW PART# 30848-4.
 - NEW ROUND MEMBER ADAPTER SIZED FOR EXISTING PIPE SUPPORT.
 - BREAKOUT UNIT.
 - CABLE.



3 MEDUSA HEAD DETAIL
S-2 SCALE: NTS

2 2.5 HYBRID CABLE X-SECTION AND DATA
S-2 SCALE: NTS

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DATE: 8/1/14 REVIEWED BY: JMG

SEAL: PROFESSIONAL ENGINEER 22033

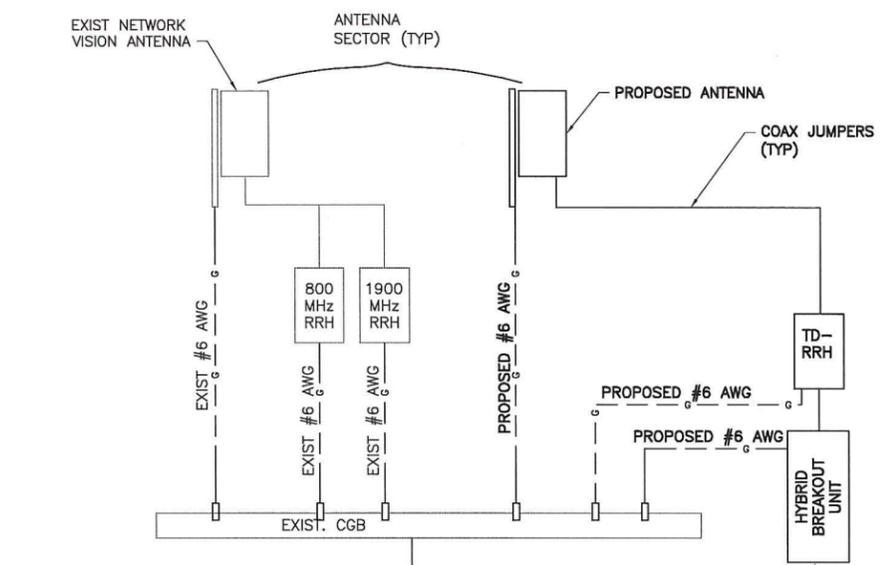
SITE NUMBER:
 CT54XC771

SITE NAME:
 WOODBURY NORTH

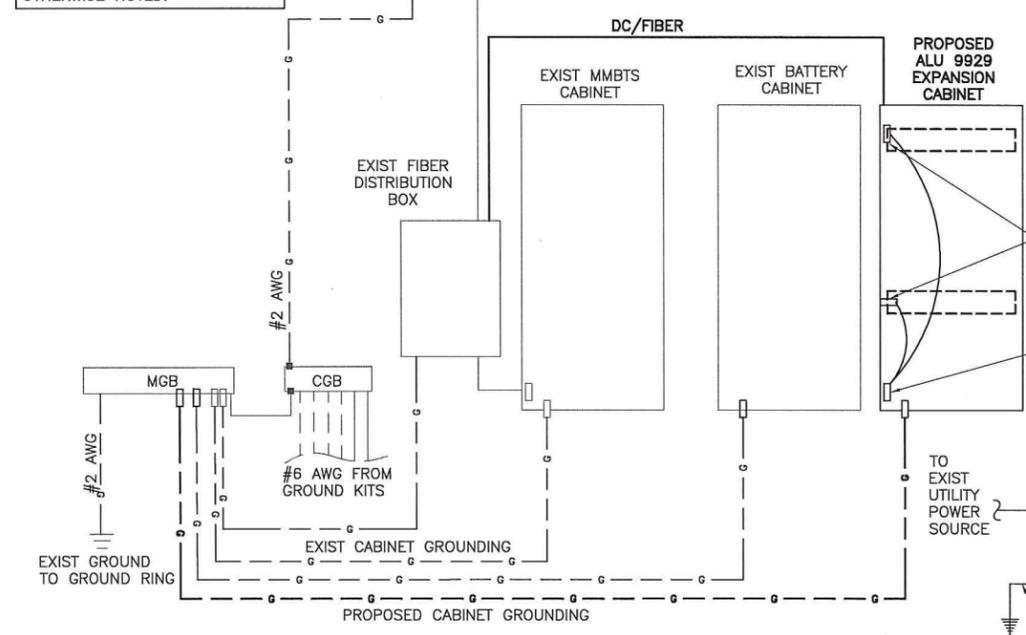
SITE ADDRESS:
 186 MINORTOWN ROAD
 WOODBURY, CT 06798

SHEET TITLE:
 ELECTRICAL & GROUNDING
 PLANS

SHEET NO:
 E-1



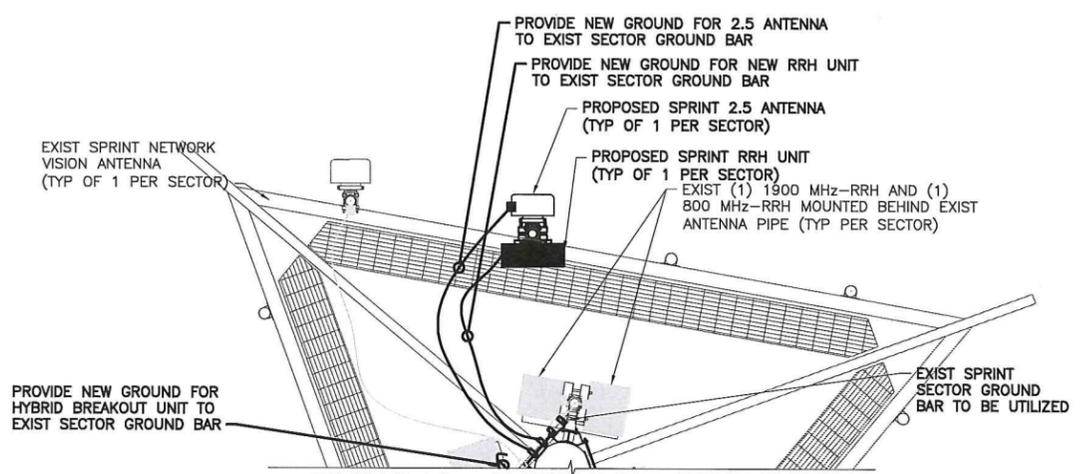
NOTE:
 ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.



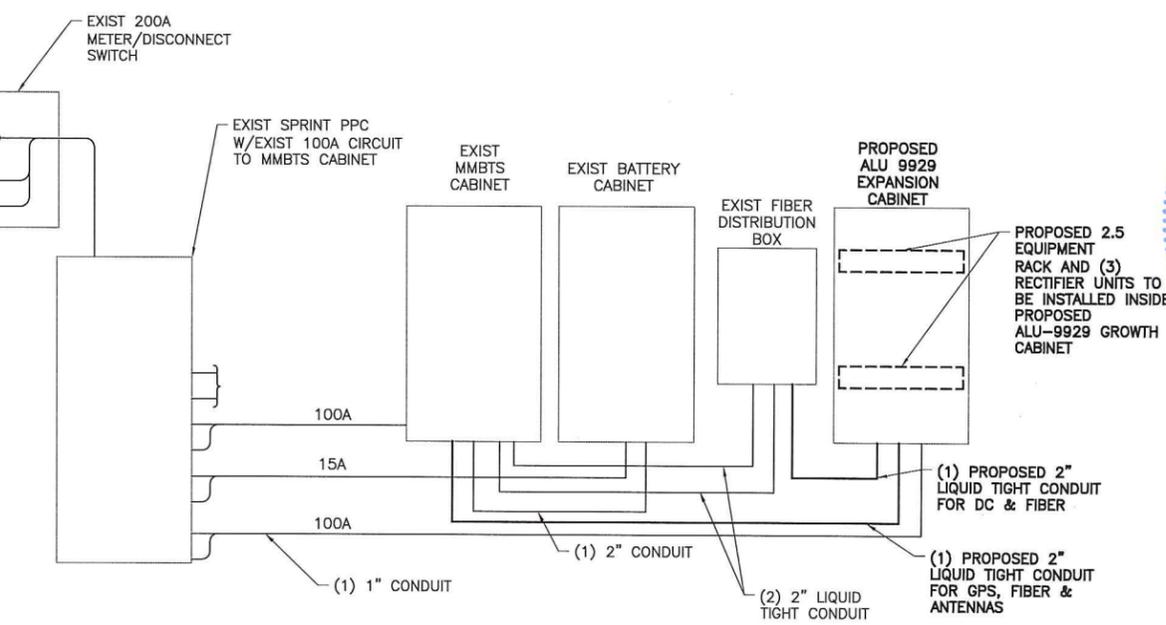
LEGEND

- CADWELD CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION

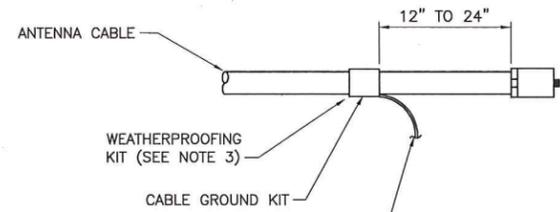
1
 E-1
 SCALE: NTS
TYPICAL GROUNDING ONE LINE DIAGRAM



2
 E-1
 SCALE: NTS
TYPICAL ANTENNA GROUNDING PLAN



NOTE: FINAL ELECTRICAL DESIGN TO BE DETERMINED BY OTHER.
 3
 E-1
 SCALE: NTS
TYPICAL ELECTRICAL & TELCO PLAN



6 AWG STRANDED Cu WIRE WITH GREEN, 600V, THWN INSULATION OR BLACK, MARKED AS REQUIRED BY THE NEC (GROUNDED TO GROUND BAR) (SEE NOTES 1 & 2)

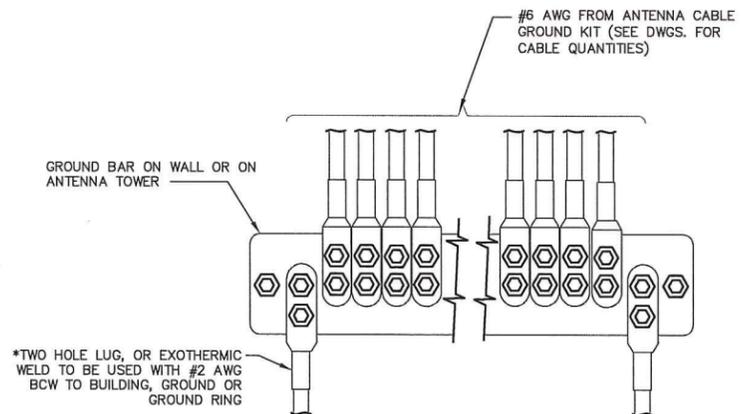
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

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

GROUNTING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

WEATHER PROOFING SHALL BE (TYPE AND PART NUMBER) AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER AND APPROVED BY CONTRACTOR.



*TWO HOLE LUG, OR EXOTHERMIC WELD TO BE USED WITH #2 AWG BCW TO BUILDING, GROUND OR GROUND RING

* - GROUND BARS AT THE BOTTOM OF TOWERS/MONOPOLES SHALL ONLY USE EXOTHERMIC WELDS.

- ATTACH "DO NOT DISCONNECT" LABELS TO GROUND BARS. CAN USE BRASS TAG "DO NOT DISCONNECT" AT EACH HYBRID GROUND POINT OR BACK-A-LITE PLATE LABEL ON GROUND BAR.

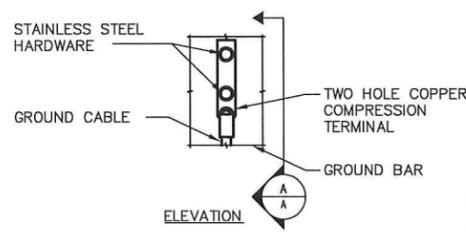
- CONNECT SEQUENCE- BOLT/WASHER/NO-OX/GROUND BAR/NO-OX/WASHER/LOCK-WASHER/NUT. THIS IS REPEATED FOR EACH LUG CONNECTION POINT.

4 ANTENNA GROUND BAR DETAIL

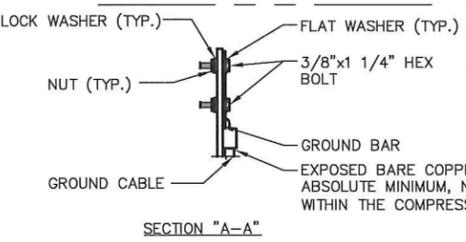
E-2 SCALE: NTS

1 CABLE GROUNDING KIT DETAIL

E-2 SCALE: N.T.S.



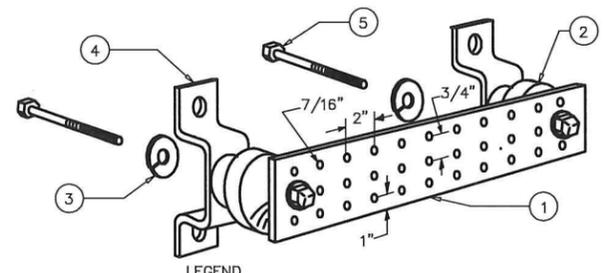
NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLOADS FROM UPPER EGB, LOWER EGB AND MGB.



SECTION "A-A"

2 GROUNDING BAR CONN. DETAIL

E-2 SCALE: NTS



LEGEND

- 1- COPPER TINNED GROUND BAR, 1/4" X 4" X 20", OR OTHER LENGTH AS REQUIRED, HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
- 2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
- 3- 5/8" LOCKWASHERS OR EQUAL
- 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
- 5- 5/8-11 X 1" H.H.C.S. BOLTS

NOTE:
ALL BOLTS, NUTS, WASHERS AND LOCK WASHERS SHALL BE 18-8 STAINLESS STEEL.

3 GROUNDING BAR DETAIL

E-2 SCALE: NTS

GROUNDING NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250--GROUNDING AND BONDING.
2. ALL GROUND WIRES SHALL BE #2 AWG UNLESS NOTED OTHERWISE.
3. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
4. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
5. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
6. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
7. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL AND SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
8. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
9. WHEN CABLE LENGTH IS OVER 20' THE MANUFACTURERS GROUND KIT MUST BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS.
10. REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUNDING.
11. HOME RUN GROUNDS ARE NOT APPROVED BY CROWN CASTLE CONSTRUCTION STANDARDS AND THAT ANTENNA BUSS BARS SHOULD BE INSTALLED DIRECTLY TO TOWER STEEL WITHOUT INSULATORS OR DOWN CONDUCTORS.

PROTECTIVE GROUNDING SYSTEM GENERAL NOTES:

1. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF-TAPPING SCREWS.
2. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
3. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH PROJECT MANAGER.
4. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
5. INSTALL GROUND BUSHING ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
6. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
7. GROUND HYBRID CABLE SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
4. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
5. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THNN INSULATION.
6. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
7. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
8. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
9. GROUNDING SHALL COMPLY WITH NEC ART. 250.
10. GROUND HYBRID CABLE SHIELDS AT 3 LOCATIONS USING MANUFACTURER'S HYBRID CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
11. USE #2 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
12. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
13. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #2 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
14. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
15. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
16. BOND ANTENNA MOUNTING BRACKETS, HYBRID CABLE GROUND KITS, AND RRHs TO EGB PLACED NEAR THE ANTENNA LOCATION.
17. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
18. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULT FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
19. CONTRACTOR SHALL CONDUCT ANTENNA, HYBRID CABLES, GPS COAX AND RRH RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
20. CONTRACTOR SHALL CHECK CAPACITY OF EXISTING SERVICE & PANEL ON SITE TO DETERMINE IF CAPACITY EXISTS TO ACCOMMODATE THE ADDED LOAD OF THIS PROJECT. ADVISE ENGINEER OF ANY DISCREPANCY.
21. LOCATION OF ALL OUTLET, BOXES, ETC, AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.
22. ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNERS REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT.

Sprint
2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251

CROWN CASTLE

TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
www.tectonicengineering.com

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SUBMITTALS

PROJECT NO: 7225.CT54XC771

NO	DATE	DESCRIPTION	BY
0	6/23/14	FOR COMMENT	JT
1	7/29/14	FOR CONSTRUCTION	KA
2	8/1/14	PER COMMENTS	KA

DATE	REVIEWED BY
8/1/14	SKH

SEAL
MAJOR STATE ENGINEER
22033
PROFESSIONAL ENGINEER

SITE NUMBER:
CT54XC771
SITE NAME:
WOODBURY NORTH
SITE ADDRESS:
186 MINORTOWN ROAD
WOODBURY, CT 06798

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
 250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **June 23, 2014**

Holly Haas
 Crown Castle
 3530 Toringdon Way Suite 300
 Charlotte, NC 28277

Paul J Ford and Company
 250 E. Broad Street Suite 600
 Columbus, OH 43215
 614.221.6679

Subject: Structural Analysis Report

Carrier Designation:	Sprint PCS Co-Locate	Scenario 2.5B
	Carrier Site Number:	CT54XC771
	Carrier Site Name:	N/A
Crown Castle Designation:	Crown Castle BU Number:	876405
	Crown Castle Site Name:	WOODBURY NORTH
	Crown Castle JDE Job Number:	288223
	Crown Castle Work Order Number:	771302
	Crown Castle Application Number:	246088 Rev. 2
Engineering Firm Designation:	Paul J Ford and Company Project Number:	37514-1305.001.7805 (Revised Mount)
Site Data:	186 MinorTown, WOODBURY, Litchfield County, CT	
	Latitude 41° 34' 4.79", Longitude -73° 10' 46.85"	
	110 Foot - Monopole Tower	

Dear Holly Haas,

Paul J Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 654878, in accordance with application 246088, revision 2.

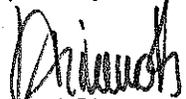
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

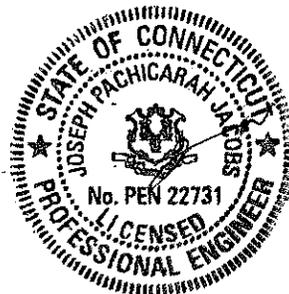
LC5: Existing + Proposed Equipment **Sufficient Capacity**
 Note: See Table I and Table II for the proposed and existing loading, respectively.

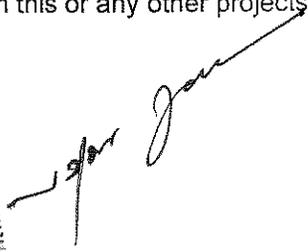
The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 CT Building Code requirements based upon a wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:


 Lohengri Gimeno
 Project Engineer 







PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **June 23, 2014**

Holly Haas
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
614.221.6679

Subject: Structural Analysis Report

Carrier Designation:	Sprint PCS Co-Locate	Scenario 2.5B
	Carrier Site Number:	CT54XC771
	Carrier Site Name:	N/A
Crown Castle Designation:	Crown Castle BU Number:	876405
	Crown Castle Site Name:	WOODBURY NORTH
	Crown Castle JDE Job Number:	288223
	Crown Castle Work Order Number:	771302
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The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 CT Building Code requirements based upon a wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

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Lohengri Gimeno
Project Engineer

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1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in April of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 CT Building Code requirements based upon a wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	103.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
108.0	108.0	1	antel	BXA-171063-8BF-2 w/ Mount Pipe	12	1-5/8	1
		2	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		1	antel	BXA-80063/4CFx5 w/ Mount Pipe			
		2	antel	BXA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	T-Arm Mount [TA 602-3]			
98.0	98.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1-1/4	1
		9	rfs celwave	ACU-A20-N			
		1	tower mounts	Side Arm Mount [SO 701-3]			
100.0	100.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1-1/4	1
		2	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 403-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
98.0	98.0	3	alcatel lucent	TME-1900MHz RRH (65 MHz)	-	-	1
		3	alcatel lucent	TME-800MHZ RRH			
78.0	78.0	1	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe	12 1 2	1-5/8 3/8 7/16	1
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		12	lgp telecom	TMA-DD 1900			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	T-Arm Mount [TA 602-3]			
76.0	76.0	6	ericsson	RRUS 11	-	-	1
		1	tower mounts	Side arm Mount [SO 102-3]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Pipe Mount [PM 601-1]			

Notes:
 1) Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti, 03/20/03	2158106	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 12/06/05	1956156	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEl, 11560, 04/24/03	1613643	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEl, 11560, 04/21/03	1614551	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 41708-0085, 07/24/08	2177138	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 06/05/2013	3849745	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
 - 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
 - 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
 - 4) Monopole was reinforced in conformance with the referenced modification drawings.
- This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	110 - 98.58	Pole	TP14.978x12.7x0.1875	1	-3.26	457.60	24.6	Pass
L2	98.58 - 79.33	Pole	TP18.8141x14.978x0.1875	2	-4.78	576.29	77.0	Pass
L3	79.33 - 47.21	Pole	TP25.215x18.8141x0.4204	3	-10.04	1500.89	66.3	Pass
L4	47.21 - 14.83	Pole	TP31.2941x23.6429x0.4258	4	-16.29	1959.59	77.5	Pass
L5	14.83 - 13.83	Pole	TP31.4934x31.2941x0.5356	5	-16.50	2253.30	68.4	Pass
L6	13.83 - 6	Pole	TP33.0541x31.4934x0.4415	6	-17.98	2098.46	77.4	Pass
L7	6 - 3.3333	Pole	TP33.5856x33.0541x0.5253	7	-18.57	2360.77	70.4	Pass
L8	3.3333 - 0	Pole	TP34.25x33.5856x0.4279	8	-19.21	2106.17	80.2	Pass
							Summary	
						Pole (L7)	80.2	Pass
						Rating =	80.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.6	Pass
1	Base Plate	0	92.2	Pass
1	Base Foundation Steel	0	52.9	Pass
1	Base Foundation Soil Interaction	0	86.0	Pass

Structure Rating (max from all components) =	92.2%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

APPENDIX A

**TNXTOWER OUTPUT
 Tower Input Data**

There is a pole section.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- 1) Tower is located in Litchfield County, Connecticut.
- 2) Basic wind speed of 80 mph.
- 3) Nominal ice thickness of 1.0000 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 28 mph is used in combination with ice.
- 7) Temperature drop of 50 °F.
- 8) Deflections calculated using a wind speed of 50 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- 12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	110.00-98.58	11.42	0.00	18	12.7000	14.9780	0.1875	0.7500	A572-65 (65 ksi)
L2	98.58-79.33	19.25	0.00	18	14.9780	18.8141	0.1875	0.7500	A572-65 (65 ksi)
L3	79.33-47.21	32.12	3.67	18	18.8141	25.2150	0.4204	1.6814	Reinf 58.45 ksi (58 ksi)
L4	47.21-14.83	36.05	0.00	18	23.6429	31.2941	0.4258	1.7032	Reinf 58.73 ksi (59 ksi)
L5	14.83-13.83	1.00	0.00	18	31.2941	31.4934	0.5356	2.1425	Reinf 53.53 ksi (54 ksi)
L6	13.83-6.00	7.83	0.00	18	31.4934	33.0541	0.4415	1.7660	Reinf 57.41 ksi (57 ksi)
L7	6.00-3.33	2.67	0.00	18	33.0541	33.5856	0.5253	2.1012	Reinf 53.55 ksi (54 ksi)
L8	3.33-0.00	3.33		18	33.5856	34.2500	0.4279	1.7115	Reinf 57.33 ksi (57 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	12.8959	7.4465	147.2916	4.4419	6.4516	22.8302	294.7770	3.7240	1.9052	10.161
	15.2091	8.8022	243.2732	5.2506	7.6088	31.9725	486.8664	4.4019	2.3061	12.299
L2	15.2091	8.8022	243.2732	5.2506	7.6088	31.9725	486.8664	4.4019	2.3061	12.299
	19.1044	11.0852	485.9018	6.6125	9.5576	50.8394	972.4430	5.5436	2.9813	15.9
L3	19.1044	24.5414	1049.0061	6.5298	9.5576	109.7565	2099.3925	12.2730	2.5715	6.117
	25.6040	33.0816	2569.4441	8.8021	12.8092	200.5933	5142.2692	16.5439	3.6980	8.797
L4	24.7986	31.3777	2136.8558	8.2421	12.0106	177.9141	4276.5234	15.6918	3.4117	8.013
	31.7768	41.7181	5022.1227	10.9582	15.8974	315.9086	10050.853	20.8630	4.7584	11.175
L5	31.7768	52.2921	6250.3251	10.9192	15.8974	393.1667	12508.874	26.1510	4.5650	8.523
	31.9792	52.6310	6372.6237	10.9900	15.9986	398.3227	12753.632	26.3205	4.6001	8.588
L6	31.9792	43.5147	5300.8930	11.0234	15.9986	331.3338	10608.761	21.7615	4.7658	10.794

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	33.5640	45.7017	6141.0126	11.5775	16.7915	365.7221	12290.1057	22.8552	5.0405	11.4167
L7	33.5640	54.2343	7250.1540	11.5477	16.7915	431.7759	14509.8480	27.1223	4.8930	9.3150
	34.1037	55.1205	7611.4021	11.7364	17.0615	446.1159	15232.8194	27.5655	4.9866	9.4934
L8	34.1037	45.0312	6254.9052	11.7710	17.0615	366.6096	12518.0408	22.5199	5.1580	12.0558
	34.7784	45.9335	6638.4829	12.0069	17.3990	381.5439	13285.7008	22.9711	5.2749	12.3288

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 110.00-98.58				1	1	1		
L2 98.58-79.33				1	1	1		
L3 79.33-47.21				1	1	1		
L4 47.21-14.83				1	1	1		
L5 14.83-13.83				1	1	1		
L6 13.83-6.00				1	1	1		
L7 6.00-3.33				1	1	1		
L8 3.33-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	r in	r in	plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _A A _A	Weight
				ft		ft ² /ft	plf
LDF7-50A(1-5/8")	C	No	Inside Pole	108.00 - 0.00	12	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.82 0.82 0.82

HB114-1-0813U4-M5J(1 1/4")	C	No	Inside Pole	100.00 - 0.00	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 1.20 1.20 1.20
HB114-21U3M12-XXXF(1-1/4")	C	No	Inside Pole	100.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 1.22 1.22 1.22

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight plf
						In Face ft ² /ft	Out Face ft ² /ft	
LDF7-50A(1-5/8")	C	No	Inside Pole	78.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-002-75000(3/8")	C	No	Inside Pole	78.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	CaAa (Out Of Face)	78.00 - 0.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.73
						1" Ice	0.00	1.92
						2" Ice	0.00	6.15
						4" Ice	0.00	21.94

LDF4-50A(1/2")	C	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15

Aero MP3-05	C	No	CaAa (Out Of Face)	81.58 - 0.00	1	No Ice	0.35	0.00
						1/2" Ice	0.40	0.00
						1" Ice	0.66	0.00
						2" Ice	0.88	0.00
						4" Ice	1.32	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight K
			ft ²	ft ²	ft ²	ft ²	
L1	110.00-98.58	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L2	98.58-79.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.783	0.28
L3	79.33-47.21	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.171	0.78
L4	47.21-14.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.262	0.81
L5	14.83-13.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.348	0.02
L6	13.83-6.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.723	0.20
L7	6.00-3.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.927	0.07
L8	3.33-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.159	0.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	110.00-98.58	A	1.148	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L2	98.58-79.33	A	1.126	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.540	0.28
L3	79.33-47.21	A	1.080	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	21.661	0.92
L4	47.21-14.83	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	21.837	0.95
L5	14.83-13.83	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.657	0.03
L6	13.83-6.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.141	0.22
L7	6.00-3.33	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.751	0.08
L8	3.33-0.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.188	0.10

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	110.00-98.58	0.0000	0.0000	0.0000	0.0000
L2	98.58-79.33	-0.0565	0.0326	-0.0961	0.0555
L3	79.33-47.21	-0.3798	0.2193	-0.5977	0.3451
L4	47.21-14.83	-0.3929	0.2269	-0.6404	0.3697
L5	14.83-13.83	-0.3988	0.2302	-0.6487	0.3746
L6	13.83-6.00	-0.4001	0.2310	-0.6530	0.3770
L7	6.00-3.33	-0.4015	0.2318	-0.6579	0.3798
L8	3.33-0.00	-0.4023	0.2323	-0.6605	0.3813

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
2.375" OD x 5' Mount Pipe	A	From Face	4.00	0.0000	108.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
2.375" OD x 5' Mount Pipe	B	From Face	4.00	0.0000	108.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
2.375" OD x 5' Mount Pipe	C	From Face	4.00	0.0000	108.00	No Ice	1.19	1.19	0.02
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
				0.00					
				0.00		1/2"	1.50	1.50	0.03
						Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00	0.0000	108.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.97	4.60	0.10
						1" Ice	4.86	5.90	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00	0.0000	108.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.97	4.60	0.10
						1" Ice	4.86	5.90	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171063-8BF-2 w/ Mount Pipe	C	From Face	4.00	0.0000	108.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-70063/6CF-2 w/ Mount Pipe	A	From Face	4.00	0.0000	108.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
BXA-70063/6CF-2 w/ Mount Pipe	B	From Face	4.00	0.0000	108.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
BXA-70063/6CF-2 w/ Mount Pipe	C	From Face	4.00	0.0000	108.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
(2) FD9R6004/2C-3L	A	From Face	4.00	0.0000	108.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	B	From Face	4.00	0.0000	108.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	C	From Face	4.00	0.0000	108.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
BXA-80080/4CF w/ Mount Pipe	A	From Face	4.00	0.0000	108.00	No Ice	5.49	4.03	0.03
			0.00			1/2"	5.94	4.65	0.08
			0.00			Ice	6.40	5.30	0.13
						1" Ice	7.35	6.70	0.25
						2" Ice	9.39	9.78	0.60
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
BXA-80080/4CF w/ Mount Pipe	B	From Face	4.00	0.0000	108.00	No Ice	5.49	4.03	0.03
			0.00			1/2"	5.94	4.65	0.08
			0.00			Ice	6.40	5.30	0.13
						1" Ice	7.35	6.70	0.25
						2" Ice	9.39	9.78	0.60
BXA-80063/4CFx5 w/ Mount Pipe	C	From Face	4.00	0.0000	108.00	No Ice	5.40	3.62	0.03
			0.00			1/2"	5.84	4.22	0.07
			0.00			Ice	6.30	4.83	0.12
						1" Ice	7.24	6.16	0.23
						2" Ice	9.26	9.18	0.57
T-Arm Mount [TA 602-3]	C	None		0.0000	108.00	No Ice	11.59	11.59	0.77
						1/2"	15.44	15.44	0.99
						Ice	19.29	19.29	1.21
						1" Ice	26.99	26.99	1.64
						2" Ice	42.39	42.39	2.50

2.375" OD x 5' Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			2.00			Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
2.375" OD x 5' Mount Pipe	B	From Face	4.00	0.0000	100.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			2.00			Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
2.375" OD x 5' Mount Pipe	C	From Face	4.00	0.0000	100.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			2.00			Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice	3.92	3.92	0.20
APXVSP18-C-A20 w/ Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	8.50	6.95	0.08
			0.00			1/2"	9.15	8.13	0.15
			0.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Face	4.00	0.0000	100.00	No Ice	8.50	7.47	0.09
			0.00			1/2"	9.15	8.66	0.16
			0.00			Ice	9.77	9.56	0.24
						1" Ice	11.03	11.39	0.42
						2" Ice	13.68	15.53	0.94
APXVSP18-C-A20 w/ Mount Pipe	C	From Face	4.00	0.0000	100.00	No Ice	8.50	6.95	0.08
			0.00			1/2"	9.15	8.13	0.15
			0.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
(3) ACU-A20-N	A	From Face	4.00	0.0000	100.00	No Ice	0.08	0.14	0.00
			0.00			1/2"	0.12	0.19	0.00
			0.00			Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						2" Ice	0.67	0.80	0.04
(3) ACU-A20-N	B	From Face	4.00	0.0000	100.00	No Ice	0.08	0.14	0.00
			0.00			1/2"	0.12	0.19	0.00
			0.00			Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						1" Ice	0.30	0.40	0.01

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz Lateral	Vert						ft
(3) ACU-A20-N	C	From Face	4.00	0.00	0.0000	100.00	2" Ice	0.67	0.80	0.04
							4" Ice	0.08	0.14	0.00
							No Ice	0.12	0.19	0.00
							1/2" Ice	0.17	0.25	0.00
							1" Ice	0.30	0.40	0.01
							2" Ice	0.67	0.80	0.04
*** 800 EXTERNAL NOTCH FILTER	A	From Face	2.00	0.00	0.0000	98.00	2" Ice	0.77	0.37	0.01
							4" Ice	0.89	0.46	0.02
							No Ice	1.02	0.56	0.02
							1/2" Ice	1.30	0.79	0.04
							1" Ice	1.97	1.34	0.11
							2" Ice	1.97	1.34	0.11
800 EXTERNAL NOTCH FILTER	B	From Face	2.00	0.00	0.0000	98.00	4" Ice	0.77	0.37	0.01
							No Ice	0.89	0.46	0.02
							1/2" Ice	1.02	0.56	0.02
							Ice	1.30	0.79	0.04
							1" Ice	1.97	1.34	0.11
							2" Ice	1.97	1.34	0.11
800 EXTERNAL NOTCH FILTER	C	From Face	2.00	0.00	0.0000	98.00	4" Ice	0.77	0.37	0.01
							No Ice	0.89	0.46	0.02
							1/2" Ice	1.02	0.56	0.02
							Ice	1.30	0.79	0.04
							1" Ice	1.97	1.34	0.11
							2" Ice	1.97	1.34	0.11
TME-800MHZ RRH	A	From Face	2.00	0.00	0.0000	98.00	4" Ice	2.49	2.07	0.05
							No Ice	2.71	2.27	0.07
							1/2" Ice	2.93	2.48	0.10
							Ice	3.41	2.93	0.16
							1" Ice	4.46	3.93	0.32
							2" Ice	4.46	3.93	0.32
(2) TME-1900MHz RRH (65 MHz)	B	From Face	2.00	0.00	0.0000	98.00	4" Ice	2.70	2.77	0.06
							No Ice	2.94	3.01	0.08
							1/2" Ice	3.18	3.26	0.11
							Ice	3.70	3.78	0.18
							1" Ice	4.85	4.93	0.35
							2" Ice	4.85	4.93	0.35
(2) TME-800MHZ RRH	C	From Face	2.00	0.00	0.0000	98.00	4" Ice	2.49	2.07	0.05
							No Ice	2.71	2.27	0.07
							1/2" Ice	2.93	2.48	0.10
							Ice	3.41	2.93	0.16
							1" Ice	4.46	3.93	0.32
							2" Ice	4.46	3.93	0.32
TME-1900MHz RRH (65 MHz)	A	From Face	2.00	0.00	0.0000	98.00	4" Ice	2.70	2.77	0.06
							No Ice	2.94	3.01	0.08
							1/2" Ice	3.18	3.26	0.11
							Ice	3.70	3.78	0.18
							1" Ice	4.85	4.93	0.35
							2" Ice	4.85	4.93	0.35
Side Arm Mount [SO 701-3]	C	None			0.0000	98.00	4" Ice	2.83	2.83	0.20
							No Ice	3.92	3.92	0.24
							1/2" Ice	5.01	5.01	0.28
							Ice	7.19	7.19	0.36
							1" Ice	11.55	11.55	0.53
							2" Ice	11.55	11.55	0.53
*** APXVTM14-C-120 w/ Mount Pipe	A	From Face	4.00	0.00	0.0000	100.00	4" Ice	7.13	4.96	0.08
							No Ice	7.66	5.75	0.13
							1/2" Ice	8.18	6.47	0.19
							Ice	9.26	8.01	0.34
							1" Ice	11.53	11.41	0.75
							2" Ice	11.53	11.41	0.75
APXVTM14-C-120 w/	B	From Face	4.00	0.0000	100.00	4" Ice	7.13	4.96	0.08	
						No Ice	7.13	4.96	0.08	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Mount Pipe			0.00 3.00		1/2" Ice 1" 2" 4"	7.66 8.18 9.26 11.53	5.75 6.47 8.01 11.41	0.13 0.19 0.34 0.75	
APXVTM14-C-120 w/ Mount Pipe	C	From Face	4.00 0.00 3.00	0.0000	100.00	No Ice 1/2" Ice 1" 2" 4"	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Face	4.00 0.00 3.00	0.0000	100.00	No Ice 1/2" Ice 1" 2" 4"	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Face	4.00 0.00 3.00	0.0000	100.00	No Ice 1/2" Ice 1" 2" 4"	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Face	4.00 0.00 3.00	0.0000	100.00	No Ice 1/2" Ice 1" 2" 4"	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
Platform Mount [LP 403-1]	C	None		0.0000	100.00	No Ice 1/2" Ice 1" 2" 4"	18.85 24.30 29.75 40.65 62.45	18.85 24.30 29.75 40.65 62.45	1.50 1.80 2.09 2.69 3.87

AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" 2" 4"	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" 2" 4"	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	0.05 0.10 0.15 0.27 0.63
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" 2" 4"	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
DC6-48-60-18-8F	B	From Face	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" 2" 4"	2.57 2.80 3.04 3.54 4.66	2.57 2.80 3.04 3.54 4.66	0.02 0.04 0.07 0.13 0.30
(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" 2"	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	78.00	4" Ice			
						No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	78.00	4" Ice			
						No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
(4) TMA-DD 1900	A	From Face	4.00 0.00 0.00	0.0000	78.00	4" Ice			
						No Ice	0.59	0.28	0.01
						1/2" Ice	0.69	0.36	0.01
						1" Ice	0.81	0.46	0.02
						2" Ice	1.06	0.67	0.04
(4) TMA-DD 1900	B	From Face	4.00 0.00 0.00	0.0000	78.00	4" Ice			
						No Ice	0.59	0.28	0.01
						1/2" Ice	0.69	0.36	0.01
						1" Ice	0.81	0.46	0.02
						2" Ice	1.06	0.67	0.04
(4) TMA-DD 1900	C	From Face	4.00 0.00 0.00	0.0000	78.00	4" Ice			
						No Ice	0.59	0.28	0.01
						1/2" Ice	0.69	0.36	0.01
						1" Ice	0.81	0.46	0.02
						2" Ice	1.06	0.67	0.04
T-Arm Mount [TA 602-3]	C	None		0.0000	78.00	4" Ice			
						No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
						2" Ice	26.99	26.99	1.64
***** (2) RRUS 11	A	From Face	4.00 0.00 0.00	0.0000	76.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
(2) RRUS 11	B	From Face	4.00 0.00 0.00	0.0000	76.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
(2) RRUS 11	C	From Face	4.00 0.00 0.00	0.0000	76.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
Side Arm Mount [SO 102-3]	C	None		0.0000	76.00	4" Ice			
						No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
***** KS24019-L112A	B	From Face	4.00 0.00	0.0000	50.00	4" Ice			
						No Ice	0.16	0.16	0.01
						1/2" Ice	0.22	0.22	0.01

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
L2 98.58-79.33	88.59	1.326	3	1.1258	30.716	A	0.000	30.716	30.716	100.00	0.000	0.000
						B	0.000	30.716		100.00	0.000	0.000
						C	0.000	30.716		100.00	0.000	1.540
L3 79.33-47.21	62.78	1.202	2	1.0802	64.709	A	0.000	64.709	64.709	100.00	0.000	0.000
						B	0.000	64.709		100.00	0.000	0.000
						C	0.000	64.709		100.00	0.000	21.661
L4 47.21-14.83	30.54	1	2	1.0000	81.000	A	0.000	81.000	81.000	100.00	0.000	0.000
						B	0.000	81.000		100.00	0.000	0.000
						C	0.000	81.000		100.00	0.000	21.837
L5 14.83-13.83	14.33	1	2	1.0000	2.783	A	0.000	2.783	2.783	100.00	0.000	0.000
						B	0.000	2.783		100.00	0.000	0.000
						C	0.000	2.783		100.00	0.000	0.657
L6 13.83-6.00	9.88	1	2	1.0000	22.364	A	0.000	22.364	22.364	100.00	0.000	0.000
						B	0.000	22.364		100.00	0.000	0.000
						C	0.000	22.364		100.00	0.000	5.141
L7 6.00-3.33	4.66	1	2	1.0000	7.849	A	0.000	7.849	7.849	100.00	0.000	0.000
						B	0.000	7.849		100.00	0.000	0.000
						C	0.000	7.849		100.00	0.000	1.751
L8 3.33-0.00	1.66	1	2	1.0000	9.977	A	0.000	9.977	9.977	100.00	0.000	0.000
						B	0.000	9.977		100.00	0.000	0.000
						C	0.000	9.977		100.00	0.000	2.188

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
L1 110.00-98.58	104.13	1.389	9	13.170	A	0.000	13.170	13.170	100.00	0.000	0.000
					B	0.000	13.170		100.00	0.000	0.000
					C	0.000	13.170		100.00	0.000	0.000
L2 98.58-79.33	88.59	1.326	8	27.104	A	0.000	27.104	27.104	100.00	0.000	0.000
					B	0.000	27.104		100.00	0.000	0.000
					C	0.000	27.104		100.00	0.000	0.783
L3 79.33-47.21	62.78	1.202	8	58.926	A	0.000	58.926	58.926	100.00	0.000	0.000
					B	0.000	58.926		100.00	0.000	0.000
					C	0.000	58.926		100.00	0.000	11.171
L4 47.21-14.83	30.54	1	7	75.170	A	0.000	75.170	75.170	100.00	0.000	0.000
					B	0.000	75.170		100.00	0.000	0.000
					C	0.000	75.170		100.00	0.000	11.262
L5 14.83-13.83	14.33	1	6	2.616	A	0.000	2.616	2.616	100.00	0.000	0.000
					B	0.000	2.616		100.00	0.000	0.000
					C	0.000	2.616		100.00	0.000	0.348
L6 13.83-6.00	9.88	1	6	21.059	A	0.000	21.059	21.059	100.00	0.000	0.000
					B	0.000	21.059		100.00	0.000	0.000
					C	0.000	21.059		100.00	0.000	2.723
L7 6.00-3.33	4.66	1	6	7.405	A	0.000	7.405	7.405	100.00	0.000	0.000
					B	0.000	7.405		100.00	0.000	0.000
					C	0.000	7.405		100.00	0.000	0.927
L8 3.33-0.00	1.66	1	6	9.422	A	0.000	9.422	9.422	100.00	0.000	0.000
					B	0.000	9.422		100.00	0.000	0.000
					C	0.000	9.422		100.00	0.000	1.159

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice

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Comb. No.	Description
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	110 - 98.58	Pole	Max Tension	2	0.00	0.00	-0.00
			Max. Compression	14	-7.65	-0.04	0.07
			Max. Mx	5	-3.27	-32.90	0.00
			Max. My	2	-3.26	-0.02	33.02
			Max. Vy	5	5.86	-32.90	0.00
			Max. Vx	2	-5.89	-0.02	33.02
			Max. Torque	12			-0.14
L2	98.58 - 79.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-10.12	-0.07	0.13
			Max. Mx	5	-4.79	-166.46	-0.29
			Max. My	2	-4.78	0.29	167.60
			Max. Vy	5	7.29	-166.46	-0.29
			Max. Vx	2	-7.34	0.29	167.60
			Max. Torque	12			-0.26
L3	79.33 - 47.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.54	-0.01	0.09
			Max. Mx	5	-10.04	-479.49	-0.99
			Max. My	2	-10.04	0.99	482.38
			Max. Vy	5	11.92	-479.49	-0.99
			Max. Vx	2	-11.98	0.99	482.38
			Max. Torque	12			-0.29
L4	47.21 - 14.83	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	14.83 - 13.83	Pole	Max. Compression	14	-25.99	0.11	0.02
			Max. Mx	5	-16.29	-942.47	-1.87
			Max. My	2	-16.29	1.87	947.56
			Max. Vy	5	13.64	-942.47	-1.87
			Max. Vx	2	-13.70	1.87	947.56
			Max. Torque	12			-0.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.23	0.11	0.02
			Max. Mx	5	-16.51	-956.13	-1.89
			Max. My	2	-16.50	1.89	961.28
L6	13.83 - 6	Pole	Max. Vy	5	13.68	-956.13	-1.89
			Max. Vx	2	-13.74	1.89	961.28
			Max. Torque	12			-0.21
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27.97	0.15	-0.00
			Max. Mx	5	-17.98	-1064.55	-2.08
			Max. My	2	-17.98	2.08	1070.17
			Max. Vy	5	14.03	-1064.55	-2.08
			Max. Vx	2	-14.09	2.08	1070.17
			Max. Torque	12			-0.21
L7	6 - 3.3333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.65	0.16	-0.01
			Max. Mx	5	-18.57	-1102.11	-2.15
			Max. My	2	-18.57	2.15	1107.89
			Max. Vy	5	14.16	-1102.11	-2.15
			Max. Vx	2	-14.22	2.15	1107.89
			Max. Torque	12			-0.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.41	0.17	-0.02
			Max. Mx	5	-19.21	-1149.52	-2.23
L8	3.3333 - 0	Pole	Max. My	2	-19.21	2.23	1155.50
			Max. Vy	5	14.31	-1149.52	-2.23
			Max. Vx	2	-14.36	2.23	1155.50
			Max. Torque	12			-0.19

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	29.41	0.00	0.00
	Max. H _x	11	19.22	14.30	0.02
	Max. H _z	2	19.22	0.02	14.36
	Max. M _x	2	1155.50	0.02	14.36
	Max. M _z	5	1149.52	-14.30	-0.02
	Max. Torsion	6	0.18	-12.39	-7.20
	Min. Vert	1	19.22	0.00	0.00
	Min. H _x	5	19.22	-14.30	-0.02
	Min. H _z	8	19.22	-0.02	-14.36
	Min. M _x	8	-1155.36	-0.02	-14.36
	Min. M _z	11	-1149.38	14.30	0.02
	Min. Torsion	12	-0.18	12.39	7.20

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	19.22	0.00	0.00	-0.06	-0.06	0.00
Dead+Wind 0 deg - No Ice	19.22	-0.02	-14.36	-1155.50	2.23	0.06

Load Combination	Vertical	Shear _x	Shear _y	Overturing Moment, M _x	Overturing Moment, M _y	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - No Ice	19.22	7.13	-12.42	-999.56	-572.80	-0.04
Dead+Wind 60 deg - No Ice	19.22	12.37	-7.16	-575.80	-994.38	-0.12
Dead+Wind 90 deg - No Ice	19.22	14.30	0.02	2.23	-1149.52	-0.17
Dead+Wind 120 deg - No Ice	19.22	12.39	7.20	579.64	-996.66	-0.18
Dead+Wind 150 deg - No Ice	19.22	7.17	12.44	1001.71	-576.77	-0.14
Dead+Wind 180 deg - No Ice	19.22	0.02	14.36	1155.36	-2.36	-0.06
Dead+Wind 210 deg - No Ice	19.22	-7.13	12.42	999.43	572.67	0.04
Dead+Wind 240 deg - No Ice	19.22	-12.37	7.16	575.67	994.24	0.12
Dead+Wind 270 deg - No Ice	19.22	-14.30	-0.02	-2.36	1149.38	0.17
Dead+Wind 300 deg - No Ice	19.22	-12.39	-7.20	-579.77	996.53	0.18
Dead+Wind 330 deg - No Ice	19.22	-7.17	-12.44	-1001.85	576.64	0.14
Dead+Ice+Temp	29.41	0.00	0.00	0.02	0.17	0.00
Dead+Wind 0	29.41	-0.00	-2.52	-213.19	0.41	-0.02
deg+Ice+Temp						
Dead+Wind 30	29.41	1.26	-2.18	-184.51	-105.85	-0.02
deg+Ice+Temp						
Dead+Wind 60	29.41	2.18	-1.26	-106.39	-183.70	-0.02
deg+Ice+Temp						
Dead+Wind 90	29.41	2.51	0.00	0.24	-212.28	-0.01
deg+Ice+Temp						
Dead+Wind 120	29.41	2.18	1.26	106.80	-183.93	-0.00
deg+Ice+Temp						
Dead+Wind 150	29.41	1.26	2.18	184.75	-106.25	0.01
deg+Ice+Temp						
Dead+Wind 180	29.41	0.00	2.52	213.20	-0.06	0.02
deg+Ice+Temp						
Dead+Wind 210	29.41	-1.26	2.18	184.52	106.20	0.02
deg+Ice+Temp						
Dead+Wind 240	29.41	-2.18	1.26	106.40	184.05	0.02
deg+Ice+Temp						
Dead+Wind 270	29.41	-2.51	-0.00	-0.23	212.63	0.01
deg+Ice+Temp						
Dead+Wind 300	29.41	-2.18	-1.26	-106.79	184.28	0.00
deg+Ice+Temp						
Dead+Wind 330	29.41	-1.26	-2.18	-184.74	106.60	-0.01
deg+Ice+Temp						
Dead+Wind 0 deg - Service	19.22	-0.01	-5.61	-451.93	0.83	0.02
Dead+Wind 30 deg - Service	19.22	2.78	-4.85	-390.95	-224.05	-0.01
Dead+Wind 60 deg - Service	19.22	4.83	-2.80	-225.23	-388.92	-0.05
Dead+Wind 90 deg - Service	19.22	5.58	0.01	0.83	-449.59	-0.07
Dead+Wind 120 deg - Service	19.22	4.84	2.81	226.64	-389.82	-0.07
Dead+Wind 150 deg - Service	19.22	2.80	4.86	391.71	-225.61	-0.05
Dead+Wind 180 deg - Service	19.22	0.01	5.61	451.80	-0.97	-0.02
Dead+Wind 210 deg - Service	19.22	-2.78	4.85	390.81	223.92	0.01
Dead+Wind 240 deg - Service	19.22	-4.83	2.80	225.09	388.78	0.05
Dead+Wind 270 deg - Service	19.22	-5.58	-0.01	-0.96	449.45	0.07
Dead+Wind 300 deg - Service	19.22	-4.84	-2.81	-226.78	389.68	0.07
Dead+Wind 330 deg - Service	19.22	-2.80	-4.86	-391.85	225.47	0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-19.22	0.00	0.00	19.22	0.00	0.000%
2	-0.02	-19.22	-14.36	0.02	19.22	14.36	0.000%
3	7.13	-19.22	-12.42	-7.13	19.22	12.42	0.000%
4	12.37	-19.22	-7.16	-12.37	19.22	7.16	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
5	14.30	-19.22	0.02	-14.30	19.22	-0.02	0.000%
6	12.39	-19.22	7.20	-12.39	19.22	-7.20	0.000%
7	7.17	-19.22	12.44	-7.17	19.22	-12.44	0.000%
8	0.02	-19.22	14.36	-0.02	19.22	-14.36	0.000%
9	-7.13	-19.22	12.42	7.13	19.22	-12.42	0.000%
10	-12.37	-19.22	7.16	12.37	19.22	-7.16	0.000%
11	-14.30	-19.22	-0.02	14.30	19.22	0.02	0.000%
12	-12.39	-19.22	-7.20	12.39	19.22	7.20	0.000%
13	-7.17	-19.22	-12.44	7.17	19.22	12.44	0.000%
14	0.00	-29.41	0.00	0.00	29.41	0.00	0.000%
15	-0.00	-29.41	-2.52	0.00	29.41	2.52	0.000%
16	1.26	-29.41	-2.18	-1.26	29.41	2.18	0.000%
17	2.18	-29.41	-1.26	-2.18	29.41	1.26	0.000%
18	2.51	-29.41	0.00	-2.51	29.41	-0.00	0.000%
19	2.18	-29.41	1.26	-2.18	29.41	-1.26	0.000%
20	1.26	-29.41	2.18	-1.26	29.41	-2.18	0.000%
21	0.00	-29.41	2.52	-0.00	29.41	-2.52	0.000%
22	-1.26	-29.41	2.18	1.26	29.41	-2.18	0.000%
23	-2.18	-29.41	1.26	2.18	29.41	-1.26	0.000%
24	-2.51	-29.41	-0.00	2.51	29.41	0.00	0.000%
25	-2.18	-29.41	-1.26	2.18	29.41	1.26	0.000%
26	-1.26	-29.41	-2.18	1.26	29.41	2.18	0.000%
27	-0.01	-19.22	-5.61	0.01	19.22	5.61	0.000%
28	2.78	-19.22	-4.85	-2.78	19.22	4.85	0.000%
29	4.83	-19.22	-2.80	-4.83	19.22	2.80	0.000%
30	5.58	-19.22	0.01	-5.58	19.22	-0.01	0.000%
31	4.84	-19.22	2.81	-4.84	19.22	-2.81	0.000%
32	2.80	-19.22	4.86	-2.80	19.22	-4.86	0.000%
33	0.01	-19.22	5.61	-0.01	19.22	-5.61	0.000%
34	-2.78	-19.22	4.85	2.78	19.22	-4.85	0.000%
35	-4.83	-19.22	2.80	4.83	19.22	-2.80	0.000%
36	-5.58	-19.22	-0.01	5.58	19.22	0.01	0.000%
37	-4.84	-19.22	-2.81	4.84	19.22	2.81	0.000%
38	-2.80	-19.22	-4.86	2.80	19.22	4.86	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00030926
3	Yes	5	0.00000001	0.00080694
4	Yes	5	0.00000001	0.00081238
5	Yes	4	0.00000001	0.00046247
6	Yes	5	0.00000001	0.00079884
7	Yes	5	0.00000001	0.00082548
8	Yes	4	0.00000001	0.00046650
9	Yes	5	0.00000001	0.00080573
10	Yes	5	0.00000001	0.00079836
11	Yes	4	0.00000001	0.00064291
12	Yes	5	0.00000001	0.00082599
13	Yes	5	0.00000001	0.00080130
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00016039
16	Yes	5	0.00000001	0.00018871
17	Yes	5	0.00000001	0.00018870
18	Yes	5	0.00000001	0.00015962
19	Yes	5	0.00000001	0.00018828
20	Yes	5	0.00000001	0.00018909
21	Yes	5	0.00000001	0.00015996
22	Yes	5	0.00000001	0.00018816
23	Yes	5	0.00000001	0.00018764
24	Yes	5	0.00000001	0.00015952
25	Yes	5	0.00000001	0.00018927
26	Yes	5	0.00000001	0.00018901

27	Yes	4	0.00000001	0.00009046
28	Yes	5	0.00000001	0.00008469
29	Yes	5	0.00000001	0.00008586
30	Yes	4	0.00000001	0.00012219
31	Yes	5	0.00000001	0.00008257
32	Yes	5	0.00000001	0.00008821
33	Yes	4	0.00000001	0.00010228
34	Yes	5	0.00000001	0.00008426
35	Yes	5	0.00000001	0.00008272
36	Yes	4	0.00000001	0.00013649
37	Yes	5	0.00000001	0.00008833
38	Yes	5	0.00000001	0.00008306

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 98.58	27.428	27	2.3182	0.0037
L2	98.58 - 79.33	21.929	38	2.2530	0.0032
L3	79.33 - 47.21	13.862	38	1.6782	0.0011
L4	50.88 - 14.83	5.600	38	1.0710	0.0004
L5	14.83 - 13.83	0.433	38	0.2803	0.0001
L6	13.83 - 6	0.376	38	0.2636	0.0001
L7	6 - 3.3333	0.071	38	0.1087	0.0000
L8	3.3333 - 0	0.023	38	0.0651	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	2.375" OD x 5' Mount Pipe	27	26.449	2.3170	0.0036	6512
100.00	2.375" OD x 5' Mount Pipe	38	22.594	2.2733	0.0033	3332
98.00	800 EXTERNAL NOTCH FILTER	38	21.660	2.2432	0.0031	2923
78.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	38	13.379	1.6384	0.0010	2045
76.00	(2) RRUS 11	38	12.673	1.5823	0.0009	2074
50.00	KS24019-L112A	38	5.406	1.0530	0.0004	2861

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 98.58	69.990	2	5.9166	0.0094
L2	98.58 - 79.33	55.975	2	5.7507	0.0081
L3	79.33 - 47.21	35.398	2	4.2867	0.0029
L4	50.88 - 14.83	14.311	13	2.7369	0.0011
L5	14.83 - 13.83	1.106	13	0.7167	0.0002
L6	13.83 - 6	0.961	13	0.6740	0.0002
L7	6 - 3.3333	0.182	13	0.2778	0.0001
L8	3.3333 - 0	0.058	13	0.1666	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	2.375" OD x 5' Mount Pipe	2	67.496	5.9134	0.0092	2604
100.00	2.375" OD x 5' Mount Pipe	2	57.670	5.8024	0.0083	1331
98.00	800 EXTERNAL NOTCH FILTER	2	55.288	5.7256	0.0080	1167
78.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	34.166	4.1853	0.0027	810
76.00	(2) RRUS 11	13	32.364	4.0424	0.0023	821
50.00	KS24019-L112A	13	13.814	2.6911	0.0011	1124

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	110 - 98.58 (1)	TP14.978x12.7x0.1875	11.42	0.00	0.0	39.000	8.8022	-3.26	343.29	0.010
L2	98.58 - 79.33 (2)	TP18.8141x14.978x0.1875	19.25	0.00	0.0	39.000	11.0852	-4.78	432.32	0.011
L3	79.33 - 47.21 (3)	TP25.215x18.8141x0.4204	32.12	0.00	0.0	35.070	32.1058	-10.04	1125.95	0.009
L4	47.21 - 14.83 (4)	TP31.2941x23.6429x0.425 8	36.05	0.00	0.0	35.238	41.7181	-16.29	1470.06	0.011
L5	14.83 - 13.83 (5)	TP31.4934x31.2941x0.535 6	1.00	0.00	0.0	32.118	52.6310	-16.50	1690.40	0.010
L6	13.83 - 6 (6)	TP33.0541x31.4934x0.441 5	7.83	0.00	0.0	34.446	45.7017	-17.98	1574.24	0.011
L7	6 - 3.3333 (7)	TP33.5856x33.0541x0.525 3	2.67	0.00	0.0	32.130	55.1205	-18.57	1771.02	0.010
L8	3.3333 - 0 (8)	TP34.25x33.5856x0.4279	3.33	0.00	0.0	34.398	45.9335	-19.21	1580.02	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} F _{by}
L1	110 - 98.58 (1)	TP14.978x12.7x0.1875	33.02	12.395	39.000	0.318	0.00	0.000	39.000	0.000
L2	98.58 - 79.33 (2)	TP18.8141x14.978x0.1875	167.60	39.561	39.000	1.014	0.00	0.000	39.000	0.000
L3	79.33 - 47.21 (3)	TP25.215x18.8141x0.4204	482.53	30.663	35.070	0.874	0.00	0.000	35.070	0.000
L4	47.21 - 14.83 (4)	TP31.2941x23.6429x0.425 8	947.92	36.007	35.238	1.022	0.00	0.000	35.238	0.000
L5	14.83 - 13.83 (5)	TP31.4934x31.2941x0.535 6	961.64	28.971	32.118	0.902	0.00	0.000	32.118	0.000
L6	13.83 - 6 (6)	TP33.0541x31.4934x0.441 5	1070.5	35.128	34.446	1.020	0.00	0.000	34.446	0.000
L7	6 - 3.3333 (7)	TP33.5856x33.0541x0.525 3	1108.3	29.813	32.130	0.928	0.00	0.000	32.130	0.000
L8	3.3333 - 0 (8)	TP34.25x33.5856x0.4279	1155.9	36.356	34.398	1.057	0.00	0.000	34.398	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	110 - 98.58 (1)	TP14.978x12.7x0.1875	5.89	0.669	26.000	0.051	0.08	0.014	26.000	0.001
L2	98.58 - 79.33 (2)	TP18.8141x14.978x0.1875	7.34	0.662	26.000	0.051	0.13	0.015	26.000	0.001
L3	79.33 - 47.21 (3)	TP25.215x18.8141x0.4204	11.99	0.373	23.380	0.032	0.22	0.007	23.380	0.000
L4	47.21 - 14.83 (4)	TP31.2941x23.6429x0.4258	13.71	0.329	23.492	0.028	0.17	0.003	23.492	0.000
L5	14.83 - 13.83 (5)	TP31.4934x31.2941x0.5356	13.75	0.261	21.412	0.024	0.17	0.002	21.412	0.000
L6	13.83 - 6 (6)	TP33.0541x31.4934x0.4415	14.10	0.308	22.964	0.027	0.15	0.002	22.964	0.000
L7	6 - 3.3333 (7)	TP33.5856x33.0541x0.5253	14.22	0.258	21.420	0.024	0.15	0.002	21.420	0.000
L8	3.3333 - 0 (8)	TP34.25x33.5856x0.4279	14.37	0.313	22.932	0.027	0.14	0.002	22.932	0.000

Pole Interaction Design Data

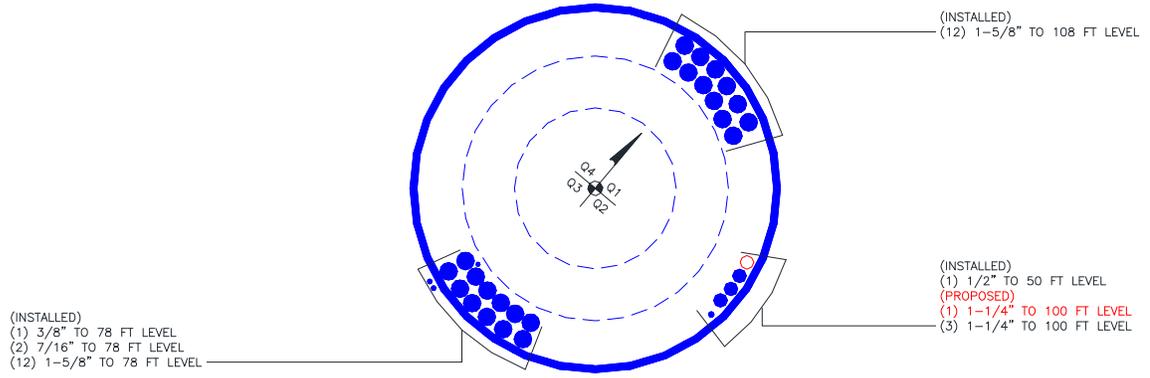
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 98.58 (1)	0.010	0.318	0.000	0.051	0.001	0.328	1.333	H1-3+VT ✓
L2	98.58 - 79.33 (2)	0.011	1.014	0.000	0.051	0.001	1.026	1.333	H1-3+VT ✓
L3	79.33 - 47.21 (3)	0.009	0.874	0.000	0.032	0.000	0.884	1.333	H1-3+VT ✓
L4	47.21 - 14.83 (4)	0.011	1.022	0.000	0.028	0.000	1.033	1.333	H1-3+VT ✓
L5	14.83 - 13.83 (5)	0.010	0.902	0.000	0.024	0.000	0.912	1.333	H1-3+VT ✓
L6	13.83 - 6 (6)	0.011	1.020	0.000	0.027	0.000	1.031	1.333	H1-3+VT ✓
L7	6 - 3.3333 (7)	0.010	0.928	0.000	0.024	0.000	0.939	1.333	H1-3+VT ✓
L8	3.3333 - 0 (8)	0.012	1.057	0.000	0.027	0.000	1.069	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail
L1	110 - 98.58	Pole	TP14.978x12.7x0.1875	1	-3.26	457.60	24.6	Pass
L2	98.58 - 79.33	Pole	TP18.8141x14.978x0.1875	2	-4.78	576.29	77.0	Pass
L3	79.33 - 47.21	Pole	TP25.215x18.8141x0.4204	3	-10.04	1500.89	66.3	Pass
L4	47.21 - 14.83	Pole	TP31.2941x23.6429x0.4258	4	-16.29	1959.59	77.5	Pass
L5	14.83 - 13.83	Pole	TP31.4934x31.2941x0.5356	5	-16.50	2253.30	68.4	Pass
L6	13.83 - 6	Pole	TP33.0541x31.4934x0.4415	6	-17.98	2098.46	77.4	Pass
L7	6 - 3.3333	Pole	TP33.5856x33.0541x0.5253	7	-18.57	2360.77	70.4	Pass
L8	3.3333 - 0	Pole	TP34.25x33.5856x0.4279	8	-19.21	2106.17	80.2	Pass
Summary								
Pole (L8)							80.2	Pass
RATING =							80.2	Pass

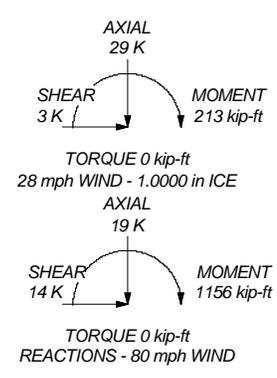
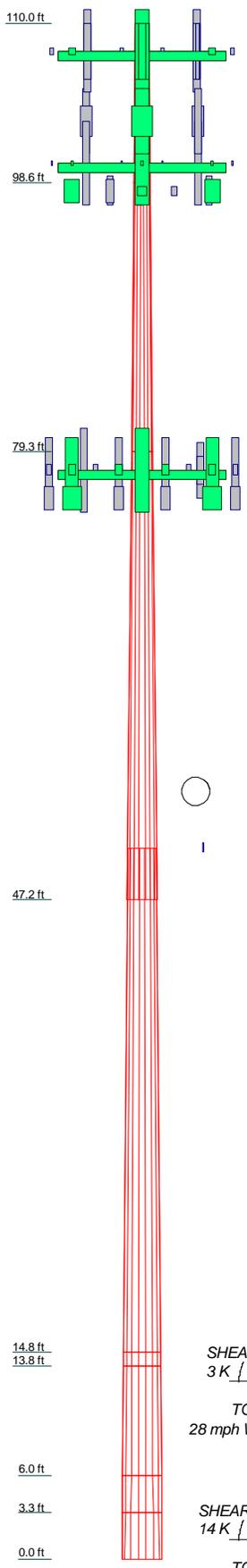
APPENDIX B

BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8
Length (ft)	11.42	19.25	32.12	36.05	1.00	7.83	2.67	3.33
Number of Sides	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.4204	0.4258	0.5346	0.4415	0.5253	0.4279
Socket Length (ft)			3.67					
Top Dia (in)	12.7000	14.9780	18.8141	23.6428	31.2941	31.4834	33.0541	33.5856
Bot Dia (in)	14.9780	18.8141	25.2150	31.2941	31.4834	33.0541	33.5856	34.2500
Grade	A572-65 Reinf 58.45 ksi							
Weight (K)	0.3	0.7	3.1	4.5	0.2	1.2	0.5	0.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
2.375" OD x 5' Mount Pipe	108	TD-RRH8x20-25	100
2.375" OD x 5' Mount Pipe	108	TD-RRH8x20-25	100
2.375" OD x 5' Mount Pipe	108	Platform Mount [LP 403-1]	100
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	108	Side Arm Mount [SO 701-3]	98
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	108	800 EXTERNAL NOTCH FILTER	98
BXA-171063-8BF-2 w/ Mount Pipe	108	800 EXTERNAL NOTCH FILTER	98
BXA-70063/6CF-2 w/ Mount Pipe	108	800 EXTERNAL NOTCH FILTER	98
BXA-70063/6CF-2 w/ Mount Pipe	108	TME-800MHZ RRH	98
BXA-70063/6CF-2 w/ Mount Pipe	108	(2) TME-1900MHZ RRH (65 MHz)	98
(2) FD9R6004/2C-3L	108	(2) TME-800MHZ RRH	98
(2) FD9R6004/2C-3L	108	TME-1900MHZ RRH (65 MHz)	98
(2) FD9R6004/2C-3L	108	AM-X-CD-16-65-00T-RET w/ Mount Pipe	78
BXA-80080/4CF w/ Mount Pipe	108	AM-X-CD-14-65-00T-RET w/ Mount Pipe	78
BXA-80080/4CF w/ Mount Pipe	108	AM-X-CD-16-65-00T-RET w/ Mount Pipe	78
BXA-80063/4CFx5 w/ Mount Pipe	108	DC6-48-60-18-8F	78
T-Arm Mount [TA 602-3]	108	(2) 7770.00 w/ Mount Pipe	78
2.375" OD x 5' Mount Pipe	100	(2) 7770.00 w/ Mount Pipe	78
2.375" OD x 5' Mount Pipe	100	(2) 7770.00 w/ Mount Pipe	78
2.375" OD x 5' Mount Pipe	100	(4) TMA-DD 1900	78
APXVSP18-C-A20 w/ Mount Pipe	100	(4) TMA-DD 1900	78
APXV9ERR18-C-A20 w/ Mount Pipe	100	(4) TMA-DD 1900	78
APXVSP18-C-A20 w/ Mount Pipe	100	T-Arm Mount [TA 602-3]	78
(3) ACU-A20-N	100	(2) RRUS 11	76
(3) ACU-A20-N	100	(2) RRUS 11	76
(3) ACU-A20-N	100	(2) RRUS 11	76
APXVTM14-C-120 w/ Mount Pipe	100	Side Arm Mount [SO 102-3]	76
APXVTM14-C-120 w/ Mount Pipe	100	KS24019-L112A	50
APXVTM14-C-120 w/ Mount Pipe	100	Pipe Mount [PM 601-1]	50
TD-RRH8x20-25	100		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 57.41 ksi	57 ksi	72 ksi
Reinf 58.45 ksi	58 ksi	74 ksi	Reinf 53.55 ksi	54 ksi	67 ksi
Reinf 58.73 ksi	59 ksi	74 ksi	Reinf 57.33 ksi	57 ksi	72 ksi
Reinf 53.53 ksi	54 ksi	67 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 80.2%

Paul J Ford and Company 250 E. Broad Street Suite 600 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105		Job: 110-ft Monopole, Woodbury North, CT Project: PJF#: 37514-001.7805 / BU#: 876405 Client: Crown Castle Drawn by: Lohengri Gimeno App'd: Code: TIA/EIA-222-F Date: 06/23/14 Scale: NTS Path:	
		T:\05 - Crown Castle\2014\06\1105 BU 876405\072130 BU 876405.dwg Dwg No. E-1	



v4.4 - Effective 7-12-13

Asymmetric Anchor Rod Analysis

Moment = 1156 k-ft
Axial = 19.0 kips
Shear = 14.0 kips
Anchor Qty = 11

TIA Ref. F
ASIF = 1.3333
Max Ratio = 105.0%

Location = Base Plate
η = N/A for BP, Rev. G Sect. 4.9.9
Threads = N/A for FP, Rev. G

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in ²	Area, in ²	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	42.00	0.00	3.98	118.26	114.80	114.80	0.00	195.00	58.9%
2	2.250	#18J A615 Gr 75	75	100	45.0	42.00	0.00	3.98	109.96	106.51	106.51	0.00	195.00	54.6%
3	2.250	#18J A615 Gr 75	75	100	90.0	42.00	0.00	3.98	107.11	103.65	103.65	0.00	195.00	53.2%
4	2.250	#18J A615 Gr 75	75	100	135.0	42.00	0.00	3.98	115.55	112.09	112.09	0.00	195.00	57.5%
5	2.250	#18J A615 Gr 75	75	100	180.0	42.00	0.00	3.98	119.72	116.26	116.26	0.00	195.00	59.6%
6	2.250	#18J A615 Gr 75	75	100	225.0	42.00	0.00	3.98	113.94	110.48	110.48	0.00	195.00	56.7%
7	2.250	#18J A615 Gr 75	75	100	270.0	42.00	0.00	3.98	111.28	107.82	107.82	0.00	195.00	55.3%
8	2.250	#18J A615 Gr 75	75	100	315.0	42.00	0.00	3.98	117.26	113.80	113.80	0.00	195.00	58.4%
9	2.250	A193 Gr B7	105	125	22.5	47.25	0.00	3.98	128.79	125.34	125.34	0.00	218.68	57.3%
10	2.250	A193 Gr B7	105	125	128.5	47.25	0.00	3.98	128.24	124.79	124.79	0.00	218.68	57.1%
11	2.250	A193 Gr B7	105	125	256.5	47.25	0.00	3.98	124.16	120.71	120.71	0.00	218.68	55.2%

43.77

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data	
BU#:	
Site Name:	
App #:	
Pole Manufacturer:	Other

Reactions		
Moment:	825.9	ft-kips
Axial:	13.8	kips
Shear:	10.2	kips

Adjusted reactions to account for additional reactions.

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	42	in

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results		Non-Rigid
Maximum Rod Tension:	116.3 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	59.6% Pass	

Plate Data		
Diam:	48	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	13.59	in

Base Plate Results		Flexural Check	Non-Rigid
Base Plate Stress:	55.3 ksi		Service ASD
Allowable Plate Stress:	60.0 ksi		0.75*Fy*ASIF
Base Plate Stress Ratio:	92.2% Pass		Y.L. Length: 24.31

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.25	in
Width:	6.5	in
Height:	18	in
Thick:	0.5	in
Notch:	1	in
Grade:	36	ksi
Weld str.:	70	ksi

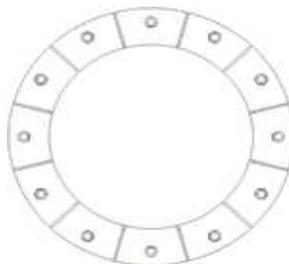
b/Le>2, Stiffeners are not fully effective

Stiffener Results	
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results	
Pole Punching Shear Check:	n/a

Pole Data		
Diam:	34.25	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Foundation Loads:

Pole weight or tower leg compression = 19 (kips)
 Horizontal load at top of pier = 14 (kips)
 Overturning moment at top of pier = 1156 (ft-kips)

Design criteria:

Safety factor against overturning = 1.5

Soil Properties:

Soil density = 125 (pcf)
 Allowable soil bearing = 6 (ksf)
 Depth to water table = 99 (ft)

Dimensions:

Pier shape (round or square) = S ("R" or "S")
 Pier width = 5.5 (ft)
 Pier height above grade = 1 (ft)
 depth to bottom of footing = 6.5 (ft)
 Footing thickness = 3 (ft)
 Footing width = 16.5 (ft)
 Footing length = 16.5 (ft)

Concrete:

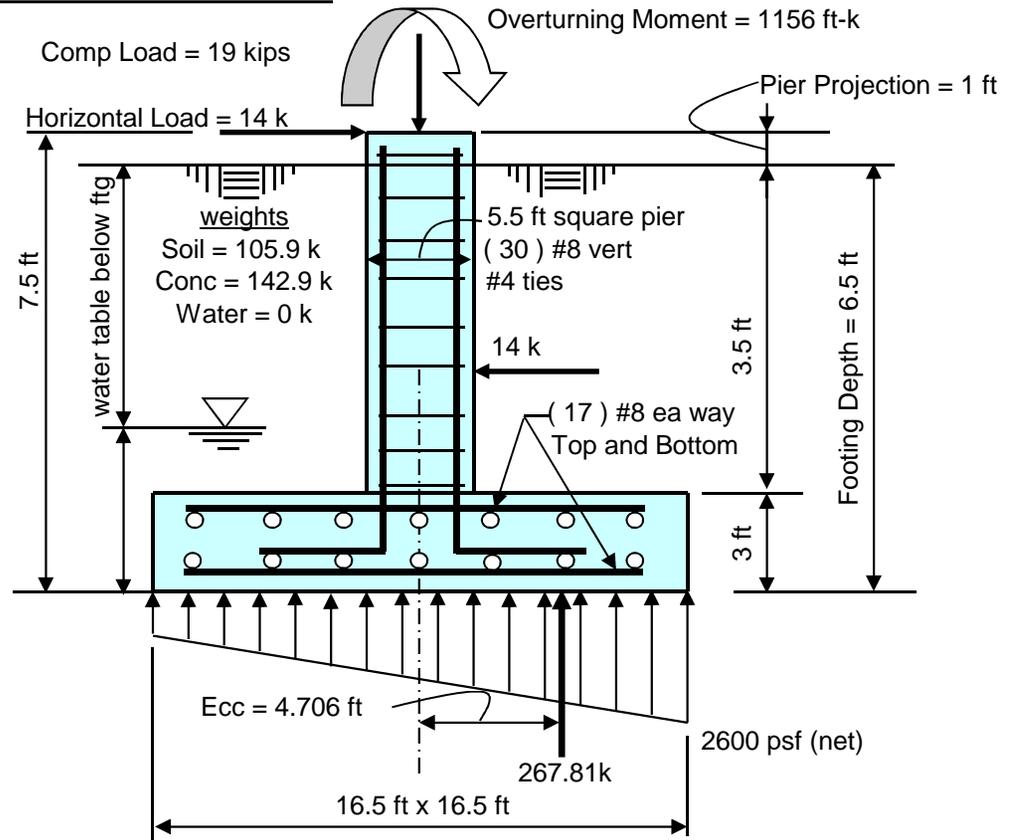
Concrete strength = 4 (ksi)
 Rebar strength = 60 (ksi)
 ultimate load factor = 1.3

Reinforcing Steel:

Pad
 minimum cover over rebar = 3 inches
 size of pad rebar = #8 bar
 quantity of pad rebar = 17 (ea direction)

Reinforcing Steel:

Pier
 size of vert rebar in pier = #8 bar
 vertical rebar quantity = 30
 size of pier ties = #4 bar
 minimum cover over rebar = 3 inches
 Total volume of concrete = 35.3 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 2.6 ksf Allowable Net Soil Bearing = 6 ksf Soil Bearing Stress Ratio = 0.43 Okay	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 27 psi Bending Shear Stress Ratio = 0.21 Okay
Ftg Overturning Resistance = 2209 ft-kips Overturning Moment = 1260 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 1.753 Ratio = 0.86 Okay	Pad Bending Moment Capacity = 1868 ft-k Pad Bending Moment = 532 ft-k Bending Moment Stress Ratio = 0.28 OK

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                        spColumn v4.80 (TM)
    Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:
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File Name: T:\375_Crown_Castle\2014\37514-1305 BU 876405\WO 771302 BU 876...\37514-1305.001.7805.col
 Project: 37514-1305.001.7805
 Column: Engineer: LGR
 Code: ACI 318-08 Units: English
 Run Option: Investigation Slenderness: Not considered
 Run Axis: X-axis Column Type: Architectural

Material Properties:
 =====

f'c = 4 ksi fy = 60 ksi
 Ec = 3605 ksi Es = 29000 ksi
 Ultimate strain = 0.003 in/in
 Beta1 = 0.85

Section:
 =====

Rectangular: Width = 66 in Depth = 66 in
 Gross section area, Ag = 4356 in^2
 Ix = 1.58123e+006 in^4 Iy = 1.58123e+006 in^4
 rx = 19.0526 in ry = 19.0526 in
 Xo = 0 in Yo = 0 in

Reinforcement:
 =====

Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
 phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
 Pattern: All Sides Equal (Cover to transverse reinforcement)
 Total steel area: As = 23.70 in^2 at rho = 0.54% (Note: rho < 1.0%)
 Minimum clear spacing = 5.09 in

30 #8 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
 =====

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu NA	depth in	Dt in	depth in	eps_t	Phi
1	19.00	1621.27	3061.77	1.889	9.11	62.13	0.01746	0.900	

*** End of output ***

RADIO FREQUENCY FCC REGULATORY COMPLIANCE
MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT54XC771

Woodbury North

186 Minortown Road
Woodbury, CT 06798

September 24, 2014

EBI Project Number: 62144695

September 24, 2014

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT54XC771 - Woodbury North

Site Total: 87.87% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **186 Minortown Road, Woodbury, CT**, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band (850 MHz Band) is approximately $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at **186 Minortown Road, Woodbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

- 1) 2 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
- 2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation.
- 3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXV9ERR18-C-A20 has a 14.9 dBd gain value at its main lobe at 1900 MHz and 11.9 dBd at its main lobe for 850 MHz. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerlines for the proposed antennas are **100 feet and 103 feet** above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Site ID	CT54XC771 - Woodbury North
Site Address	186 Minortown Road, Woodbury, CT, 06798
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	4.9	100	94	1/2 "	0.5	0	110.17	0.45%
1a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.9	100	94	1/2 "	0.5	0	27.61	0.20%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	103	97	1/2 "	0.5	0	138.69	0.93%
Sector total Power Density Value:																1.58%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	100	94	1/2 "	0.5	0	138.69	0.56%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	100	94	1/2 "	0.5	0	39.00	0.28%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	103	97	1/2 "	0.5	0	138.69	0.93%
Sector total Power Density Value:																1.78%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	100	94	1/2 "	0.5	0	138.69	0.56%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	100	94	1/2 "	0.5	0	39.00	0.28%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	103	97	1/2 "	0.5	0	138.69	0.93%
Sector total Power Density Value:																1.78%

Site Composite MPE %	
Carrier	MPE %
Sprint	5.14%
Verizon Wireless	29.88%
AT&T	52.85%
Total Site MPE %	87.87%

Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **5.14%** (**1.58% from sector 1, 1.78% from sector 2 and 1.78% from sector 3**) of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **87.87%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Scott Heffernan
RF Engineering Director

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