

November 4, 2014

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

RE: Sprint PCS-Exempt Modification – Crown Site BU: 876380
Sprint PCS Site ID: CT33XC520
Located at: Great Hollow 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 the Town of Woodbury, and O & G Industries, Inc., Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **Great Hollow 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.

Melanie A. Bachman

November 4, 2014

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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,



Susan Vale
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
281 Main Street South
Woodbury, CT 06798

cc: O & G Industries, Inc.
112 Wall Street
Torrington, CT 06790



2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:
CT33XC520

SITE NAME:
O&G WOODBURY

SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 06798

CROWN ID#: 876380
CROWN SITE NAME: O&G WOODBURY



2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 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: CT33XC520
SITE NAME: O&G WOODBURY
SITE ADDRESS: GREAT HOLLOW ROAD
WOODBURY, CT 06798
COUNTY: LITCHFIELD
COORDINATES: 41° 31' 19.2"N
(NAD 83) 73° 13' 15.6"W
GROUND ELEV: 597± AMSL
STRUCTURE TYPE: MONOPOLE
STRUCTURE HEIGHT: 139'-0"± AGL
STRUCTURE RAD CENTER: 108'-0"± AGL
ZONING CLASSIFICATION: OS80
PARCEL ID: 034-015

LANDLORD: CROWN CASTLE USA
2000 CORPORATE DRIVE
CANONSBURG, PA

LOCAL POWER COMPANY: CONNECTICUT LIGHT AND
POWER
CONTACT CUSTOMER SERVICE
(800) 286-2000

APPLICANT: SPRINT
6580 SPRINT PARKWAY
OVERLAND PARK,
KANSAS 66251

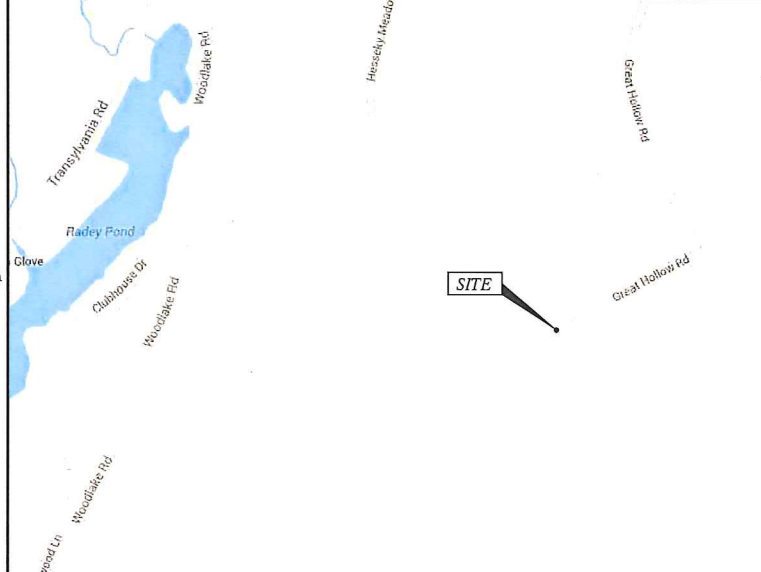
ENGINEER: JAMES QUICKSELL
(845) 567-6656 EXT. 2835
JQuicksell@tectonicengineering.com

SPRINT CM: GARY WOOD
(860) 940-9168
gary.wood@sprint.com

CROWN CM: JASON D'AMICO
(860) 209-0104
jason.d'amico@crowncastle.com

AAV: AT&T

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

| SHT. NO. | SHEET DESCRIPTION |
|----------|---------------------------------|
| T-1 | TITLE SHEET |
| SP-1 | GENERAL NOTES |
| SP-2 | GENERAL NOTES |
| A-1 | SITE PLAN |
| A-2 | ELEVATION |
| A-3 | ENLARGED EQUIPMENT LAYOUT PLANS |
| A-4 | ANTENNA LAYOUT PLANS |
| A-5 | RAN WIRING DIAGRAM |
| A-6 | CABLE DETAILS |
| S-1 | EQUIPMENT DETAILS |
| S-2 | EQUIPMENT SCHEMATIC DETAILS |
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| E-2 | GROUNDING DETAILS & NOTES |

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SUBMITTALS

PROJECT NO: 7225.CT33XC520

| NO | DATE | DESCRIPTION | BY |
|----|----------|------------------|----|
| 0 | 6/19/14 | FOR COMMENT | DC |
| 1 | 10/31/14 | FOR CONSTRUCTION | DC |

| DATE | REVIEWED BY |
|----------|-------------|
| 10/31/14 | 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 APXVTM14-C-120 ANTENNAS.
- (3) NEW TD-RRH8x20-25 RRH.
- (1) NEW 5/8" FIBER CABLE.



SITE NUMBER:
CT33XC520

SITE NAME:
O&G WOODBURY

SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 06798

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1

DIVISION 01000—GENERAL NOTES

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
- THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
- THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS-BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
- REFER TO: CONSTRUCTION STANDARDS—SPRINT DOCUMENT EXHIBIT A—STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0— 02.15.2011.DOCM.
- REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A—WIHRPRF—STD CONSTR SPECS._157201110421855492.DOCM.
- REFER TO: COLOR CODING—SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
- REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000—CONCRETE

- APPLICABLE STANDARDS (USE LATEST EDITIONS)
 - ACI-301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
 - ACI-347 GUIDE TO FORM WORK FOR CONCRETE.
 - ASTM C33- CONCRETE AGGREGATE
 - ASTM C94 – READY MIXED CONCRETE e. ASTM C150 – PORTLAND CEMENT.
 - ASTM C260 – AIR-ENTRAINING ADMIXTURES FOR CONCRETE
 - ASTM C309– LIQUID MEMBRANE FORMING COMPOUNDS FOR CURING CONCRETE.
 - ASTM C494 – CHEMICAL ADMIXTURES FOR CONCRETE
 - ASTM A615– DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT
 - ASTM A185– STEEL WELDED WIRE FABRIC (PLAIN) FOR CONCRETE REINFORCEMENT
- QUALITY ASSURANCE
CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.
- SURFACE FINISHES
 - SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.
 - SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINS AND THE FILLING HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.
 - 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.
 - SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.
 - 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.
- QUALITY ASSURANCE CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.
- 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.
- DEFECTIVE CONCRETE
THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.
- PROTECTION
 - 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.
 - CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
 - ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE (LATEST EDITION)

DIVISION 05000 – METALS

- GENERAL
 - WORK INCLUDED
 - 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:
 - STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES. WELDING AND BOLTING OF ATTACHMENTS.
 - REFERENCE STANDARDS
 - THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
 - ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES" OR LATEST EDITION.
 - AWS: AMERICAN WELDING SOCIETY CODE OR LATEST EDITION.
 - AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
 - PRODUCTS
 - STRUCTURAL STEEL: SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A36 AND A992 FOR STRUCTURAL STEEL.
- 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.
 - STRUCTURAL WIDE FLANGE: ASTM A992 Fy=50KSI.
 - MISCELLANEOUS STEEL (PLATES), CHANNELS, ANGLES, ETC): ASTM A36 (Fy=36KSI).
 - STRUCTURAL TUBING: ASTM A500 Gr. B (Fy=46KSI).
 - STEEL PIPE: ASTM A53 Gr B (Fy=35KSI).
- WELDING
 - ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.
 - 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.
 - FIELD WELDING SHALL BE DONE AS PER AWS D1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.
 - STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING CAPACITOR DISCHARGE STUD WELDER.
 - PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.
 - FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.
- BOLTING
 - BOLTS SHALL BE CONFORMING TO ASTM A35 HIGH STRENGTH HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED. ASTM A153 NUTS SHALL BE HEAVY HEX TYPE.
 - ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
 - 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.
 - STANDARD, OVERSIZED OR HORIZONTAL SHORT SLOTTED HOLES.
 - SNUG-TIGHT STRENGTH BEARING BOLTS MAY BE USED IN STANDARD HOLES CONFORMING TO ACIS, USING THE TURN OF THE NUT METHOD.
 - FULLY-TENSIONED HIGH STRENGTH (SLIP CRITICAL) SHALL BE USED IN OVERSIZED SLOT HOLES (RESPECTIVE OF SLOT ORIENTATION).
 - 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.
 - 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 |
- FABRICATION
 - FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS

- FINISH
 - STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. (LATEST EDITION) UNLESS OTHERWISE NOTED.
 - PROTECTION
 - 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.
- ERECTION
 - 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.
 - 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
 - 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.



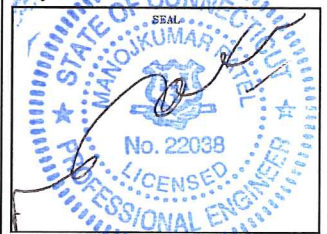
TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.

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Newburgh, NY 12550
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www.tectonicengineering.com

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| SUBMITTALS | | | |
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| PROJECT NO: 7225.CT33XC520 | | | |
| NO | DATE | DESCRIPTION | BY |
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DATE: 6/31/14 REVIEWED BY: SMO



SITE NUMBER: CT33XC520
SITE NAME: O&G WOODBURY
SITE ADDRESS: GREAT HOLLOW ROAD WOODBURY, CT 6798

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 OTHER 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 70/7480-1H, 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.

B. 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 |
| --- OW --- OW --- | OVERHEAD WIRE |
| --- | PROPERTY LINE |
| - X - X - X - | CHAIN LINK FENCE |
| A-1 | ANTENNA MARK |
| (E) | EXISTING |
| (P) | PROPOSED DETAIL |
| | REFERENCE |
| | SURFACE ELEVATION |

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6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

TECTONIC

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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SUBMITTALS

PROJECT NO: 7225.CT33XC520

| NO | DATE | DESCRIPTION | BY |
|----|----------|------------------|----|
| 0 | 6/19/14 | FOR COMMENT | DC |
| 1 | 10/31/14 | FOR CONSTRUCTION | DC |

| DATE | REVIEWED BY |
|----------|-------------|
| 10/31/14 | JMG |

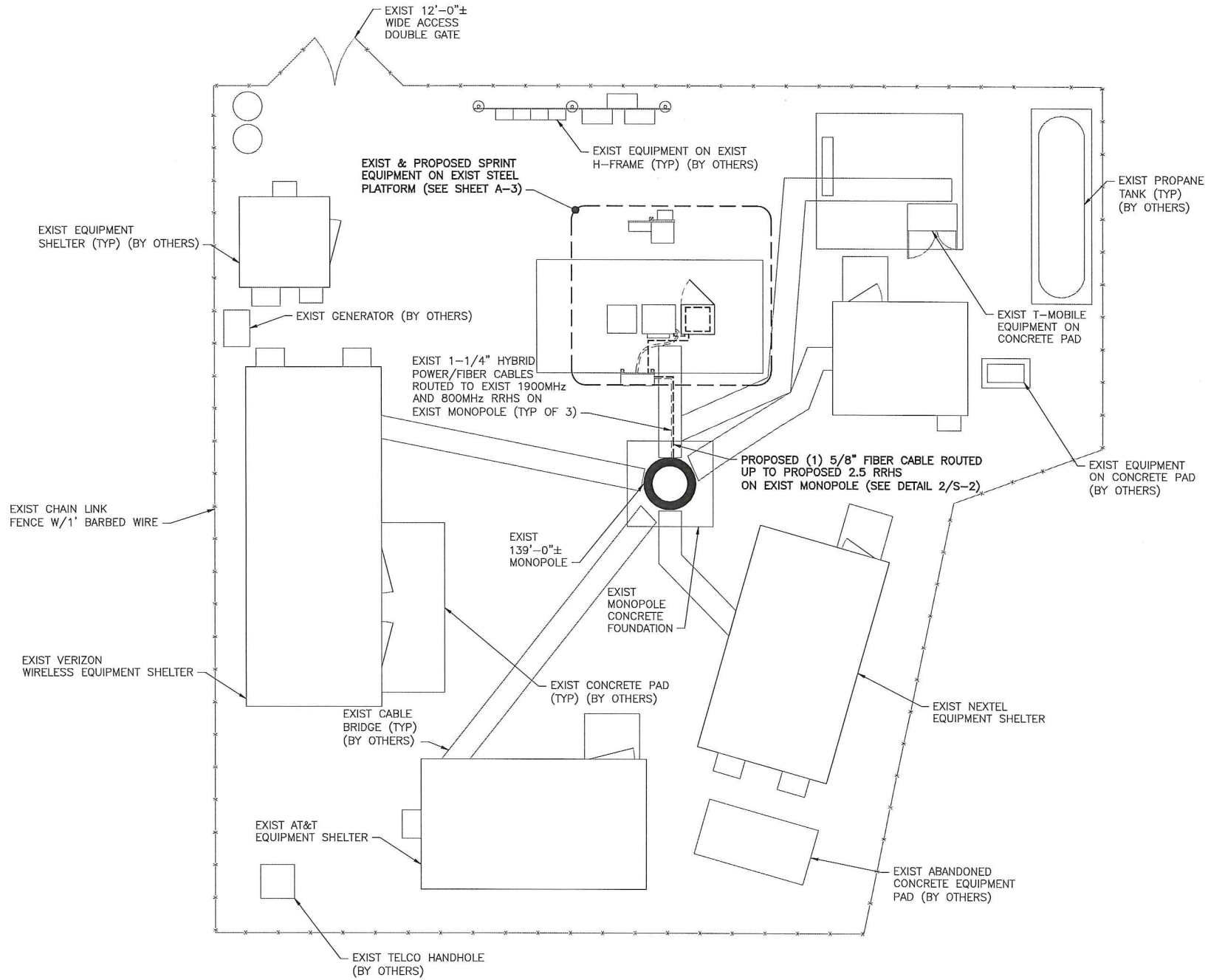
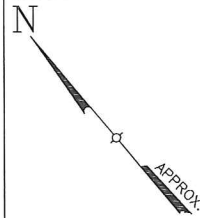


SITE NUMBER:
CT33XC520
SITE NAME:
O&G WOODBURY
SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 0798

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

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| 1 | 10/31/14 | FOR CONSTRUCTION | DC |
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DATE: 10/31/14
 REVIEWED BY: JMQ



SITE NUMBER:
 CT33XC520
 SITE NAME:
 O&G WOODBURY
 SITE ADDRESS:
 GREAT HOLLOW ROAD
 WOODBURY, CT 0798

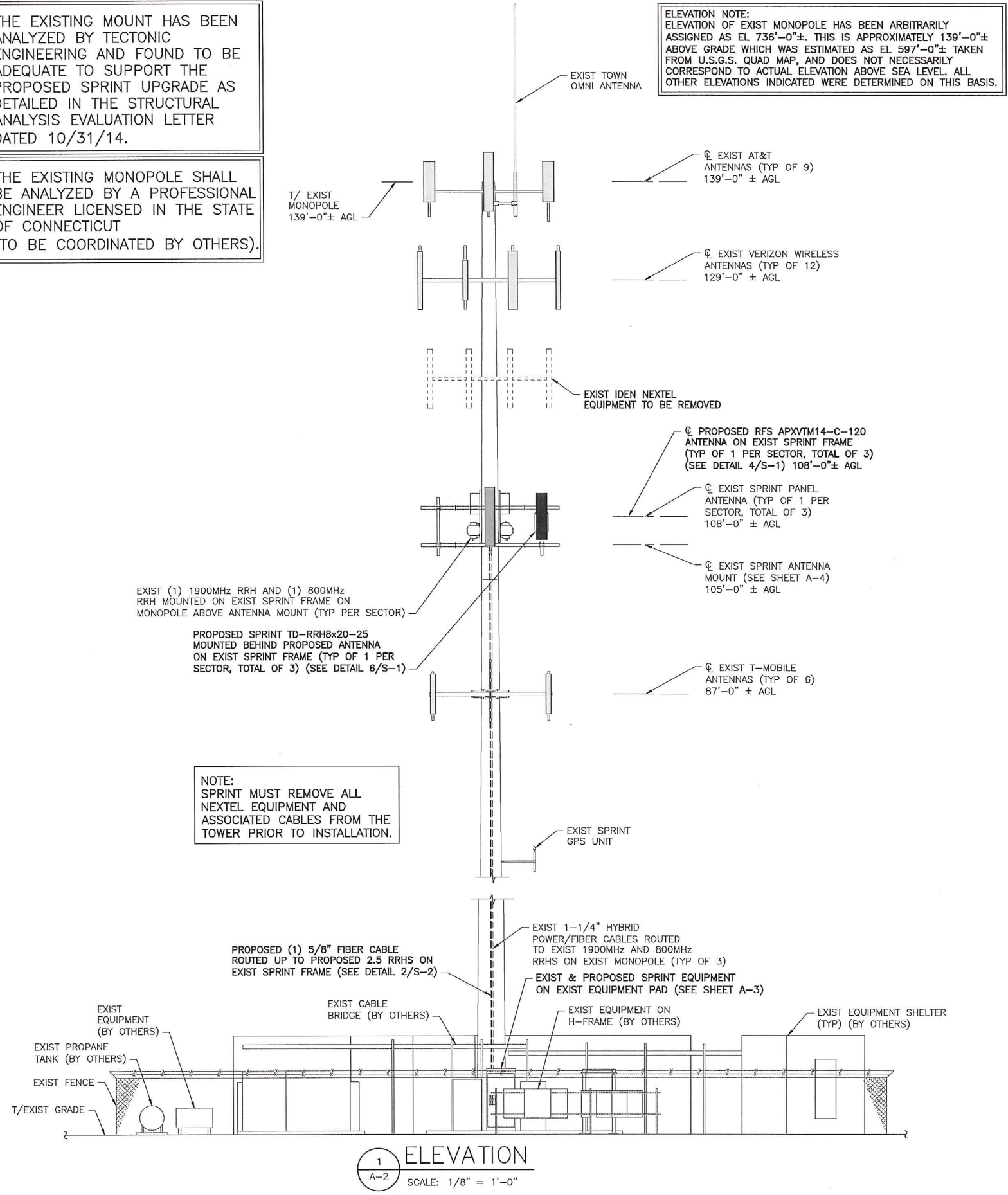
SHEET TITLE:
 SITE PLAN

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 10/31/14.

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

ELEVATION NOTE:
ELEVATION OF EXIST MONOPOLE HAS BEEN ARBITRARILY ASSIGNED AS EL 736'-0"±. THIS IS APPROXIMATELY 139'-0"± ABOVE GRADE WHICH WAS ESTIMATED AS EL 597'-0"± TAKEN FROM U.S.G.S. QUAD MAP, AND DOES NOT NECESSARILY CORRESPOND TO ACTUAL ELEVATION ABOVE SEA LEVEL. ALL OTHER ELEVATIONS INDICATED WERE DETERMINED ON THIS BASIS.



NOTE:
SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION.

1 ELEVATION
A-2 SCALE: 1/8" = 1'-0"



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DATE: 10/31/14
REVIEWED BY: JMG

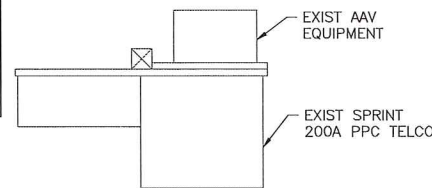
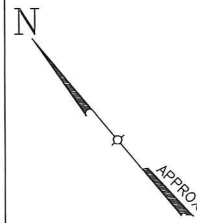
STATE OF CONNECTICUT
MANOJKUMAR P. TEL
No. 22038
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER:
CT33XC520
SITE NAME:
O&G WOODBURY
SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 6798

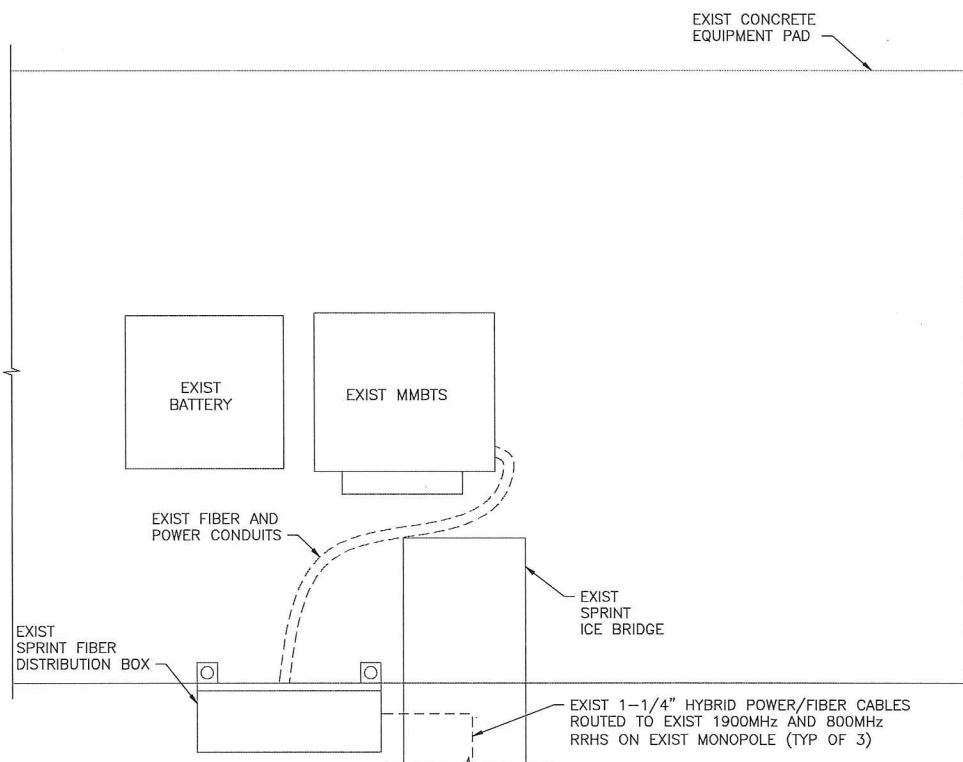
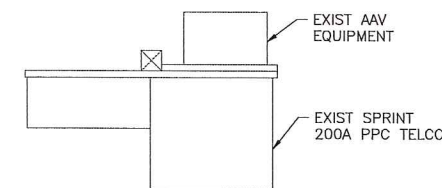
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ELEVATION

SHEET NO:
A-2

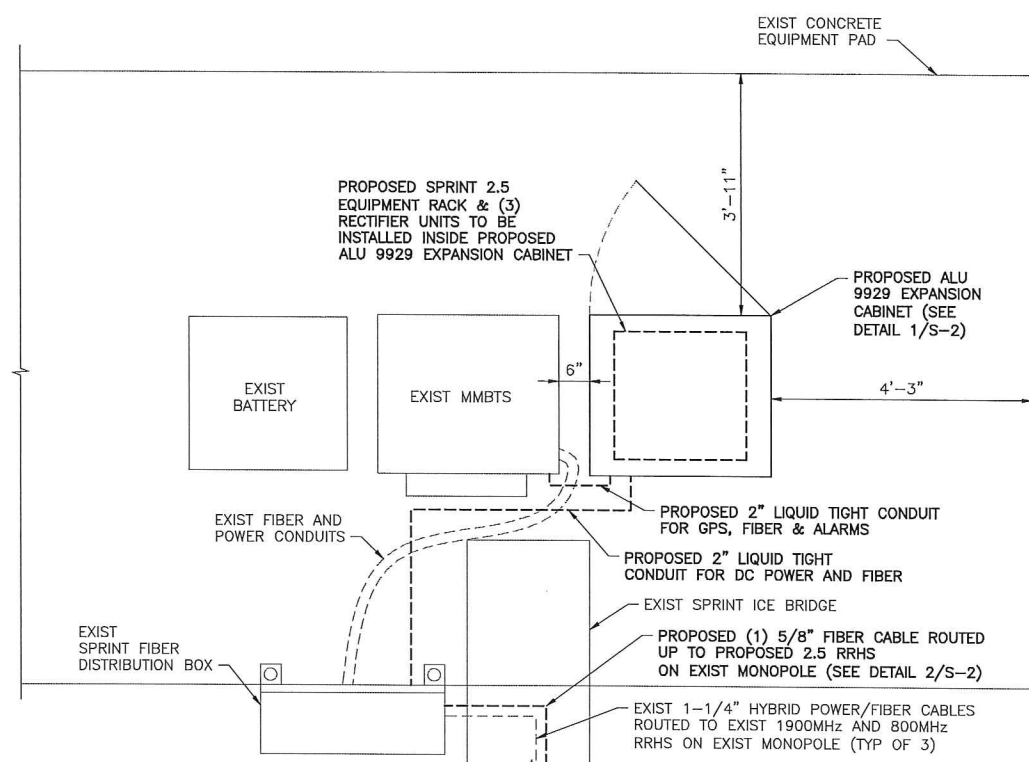
NORTH NOTE:
 NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



3
A-3



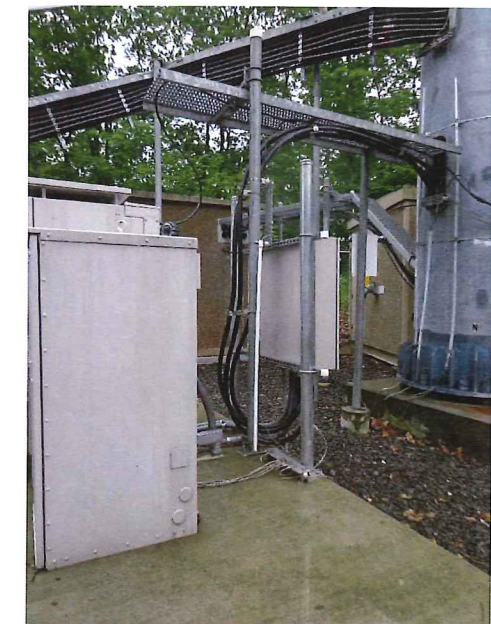
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A-3 **EQUIPMENT PLAN (EXIST)**
 SCALE: 1/2" = 1'-0"



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



3
A-3 **EXIST EQUIPMENT AREA**
 SCALE: N.T.S.



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

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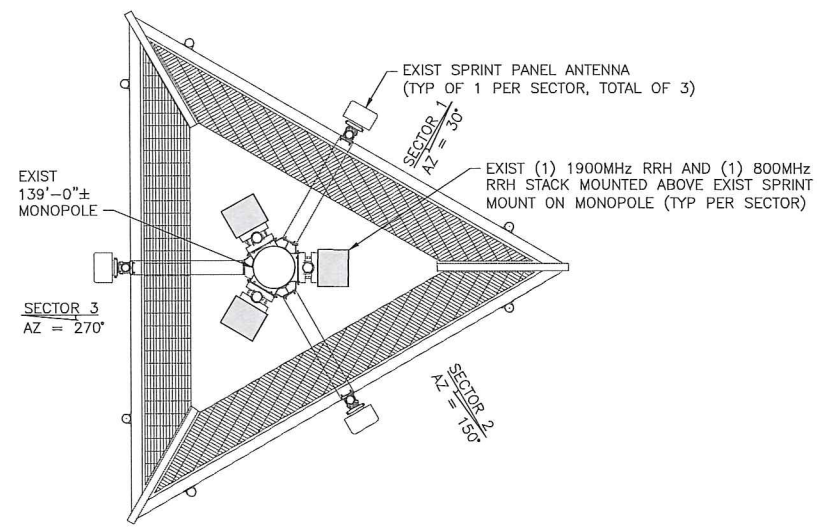
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| 10/31/14 | JMQ |



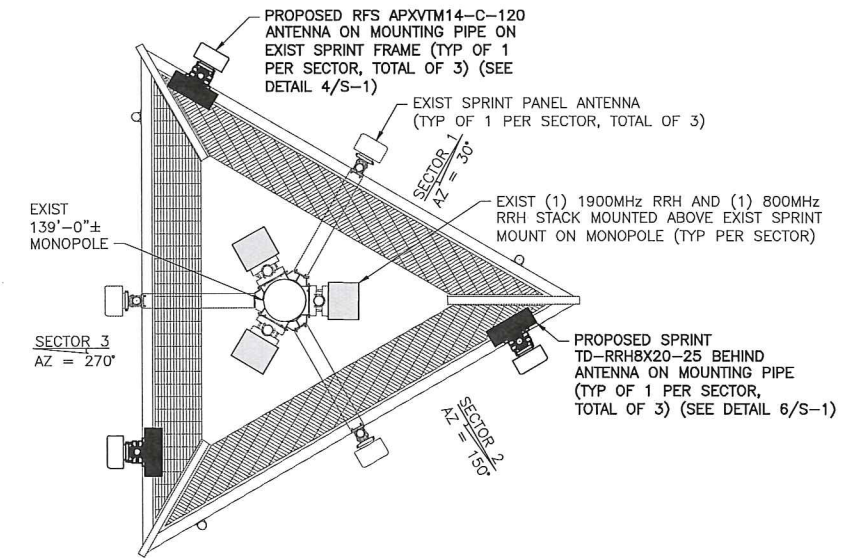
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 CT33XC520
 SITE NAME:
 O&G WOODBURY
 SITE ADDRESS:
 GREAT HOLLOW ROAD
 WOODBURY, CT 6798

SHEET TITLE:
 ENLARGED EQUIPMENT
 LAYOUT PLANS

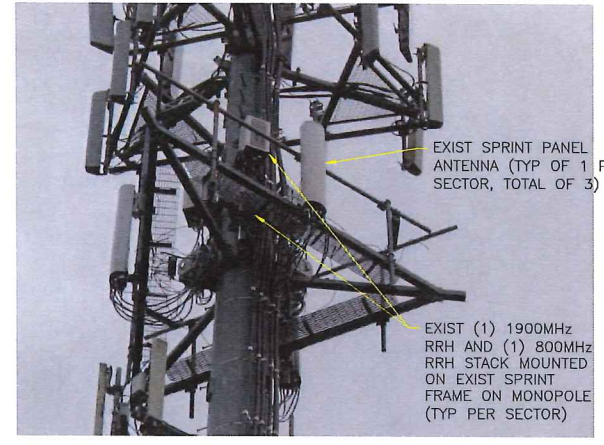
SHEET NO:
 A-3



1 ANTENNA LAYOUT PLAN (EXIST)
A-4 SCALE: 3/8" = 1'-0"

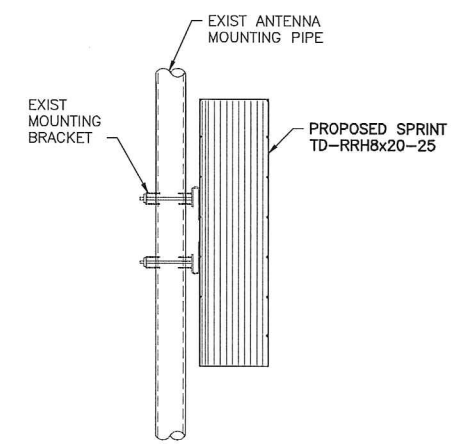


2 ANTENNA LAYOUT PLAN (FINAL)
A-4 SCALE: 3/8" = 1'-0"



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



3 RRH MOUNTING DETAIL
A-4 SCALE: 1 1/2" = 1'-0"

ANTENNA DATA

| Status | Exist | Proposed |
|--------------------------|----------------|-------------------|
| Antenna Manufacturer | RFS-CELWAVE | RFS-CELWAVE |
| Antenna Model Number | APXVSP18-C-A20 | APXV9TM14-ALV-120 |
| Number of Antennas | 3 | 3 |
| Antenna RAD Center | 108' | 108' |
| Antenna Azimuth | 30/150/270 | 30/150/270 |
| Antenna RRH Model Number | 800MHz/1900MHz | TD-RRHx20-25 |
| Number of RRH | 6 | 3 |

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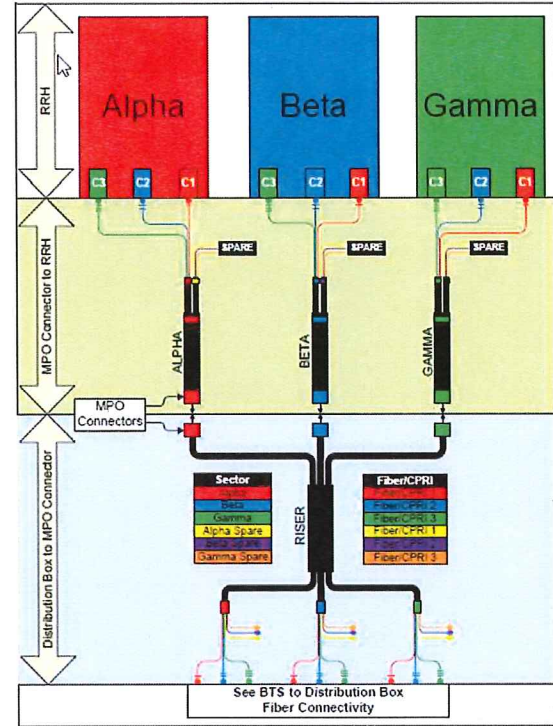
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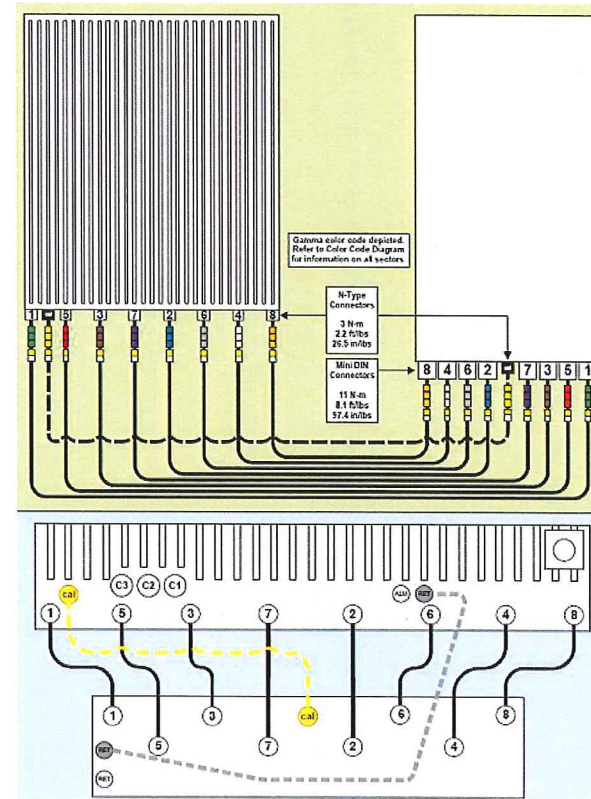
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SITE NAME: O&G WOODBURY
SITE ADDRESS: GREAT HOLLOW ROAD WOODBURY, CT 06798

SHEET TITLE: ANTENNA LAYOUT PLANS

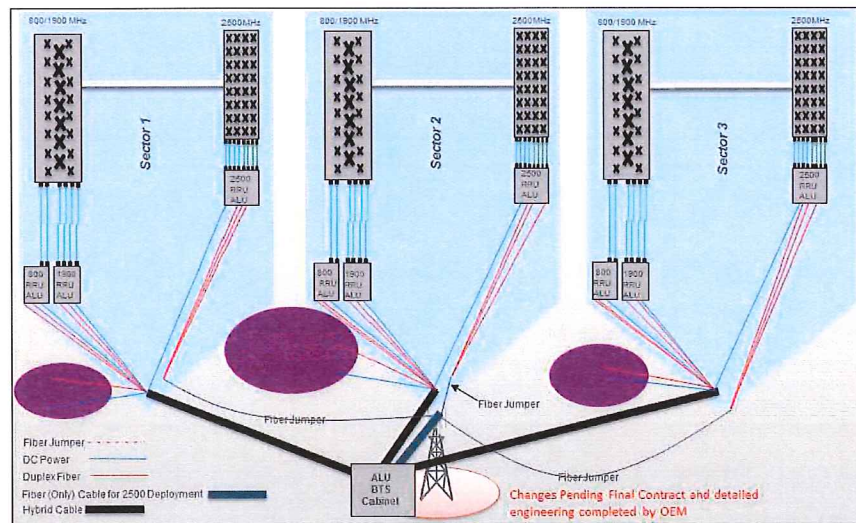
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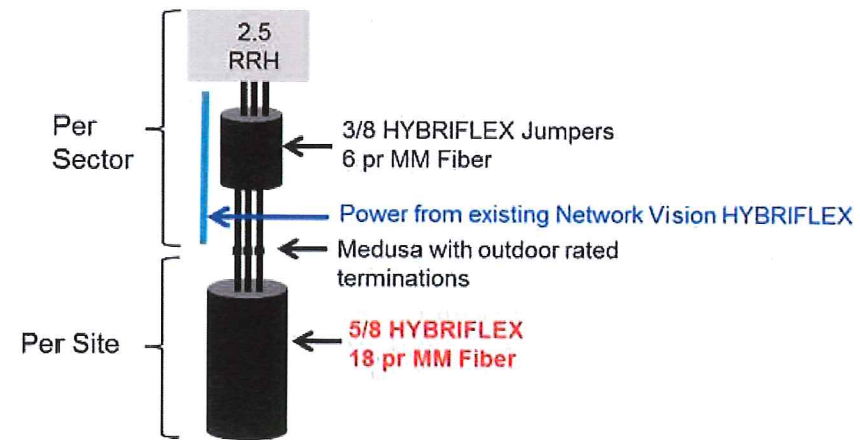
1 2.5 CABLE COLOR CODING
A-5 SCALE: N.T.S.



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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|----------|-------------|
| 10/31/14 | JMC |



SITE NUMBER:
CT33XC520
SITE NAME:
O&G WOODBURY
SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 07908

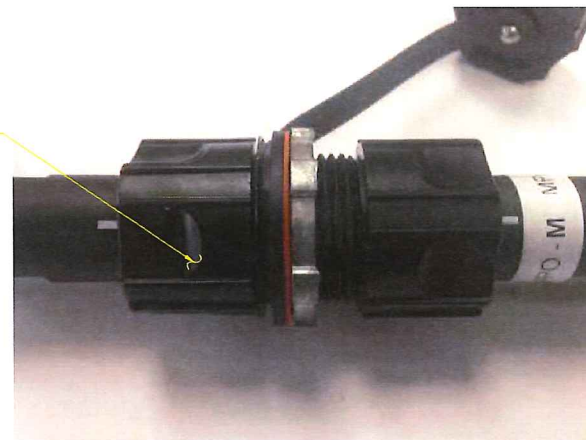
SHEET TITLE:
RAN WIRING DIAGRAM

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

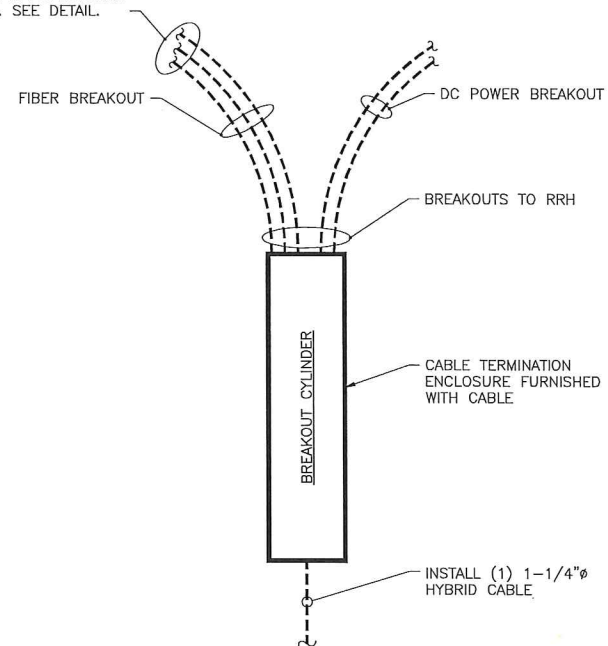


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

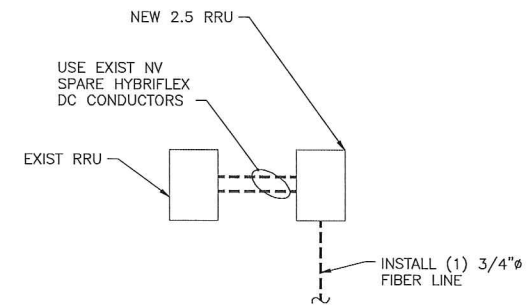


1 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS
A-6 SCALE: N.T.S.

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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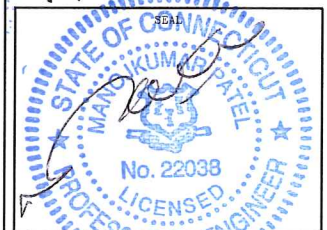
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SUBMITTALS

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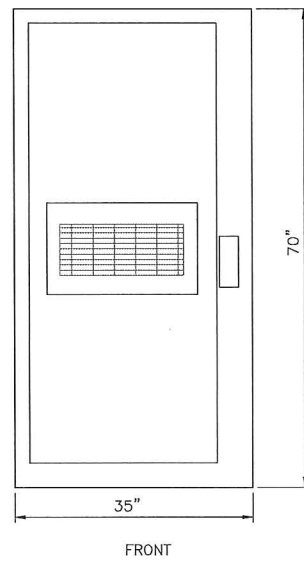
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| 10/31/14 | JMO |



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CT33XC520
SITE NAME:
O&G WOODBURY
SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 06798

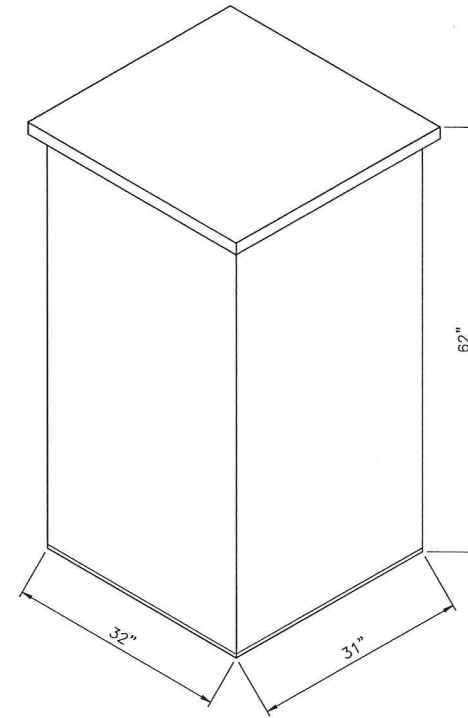
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CABLE DETAILS

SHEET NO:
A-6



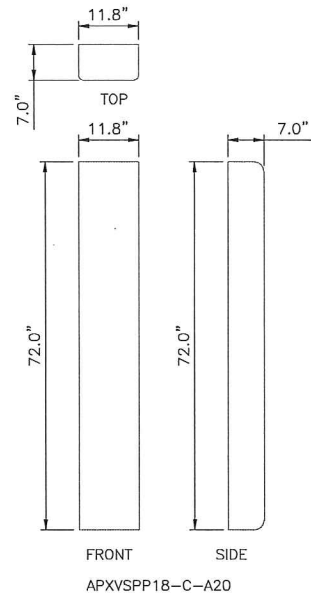
| | |
|-------------------------|-----------|
| CABINET FRONT | |
| 9928 MMBTS MODULAR CELL | |
| SPECIFICATIONS: | |
| HEIGHT: | 70" |
| WIDTH: | 35" |
| DEPTH: | 37.8" |
| WEIGHT: | 1090 LBS. |

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

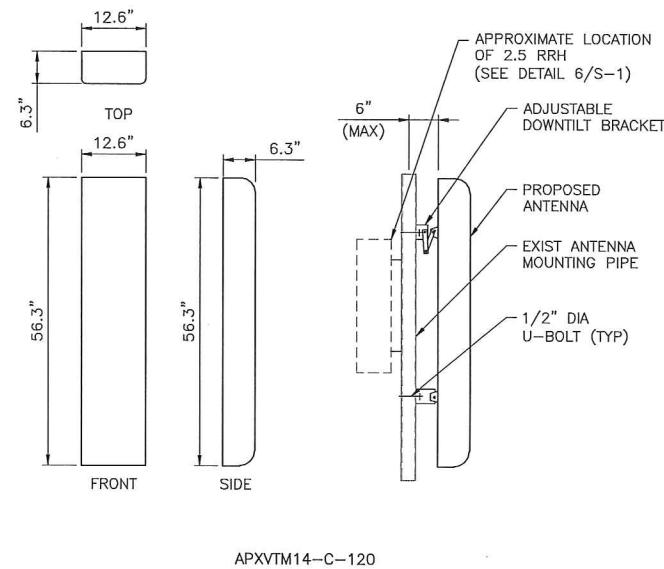


| | |
|-----------------|-----------|
| ANDREW 60ECv2 | |
| SPECIFICATIONS: | |
| HEIGHT: | 60" |
| WIDTH: | 31" |
| DEPTH: | 30" |
| WEIGHT: | 2430 LBS. |

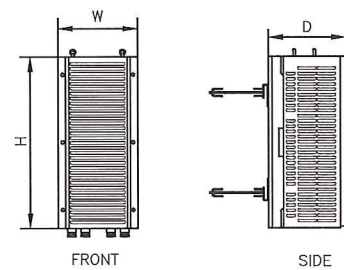
2 (EXIST) BATTERY CABINET
S-1 SCALE: 1" = 1'-0"



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

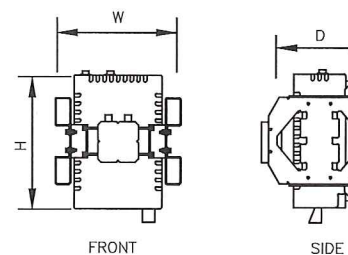


4 (PROPOSED) ANTENNA DETAIL
S-1 SCALE: 3/4" = 1'-0"



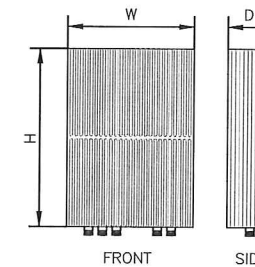
| | |
|----------|---------------------|
| TYPE: | 1900 MHz 4x45W |
| MODEL #: | RRH 1900 4X45 65MHz |
| HEIGHT: | 25.0" |
| WIDTH: | 11.1" |
| DEPTH: | 11.4" |
| WEIGHT: | ±60 LBS. |

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



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

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



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

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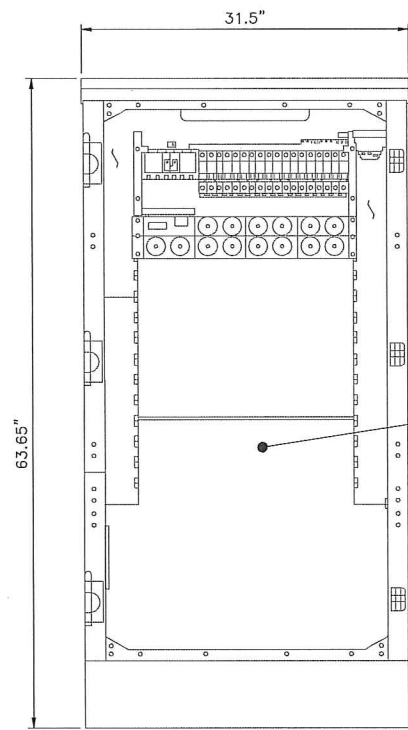
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| 10/31/14 | TMC |



SITE NUMBER:
CT33XC520
SITE NAME:
O&G WOODBURY
SITE ADDRESS:
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WOODBURY, CT 0798

SHEET TITLE:
EQUIPMENT DETAILS

SHEET NO:
S-1



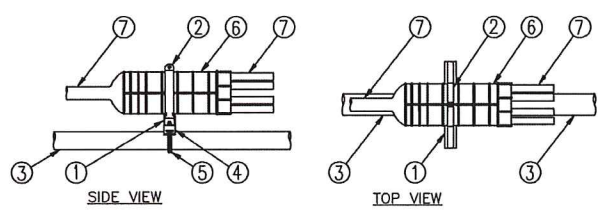
| | |
|------------------------|--------|
| 9929 CABINET | |
| CABINET SPECIFICATIONS | |
| EXPANSION CABINET: | |
| - HEIGHT - | 63.65" |
| - WIDTH - | 31.5" |
| - DEPTH - | 35.5" |
| WEIGHT: 1,600 LBS. | |

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
SCALE: N.T.S.

- 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
SCALE: NTS

RFS HYBRIFLEX RISER CABLES SCHEDULE

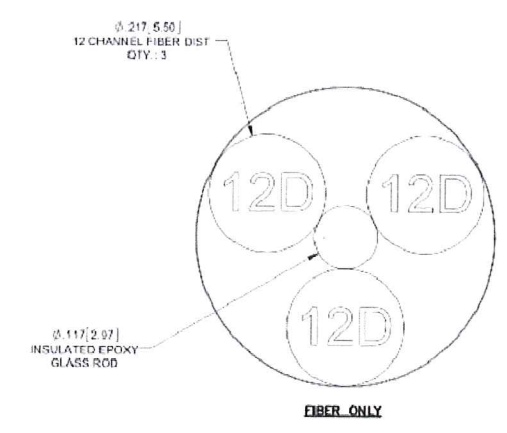
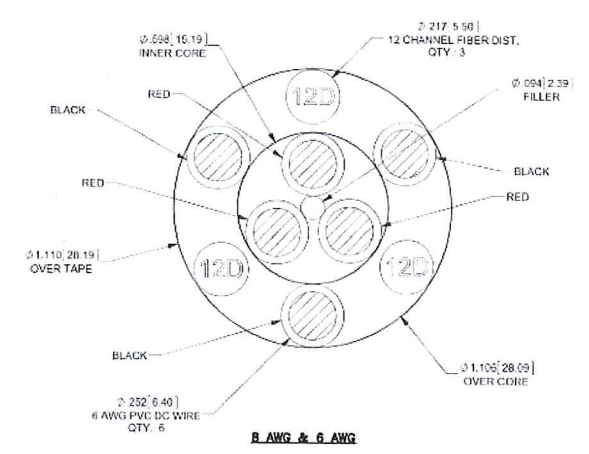
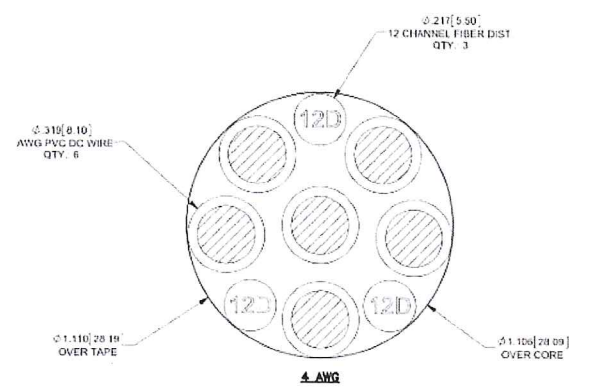
| | | | |
|-----------------------------------|--|--------|--|
| Fiber Only (Existing DC Power) | Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50ft | 50 ft | |
| | MN: HB058-M12-075F | 75 ft | |
| | MN: HB058-M12-100F | 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 | 225 ft | |
| | MN: HB114-21U3M12-250F | 250 ft | |
| | MN: HB114-21U3M12-275F | 275 ft | |
| | MN: HB114-21U3M12-300F | 300 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 | DC CONDUCTOR | CABLE DIAMETER |
|------------|-----------|------------------|----------------|
| FIBER ONLY | VARIABLES | 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" |



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

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| 10/31/14 | JMA |

STATE OF CONNECTICUT
MANOJKUMAR SINGH
No. 22038
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER:
CT33XC520

SITE NAME:
O&G WOODBURY

SITE ADDRESS:
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WOODBURY, CT 6798

SHEET TITLE:
EQUIPMENT
SCHEMATIC DETAILS

SHEET NO:
S-2

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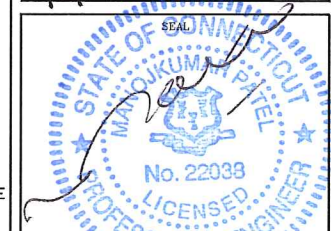
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REVIEWED BY: SMQ



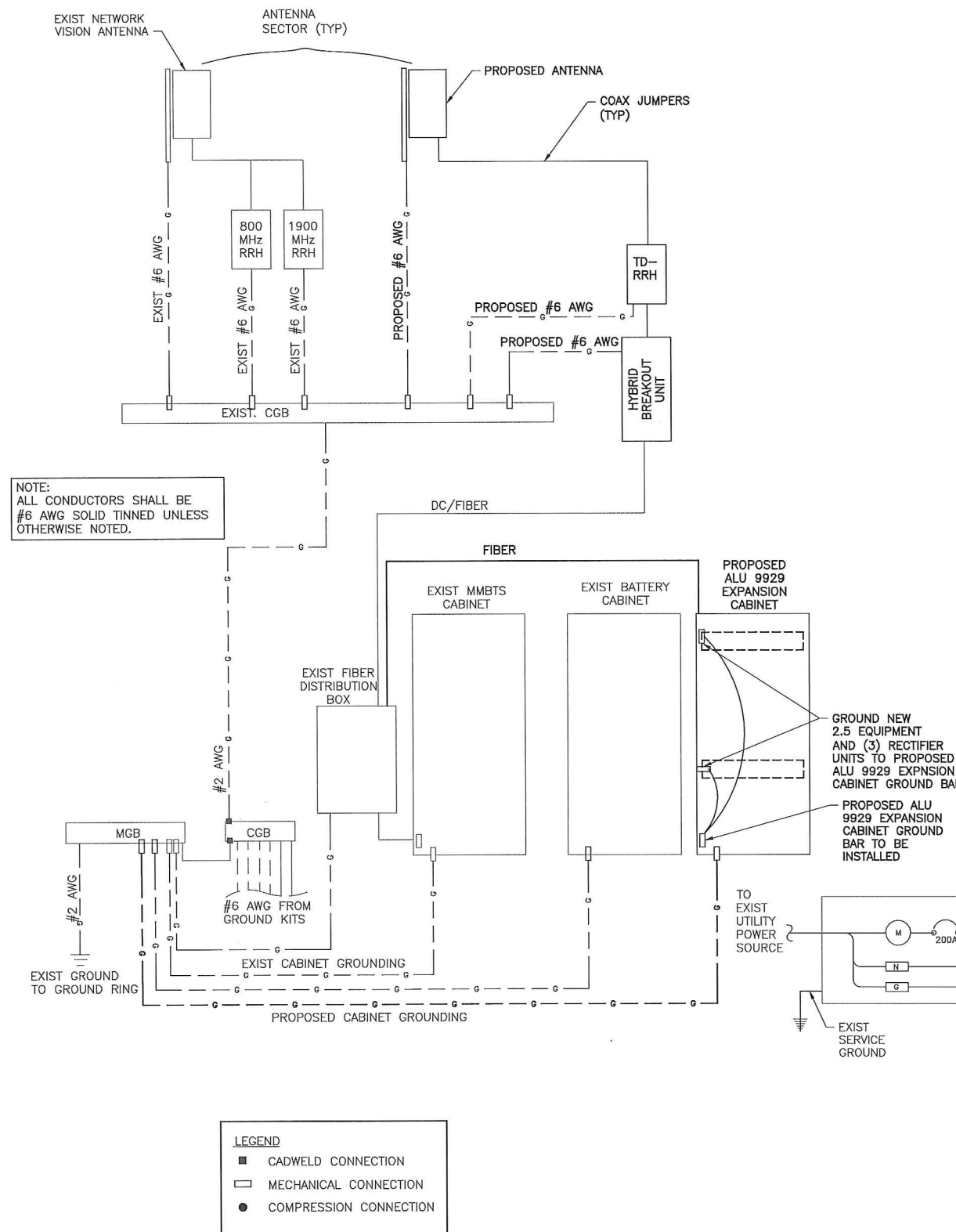
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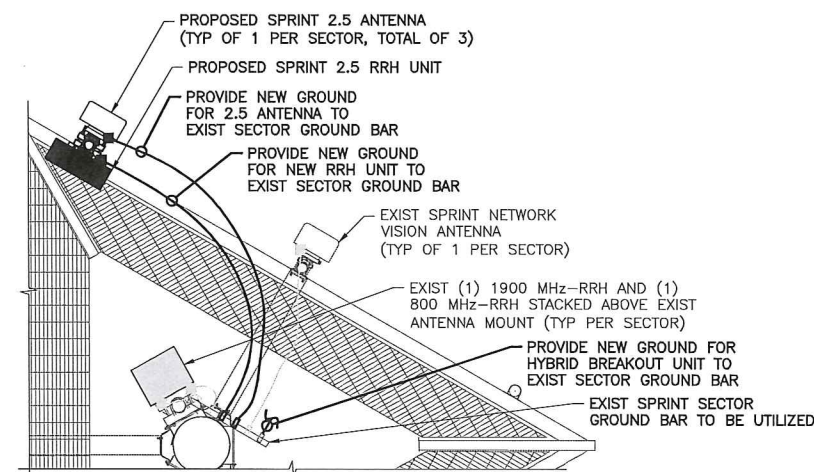
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GREAT HOLLOW ROAD
WOODBURY, CT 0798

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ELECTRICAL & GROUNDING
PLANS

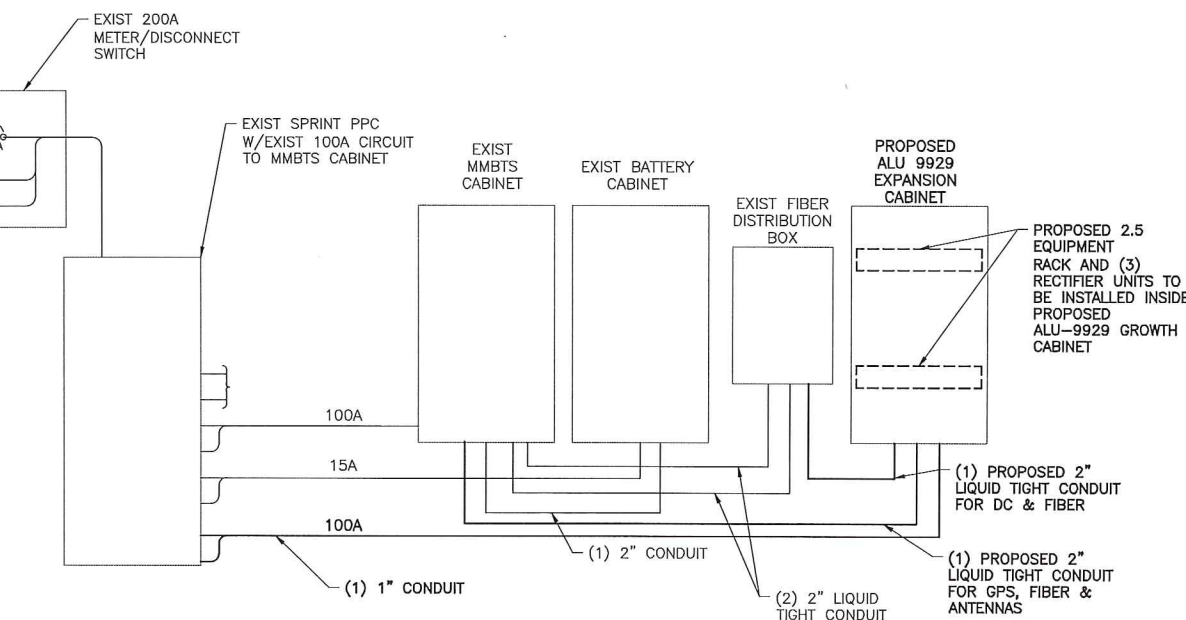
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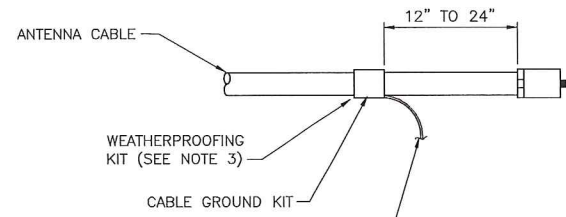
1
E-1
TYPICAL GROUNDING ONE LINE DIAGRAM
SCALE: NTS



2
E-1
TYPICAL ANTENNA GROUNDING PLAN
SCALE: NTS



3
E-1
TYPICAL ELECTRICAL & TELCO PLAN
SCALE: NTS



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)

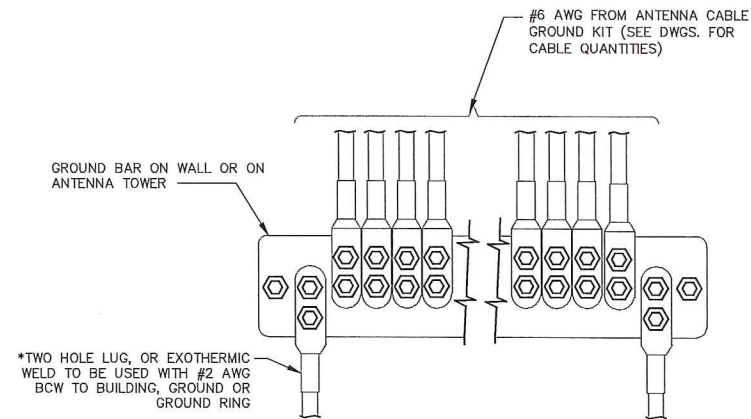
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

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

GROUNDING 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

SCALE: NTS

GROUNDING NOTES:

- GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
- ALL GROUND WIRES SHALL BE #2 AWG UNLESS NOTED OTHERWISE.
- 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.
- 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.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
- THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
- ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL AND SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
- WHEN CABLE LENGTH IS OVER 20' THE MANUFACTURERS GROUND KIT MUST BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS.
- REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUNDING.
- 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:

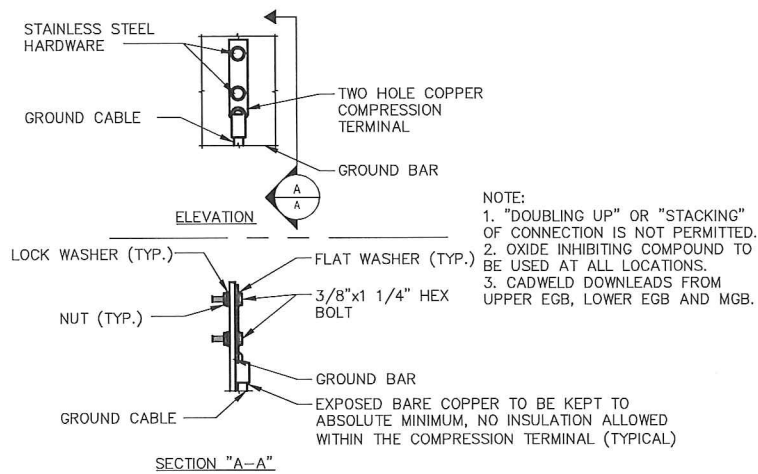
- AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF-TAPPING SCREWS.
- ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING 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.
- ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH PROJECT MANAGER.
- ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
- INSTALL GROUND BUSHING ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
- 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.
- GROUND HYBRID CABLE SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

ELECTRICAL AND GROUNDING NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- 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.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THNN INSULATION.
- 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.
- 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.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- GROUNDING SHALL COMPLY WITH NEC ART. 250.
- GROUND HYBRID CABLE SHIELDS AT 3 LOCATIONS USING MANUFACTURER'S HYBRID CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- 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.
- 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.
- 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.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, HYBRID CABLE GROUND KITS, AND RRRs TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S AND MGB TO GROUND RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULT FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, HYBRID CABLES, GPS COAX AND RRR RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
- 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.
- 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.
- 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.

1 CABLE GROUNDING KIT DETAIL

SCALE: N.T.S.

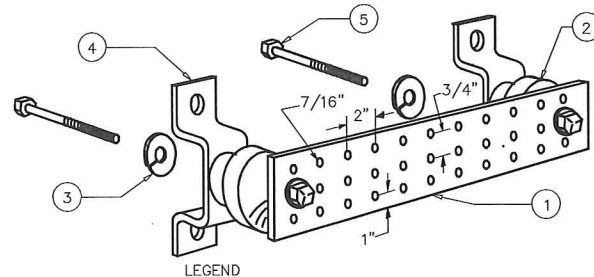


NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

SECTION "A-A"

2 GROUNDING BAR CONN. DETAIL

SCALE: NTS



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

SCALE: NTS

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

CROWN CASTLE

TECTONIC
• PLANNING
• ENGINEERING
• SURVEYING
• CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
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www.tectonicengineering.com

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SUBMITTALS

PROJECT NO: 7225.CT33XC520

| NO | DATE | DESCRIPTION | BY |
|----|----------|------------------|----|
| 0 | 6/19/14 | FOR COMMENT | DC |
| 1 | 10/31/14 | FOR CONSTRUCTION | DC |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| DATE | REVIEWED BY |
|----------|-------------|
| 10/31/14 | JMG |

STATE OF CONNECTICUT
JANUARIAN KUMAR
No. 22038
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER:
CT33XC520

SITE NAME:
O&G WOODBURY

SITE ADDRESS:
GREAT HOLLOW ROAD
WOODBURY, CT 6798

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2



FDH Engineering, Inc.
 6521 Meridien Drive
 Raleigh, NC 27616
 (919) 755-1012

Date: **June 12, 2014**

Veronica Harris
 Crown Castle
 1200 McArthur Blvd
 Mahwah, NJ 07430

Subject: Structural Analysis Report

| | | |
|--------------------------------------|--|---|
| Carrier Designation: | Sprint PCS Co-Locate Carrier Site Number: | Scenario 2.5A CT33XC520 |
| Crown Castle Designation: | Crown Castle BU Number: Crown Castle Site Name: Crown Castle JDE Job Number: Crown Castle Work Order Number: Crown Castle Application Number: | 876380 O&G WOODBURY 288224 773382 246007 Rev. 1 |
| Engineering Firm Designation: | FDH Engineering, Inc. Project Number: | 1467431400 |
| Site Data: | Great Hollow Road, WOODBURY, Litchfield County, CT Latitude 41° 31' 19.2", Longitude -73° 13' 15.6" 138.5 Foot - Monopole Tower | |

Dear Veronica Harris,

FDH Engineering, Inc. 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 655905, in accordance with application 246007, revision 1.

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:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
 Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *FDH Engineering, Inc.* 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:

Reviewed by:

Mark S. Girgis, EI
 Project Engineer

Bradley R. Newman, PE
 Senior Project Engineer
 CT PE License No. 29630

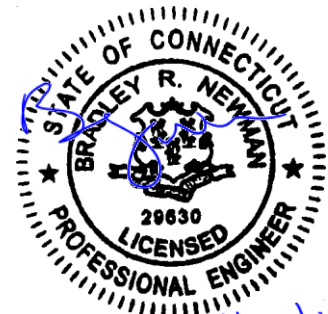


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1) INTRODUCTION

This tower is a 138.5 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. The tower was originally designed to be 150-ft but was only constructed to a height of 139 ft. The tower has been modified multiple times in the past to accommodate additional loading. The tower was modified per reinforcement drawings prepared by Semaan Engineering Solutions, Inc. in November of 2005. Reinforcement consists of base plate stiffeners. The tower was modified again per reinforcement drawings prepared by GPD Group in December of 2011. Reinforcement consists of additional anchor rods.

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 using a fastest mile 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 |
|---------------------|----------------------------|--------------------|----------------------|------------------------------|----------------------|---------------------|------|
| 104.0 | 108.0 | 3 | alcatel lucent | TD-RRH8x20-25 | 1 | 1-1/4 | - |
| | | 3 | rfc celwave | APXVTM14-C-120 w/ Mount Pipe | | | |

Table 2 - Existing and Reserved 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 |
|---------------------|----------------------------|---------------------------|------------------------|-------------------------------------|----------------------|---------------------|------|
| 139.0 | 140.0 | 6 | ericsson | RRUS-11 | - | - | 1 |
| | 139.0 | 1 | crown mounts | Side Arm Mount [SO 102-3] | | | |
| 138.0 | 148.0 | 1 | dbspectra | DS9A09F36D-N | - | - | 2 |
| | 139.0 | 6 | powerwave technologies | LGP2140X | 12 | 1-1/4 | 1 |
| | | 6 | css | XDUO1416-80 w/ Mount Pipe | | | |
| | | 1 | kathrein | 800 10764 w/ Mount Pipe | | | |
| | | 1 | kmw communications | AM-X-CD-14-65-00T-RET w/ Mount Pipe | | | |
| | | 1 | kmw communications | AM-X-CD-16-65-00T-RET w/ Mount Pipe | | | |
| | 1 | raycap | DC6-48-60-18-8F | 1 | 3/8 | | |
| | 138.0 | 6 | powerwave technologies | LGP21401 | 1 | 1-1/4 | 2 |
| | | 6 | powerwave technologies | LGP21901 | | | |
| | | 1 | crown mounts | Platform Mount [LP 303-1] | | | |
| 1 | | bird technologies group | TTA-429-83H-08179 | | | | |
| 1 | crown mounts | Side Arm Mount [SO 309-1] | 2 | 1-1/4 | | | |

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|----------------------|-------------------------------------|----------------------|---------------------|------|
| 137.0 | 147.0 | 1 | telewave | ANT150F6 | 1 | 1/2 | 1 |
| | 137.0 | 1 | crown mounts | 5' x 2' Pipe Mount | | | |
| 129.0 | 129.0 | 3 | antel | BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 18 | 1-5/8 | 1 |
| | | 3 | antel | BXA-70063/6CF-2 W/Mount Pipe | | | |
| | | 6 | antel | LPA-80080/6CF w/ Mount Pipe | | | |
| | | 1 | crown mounts | Platform Mount [LP 304-1] | | | |
| 119.0 | 119.0 | 1 | crown mounts | Platform Mount [LP 304-1] | 12 | 1-5/8 | 1 |
| | | 12 | decibel | DB846G90A-XY w/ Mount Pipe | | | |
| 105.0 | 105.0 | 3 | alcatel lucent | 1900MHz RRH (65MHz) | - | - | 1 |
| | | 1 | crown mounts | Side Arm Mount [SO 102-3] | | | |
| 104.0 | 108.0 | 3 | rfs celwave | APXVSP18-C-A20 w/ Mount Pipe | 3 | 1-1/4 | 1 |
| | 104.0 | 9 | rfs celwave | ACU-A20-N | | | |
| | | 3 | alcatel lucent | 800 EXTERNAL NOTCH FILTER | | | |
| | | 3 | alcatel lucent | 800MHZ RRH | | | |
| | | 1 | crown mounts | Miscellaneous [NA 507-1] | | | |
| | | 1 | crown mounts | Platform Mount [LP 712-1] | | | |
| 87.0 | 87.0 | 12 | airtech | KN-1870-15-4803 | 12 | 1-5/8 | 1 |
| | | 1 | crown mounts | Platform Mount [LP 305-1] | | | |
| | | 6 | rfs celwave | APXV18-209014-C w/ Mount Pipe | | | |
| 70.0 | 71.0 | 1 | lucent | KS24019-L112A | 1 | 1/2 | 1 |
| | 70.0 | 1 | crown mounts | Side Arm Mount [SO 701-1] | | | |

Notes:

- 1) Existing Equipment
- 2) Reserved 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) |
|---------------------|----------------------------|--------------------|----------------------|---------------|----------------------|---------------------|
| 150 | 150 | 12 | decibel | DB980F90 | - | - |
| 140 | 140 | 12 | decibel | DB980F90 | - | - |
| 130 | 130 | 12 | decibel | DB980F90 | - | - |
| 120 | 120 | 12 | decibel | DB980F90 | - | - |
| 109 | 109 | 12 | decibel | DB980F90 | - | - |
| 100 | 100 | 12 | decibel | DB980F90 | | |

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

| Document | Remarks | Reference | Source |
|--|------------------------------|-----------|----------|
| 4-GEOTECHNICAL REPORTS | Clarence Welti Assoc, Inc. | 1531967 | CCISITES |
| 4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS | Engineered Endeavors, Inc. | 2122534 | CCISITES |
| 4-TOWER MANUFACTURER DRAWINGS | Engineered Endeavors, Inc. | 1533002 | CCISITES |
| 4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA | Semaan Engineering Solutions | 2055776 | CCISITES |
| 4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA | GPD Group | 3030835 | CCISITES |
| 4-POST-INSTALLATION INSPECTION | GPD Group | 3420974 | 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) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) Tower dimensions for elevation 108.5' to 138.5' was taken from Crown Castle Structural Analysis Report dated March 19, 2013 (Project No. 587330).

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Engineering, Inc. 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 | 138.5 - 108.5 | Pole | TP24.5x17.375x0.1875 | 1 | -6.79 | 752.20 | 77.8 | Pass |
| L2 | 108.5 - 83.75 | Pole | TP31.88x24.5x0.25 | 2 | -11.75 | 1249.44 | 86.0 | Pass |
| L3 | 83.75 - 43 | Pole | TP43.42x30.0382x0.3125 | 3 | -20.86 | 2131.32 | 87.2 | Pass |
| L4 | 43 - 0 | Pole | TP55.5x41.0206x0.3125 | 4 | -32.94 | 2629.01 | 96.4 | Pass |
| | | | | | | | Summary | |
| | | | | | | Pole (L4) | 96.4 | Pass |
| | | | | | | Rating = | 96.4 | Pass |

Table 6 - Tower Component Stresses vs. Capacity - LC7

| Notes | Component | Elevation (ft) | % Capacity | Pass / Fail |
|-------|-----------------|----------------|------------|-------------|
| 1 | Anchor Rods | 0 | 67.5 | Pass |
| 1 | Base Plate | 0 | 99.3 | Pass |
| 1 | Base Foundation | 0 | 76.3 | Pass |
| 1 | Flange Bolts | 108.5 | 44.2 | Pass |
| 1 | Flange Plate | 108.5 | 30.8 | Pass |

| | |
|---|--------------|
| Structure Rating (max from all components) = | 99.3% |
|---|--------------|

Notes:

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

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loading. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

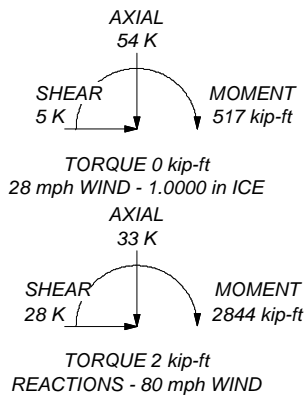
| TYPE | ELEVATION | TYPE | ELEVATION |
|-------------------------------------|-----------|-----------------------------------|-----------|
| (2) RRUS-11 | 139 | (4) DB846G90A-XY w/ Mount Pipe | 119 |
| (2) RRUS-11 | 139 | (4) DB846G90A-XY w/ Mount Pipe | 119 |
| (2) RRUS-11 | 139 | (4) DB846G90A-XY w/ Mount Pipe | 119 |
| Side Arm Mount [SO 102-3] | 139 | Platform Mount [LP 304-1] | 119 |
| TTA-429-83H-08179 | 138 | 1900MHz RRH (65MHz) | 105 |
| DS9A09F36D-N | 138 | 1900MHz RRH (65MHz) | 105 |
| Side Arm Mount [SO 309-1] | 138 | 1900MHz RRH (65MHz) | 105 |
| (2) LGP21401 | 138 | Side Arm Mount [SO 102-3] | 105 |
| (2) LGP21401 | 138 | APXVTM14-C-120 w/ Mount Pipe | 104 |
| (2) LGP21401 | 138 | APXVTM14-C-120 w/ Mount Pipe | 104 |
| (2) LGP2140X | 138 | APXVTM14-C-120 w/ Mount Pipe | 104 |
| (2) LGP2140X | 138 | (3) ACU-A20-N | 104 |
| (2) LGP2140X | 138 | APXVSP18-C-A20 w/ Mount Pipe | 104 |
| (2) LGP21901 | 138 | (3) ACU-A20-N | 104 |
| (2) LGP21901 | 138 | APXVSP18-C-A20 w/ Mount Pipe | 104 |
| (2) LGP21901 | 138 | (3) ACU-A20-N | 104 |
| (2) XDUO1416-80 w/ Mount Pipe | 138 | APXVSP18-C-A20 w/ Mount Pipe | 104 |
| (2) XDUO1416-80 w/ Mount Pipe | 138 | TD-RRH8x20-25 | 104 |
| (2) XDUO1416-80 w/ Mount Pipe | 138 | TD-RRH8x20-25 | 104 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | 138 | TD-RRH8x20-25 | 104 |
| 800 10764 w/ Mount Pipe | 138 | 800 EXTERNAL NOTCH FILTER | 104 |
| AM-X-CD-14-65-00T-RET w/ Mount Pipe | 138 | 800MHZ RRH | 104 |
| DC6-48-60-18-8F | 138 | 800 EXTERNAL NOTCH FILTER | 104 |
| Platform Mount [LP 303-1] | 138 | 800MHZ RRH | 104 |
| ANT150F6 | 137 | 800MHZ RRH | 104 |
| 5' x 2' Pipe Mount | 137 | Platform Mount [LP 712-1] | 104 |
| (2) LPA-80080/6CF w/ Mount Pipe | 129 | Miscellaneous [NA 507-1] | 104 |
| (2) LPA-80080/6CF w/ Mount Pipe | 129 | (4) KN-1870-15-4803 | 87 |
| (2) LPA-80080/6CF w/ Mount Pipe | 129 | (4) KN-1870-15-4803 | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | (4) KN-1870-15-4803 | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | (2) APXV18-209014-C w/ Mount Pipe | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | (2) APXV18-209014-C w/ Mount Pipe | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | (2) APXV18-209014-C w/ Mount Pipe | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | Empty Pipe Mount | 87 |
| BXA-171085-8BF-EDIN-2 w/ Mount Pipe | 129 | Empty Pipe Mount | 87 |
| BXA-70063/6CF-2 W/Mount Pipe | 129 | Empty Pipe Mount | 87 |
| BXA-70063/6CF-2 W/Mount Pipe | 129 | Platform Mount [LP 305-1] | 87 |
| BXA-70063/6CF-2 W/Mount Pipe | 129 | KS24019-L112A | 70 |
| Platform Mount [LP 304-1] | 129 | Side Arm Mount [SO 701-1] | 70 |

MATERIAL STRENGTH

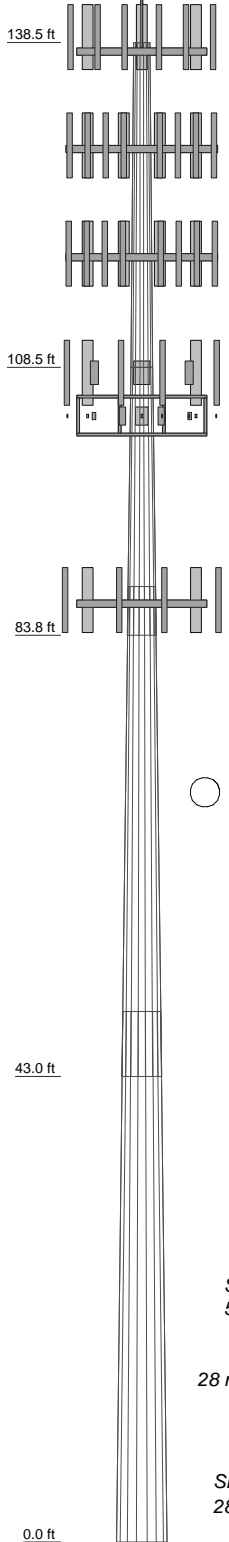
| GRADE | Fy | Fu | GRADE | Fy | Fu |
|---------|--------|--------|-------|----|----|
| A572-65 | 65 ksi | 80 ksi | | | |

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: 96.4%



| | | | | |
|--------------------|---------|---------|---------|---------|
| Section | 1 | 2 | 3 | 4 |
| Length (ft) | 30.00 | 24.75 | 45.25 | 49.00 |
| Number of Sides | 18 | 18 | 18 | 18 |
| Thickness (in) | 0.1875 | 0.2500 | 0.3125 | 0.3125 |
| Socket Length (ft) | | 4.50 | 6.00 | |
| Top Dia (in) | 17.3750 | 24.5000 | 30.0382 | 41.0206 |
| Bot Dia (in) | 24.5000 | 31.8800 | 43.4200 | 55.5000 |
| Grade | | | A572-65 | |
| Weight (K) | 1.3 | 1.9 | 5.6 | 7.9 |
| | | | | 16.6 |



| | | | | |
|--|--|--------------------------|--|--|
| | FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031 | | Job: O&G Woodbury, BU# 876380 Project: 1467431400 | |
| | Client: Crown Castle | Drawn by: Mark S. Girgis | App'd: | |
| | Code: TIA/EIA-222-F | Date: 06/12/14 | Scale: NTS | |
| | Path: | | Dwg No. E-1 | |

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.

Options

| | | |
|--|--|--|
| Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption | Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

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 | 138.50-108.50 | 30.00 | 0.00 | 18 | 17.3750 | 24.5000 | 0.1875 | 0.7500 | A572-65 (65 ksi) |
| L2 | 108.50-83.75 | 24.75 | 4.50 | 18 | 24.5000 | 31.8800 | 0.2500 | 1.0000 | A572-65 (65 ksi) |
| L3 | 83.75-43.00 | 45.25 | 6.00 | 18 | 30.0382 | 43.4200 | 0.3125 | 1.2500 | A572-65 (65 ksi) |
| L4 | 43.00-0.00 | 49.00 | | 18 | 41.0206 | 55.5000 | 0.3125 | 1.2500 | A572-65 (65 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 |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|-----|
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|-----|

| 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 |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|------------------------|---------|--------|
| L1 | 17.6430 | 10.2287 | 381.7542 | 6.1016 | 8.8265 | 43.2509 | 764.0106 | 5.1153 | 2.7280 | 14.549 |
| | 24.8780 | 14.4690 | 1080.5242 | 8.6309 | 12.4460 | 86.8170 | 2162.4702 | 7.2359 | 3.9820 | 21.237 |
| L2 | 24.8780 | 19.2424 | 1429.6167 | 8.6088 | 12.4460 | 114.8656 | 2861.1145 | 9.6230 | 3.8720 | 15.488 |
| | 32.3718 | 25.0984 | 3172.3563 | 11.2287 | 16.1950 | 195.8844 | 6348.8868 | 12.5516 | 5.1709 | 20.684 |
| L3 | 31.8529 | 29.4842 | 3291.4698 | 10.5526 | 15.2594 | 215.7012 | 6587.2706 | 14.7449 | 4.7367 | 15.158 |
| | 44.0898 | 42.7573 | 10038.132 | 15.3032 | 22.0574 | 455.0922 | 20089.472 | 21.3827 | 7.0919 | 22.694 |
| L4 | 43.4538 | 40.3774 | 8453.5159 | 14.4514 | 20.8385 | 405.6687 | 16918.155 | 20.1925 | 6.6696 | 21.343 |
| | 56.3562 | 54.7391 | 21062.822 | 19.5916 | 28.1940 | 747.0675 | 42153.359 | 27.3748 | 9.2180 | 29.498 |

| 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 138.50-108.50 | | | | 1 | 1 | 1 | | |
| L2 108.50-83.75 | | | | 1 | 1 | 1 | | |
| L3 83.75-43.00 | | | | 1 | 1 | 1 | | |
| L4 43.00-0.00 | | | | 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 | |
| Safety Line 3/8 | C | No | CaAa (Out Of Face) | 138.50 - 0.00 | 1 | No Ice | 0.04 | 0.22 |
| | | | | | | 1/2" Ice | 0.14 | 0.75 |
| | | | | | | 1" Ice | 0.24 | 1.28 |
| | | | | | | 2" Ice | 0.44 | 2.34 |
| | | | | | | 4" Ice | 0.84 | 4.46 |
| *** | | | | | | | | |
| LDF6-50A(1-1/4") | A | No | Inside Pole | 138.00 - 0.00 | 6 | No Ice | 0.00 | 0.66 |
| | | | | | | 1/2" Ice | 0.00 | 0.66 |
| | | | | | | 1" Ice | 0.00 | 0.66 |
| | | | | | | 2" Ice | 0.00 | 0.66 |
| | | | | | | 4" Ice | 0.00 | 0.66 |
| LCF114-50J(1-1/4") | A | No | Inside Pole | 138.00 - 0.00 | 6 | No Ice | 0.00 | 0.70 |
| | | | | | | 1/2" Ice | 0.00 | 0.70 |
| | | | | | | 1" Ice | 0.00 | 0.70 |
| | | | | | | 2" Ice | 0.00 | 0.70 |
| | | | | | | 4" Ice | 0.00 | 0.70 |
| FB-L98B-002-75000(3/8") | A | No | Inside Pole | 138.00 - 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) | A | No | Inside Pole | 138.00 - 0.00 | 2 | No Ice | 0.00 | 0.14 |
| | | | | | | 1/2" Ice | 0.00 | 0.14 |
| | | | | | | 1" Ice | 0.00 | 0.14 |
| | | | | | | 2" Ice | 0.00 | 0.14 |
| | | | | | | 4" Ice | 0.00 | 0.14 |

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | C _{AA} | | Weight | |
|----------------------------|----------------------------|--------------|--------------------|-----------------|---------------|---------------------|--------|--------|------|
| | | | | | | ft ² /ft | plf | | |
| LDF4-50A(1/2") | A | No | CaAa (Out Of Face) | 138.00 - 0.00 | 1 | 4" Ice | 0.00 | 0.14 | |
| | | | | | | No Ice | 0.00 | 0.15 | |
| | | | | | | 1/2" Ice | 0.00 | 0.84 | |
| | | | | | | 1" Ice | 0.00 | 2.14 | |
| | | | | | | 2" Ice | 0.00 | 6.58 | |
| LDF6-50A(1-1/4") | A | No | CaAa (Out Of Face) | 138.00 - 0.00 | 2 | 4" Ice | 0.00 | 22.78 | |
| | | | | | | No Ice | 0.00 | 0.66 | |
| | | | | | | 1/2" Ice | 0.00 | 1.91 | |
| | | | | | | 1" Ice | 0.00 | 3.78 | |
| | | | | | | 2" Ice | 0.00 | 9.33 | |
| *** | 4" Ice | 0.00 | 27.78 | | | | | | |
| LDF4-50A(1/2") | A | No | Inside Pole | 137.00 - 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 | |
| | | | | | | 4" Ice | 0.00 | 0.15 | |
| *** | LDF7-50A(1-5/8") | A | No | Inside Pole | 129.00 - 0.00 | 17 | 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 | |
| LDF7-50A(1-5/8") | A | No | CaAa (Out Of Face) | 129.00 - 0.00 | 1 | No Ice | 0.20 | 0.82 | |
| | | | | | | 1/2" Ice | 0.30 | 2.33 | |
| | | | | | | 1" Ice | 0.40 | 4.46 | |
| | | | | | | 2" Ice | 0.60 | 10.54 | |
| | | | | | | 4" Ice | 1.00 | 30.04 | |
| *** | LDF7-50A(1-5/8") | C | No | Inside Pole | 119.00 - 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 | |
| *** | HB114-1-0813U4-M5J(1 1/4") | B | No | Inside Pole | 104.00 - 0.00 | 3 | No Ice | 0.00 | 1.20 |
| 1/2" Ice | | | | | | | 0.00 | 1.20 | |
| 1" Ice | | | | | | | 0.00 | 1.20 | |
| 2" Ice | | | | | | | 0.00 | 1.20 | |
| 4" Ice | | | | | | | 0.00 | 1.20 | |
| HB114-1-0813U4-M5J(1 1/4") | B | No | CaAa (Out Of Face) | 104.00 - 0.00 | 1 | No Ice | 0.15 | 1.20 | |
| | | | | | | 1/2" Ice | 0.25 | 2.45 | |
| | | | | | | 1" Ice | 0.35 | 4.30 | |
| | | | | | | 2" Ice | 0.55 | 9.85 | |
| | | | | | | 4" Ice | 0.95 | 28.27 | |
| *** | LDF7-50A(1-5/8") | B | No | Inside Pole | 87.00 - 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 | |
| *** | LDF4-50A(1/2") | B | No | Inside Pole | 70.00 - 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 | |
| 4" Ice | | | | | | | 0.00 | 0.15 | |
| *** | | | | | | | | | |

Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight K |
|---------------|-----------------------|------|-----------------------------------|-----------------------------------|---|--|-------------|
| L1 | 138.50-108.50 | A | 0.000 | 0.000 | 0.000 | 4.059 | 0.60 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |

| Tower Section | Tower Elevation ft | Face | 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 |
|---------------|-----------------------|------|-----------------------------------|-----------------------------------|---|--|-------------|
| L2 | 108.50-83.75 | C | 0.000 | 0.000 | 0.000 | 1.125 | 0.11 |
| | | A | 0.000 | 0.000 | 0.000 | 4.901 | 0.62 |
| | | B | 0.000 | 0.000 | 0.000 | 3.118 | 0.13 |
| L3 | 83.75-43.00 | C | 0.000 | 0.000 | 0.000 | 0.928 | 0.25 |
| | | A | 0.000 | 0.000 | 0.000 | 8.069 | 1.01 |
| | | B | 0.000 | 0.000 | 0.000 | 6.275 | 0.60 |
| L4 | 43.00-0.00 | C | 0.000 | 0.000 | 0.000 | 1.528 | 0.41 |
| | | A | 0.000 | 0.000 | 0.000 | 8.514 | 1.07 |
| | | B | 0.000 | 0.000 | 0.000 | 6.622 | 0.64 |
| | | C | 0.000 | 0.000 | 0.000 | 1.613 | 0.43 |

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 | 138.50-108.50 | A | 1.171 | 0.000 | 0.000 | 0.000 | 8.859 | 1.02 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 0.000 | 8.149 | 0.15 |
| L2 | 108.50-83.75 | A | 1.136 | 0.000 | 0.000 | 0.000 | 10.524 | 0.98 |
| | | B | | 0.000 | 0.000 | 0.000 | 7.720 | 0.21 |
| | | C | | 0.000 | 0.000 | 0.000 | 6.552 | 0.28 |
| L3 | 83.75-43.00 | A | 1.080 | 0.000 | 0.000 | 0.000 | 17.328 | 1.62 |
| | | B | | 0.000 | 0.000 | 0.000 | 15.535 | 0.76 |
| | | C | | 0.000 | 0.000 | 0.000 | 10.788 | 0.46 |
| L4 | 43.00-0.00 | A | 1.000 | 0.000 | 0.000 | 0.000 | 17.804 | 1.65 |
| | | B | | 0.000 | 0.000 | 0.000 | 15.911 | 0.79 |
| | | C | | 0.000 | 0.000 | 0.000 | 10.902 | 0.48 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _X in | CP _Z in | CP _X Ice in | CP _Z Ice in |
|---------|-----------------|-----------------------|-----------------------|------------------------------|------------------------------|
| L1 | 138.50-108.50 | -0.0443 | -0.1690 | -0.2456 | -0.1831 |
| L2 | 108.50-83.75 | 0.1030 | -0.1492 | 0.0471 | -0.1326 |
| L3 | 83.75-43.00 | 0.1345 | -0.1363 | 0.1077 | -0.1092 |
| L4 | 43.00-0.00 | 0.1382 | -0.1401 | 0.1167 | -0.1182 |

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) RRUS-11 | A | From Leg | 1.00 | 0.0000 | 139.00 | No Ice | 2.94 | 1.25 | 0.06 |
| | | | 0.00 | | | 1/2" | 3.17 | 1.41 | 0.07 |
| | | | 1.00 | | | Ice | 3.41 | 1.59 | 0.10 |
| | | | | | | 1" Ice | 3.91 | 1.96 | 0.15 |
| | | | | | | 2" Ice | 5.02 | 2.82 | 0.30 |
| (2) RRUS-11 | B | From Leg | 1.00 | 0.0000 | 139.00 | No Ice | 2.94 | 1.25 | 0.06 |
| | | | 0.00 | | | 1/2" | 3.17 | 1.41 | 0.07 |
| | | | 1.00 | | | Ice | 3.41 | 1.59 | 0.10 |
| | | | | | | 1" Ice | 3.91 | 1.96 | 0.15 |

| Description | Face or Leg | Offset Type | Offsets: | | | Azimuth Adjustment | Placement | C _{AA} _{Front} | C _{AA} _{Side} | Weight | |
|---------------------------|-------------|-------------|----------|---------|-------|--------------------|-----------|----------------------------------|---------------------------------|--------|------|
| | | | Horz | Lateral | Vert | | | | | | ft |
| | | | ft | ft | ft | ° | ft | ft ² | ft ² | K | |
| (2) RRUS-11 | C | From Leg | 1.00 | 0.00 | 1.00 | 0.0000 | 139.00 | 2" Ice | 5.02 | 2.82 | 0.30 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 2.94 | 1.25 | 0.06 |
| | | | | | | | | 1/2" Ice | 3.17 | 1.41 | 0.07 |
| | | | | | | | | 1" Ice | 3.41 | 1.59 | 0.10 |
| | | | | | | | | 2" Ice | 3.91 | 1.96 | 0.15 |
| Side Arm Mount [SO 102-3] | C | None | 1.00 | 0.00 | 1.00 | 0.0000 | 139.00 | 2" Ice | 5.02 | 2.82 | 0.30 |
| | | | | | | | | 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 |
| *** TTA-429-83H-08179 | A | From Leg | 1.00 | 0.00 | 1.00 | 0.0000 | 138.00 | 2" Ice | 6.84 | 6.84 | 0.32 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 1.05 | 1.05 | 0.02 |
| | | | | | | | | 1/2" Ice | 1.21 | 1.21 | 0.03 |
| | | | | | | | | 1" Ice | 1.38 | 1.38 | 0.04 |
| | | | | | | | | 2" Ice | 1.74 | 1.74 | 0.07 |
| DS9A09F36D-N | A | From Leg | 1.00 | 0.00 | 10.00 | 0.0000 | 138.00 | 2" Ice | 2.57 | 2.57 | 0.16 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 5.76 | 5.76 | 0.05 |
| | | | | | | | | 1/2" Ice | 7.71 | 7.71 | 0.09 |
| | | | | | | | | 1" Ice | 9.68 | 9.68 | 0.14 |
| | | | | | | | | 2" Ice | 13.67 | 13.67 | 0.29 |
| Side Arm Mount [SO 309-1] | A | From Leg | 0.50 | 0.00 | 0.00 | 0.0000 | 138.00 | 2" Ice | 20.51 | 20.51 | 0.73 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 2.82 | 2.20 | 0.04 |
| | | | | | | | | 1/2" Ice | 4.07 | 3.16 | 0.06 |
| | | | | | | | | 1" Ice | 5.32 | 4.12 | 0.08 |
| | | | | | | | | 2" Ice | 7.82 | 6.04 | 0.13 |
| *** (2) LGP21401 | A | From Leg | 4.00 | 0.00 | 0.00 | 0.0000 | 138.00 | 2" Ice | 12.82 | 9.88 | 0.22 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.23 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.31 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.40 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.61 | 0.05 |
| (2) LGP21401 | B | From Leg | 4.00 | 0.00 | 0.00 | 0.0000 | 138.00 | 2" Ice | 0.00 | 1.12 | 0.14 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.23 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.31 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.40 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.61 | 0.05 |
| (2) LGP21401 | C | From Leg | 4.00 | 0.00 | 0.00 | 0.0000 | 138.00 | 2" Ice | 0.00 | 1.12 | 0.14 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.23 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.31 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.40 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.61 | 0.05 |
| (2) LGP2140X | A | From Leg | 4.00 | 0.00 | 1.00 | 0.0000 | 138.00 | 2" Ice | 0.00 | 1.12 | 0.14 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.38 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.62 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.89 | 0.05 |
| (2) LGP2140X | B | From Leg | 4.00 | 0.00 | 1.00 | 0.0000 | 138.00 | 2" Ice | 0.00 | 1.54 | 0.13 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.38 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.62 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.89 | 0.05 |
| (2) LGP2140X | C | From Leg | 4.00 | 0.00 | 1.00 | 0.0000 | 138.00 | 2" Ice | 0.00 | 1.54 | 0.13 |
| | | | | | | | | 4" Ice | | | |
| | | | | | | | | No Ice | 0.00 | 0.38 | 0.01 |
| | | | | | | | | 1/2" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | | | 1" Ice | 0.00 | 0.62 | 0.03 |
| | | | | | | | | 2" Ice | 0.00 | 0.89 | 0.05 |

| 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 | |
|--------------------------------------|-------------|-------------|--|------------------------------|-----------------|---|--|-------------|------|
| | | | 0.00 | | | 1/2" | 0.00 | 0.49 | 0.02 |
| | | | 1.00 | | | Ice | 0.00 | 0.62 | 0.03 |
| | | | | | | 1" Ice | 0.00 | 0.89 | 0.05 |
| | | | | | | 2" Ice | 0.00 | 1.54 | 0.13 |
| | | | | | | 4" Ice | | | |
| (2) LGP21901 | A | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 0.00 | 0.18 | 0.01 |
| | | | 6.00 | | | 1/2" | 0.00 | 0.25 | 0.01 |
| | | | 0.00 | | | Ice | 0.00 | 0.32 | 0.01 |
| | | | | | | 1" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | 2" Ice | 0.00 | 0.94 | 0.07 |
| | | | | | | 4" Ice | | | |
| (2) LGP21901 | B | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 0.00 | 0.18 | 0.01 |
| | | | 6.00 | | | 1/2" | 0.00 | 0.25 | 0.01 |
| | | | 0.00 | | | Ice | 0.00 | 0.32 | 0.01 |
| | | | | | | 1" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | 2" Ice | 0.00 | 0.94 | 0.07 |
| | | | | | | 4" Ice | | | |
| (2) LGP21901 | C | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 0.00 | 0.18 | 0.01 |
| | | | 6.00 | | | 1/2" | 0.00 | 0.25 | 0.01 |
| | | | 0.00 | | | Ice | 0.00 | 0.32 | 0.01 |
| | | | | | | 1" Ice | 0.00 | 0.49 | 0.02 |
| | | | | | | 2" Ice | 0.00 | 0.94 | 0.07 |
| | | | | | | 4" Ice | | | |
| (2) XDJO1416-80 w / Mount Pipe | A | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 6.73 | 4.09 | 0.04 |
| | | | 0.00 | | | 1/2" | 7.21 | 4.74 | 0.09 |
| | | | 1.00 | | | Ice | 7.69 | 5.38 | 0.15 |
| | | | | | | 1" Ice | 8.69 | 6.80 | 0.28 |
| | | | | | | 2" Ice | 10.82 | 9.91 | 0.66 |
| | | | | | | 4" Ice | | | |
| (2) XDJO1416-80 w / Mount Pipe | B | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 6.73 | 4.09 | 0.04 |
| | | | 0.00 | | | 1/2" | 7.21 | 4.74 | 0.09 |
| | | | 1.00 | | | Ice | 7.69 | 5.38 | 0.15 |
| | | | | | | 1" Ice | 8.69 | 6.80 | 0.28 |
| | | | | | | 2" Ice | 10.82 | 9.91 | 0.66 |
| | | | | | | 4" Ice | | | |
| (2) XDJO1416-80 w / Mount Pipe | C | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 6.73 | 4.09 | 0.04 |
| | | | 0.00 | | | 1/2" | 7.21 | 4.74 | 0.09 |
| | | | 1.00 | | | Ice | 7.69 | 5.38 | 0.15 |
| | | | | | | 1" Ice | 8.69 | 6.80 | 0.28 |
| | | | | | | 2" Ice | 10.82 | 9.91 | 0.66 |
| | | | | | | 4" Ice | | | |
| AM-X-CD-16-65-00T-RET w / Mount Pipe | A | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 8.50 | 6.30 | 0.07 |
| | | | 0.00 | | | 1/2" | 9.15 | 7.48 | 0.14 |
| | | | 1.00 | | | Ice | 9.77 | 8.37 | 0.21 |
| | | | | | | 1" Ice | 11.03 | 10.18 | 0.38 |
| | | | | | | 2" Ice | 13.68 | 14.02 | 0.87 |
| | | | | | | 4" Ice | | | |
| 800 10764 w / Mount Pipe | B | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 6.20 | 4.29 | 0.06 |
| | | | 0.00 | | | 1/2" | 6.69 | 4.99 | 0.11 |
| | | | 1.00 | | | Ice | 7.18 | 5.66 | 0.17 |
| | | | | | | 1" Ice | 8.19 | 7.10 | 0.30 |
| | | | | | | 2" Ice | 10.33 | 10.30 | 0.67 |
| | | | | | | 4" Ice | | | |
| AM-X-CD-14-65-00T-RET w / Mount Pipe | C | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 5.74 | 4.02 | 0.03 |
| | | | 0.00 | | | 1/2" | 6.20 | 4.63 | 0.08 |
| | | | 1.00 | | | Ice | 6.66 | 5.28 | 0.13 |
| | | | | | | 1" Ice | 7.62 | 6.68 | 0.25 |
| | | | | | | 2" Ice | 9.67 | 9.74 | 0.61 |
| | | | | | | 4" Ice | | | |
| DC6-48-60-18-8F | B | From Leg | 4.00 | 0.0000 | 138.00 | No Ice | 2.57 | 4.32 | 0.03 |
| | | | 0.00 | | | 1/2" | 2.80 | 4.60 | 0.06 |
| | | | 1.00 | | | Ice | 3.04 | 4.88 | 0.10 |
| | | | | | | 1" Ice | 3.54 | 5.49 | 0.18 |
| | | | | | | 2" Ice | 4.66 | 6.80 | 0.40 |
| | | | | | | 4" Ice | | | |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} _{Front} | C _{AA} _{Side} | Weight |
|---|-------------|-------------|-----------------------|---------|--------------------|-----------|---|---|--------------------------------------|
| | | | Horz | Lateral | | | | | |
| | | | ft | ft | ° | ft | ft ² | ft ² | K |
| Platform Mount [LP 303-1] | C | None | | | 0.0000 | 138.00 | No Ice 14.66 1/2" 18.87 Ice 23.08 1" Ice 31.50 2" Ice 48.34 4" Ice | 14.66 18.87 23.08 31.50 48.34 | 1.25 1.48 1.71 2.18 3.10 |
| *** ANT150F6 | A | From Leg | 1.00 0.00 10.00 | | 0.0000 | 137.00 | No Ice 4.80 1/2" 6.83 Ice 8.87 1" Ice 13.01 2" Ice 21.03 4" Ice | 4.80 6.83 8.87 13.01 21.03 | 0.03 0.07 0.11 0.25 0.68 |
| 5' x 2' Pipe Mount | A | From Leg | 0.50 0.00 0.00 | | 0.0000 | 137.00 | No Ice 1.00 1/2" 1.39 Ice 1.70 1" Ice 2.35 2" Ice 3.78 4" Ice | 1.00 1.39 1.70 2.35 3.78 | 0.03 0.04 0.05 0.08 0.20 |
| *** (2) LPA-80080/6CF w/ Mount Pipe | A | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 4.56 1/2" 5.11 Ice 5.61 1" Ice 6.65 2" Ice 8.83 4" Ice | 10.73 11.99 12.97 14.98 19.22 | 0.05 0.11 0.19 0.36 0.86 |
| (2) LPA-80080/6CF w/ Mount Pipe | B | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 4.56 1/2" 5.11 Ice 5.61 1" Ice 6.65 2" Ice 8.83 4" Ice | 10.73 11.99 12.97 14.98 19.22 | 0.05 0.11 0.19 0.36 0.86 |
| (2) LPA-80080/6CF w/ Mount Pipe | C | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 4.56 1/2" 5.11 Ice 5.61 1" Ice 6.65 2" Ice 8.83 4" Ice | 10.73 11.99 12.97 14.98 19.22 | 0.05 0.11 0.19 0.36 0.86 |
| BXA-171085-8BF-EDIN-2 w / Mount Pipe | A | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 3.18 1/2" 3.56 Ice 3.96 1" Ice 4.85 2" Ice 6.77 4" Ice | 3.35 3.97 4.60 5.89 8.89 | 0.03 0.06 0.10 0.19 0.49 |
| BXA-171085-8BF-EDIN-2 w / Mount Pipe | B | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 3.18 1/2" 3.56 Ice 3.96 1" Ice 4.85 2" Ice 6.77 4" Ice | 3.35 3.97 4.60 5.89 8.89 | 0.03 0.06 0.10 0.19 0.49 |
| BXA-171085-8BF-EDIN-2 w / Mount Pipe | C | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 3.18 1/2" 3.56 Ice 3.96 1" Ice 4.85 2" Ice 6.77 4" Ice | 3.35 3.97 4.60 5.89 8.89 | 0.03 0.06 0.10 0.19 0.49 |
| BXA-70063/6CF-2 W/Mount Pipe | A | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 7.75 1/2" 8.29 Ice 8.85 1" Ice 9.97 2" Ice 12.34 4" Ice | 5.18 6.11 6.92 8.59 12.13 | 0.04 0.10 0.16 0.31 0.75 |
| BXA-70063/6CF-2 W/Mount Pipe | B | From Leg | 4.00 0.00 0.00 | | 0.0000 | 129.00 | No Ice 7.75 1/2" 8.29 Ice 8.85 | 5.18 6.11 6.92 | 0.04 0.10 0.16 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustmen t ° | Placement ft | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight K | |
|--|-------------|-------------|---|--------------------------------|-----------------|---|--|-------------|------|
| BXA-70063/6CF-2 W/Mount Pipe | C | From Leg | 4.00 0.00 0.00 | 0.0000 | 129.00 | 1" Ice | 9.97 | 8.59 | 0.31 |
| | | | | | | 2" Ice | 12.34 | 12.13 | 0.75 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 7.75 | 5.18 | 0.04 |
| | | | | | | 1/2" Ice | 8.29 | 6.11 | 0.10 |
| | | | | | | 1" Ice | 8.85 | 6.92 | 0.16 |
| | | | | | | 2" Ice | 12.34 | 12.13 | 0.75 |
| Platform Mount [LP 304-1] | C | None | | 0.0000 | 129.00 | 4" Ice | | | |
| | | | | | | No Ice | 17.46 | 17.46 | 1.35 |
| | | | | | | 1/2" Ice | 22.44 | 22.44 | 1.62 |
| | | | | | | Ice | 27.42 | 27.42 | 1.90 |
| | | | | | | 1" Ice | 37.38 | 37.38 | 2.45 |
| | | | | | | 2" Ice | 57.30 | 57.30 | 3.55 |
| | | | | | | 4" Ice | | | |
| *** (4) DB846G90A-XY w/ Mount Pipe | A | From Leg | 4.00 0.00 0.00 | 0.0000 | 119.00 | No Ice | 5.23 | 7.53 | 0.04 |
| | | | | | | 1/2" Ice | 5.78 | 8.72 | 0.10 |
| | | | | | | Ice | 6.30 | 9.62 | 0.16 |
| | | | | | | 1" Ice | 7.37 | 11.45 | 0.32 |
| | | | | | | 2" Ice | 9.69 | 15.60 | 0.77 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 5.23 | 7.53 | 0.04 |
| (4) DB846G90A-XY w/ Mount Pipe | B | From Leg | 4.00 0.00 0.00 | 0.0000 | 119.00 | No Ice | 5.23 | 7.53 | 0.04 |
| | | | | | | 1/2" Ice | 5.78 | 8.72 | 0.10 |
| | | | | | | Ice | 6.30 | 9.62 | 0.16 |
| | | | | | | 1" Ice | 7.37 | 11.45 | 0.32 |
| | | | | | | 2" Ice | 9.69 | 15.60 | 0.77 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 5.23 | 7.53 | 0.04 |
| (4) DB846G90A-XY w/ Mount Pipe | C | From Leg | 4.00 0.00 0.00 | 0.0000 | 119.00 | No Ice | 5.23 | 7.53 | 0.04 |
| | | | | | | 1/2" Ice | 5.78 | 8.72 | 0.10 |
| | | | | | | Ice | 6.30 | 9.62 | 0.16 |
| | | | | | | 1" Ice | 7.37 | 11.45 | 0.32 |
| | | | | | | 2" Ice | 9.69 | 15.60 | 0.77 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 5.23 | 7.53 | 0.04 |
| Platform Mount [LP 304-1] | C | None | | 0.0000 | 119.00 | 4" Ice | | | |
| | | | | | | No Ice | 17.46 | 17.46 | 1.35 |
| | | | | | | 1/2" Ice | 22.44 | 22.44 | 1.62 |
| | | | | | | Ice | 27.42 | 27.42 | 1.90 |
| | | | | | | 1" Ice | 37.38 | 37.38 | 2.45 |
| | | | | | | 2" Ice | 57.30 | 57.30 | 3.55 |
| | | | | | | 4" Ice | | | |
| *** 1900MHz RRH (65MHz) | A | From Leg | 1.00 0.00 0.00 | 0.0000 | 105.00 | No Ice | 2.70 | 2.77 | 0.06 |
| | | | | | | 1/2" Ice | 2.94 | 3.01 | 0.08 |
| | | | | | | Ice | 3.18 | 3.26 | 0.11 |
| | | | | | | 1" Ice | 3.70 | 3.78 | 0.18 |
| | | | | | | 2" Ice | 4.85 | 4.93 | 0.35 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 2.70 | 2.77 | 0.06 |
| 1900MHz RRH (65MHz) | B | From Leg | 1.00 0.00 0.00 | 0.0000 | 105.00 | No Ice | 2.70 | 2.77 | 0.06 |
| | | | | | | 1/2" Ice | 2.94 | 3.01 | 0.08 |
| | | | | | | Ice | 3.18 | 3.26 | 0.11 |
| | | | | | | 1" Ice | 3.70 | 3.78 | 0.18 |
| | | | | | | 2" Ice | 4.85 | 4.93 | 0.35 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 2.70 | 2.77 | 0.06 |
| 1900MHz RRH (65MHz) | C | From Leg | 1.00 0.00 0.00 | 0.0000 | 105.00 | No Ice | 2.70 | 2.77 | 0.06 |
| | | | | | | 1/2" Ice | 2.94 | 3.01 | 0.08 |
| | | | | | | Ice | 3.18 | 3.26 | 0.11 |
| | | | | | | 1" Ice | 3.70 | 3.78 | 0.18 |
| | | | | | | 2" Ice | 4.85 | 4.93 | 0.35 |
| | | | | | | 4" Ice | | | |
| | | | | | | No Ice | 2.70 | 2.77 | 0.06 |
| Side Arm Mount [SO 102-3] | C | None | | 0.0000 | 105.00 | 4" Ice | | | |
| | | | | | | No Ice | 3.00 | 3.00 | 0.08 |
| | | | | | | 1/2" Ice | 3.48 | 3.48 | 0.11 |
| | | | | | | Ice | 3.96 | 3.96 | 0.14 |
| | | | | | | 1" Ice | 4.92 | 4.92 | 0.20 |
| | | | | | | 2" Ice | 6.84 | 6.84 | 0.32 |
| | | | | | | 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 | |
| *** | | | | | | | | | | |
| APXVTM14-C-120 w/ Mount Pipe | A | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 7.13 | 4.96 | 0.08 |
| | | | | | | | 1/2" Ice | 7.66 | 5.75 | 0.13 |
| | | | | | | | Ice | 8.18 | 6.47 | 0.19 |
| | | | | | | | 1" Ice | 9.26 | 8.01 | 0.34 |
| | | | | | | | 2" Ice | 11.53 | 11.41 | 0.75 |
| APXVTM14-C-120 w/ Mount Pipe | B | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 7.13 | 4.96 | 0.08 |
| | | | | | | | 1/2" Ice | 7.66 | 5.75 | 0.13 |
| | | | | | | | Ice | 8.18 | 6.47 | 0.19 |
| | | | | | | | 1" Ice | 9.26 | 8.01 | 0.34 |
| | | | | | | | 2" Ice | 11.53 | 11.41 | 0.75 |
| APXVTM14-C-120 w/ Mount Pipe | C | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 7.13 | 4.96 | 0.08 |
| | | | | | | | 1/2" Ice | 7.66 | 5.75 | 0.13 |
| | | | | | | | Ice | 8.18 | 6.47 | 0.19 |
| | | | | | | | 1" Ice | 9.26 | 8.01 | 0.34 |
| | | | | | | | 2" Ice | 11.53 | 11.41 | 0.75 |
| (3) ACU-A20-N | A | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 0.08 | 0.14 | 0.00 |
| | | | | | | | 1/2" Ice | 0.12 | 0.19 | 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 |
| APXVSP18-C-A20 w/ Mount Pipe | A | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 8.50 | 6.95 | 0.08 |
| | | | | | | | 1/2" Ice | 9.15 | 8.13 | 0.15 |
| | | | | | | | 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 | B | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 0.08 | 0.14 | 0.00 |
| | | | | | | | 1/2" Ice | 0.12 | 0.19 | 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 |
| APXVSP18-C-A20 w/ Mount Pipe | B | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 8.50 | 6.95 | 0.08 |
| | | | | | | | 1/2" Ice | 9.15 | 8.13 | 0.15 |
| | | | | | | | 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 | C | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 0.08 | 0.14 | 0.00 |
| | | | | | | | 1/2" Ice | 0.12 | 0.19 | 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 |
| APXVSP18-C-A20 w/ Mount Pipe | C | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 8.50 | 6.95 | 0.08 |
| | | | | | | | 1/2" Ice | 9.15 | 8.13 | 0.15 |
| | | | | | | | Ice | 9.77 | 9.02 | 0.23 |
| | | | | | | | 1" Ice | 11.03 | 10.84 | 0.41 |
| | | | | | | | 2" Ice | 13.68 | 14.85 | 0.91 |
| TD-RRH8x20-25 | A | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 4.72 | 1.70 | 0.07 |
| | | | | | | | 1/2" Ice | 5.01 | 1.92 | 0.10 |
| | | | | | | | Ice | 5.32 | 2.14 | 0.13 |
| | | | | | | | 1" Ice | 5.95 | 2.62 | 0.20 |
| | | | | | | | 2" Ice | 7.31 | 3.68 | 0.40 |
| TD-RRH8x20-25 | B | From Leg | 4.00 | 0.00 | 0.0000 | 104.00 | No Ice | 4.72 | 1.70 | 0.07 |
| | | | | | | | 1/2" Ice | 5.01 | 1.92 | 0.10 |
| | | | | | | | Ice | 5.32 | 2.14 | 0.13 |
| | | | | | | | 1" Ice | 5.95 | 2.62 | 0.20 |
| | | | | | | | 2" Ice | 7.31 | 3.68 | 0.40 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight K | | |
|----------------------------|-------------|-------------|---|-------------------------|-----------------|---|--|-------------|------|--|
| TD-RRH8x20-25 | C | From Leg | 4.00 0.00 4.00 | 0.0000 | 104.00 | 2" Ice | 7.31 | 3.68 | 0.40 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 4.72 | 1.70 | 0.07 | |
| | | | | | | 1/2" Ice | 5.01 | 1.92 | 0.10 | |
| | | | | | | 1" Ice | 5.32 | 2.14 | 0.13 | |
| | | | | | | 2" Ice | 5.95 | 2.62 | 0.20 | |
| 800 EXTERNAL NOTCH FILTER | A | From Leg | 4.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 7.31 | 3.68 | 0.40 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 0.77 | 0.37 | 0.01 | |
| | | | | | | 1/2" Ice | 0.89 | 0.46 | 0.02 | |
| | | | | | | 1" Ice | 1.02 | 0.56 | 0.02 | |
| | | | | | | 2" Ice | 1.30 | 0.79 | 0.04 | |
| 800MHZ RRH | A | From Leg | 1.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 1.97 | 1.34 | 0.11 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 2.49 | 2.07 | 0.05 | |
| | | | | | | 1/2" Ice | 2.71 | 2.27 | 0.07 | |
| | | | | | | 1" Ice | 2.93 | 2.48 | 0.10 | |
| | | | | | | 2" Ice | 3.41 | 2.93 | 0.16 | |
| 800 EXTERNAL NOTCH FILTER | B | From Leg | 4.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 4.46 | 3.93 | 0.32 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 0.77 | 0.37 | 0.01 | |
| | | | | | | 1/2" Ice | 0.89 | 0.46 | 0.02 | |
| | | | | | | 1" Ice | 1.02 | 0.56 | 0.02 | |
| | | | | | | 2" Ice | 1.30 | 0.79 | 0.04 | |
| 800MHZ RRH | B | From Leg | 1.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 1.97 | 1.34 | 0.11 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 2.49 | 2.07 | 0.05 | |
| | | | | | | 1/2" Ice | 2.71 | 2.27 | 0.07 | |
| | | | | | | 1" Ice | 2.93 | 2.48 | 0.10 | |
| | | | | | | 2" Ice | 3.41 | 2.93 | 0.16 | |
| 800 EXTERNAL NOTCH FILTER | C | From Leg | 4.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 4.46 | 3.93 | 0.32 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 0.77 | 0.37 | 0.01 | |
| | | | | | | 1/2" Ice | 0.89 | 0.46 | 0.02 | |
| | | | | | | 1" Ice | 1.02 | 0.56 | 0.02 | |
| | | | | | | 2" Ice | 1.30 | 0.79 | 0.04 | |
| 800MHZ RRH | C | From Leg | 1.00 0.00 0.00 | 0.0000 | 104.00 | 2" Ice | 1.97 | 1.34 | 0.11 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 2.49 | 2.07 | 0.05 | |
| | | | | | | 1/2" Ice | 2.71 | 2.27 | 0.07 | |
| | | | | | | 1" Ice | 2.93 | 2.48 | 0.10 | |
| | | | | | | 2" Ice | 3.41 | 2.93 | 0.16 | |
| Platform Mount [LP 712-1] | C | None | | 0.0000 | 104.00 | 2" Ice | 4.46 | 3.93 | 0.32 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 24.53 | 24.53 | 1.34 | |
| | | | | | | 1/2" Ice | 29.94 | 29.94 | 1.65 | |
| | | | | | | 1" Ice | 35.35 | 35.35 | 1.96 | |
| | | | | | | 2" Ice | 46.17 | 46.17 | 2.58 | |
| Miscellaneous [NA 507-1] | C | None | | 0.0000 | 104.00 | 2" Ice | 67.81 | 67.81 | 3.82 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 4.80 | 4.80 | 0.25 | |
| | | | | | | 1/2" Ice | 6.70 | 6.70 | 0.29 | |
| | | | | | | 1" Ice | 8.60 | 8.60 | 0.34 | |
| | | | | | | 2" Ice | 12.40 | 12.40 | 0.44 | |
| *** (4) KN-1870-15-4803 | A | From Leg | 4.00 0.00 0.00 | 0.0000 | 87.00 | 2" Ice | 20.00 | 20.00 | 0.64 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 0.83 | 0.39 | 0.01 | |
| | | | | | | 1/2" Ice | 0.97 | 0.50 | 0.02 | |
| | | | | | | 1" Ice | 1.11 | 0.62 | 0.02 | |
| | | | | | | 2" Ice | 1.42 | 0.89 | 0.04 | |
| (4) KN-1870-15-4803 | B | From Leg | 4.00 0.00 | 0.0000 | 87.00 | 2" Ice | 2.14 | 1.52 | 0.11 | |
| | | | | | | 4" Ice | | | | |
| | | | | | | No Ice | 0.83 | 0.39 | 0.01 | |
| | | | | | | 1/2" Ice | 0.97 | 0.50 | 0.02 | |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} _{Front} | C _{AA} _{Side} | Weight |
|------------------------------------|-------------|-------------|----------|---------|--------------------|-----------|----------------------------------|---------------------------------|--------|
| | | | Horz | Lateral | | | | | |
| | | | | 0.00 | | | | | |
| | | | | | | Ice | 1.11 | 0.62 | 0.02 |
| | | | | | | 1" Ice | 1.42 | 0.89 | 0.04 |
| | | | | | | 2" Ice | 2.14 | 1.52 | 0.11 |
| | | | | | | 4" Ice | | | |
| (4) KN-1870-15-4803 | C | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 0.83 | 0.39 | 0.01 |
| | | | 0.00 | | | 1/2" | 0.97 | 0.50 | 0.02 |
| | | | 0.00 | | | Ice | 1.11 | 0.62 | 0.02 |
| | | | | | | 1" Ice | 1.42 | 0.89 | 0.04 |
| | | | | | | 2" Ice | 2.14 | 1.52 | 0.11 |
| | | | | | | 4" Ice | | | |
| (2) APXV 18-209014-C w/ Mount Pipe | A | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 3.72 | 3.31 | 0.04 |
| | | | 0.00 | | | 1/2" | 4.13 | 4.02 | 0.07 |
| | | | 0.00 | | | Ice | 4.56 | 4.68 | 0.11 |
| | | | | | | 1" Ice | 5.51 | 6.07 | 0.21 |
| | | | | | | 2" Ice | 7.55 | 9.05 | 0.52 |
| | | | | | | 4" Ice | | | |
| (2) APXV 18-209014-C w/ Mount Pipe | B | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 3.72 | 3.31 | 0.04 |
| | | | 0.00 | | | 1/2" | 4.13 | 4.02 | 0.07 |
| | | | 0.00 | | | Ice | 4.56 | 4.68 | 0.11 |
| | | | | | | 1" Ice | 5.51 | 6.07 | 0.21 |
| | | | | | | 2" Ice | 7.55 | 9.05 | 0.52 |
| | | | | | | 4" Ice | | | |
| (2) APXV 18-209014-C w/ Mount Pipe | C | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 3.72 | 3.31 | 0.04 |
| | | | 0.00 | | | 1/2" | 4.13 | 4.02 | 0.07 |
| | | | 0.00 | | | Ice | 4.56 | 4.68 | 0.11 |
| | | | | | | 1" Ice | 5.51 | 6.07 | 0.21 |
| | | | | | | 2" Ice | 7.55 | 9.05 | 0.52 |
| | | | | | | 4" Ice | | | |
| Empty Pipe Mount | A | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 1.43 | 1.43 | 0.02 |
| | | | 0.00 | | | 1/2" | 1.50 | 1.50 | 0.03 |
| | | | 0.00 | | | Ice | 1.57 | 1.57 | 0.04 |
| | | | | | | 1" Ice | 1.71 | 1.71 | 0.05 |
| | | | | | | 2" Ice | 2.00 | 2.00 | 0.07 |
| | | | | | | 4" Ice | | | |
| Empty Pipe Mount | B | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 1.43 | 1.43 | 0.02 |
| | | | 0.00 | | | 1/2" | 1.50 | 1.50 | 0.03 |
| | | | 0.00 | | | Ice | 1.57 | 1.57 | 0.04 |
| | | | | | | 1" Ice | 1.71 | 1.71 | 0.05 |
| | | | | | | 2" Ice | 2.00 | 2.00 | 0.07 |
| | | | | | | 4" Ice | | | |
| Empty Pipe Mount | C | From Leg | 4.00 | 0.0000 | 87.00 | No Ice | 1.43 | 1.43 | 0.02 |
| | | | 0.00 | | | 1/2" | 1.50 | 1.50 | 0.03 |
| | | | 0.00 | | | Ice | 1.57 | 1.57 | 0.04 |
| | | | | | | 1" Ice | 1.71 | 1.71 | 0.05 |
| | | | | | | 2" Ice | 2.00 | 2.00 | 0.07 |
| | | | | | | 4" Ice | | | |
| Platform Mount [LP 305-1] | C | None | | 0.0000 | 87.00 | No Ice | 18.01 | 18.01 | 1.12 |
| | | | | | | 1/2" | 23.33 | 23.33 | 1.35 |
| | | | | | | Ice | 28.65 | 28.65 | 1.58 |
| | | | | | | 1" Ice | 39.29 | 39.29 | 2.05 |
| | | | | | | 2" Ice | 60.57 | 60.57 | 2.97 |
| | | | | | | 4" Ice | | | |
| *** | | | | | | | | | |
| KS24019-L112A | A | From Leg | 3.00 | 0.0000 | 70.00 | No Ice | 0.16 | 0.16 | 0.01 |
| | | | 0.00 | | | 1/2" | 0.22 | 0.22 | 0.01 |
| | | | 1.00 | | | Ice | 0.30 | 0.30 | 0.01 |
| | | | | | | 1" Ice | 0.48 | 0.48 | 0.02 |
| | | | | | | 2" Ice | 0.95 | 0.95 | 0.06 |
| | | | | | | 4" Ice | | | |
| Side Arm Mount [SO 701-1] | A | From Leg | 1.50 | 0.0000 | 70.00 | No Ice | 0.85 | 1.67 | 0.07 |
| | | | 0.00 | | | 1/2" | 1.14 | 2.34 | 0.08 |
| | | | 0.00 | | | Ice | 1.43 | 3.01 | 0.09 |
| | | | | | | 1" Ice | 2.01 | 4.35 | 0.12 |
| | | | | | | 2" Ice | 3.17 | 7.03 | 0.18 |
| | | | | | | 4" Ice | | | |

| 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 |
|-------------|-------------------|----------------|---|--------------------------------|---------------------|---|--|-----------------|
| *** | | | | | | | | |

Load Combinations

| Comb. No. | Description |
|--------------|-----------------------------|
| 1 | Dead Only |
| 2 | Dead+Wind 0 deg - No Ice |
| 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 Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|----------------|---------------------|---------------------------|-----------------------|---------------|----------------|
| L1 | 138.5 - 108.5 | 37.345 | 28 | 2.6086 | 0.0121 |
| L2 | 108.5 - 83.75 | 22.064 | 28 | 2.1129 | 0.0040 |
| L3 | 88.25 - 43 | 14.157 | 28 | 1.6030 | 0.0021 |
| L4 | 49 - 0 | 4.174 | 28 | 0.8042 | 0.0008 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|-------------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 139.00 | (2) RRUS-11 | 28 | 37.345 | 2.6086 | 0.0122 | 11562 |
| 138.00 | TTA-429-83H-08179 | 28 | 37.075 | 2.6018 | 0.0120 | 11562 |
| 137.00 | ANT150F6 | 28 | 36.534 | 2.5882 | 0.0117 | 11562 |
| 129.00 | (2) LPA-80080/6CF w / Mount Pipe | 28 | 32.239 | 2.4765 | 0.0091 | 6085 |
| 119.00 | (4) DB846G90A-XY w / Mount Pipe | 28 | 27.061 | 2.3191 | 0.0063 | 2963 |
| 105.00 | 1900MHz RRH (65MHz) | 28 | 20.538 | 2.0315 | 0.0035 | 2042 |
| 104.00 | APXVTM14-C-120 w / Mount Pipe | 28 | 20.115 | 2.0071 | 0.0034 | 2075 |
| 87.00 | (4) KN-1870-15-4803 | 28 | 13.734 | 1.5720 | 0.0021 | 2810 |
| 70.00 | KS24019-L112A | 28 | 8.651 | 1.1942 | 0.0013 | 2673 |

Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|----------------|-----------------|---------------------------|-----------------------|-----------|------------|
| L1 | 138.5 - 108.5 | 95.123 | 2 | 6.6426 | 0.0305 |
| L2 | 108.5 - 83.75 | 56.262 | 2 | 5.3884 | 0.0100 |
| L3 | 88.25 - 43 | 36.121 | 3 | 4.0907 | 0.0053 |
| L4 | 49 - 0 | 10.659 | 3 | 2.0538 | 0.0019 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|-------------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 139.00 | (2) RRUS-11 | 2 | 95.123 | 6.6426 | 0.0311 | 4652 |
| 138.00 | TTA-429-83H-08179 | 2 | 94.436 | 6.6254 | 0.0307 | 4652 |
| 137.00 | ANT150F6 | 2 | 93.062 | 6.5910 | 0.0299 | 4652 |
| 129.00 | (2) LPA-80080/6CF w / Mount Pipe | 2 | 82.143 | 6.3093 | 0.0234 | 2447 |
| 119.00 | (4) DB846G90A-XY w / Mount Pipe | 2 | 68.975 | 5.9115 | 0.0160 | 1190 |
| 105.00 | 1900MHz RRH (65MHz) | 2 | 52.376 | 5.1814 | 0.0089 | 816 |
| 104.00 | APXVTM14-C-120 w / Mount Pipe | 2 | 51.299 | 5.1196 | 0.0085 | 829 |
| 87.00 | (4) KN-1870-15-4803 | 3 | 35.043 | 4.0118 | 0.0052 | 1112 |
| 70.00 | KS24019-L112A | 3 | 22.083 | 3.0487 | 0.0034 | 1053 |

Compression Checks

Pole Design Data

| Section No. | Elevation ft | Size | L ft | L _u ft | KI/r | F _a ksi | A in ² | Actual P K | Allow. P _a K | Ratio P P _a |
|----------------|----------------------|----------------------|---------|----------------------|------|-----------------------|----------------------|------------------|-------------------------------|------------------------------|
| L1 | 138.5 - 108.5 (1) | TP24.5x17.375x0.1875 | 30.00 | 0.00 | 0.0 | 39.000 | 14.4690 | -6.80 | 564.29 | 0.012 |

| 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 |
|-------------|----------------------|------------------------|---------|----------------------|------|-----------------------|----------------------|---------------|----------------------------|------------------------------|
| L2 | 108.5 - 83.75 (2) | TP31.88x24.5x0.25 | 24.75 | 0.00 | 0.0 | 39.000 | 24.0337 | -11.75 | 937.31 | 0.013 |
| L3 | 83.75 - 43 (3) | TP43.42x30.0382x0.3125 | 45.25 | 0.00 | 0.0 | 39.000 | 40.9973 | -20.85 | 1598.89 | 0.013 |
| L4 | 43 - 0 (4) | TP55.5x41.0206x0.3125 | 49.00 | 0.00 | 0.0 | 36.030 | 54.7391 | -32.94 | 1972.25 | 0.017 |

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 | 138.5 - 108.5 (1) | TP24.5x17.375x0.1875 | 288.76 | 39.913 | 39.000 | 1.023 | 0.00 | 0.000 | 39.000 | 0.000 |
| L2 | 108.5 - 83.75 (2) | TP31.88x24.5x0.25 | 661.17 | 44.187 | 39.000 | 1.133 | 0.00 | 0.000 | 39.000 | 0.000 |
| L3 | 83.75 - 43 (3) | TP43.42x30.0382x0.3125 | 1562.4 | 44.827 | 39.000 | 1.149 | 0.00 | 0.000 | 39.000 | 0.000 |
| L4 | 43 - 0 (4) | TP55.5x41.0206x0.3125 | 2844.3 7 5 | 45.688 | 36.030 | 1.268 | 0.00 | 0.000 | 36.030 | 0.000 |

Pole Shear Design Data

| Section No. | Elevation ft | Size | Actual V K | Actual f _v ksi | Allow. F _v ksi | Ratio f _v F _v | Actual T kip-ft | Actual f _{vt} ksi | Allow. F _{vt} ksi | Ratio f _{vt} F _{vt} |
|-------------|----------------------|------------------------|---------------|------------------------------|------------------------------|---|--------------------|-------------------------------|-------------------------------|---|
| L1 | 138.5 - 108.5 (1) | TP24.5x17.375x0.1875 | 14.10 | 0.975 | 26.000 | 0.075 | 0.15 | 0.010 | 26.000 | 0.000 |
| L2 | 108.5 - 83.75 (2) | TP31.88x24.5x0.25 | 19.59 | 0.815 | 26.000 | 0.063 | 0.15 | 0.005 | 26.000 | 0.000 |
| L3 | 83.75 - 43 (3) | TP43.42x30.0382x0.3125 | 24.47 | 0.597 | 26.000 | 0.046 | 0.06 | 0.001 | 26.000 | 0.000 |
| L4 | 43 - 0 (4) | TP55.5x41.0206x0.3125 | 27.86 | 0.509 | 26.000 | 0.039 | 0.08 | 0.001 | 26.000 | 0.000 |

Pole Interaction Design Data

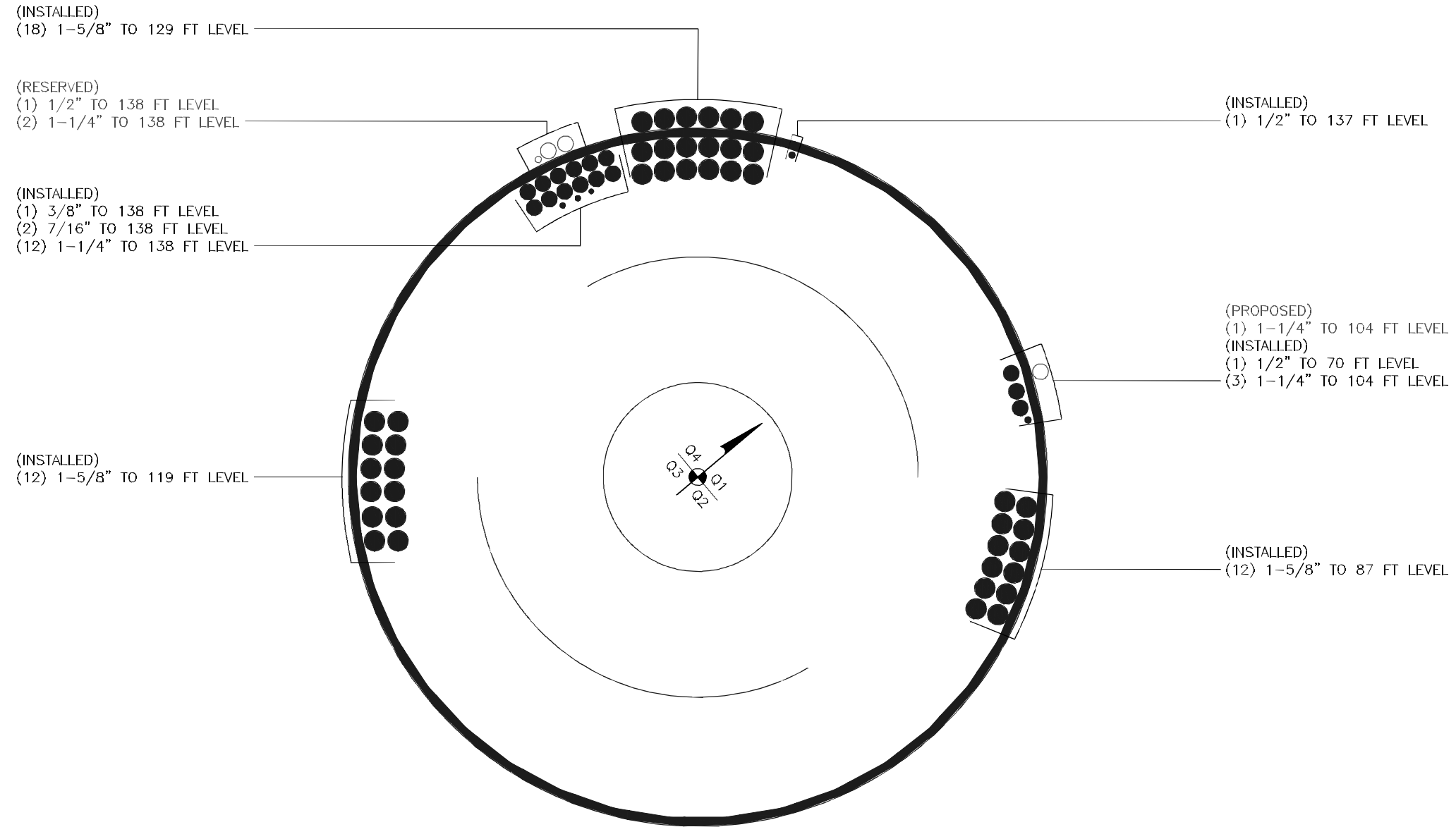
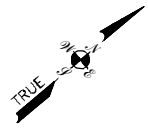
| Section No. | Elevation ft | Ratio P P _a | Ratio f _{bx} F _{bx} | Ratio f _{by} F _{by} | Ratio f _v F _v | Ratio f _{vt} F _{vt} | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|----------------------|------------------------------|---|---|---|---|-----------------------|------------------------|----------|
| L1 | 138.5 - 108.5 (1) | 0.012 | 1.023 | 0.000 | 0.075 | 0.000 | 1.037 | 1.333 | H1-3+VT |
| L2 | 108.5 - 83.75 (2) | 0.013 | 1.133 | 0.000 | 0.063 | 0.000 | 1.147 | 1.333 | H1-3+VT |
| L3 | 83.75 - 43 (3) | 0.013 | 1.149 | 0.000 | 0.046 | 0.000 | 1.163 | 1.333 | H1-3+VT |
| L4 | 43 - 0 (4) | 0.017 | 1.268 | 0.000 | 0.039 | 0.000 | 1.285 | 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 | 138.5 - 108.5 | Pole | TP24.5x17.375x0.1875 | 1 | -6.80 | 752.20 | 77.8 | Pass |
| L2 | 108.5 - 83.75 | Pole | TP31.88x24.5x0.25 | 2 | -11.75 | 1249.44 | 86.0 | Pass |
| L3 | 83.75 - 43 | Pole | TP43.42x30.0382x0.3125 | 3 | -20.85 | 2131.32 | 87.2 | Pass |

| Section No. | Elevation ft | Component Type | Size | Critical Element | P K | SF*P _{allow} K | % Capacity | Pass Fail | |
|-------------|--------------|----------------|-----------------------|------------------|--------|----------------------------|-----------------|-------------|-------------|
| L4 | 43 - 0 | Pole | TP55.5x41.0206x0.3125 | 4 | -32.94 | 2629.01 | 96.4 | Pass | |
| | | | | | | | Summary | | |
| | | | | | | | Pole (L4) | 96.4 | Pass |
| | | | | | | | RATING = | 96.4 | Pass |

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876380
 Site Name: O&G Woodbury
 App #: 246007, Rev. 1

| Reactions | | |
|------------|--------|---------|
| Moment: | 288.76 | ft-kips |
| Axial: | 6.8 | kips |
| Shear: | 14.1 | kips |
| Elevation: | 108.5 | feet |

| | |
|--------------------|-------|
| Pole Manufacturer: | Other |
|--------------------|-------|

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

| Bolt Data | | |
|-----------------|------|-------------------------------|
| Qty: | 24 | |
| Diameter (in.): | 1 | Bolt Fu: 120 |
| Bolt Material: | A325 | Bolt Fy: 92 |
| N/A: | 75 | <-- Disregard Bolt Fty: 44.00 |
| N/A: | 55 | <-- Disregard |
| Circle (in.): | 28 | |

Flange Bolt Results

Bolt Tension Capacity, **B**: 46.07 kips
 Max Bolt directly applied T: 20.34 Kips
 Min. PL "tc" for **B cap. w/o Pry**: 1.340 in
 Min PL "treq" for actual **T w/ Pry**: 0.689 in
 Min PL "t1" for actual **T w/o Pry**: 0.891 in
 T allowable w/o Prying: 46.07 kips
 Prying Force, Q: 0.00 kips
 Total Bolt Tension=T+Q: 20.34 kips
 Non-Prying Bolt Stress Ratio, T/B: 44.2% **Pass**

| |
|--------------|
| Rigid |
| Service, ASD |
| Fty*ASIF |

| Plate Data | | |
|-------------------|------|-----|
| Diam: | 31 | in |
| Thick, t: | 1.5 | in |
| Grade (Fy): | 60 | ksi |
| Strength, Fu: | 75 | ksi |
| Single-Rod B-eff: | 3.24 | in |

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 18.5 ksi
 Allowable Plate Stress: 60.0 ksi
 Compression Plate Stress Ratio: 30.8% **Pass**
No Prying
 Tension Side Stress Ratio, (treq/t)^2: 21.1% **Pass**

| |
|--------------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Comp. Y.L. Length: 13.56 |

| Stiffener Data (Welding at Both Sides) | | |
|--|--------|---------------|
| Config: | 0 | * |
| Weld Type: | Fillet | |
| Groove Depth: | 0.25 | <-- Disregard |
| Groove Angle: | 45 | <-- Disregard |
| Fillet H. Weld: | 0.25 | in |
| Fillet V. Weld: | 0.25 | in |
| Width: | 3 | in |
| Height: | 8 | in |
| Thick: | 0.5 | in |
| Notch: | 0.375 | in |
| Grade: | 36 | ksi |
| Weld str.: | 70 | ksi |

n/a

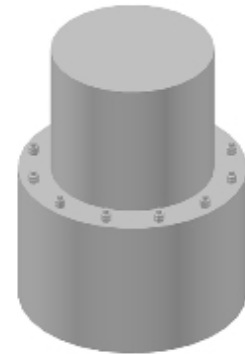
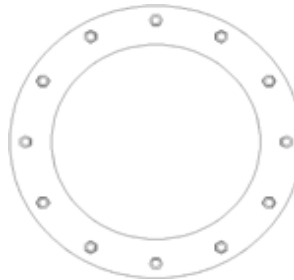
Stiffener Results

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: | 24.5 | in |
| Thick: | 0.1875 | 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



Anchor Rod Design

| | |
|------------|-----------------------|
| Site Name: | O&G Woodbury |
| Job No. : | 876380 |
| Elevation: | 0 |
| | Input Cells in Yellow |

*Note: Use Anchor Rod Transfer Plate Design Tab in Conjunction

| |
|------------------|
| Legend |
| Input |
| Output/ Notes |

| | | |
|--------------------------|------|-----------|
| Code (F or G): | F | Pull Down |
| Anchor Bolts (Yes or No) | Yes | Pull Down |
| P (from RISA) | 33 | kips |
| V (from RISA) | 28 | kips |
| M (from RISA) | 2844 | ft-kips |

| Existing Rods | | |
|---------------|-----------|-----------------|
| y | 32 | in |
| No. Bolts | 12 | |
| BC | 64 | in |
| I | 24453.12 | in ⁴ |
| Bolt Grade | A615-75 | Pull Down |
| Thread Form | Non-Upset | - |
| d (in) | 2.25 | Pull Down |
| Ag | 3.98 | in ² |
| Ae | 3.25 | in ² |
| Fy | 75 | ksi |
| Fu | 100 | ksi |

| New Rods | | |
|---------------|-----------|-----------------|
| y new | 32 | in |
| No. Bolts new | 4 | |
| BC new | 64 | in |
| I new | 8,151 | in ⁴ |
| Bolt Grade | A193 B7 | Pull Down |
| Thread Form | Non-Upset | Pull Down |
| d new (in) | 2.25 | Pull Down |
| Ag new | 3.98 | in ² |
| Ae new | 3.25 | in ² |
| Fy new | 105 | ksi |
| Fu new | 125 | ksi |

| Req'd Embedment Length for New Rods | | |
|--|-------|-----|
| f _c , caisson's concrete strength | 4000 | psi |
| f _y , rebar yield strength | 60000 | psi |
| d _b , diameter of vertical rebar | 1 | in |
| vertical rebar cage BC ø | 73 | in |
| vertical rebar top cover distance | 3 | in |
| τ, Ultimate Hilti Bond Resistance | 1.8 | ksi |

****Note For New Anchor Rods:****
Williams Bars (Upset)
 A722 (F_y=127.7 ksi, F_u=150 ksi)
 A615-75 (F_y=75 ksi, F_u=100 ksi)

| | | |
|------|----------|-----------------|
| ltot | 32604.16 | in ⁴ |
|------|----------|-----------------|

| | | |
|---|---------|------|
| T | 131.250 | kips |
| V | 1.750 | kips |

| | | |
|------|---------|------|
| Tnew | 131.250 | kips |
| Vnew | 1.750 | kips |

| | | |
|---|--------|----|
| l _v (vertical rebar dev. Length) | 28.460 | in |
| l _{GH} (Hilti dev. length) | 76.630 | in |
| G/1.5 | 3,000 | in |

| Capacity (%) | | | | Pullout Test Value |
|--------------|-------|------|----|--------------------|
| Tn/Ω | 194.5 | kips | OK | 67.48 |
| Tn/Ω, new | 218.9 | kips | OK | 59.96 |
| øTn | 260 | kips | | |
| øTn, new | 325 | kips | | |
| | | | | 218.90 kips |

| | | |
|----------------------------------|-------|----|
| Total Embed. Length of New Bolts | 76.63 | in |
| | 6.39 | ft |

Equations:

$I = (M^*y^*Ag)/ltot - P^*(Ag/Atotal)$

$Tn/\Omega = 0.33*Fu*Ag^{(4/3)}$

$= 0.8*Fu*Ae$ (anchor bolts only) $\phi Tn = 0.75*Fu*Ae$ (non anchor bolts)

$I = (No. Bolts/8)*BC^2*Ag$

Notes:

*Ag and Ae are taken from AISC 13th Ed. Manual (pg. 7-83)

*I calc. will only work for symmetric bolt group, otherwise use CAD

| Interaction Equation Checks (Rev. G: Section 4.9.9) (works for Rev F also) | | |
|--|----------|--|
| Detail Type (hover for detail) | c | Pull Down |
| η | 0.55 | |
| l _{ar} , for Detail Type d only | 2.25 | in (top of concrete to bottom of leveling nut) |
| øRnt | 194.5 | kips |
| øRnv | 119.4 | kips |
| øRnm | 94.922 | kip-in |
| Mu | 2.559375 | kip-in |
| (Pu+Vu/η)/øRnt < 1? | 0.691 | OK |
| (Vu/øRnv) ² + ((Pu/øRnt)+(Mu/øRnm)) ² | NA | (only applicable for Detail Type d) |

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

TIA Rev F

Site Data

| |
|---------------------------------|
| BU#: 876380 |
| Site Name: O&G Woodbury |
| App#: 246007, Rev. 1 |
| Pole Manufacturer: <i>Other</i> |

Anchor Rod Data

| | | |
|----------------|--------|-----|
| *Qty: | 24 | |
| Diam: | 2.25 | in |
| Rod Material: | A615-J | |
| Strength (Fu): | 100 | ksi |
| Yield (Fy): | 75 | ksi |
| Bolt Circle: | 64 | in |

Plate Data

| | | |
|-------------------|------|-----|
| Diam: | 70 | in |
| Thick: | 1.5 | in |
| Grade: | 60 | ksi |
| Single-Rod B-eff: | 7.34 | in |

Stiffener Data (Welding at both sides)

| | | |
|-----------------|--------|---------------|
| Config: | 1 | * |
| Weld Type: | Fillet | |
| Groove Depth: | 0.25 | <-- Disregard |
| Groove Angle: | 45 | <-- Disregard |
| Fillet H. Weld: | 0.375 | in |
| Fillet V. Weld: | 0.25 | in |
| Width: | 7 | in |
| Height: | 16 | in |
| Thick: | 0.5 | in |
| Notch: | 0.75 | in |
| Grade: | 50 | ksi |
| Weld str.: | 70 | ksi |

Pole Data

| | | |
|--------------------|--------|--------------|
| Diam: | 55.5 | in |
| Thick: | 0.3125 | 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 | |
|-------|-------|--|

Reactions

| | | |
|----------|------|---------|
| *Moment: | 4245 | ft-kips |
| Axial: | 33 | kips |
| Shear: | 28 | kips |

*Anchor Rod quantity and Moment are modified due to consideration of modifications.

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

Anchor Rod Results

| | |
|--------------------------|-------------------|
| Maximum Rod Tension: | 131.3 Kips |
| Allowable Tension: | 195.0 Kips |
| Anchor Rod Stress Ratio: | 67.3% Pass |

| |
|--------------|
| Stiffened |
| Service, ASD |
| Fty*ASIF |

Base Plate Results

| | | |
|--------------------------|-------------------|----------------|
| Base Plate Stress: | 58.0 ksi | Flexural Check |
| Allowable Plate Stress: | 60.0 ksi | |
| Base Plate Stress Ratio: | 96.6% Pass | |

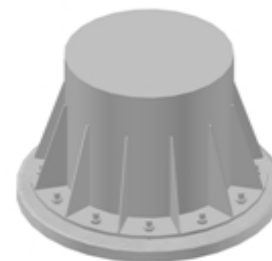
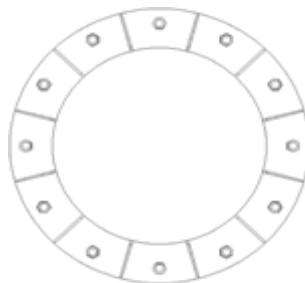
| |
|--------------|
| Stiffened |
| Service, ASD |
| 0.75*Fy*ASIF |
| Y.L. Length: |
| N/A, Roark |

Stiffener Results

| | |
|---------------------------------------|-------------------|
| Horizontal Weld : | 99.3% Pass |
| Vertical Weld: | 69.8% Pass |
| Plate Flex+Shear, fb/Fb+(fv/Fv)^2: | 37.8% Pass |
| Plate Tension+Shear, ft/Ft+(fv/Fv)^2: | 83.5% Pass |
| Plate Comp. (AISC Bracket): | 95.2% Pass |

Pole Results

| | |
|----------------------------|-------------------|
| Pole Punching Shear Check: | 18.2% Pass |
|----------------------------|-------------------|



* 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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

| |
|-------------------------|
| BU#: 876380 |
| Site Name: O&G Woodbury |
| App #: 246007, Rev. 1 |

| Monopole Base Reaction Forces | | |
|-------------------------------|------|--------------|
| TIA Revision: | F | <--Pull Down |
| Unfactored DL Axial, PD: | 33 | kips |
| Unfactored WL Axial, PW: | 0 | kips |
| Unfactored WL Shear, V: | 28 | kips |
| Unfactored WL Moment, M: | 2844 | ft-kips |

| Enter Load Factors Below: | | |
|---------------------------|------|--------------------|
| For P (DL) | 1.2 | <---- Enter Factor |
| For P,V, and M (WL) | 1.35 | <---- Enter Factor |

| Load Factor | Shaft Factored Loads | | |
|-------------|----------------------|--------|---------|
| 1.20 | 1.2D+1.6W, Pu: | 39.6 | kips |
| 0.90 | 0.9D+1.6W, Pu: | 29.7 | kips |
| 1.35 | Vu: | 37.8 | kips |
| | Mu: | 3839.4 | ft-kips |

| Pad & Pier Data | | |
|---------------------------|--------|--------------|
| Base PL Dist. Above Pier: | 0 | in |
| Pier Dist. Above Grade: | 12 | in |
| Pad Bearing Depth, D: | 6.5 | ft |
| Pad Thickness, T: | 3 | ft |
| Pad Width=Length, L: | 23 | ft |
| Pier Cross Section Shape: | Square | <--Pull Down |
| Enter Pier Side Width: | 7 | ft |
| Concrete Density: | 150.0 | pcf |
| Pier Cross Section Area: | 49.00 | ft^2 |
| Pier Height: | 4.50 | ft |
| Soil (above pad) Height: | 3.50 | ft |

1.2D+1.6W Load Combination, Bearing Results:

| | | |
|---|---------|--------------------------|
| (No Soil Wedges) [Reaction+Conc+Soil] | 616.95 | P1="1.2D+1.6W" (Kips) |
| Factored "1.6W" Overturning Moment (MW-Msoil), M1 | 4071.87 | ft-kips |

Orthogonal Direction:

ecc1 = M1/P1 = 6.60 ft
 Orthogonal qu= 2.74 ksf
 qu/φ*qn Ratio= **30.41% Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 4.67 ft
 Diagonal qu= 3.30 ksf
 qu/φ*qn Ratio= **36.70% Pass**

<-- Press Upon Completing All Input

| Soil Parameters | | |
|--------------------------------|-------|---------|
| Unit Weight, γ: | 125.0 | pcf |
| Ultimate Bearing Capacity, qn: | 12.00 | ksf |
| Strength Reduct. factor, φ: | 0.75 | |
| Angle of Friction, Φ: | 34.0 | degrees |
| Undrained Shear Strength, Cu: | 0.00 | ksf |
| Allowable Bearing: φ*qn: | 9.00 | ksf |
| Passive Pres. Coeff., Kp | 3.54 | |

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

| Forces/Moments due to Wind and Lateral Soil | | |
|--|---------|---------|
| Minimum of (φ*Ultimate Pad Passive Force, Vu): | 37.8 | kips |
| Pad Force Location Above D: | 1.35 | ft |
| φ(Passive Pressure Moment): | 51.03 | ft-kips |
| Factored O.T. M(WL), "1.6W": | 4122.9 | ft-kips |
| Factored OT (MW-Msoil), M1 | 4071.87 | ft-kips |

| | | |
|---|---------|--------------------------|
| (w/ Soil Wedges) [Reaction+Conc+Soil] | 489.56 | P2="0.9D+1.6W" (Kips) |
| Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2 | 3869.56 | ft-kips |

| Resistance due to Foundation Gravity | | |
|--------------------------------------|--------|------|
| Soil Wedge Projection grade, a: | 2.36 | ft |
| Sum of Soil Wedges Wt: | 29.83 | kips |
| Soil Wedges ecc, K1: | 7.54 | ft |
| Ftg+Soil above Pad wt: | 481.1 | kips |
| Unfactored (Total ftg-soil Wt): | 510.96 | kips |
| 1.2D. No Soil Wedges. | 616.95 | kips |
| 0.9D. With Soil Wedges | 489.56 | kips |

Orthogonal ecc3 = M2/P2 = 7.90 ft
 Ortho Non Bearing Length,NBL= 15.81 ft
 Orthogonal qu= 2.96 ksf
 Diagonal qu= 3.50 ksf

| Resistance due to Cohesion (Vertical) | | |
|---------------------------------------|------|------|
| φ*(1/2*Cu)(Total Vert. Planes) | 0.00 | kips |
| Cohesion Force Eccentricity, K2 | 0.00 | ft |

| Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating | | | |
|--|---------|---------------|-------------|
| Actual M: | 2844.00 | | |
| M Orthogonal: | 3727.14 | 76.31% | Pass |
| M Diagonal: | 3727.14 | 76.31% | Pass |

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

Sprint Existing Facility

Site ID: CT33XC520

O&G Woodbury

Great Hollow Road
Woodbury, CT 06798

July 14, 2014

EBI Project Number: 62143788

July 14, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC520 - O&G Woodbury

Site Total: 50.30% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at Great Hollow 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 Great Hollow 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 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 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 centerline for the proposed antennas is **108 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 | CT33XC520 - O&G Woodbury |
| Site Address | Great Hollow 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 | APXVSP18-C-A20 | RRH | 1900 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.48% |
| 1a | RFS | APXVSP18-C-A20 | RRH | 850 MHz | CDMA / LTE | 20 | 1 | 20 | 3.4 | 108 | 102 | 1/2 " | 0.5 | 0 | 39.00 | 0.24% |
| 1B | RFS | APXVTMM14-C-120 | RRH | 2500 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.85% |
| Sector total Power Density Value: | | | | | | | | | | | | | | | | 1.56% |

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 | APXVSP18-C-A20 | RRH | 1900 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.48% |
| 2a | RFS | APXVSP18-C-A20 | RRH | 850 MHz | CDMA / LTE | 20 | 1 | 20 | 3.4 | 108 | 102 | 1/2 " | 0.5 | 0 | 39.00 | 0.24% |
| 2B | RFS | APXVTMM14-C-120 | RRH | 2500 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.85% |
| Sector total Power Density Value: | | | | | | | | | | | | | | | | 1.56% |

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 | APXVSP18-C-A20 | RRH | 1900 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.48% |
| 3a | RFS | APXVSP18-C-A20 | RRH | 850 MHz | CDMA / LTE | 20 | 1 | 20 | 3.4 | 108 | 102 | 1/2 " | 0.5 | 0 | 39.00 | 0.24% |
| 3B | RFS | APXVTMM14-C-120 | RRH | 2500 MHz | CDMA / LTE | 20 | 2 | 40 | 5.9 | 108 | 102 | 1/2 " | 0.5 | 0 | 138.69 | 0.85% |
| Sector total Power Density Value: | | | | | | | | | | | | | | | | 1.56% |

| Site Composite MPE % | |
|-------------------------|---------------|
| Carrier | MPE % |
| Sprint | 4.69% |
| AT&T | 16.64% |
| Verizon Wireless | 17.93% |
| Nextel | 5.28% |
| T-Mobile | 4.47% |
| CL&P | 1.29% |
| Total Site MPE % | 50.30% |

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 **4.69% (1.56% from sector 1, 1.56% from sector 2 and 1.56% 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 **50.30%** 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
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