



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

September 15, 2014

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

RE: Sprint PCS-Exempt Modification - Crown Site BU: 876318
Sprint PCS Site ID: CT03XC034
Located at: 34 Rimmon Street, Seymour, CT 06483

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. W. Kurt Miller, First Selectman for Town of Seymour, and Seymour Tower One LLC, Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **34 Rimmon Street, Seymour, CT 06483**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint’s operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint’s additional antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

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

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

Sincerely,



Raymond Perry
Real Estate Specialist

Enclosures

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

Tab 2: Exhibit-2: Structural Modification Report

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

cc: Mr. W. Kurt Miller, First Selectman
Town of Seymour
1 First Street
Seymour, CT 06483

Seymour Tower One LLC
Attn: Marjorie Smith
141 Stonewall Beach Lane
Mooresville, NC 28117

5316

CROWN CASTLE - ETA PROPERTY

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

DATE 9/15/14

32-61-1110

PAY
TO THE
ORDER OF

CONNECTICUT SITING COUNCIL

\$ 625.00

SIX HUNDRED TWENTY FIVE + 10/100

DOLLARS



Security Features
Included
Details on Back

VALID FOR 180 DAYS

SPRINT
CT03XC034



JPMorgan Chase Bank, N.A.
www.Chase.com

FOR 288078 876318 ZONING

MP

⑈005316⑈ ⑆111000614⑆

464638118⑈



2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:

CT03XC034

SITE NAME:

RIMMON ST.

SITE ADDRESS:

34 RIMMON STREET
SEYMOUR, CT 06483

CROWN ID#: 876318

CROWN SITE NAME: RIMMON ST.

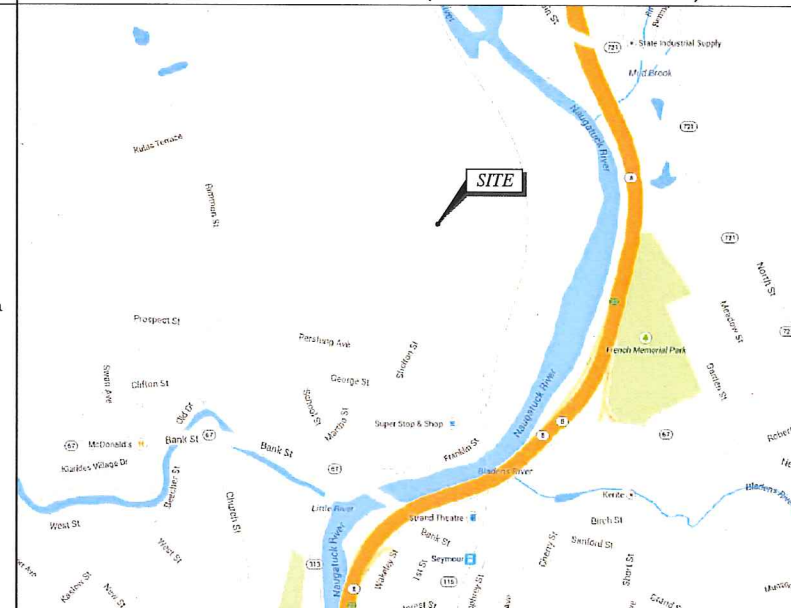


TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
www.tectonicengineering.com

SHEET INFORMATION

SITE NUMBER:	CT03XC034	LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
SITE NAME:	RIMMON ST.	LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 286-2000
SITE ADDRESS:	34 RIMMON STREET SEYMOUR, CT 06483	APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KS 66251
COUNTY:	NEW HAVEN	ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 jquicksell@tectonicengineering.com
COORDINATES: (NAD 83)	41° 24' 7.93" N 73° 4' 20.16" W	SPRINT CM:	GARY WOOD (860) 940-9168 gary.wood@sprint.com
GROUND ELEV:	172'± AMSL	CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico@crowncastle.com
STRUCTURE TYPE:	MONOPOLE	AAV:	FIBERTECH
STRUCTURE HEIGHT:	148'-0"± AGL		
STRUCTURE RAD CENTER:	150'-0"± AGL		
ZONING CLASSIFICATION:	G12		
MAP-BLOCK-LOT:	10-11.38A		

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

SHT. NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
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SP-2	GENERAL NOTES
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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
E-1	ELECTRICAL & GROUNDING PLANS
E-2	GROUNDING DETAILS & NOTES

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SUBMITTALS

PROJECT NO: 7225.CT03XC034

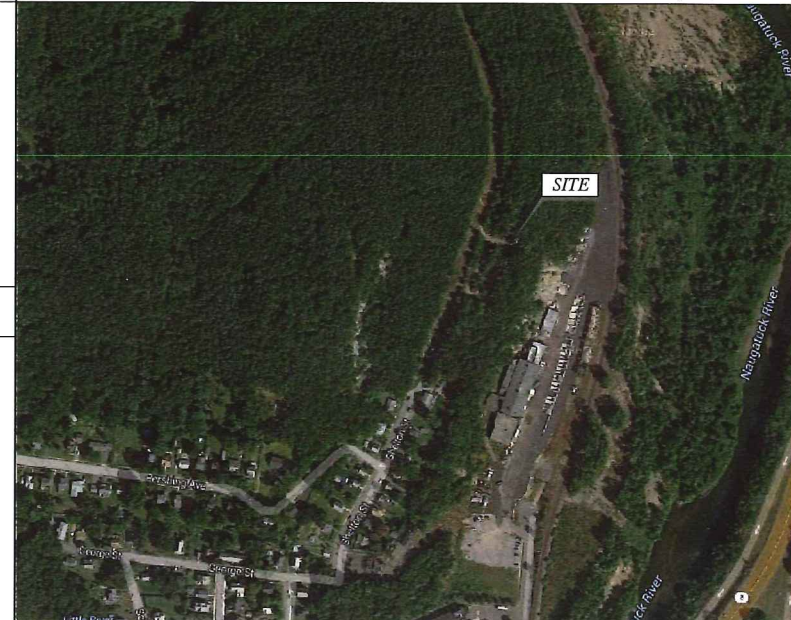
NO	DATE	DESCRIPTION	BY
0	07/09/14	FOR COMMENT	MP
1	07/25/14	FOR CONSTRUCTION	DC
2	08/01/14	PER COMMENTS	KA

DATE	REVIEWED BY
8/1/14	JMG

GENERAL NOTES

- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED. FACILITY HAS NO PLUMBING OR REFRIGERANTS. THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
- DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
 - 2005 STATE OF CONNECTICUT BUILDING CODE.
 - ANSI/TIA/EIA-222-F-1996.
 - NATIONAL ELECTRICAL CODE, LATEST EDITION.

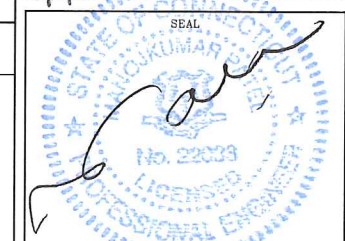
AERIAL VIEW (NOT TO SCALE)



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 2.5 EQUIPMENT RACK INSIDE EXIST MMBTS CABINET.
- (3) NEW RFS APXVM14-C-120 ANTENNAS.
- (3) NEW TD-RRH8x20-25 RRH.
- (1) NEW 5/8" FIBER CABLE.

SITE NUMBER:
CT03XC034
 SITE NAME:
RIMMON ST.
 SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1



DIVISION 01000—GENERAL NOTES

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

18. REFER TO: CONSTRUCTION STANDARDS—SPRINT DOCUMENT EXHIBIT A—STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0— 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A—WIHRPRF—STD CONSTR SPECS...157201110421855492.DOCM.
20. REFER TO: COLOR CODING—SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000—CONCRETE

- 1.03 APPLICABLE STANDARDS (USE LATEST EDITIONS)
 - A. AC1-301 — SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
 - B. ACI-347 GUIDE TO FORM WORK FOR CONCRETE.
 - C. ASTM C33— CONCRETE AGGREGATE
 - D. ASTM C94 — READY MIXED CONCRETE e. ASTM C150 — PORTLAND CEMENT.
 - E. ASTM C260 — AIR-ENTRAINING ADMIXTURES FOR CONCRETE
 - F. ASTM C309— LIQUID MEMBRANE FORMING COMPOUNDS FOR CURING CONCRETE.
 - H. ASTM C494 — CHEMICAL ADMIXTURES FOR CONCRETE
 - I. ASTM A615— DEFORMED AND PLAIN BILLET—STEEL BARS FOR CONCRETE REINFORCEMENT
 - J. ASTM A185— STEEL WELDED WIRE FABRIC (PLAIN) FOR CONCRETE REINFORCEMENT
- 1.04 QUALITY ASSURANCE

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.
- 3.04 SURFACE FINISHES
 - A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.
 - B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINES AND THE FILLING HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.
 - C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSED TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OR SURFACES SUCH AS STAIR TREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 1/4" PER FOOT.
 - D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.
 - E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREENED, FLOATED, AND STEEL TROWELED. HAND OR POWER-DRIVEN EQUIPMENT MAY BE USED FOR FLOATING. FLOATING SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. OPERATIONS. ALL EDGES MUST HAVE A 3/4" CHAMFER.
- 1.04 QUALITY ASSURANCE CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.
- 3.05 PATCHING

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON REMOVAL OF THE FORMS TO OBSERVE CONCRETE SURFACE CONDITIONS. IMPERFECTIONS SHALL BE PATCHED ACCORDING TO THE ENGINEER'S DIRECTION.
- 3.06 DEFECTIVE CONCRETE

THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.
- 3.07 PROTECTION
 - A. IMMEDIATELY AFTER PLACEMENT. THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.
 - B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
 - C. ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE (LATEST EDITION)

DIVISION 05000 — METALS

- PART 1 — GENERAL
 - 1.01 WORK INCLUDED
 - A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED. AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDING ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK AND ALL ITEMS INCIDENTAL AS SPECIFIED AND AS SHOWN ON THE DRAWINGS:
 1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.
 2. WELDING AND BOLTING OF ATTACHMENTS.
 - 1.02 REFERENCE STANDARDS
 - A. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
 1. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES" OR LATEST EDITION.
 2. AWS: AMERICAN WELDING SOCIETY CODE OR LATEST EDITION.
 3. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
- PART 2 — PRODUCTS
 - 2.01 MATERIALS
 - A. STRUCTURAL STEEL: SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A36 AND A992 FOR STRUCTURAL STEEL.

ALL PROPOSED STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC CODE AND ASTM SPECIFICATIONS (LATEST EDITION) ALL NEW STEEL SHALL CONFORM TO THE FOLLOWING.

 1. STRUCTURAL WIDE FLANGE: ASTM A992 Fy=50KSI.
 2. MISCELLANEOUS STEEL (PLATES), CHANNELS, ANGLES, ETC): ASTM A36 (Fy=36KSI).
 3. STRUCTURAL TUBING: ASTM A500 Gr. B (Fy=46KSI).
 4. STEEL PIPE: ASTM A53 Gr B (Fy=35KSI).
- 2.02 WELDING
 - A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.
 - B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM 1-233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.
 - C. FIELD WELDING SHALL BE DONE AS PER AWS D1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.
 - D. STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING CAPACITOR DISCHARGE STUD WELDER.
 - E. PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.
 - F. FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.
- 2.03 BOLTING
 - A. BOLTS SHALL BE CONFORMING TO ASTM A36 HIGH STRENGTH HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - B. BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED, ASTM A153 NUTS SHALL BE HEAVY HEX TYPE.
 - C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
 - D. EXCEPT WHERE SHOWN, ALL BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS TO BE DOUBLE ANGLED CONNECTIONS WITH HIGH STRENGTH BOLTS (THREADS EXCLUDED FROM SHEAR PLANE) AND HARDENED WASHERS.
 - E. STANDARD, OVERSIZED OR HORIZONTAL SHORT SLOTTED HOLES.
 - F. SNUG-TIGHT STRENGTH BEARING BOLTS MAY BE USED IN STANDARD HOLES CONFORMING TO ACIS, USING THE TURN OF THE NUT METHOD.
 - H. FULLY-TENSIONED HIGH STRENGTH (SLIP CRITICAL) SHALL BE USED IN OVERSIZED SLOT HOLES (RESPECTIVE OF SLOT ORIENTATION).
 - I. ALL BRACED CONNECTION, MOMENT CONNECTION AND CONNECTIONS NOTED AS "SLIP CRITICAL" SHALL BE BE SLIP CRITICAL JOINTS WITH CLASS A SURFACE CONDITIONS, UNLESS OTHERWISE NOTED.
 - J. EPOXY ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

<u>BASE MATERIAL</u>	<u>ANCHOR SYSTEM</u>
CONCRETE	HILTI HIT-HY 200
HOLLOW & GROUTED CMU OR BRICK	HILTI HIT-HY 70
- 2.04 FABRICATION
 - A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS

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



TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550
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DATE	REVIEWED BY
8/1/14	JMQ



SITE NUMBER:
CT03XC034

SITE NAME:
RIMMON ST.

SITE ADDRESS:
**34 RIMMON STREET
SEYMOUR, CT 06483**

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-IH, CONSTRUCTION MARKING AND LIGHTING.

3. FCC - FEDERAL COMMUNICATION COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES

4. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION FOR STRUCTURAL JOINTS USING ASTM 1325 OR A490 BOLTS.

5. NEC - NATIONAL ELECTRIC CODE - ON TOWER LIGHTING KITS.

6. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.

7. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

8. LIFE SAFETY CODE NFPA, LATEST EDITION.

DIVISION 13000--EARTHWORK

PART 1 GENERAL

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

1.02 RELATED WORK

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

PART 2 PRODUCTS

2.01 MATERIALS

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

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

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

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

MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS.

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

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

2.02 EQUIPMENT

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

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

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

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

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

3.03 INSTALLATION

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

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

C. DO NOT CREATE DEPRESSIONS WHERE WATER MAY POND.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.04 FIELD QUALITY CONTROL

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

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

3.05 PROTECTION

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

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

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

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

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251

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

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SUBMITTALS

PROJECT NO: 7225.CT03XC034

NO	DATE	DESCRIPTION	BY
0	07/09/14	FOR COMMENT	MP
1	07/25/14	FOR CONSTRUCTION	DC
2	08/01/14	PER COMMENTS	KA

DATE: 8/1/14
REVIEWED BY: JMQ

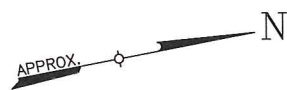
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CT03XC034

SITE NAME:
RIMMON ST.

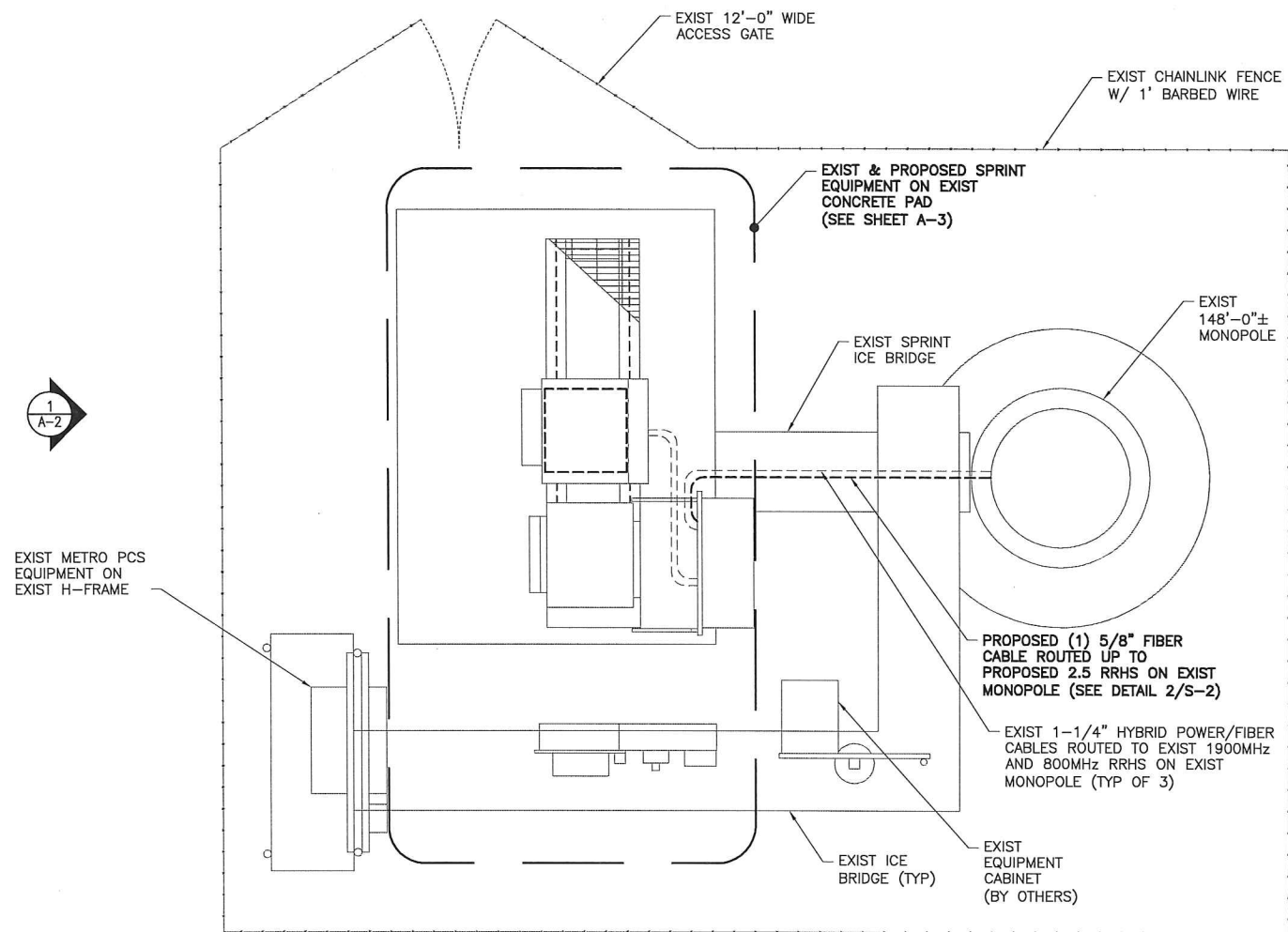
SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

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.



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

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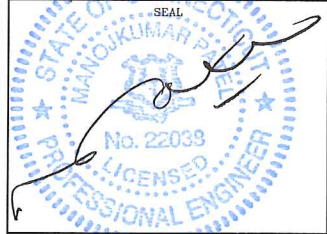
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DATE: 8/1/14
 REVIEWED BY: DMG



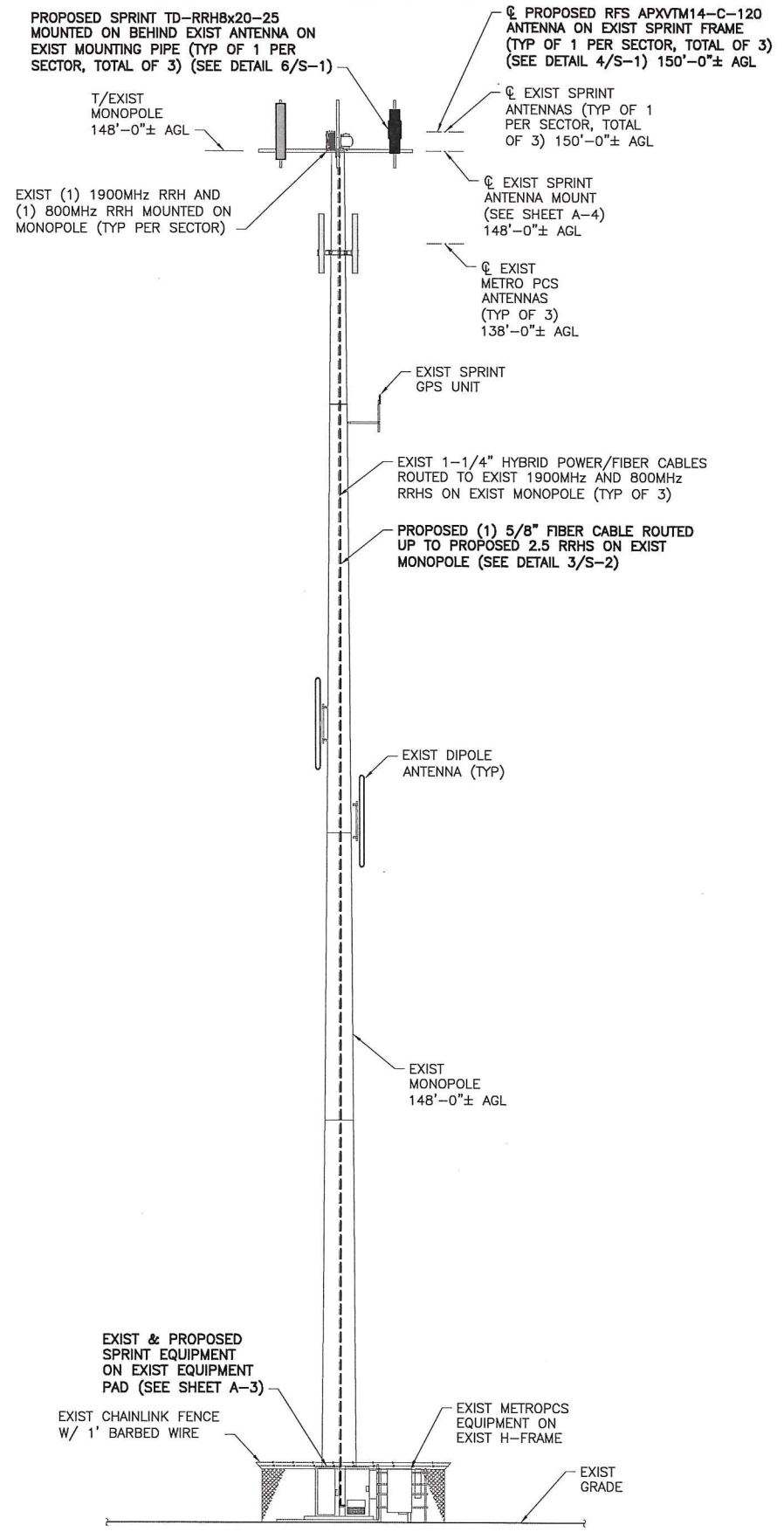
SITE NUMBER:
 CT03XC034

SITE NAME:
 RIMMON ST.

SITE ADDRESS:
 34 RIMMON STREET
 SEYMOUR, CT 06483

SHEET TITLE:
 SITE PLAN

SHEET NO:
 A-1



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

THE EXISTING MOUNT HAS BEEN ANALYZED BY TECTONIC ENGINEERING AND FOUND TO BE ADEQUATE TO SUPPORT THE PROPOSED SPRINT UPGRADE AS DETAILED IN THE STRUCTURAL ANALYSIS EVALUATION LETTER DATED 7/25/14.



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DATE: 8/1/14 REVIEWED BY: JMG

SEAL
 STATE OF CONNECTICUT
 PROFESSIONAL ENGINEER
 No. 22038

SITE NUMBER:
 CT03XC034

SITE NAME:
 RIMMON ST.

SITE ADDRESS:
 34 RIMMON STREET
 SEYMOUR, CT 06483

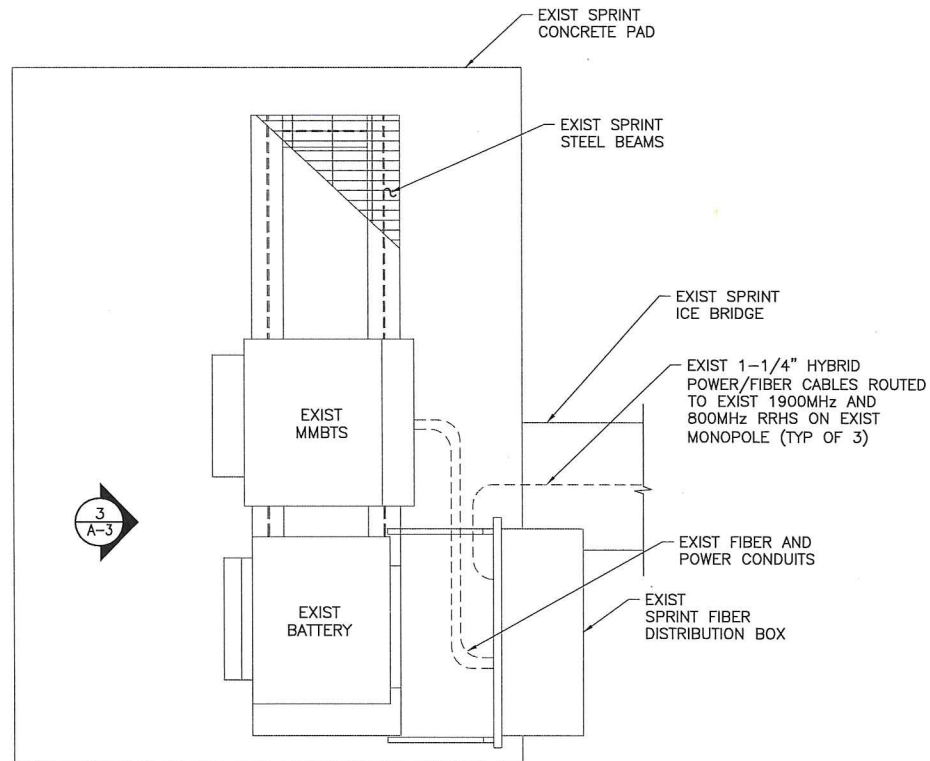
SHEET TITLE:
 ELEVATION

SHEET NO:
 A-2

1
 A-2 ELEVATION
 SCALE: 1/4" = 1'-0"



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.

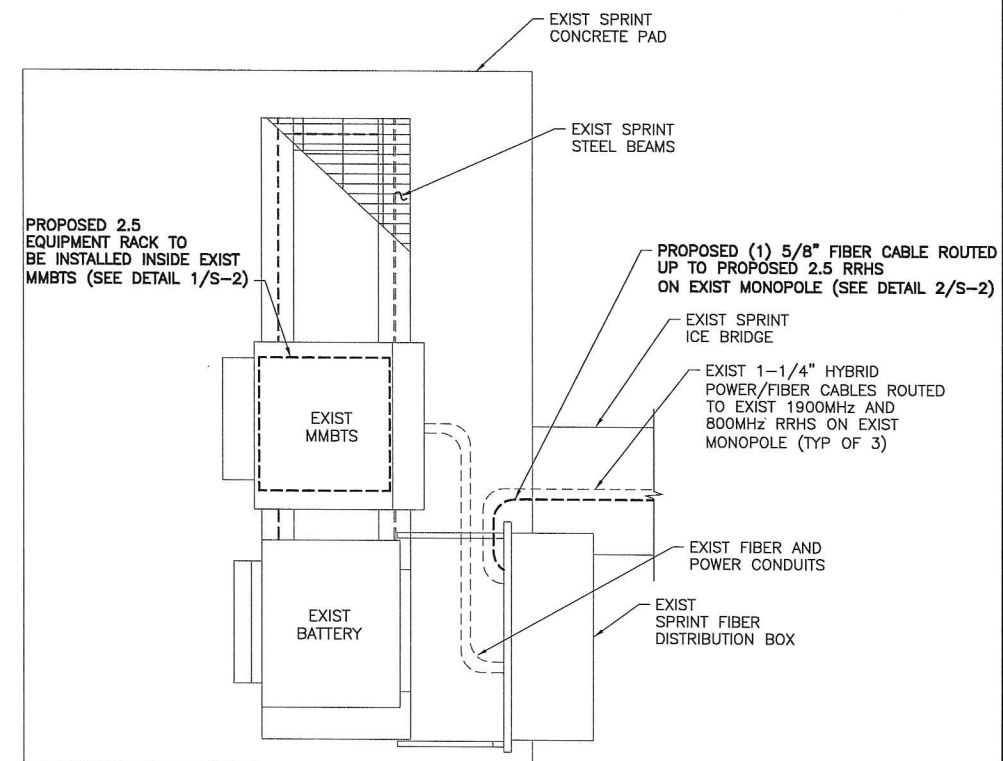


3
A-3

1 ENLARGED EQUIPMENT LAYOUT PLAN (EXIST)
 SCALE: 1/2" = 1'-0"



3 EXIST EQUIPMENT PAD
 SCALE: NTS



2 ENLARGED EQUIPMENT LAYOUT PLAN (FINAL)
 SCALE: 1/2" = 1'-0"



4 EXIST FIBER DISTRIBUTION BOX
 SCALE: NTS

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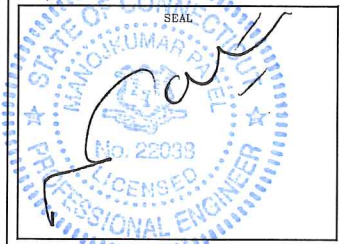
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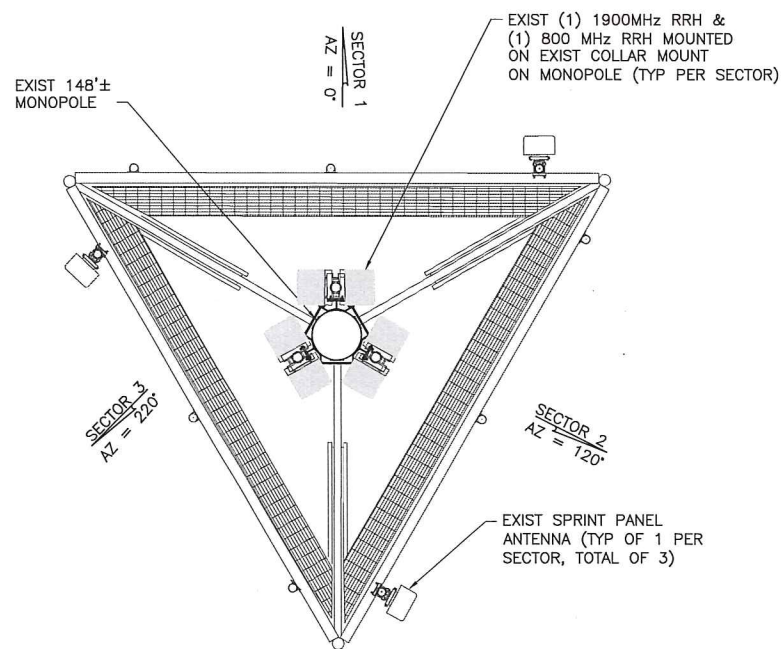
DATE: 8/1/14 REVIEWED BY: JMG



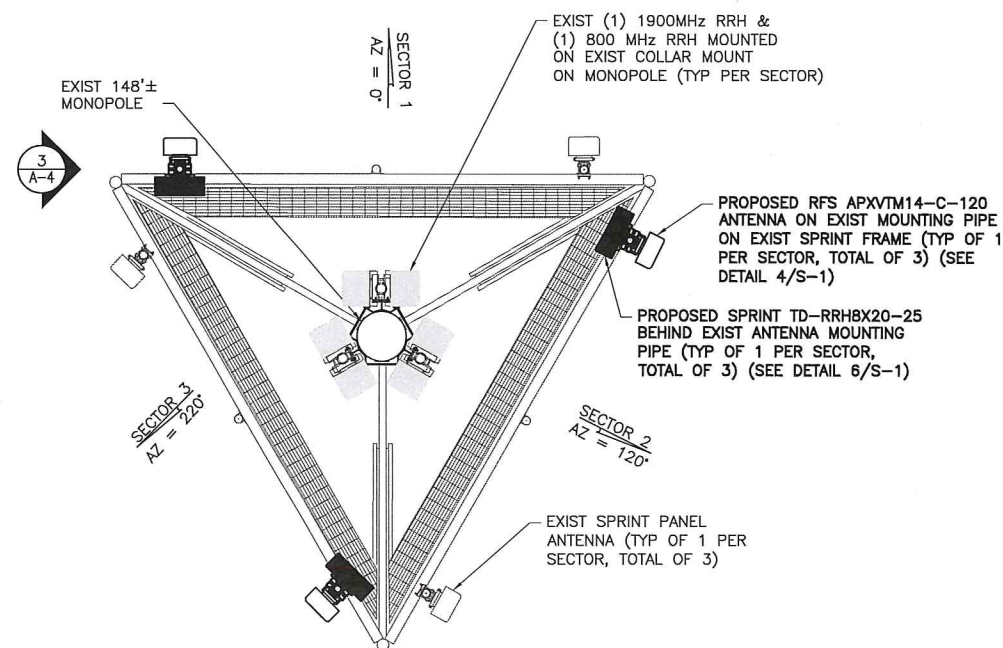
SITE NUMBER:
 CT03XC034
 SITE NAME:
 RIMMON ST.
 SITE ADDRESS:
 34 RIMMON STREET
 SEYMOUR, CT 06483

SHEET TITLE:
 ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO:
 A-3



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

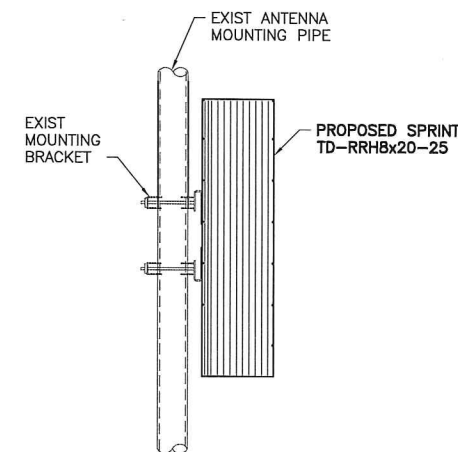


2 ANTENNA LAYOUT PLAN (FINAL)
A-4 SCALE: 3/8" = 1'-0"

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



THE PROPOSED INSTALLATION, EXISTING MOUNTS AND 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-CEL WAVE	RFS-CEL WAVE
Antenna Model Number	APXVSP18C-A20	APXVTM14-C-120
Number of Antennas	3	3
Antenna RAD Center	150'	150'
Antenna Azimuth	0/120/220	0/120/220
Antenna RRH Model Number	1900MHz/800MHz RRHS	2.5GHz RRH-V3
Number of RRH	6	3

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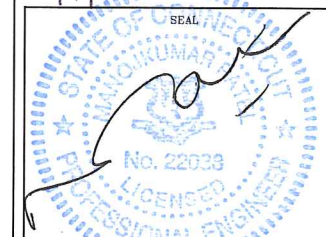
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8/1/14	JMA



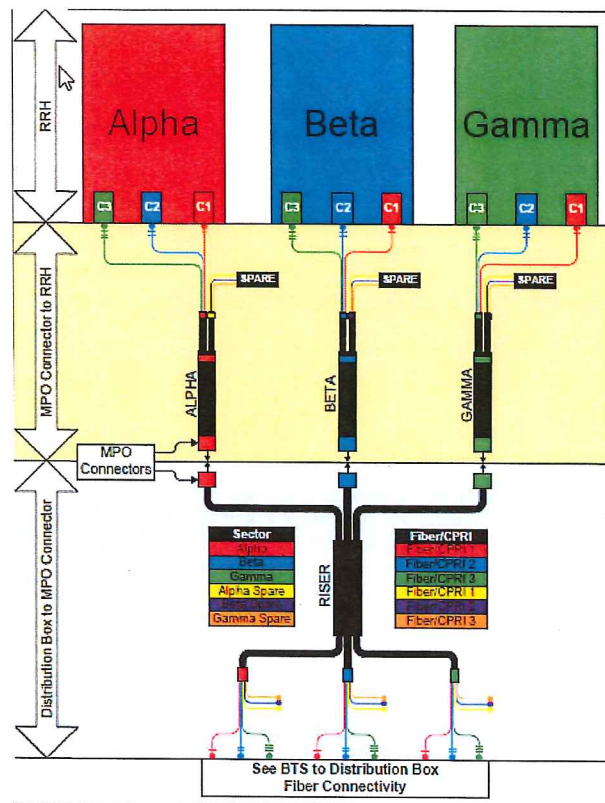
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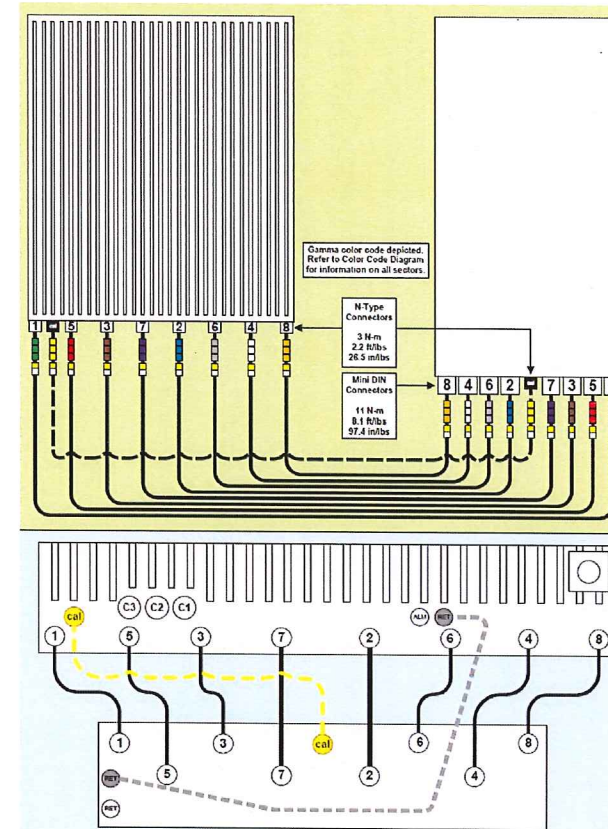
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34 RIMMON STREET
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SHEET TITLE:
ANTENNA LAYOUT PLANS

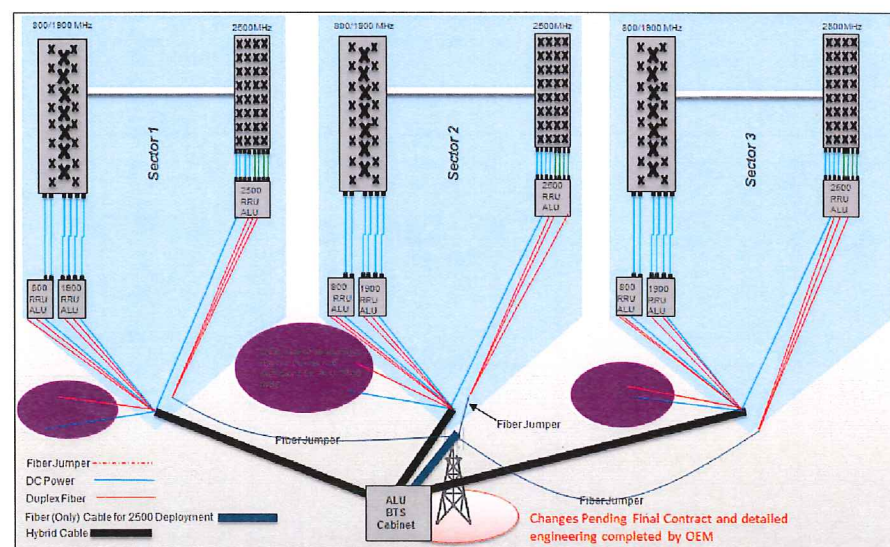
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A-4



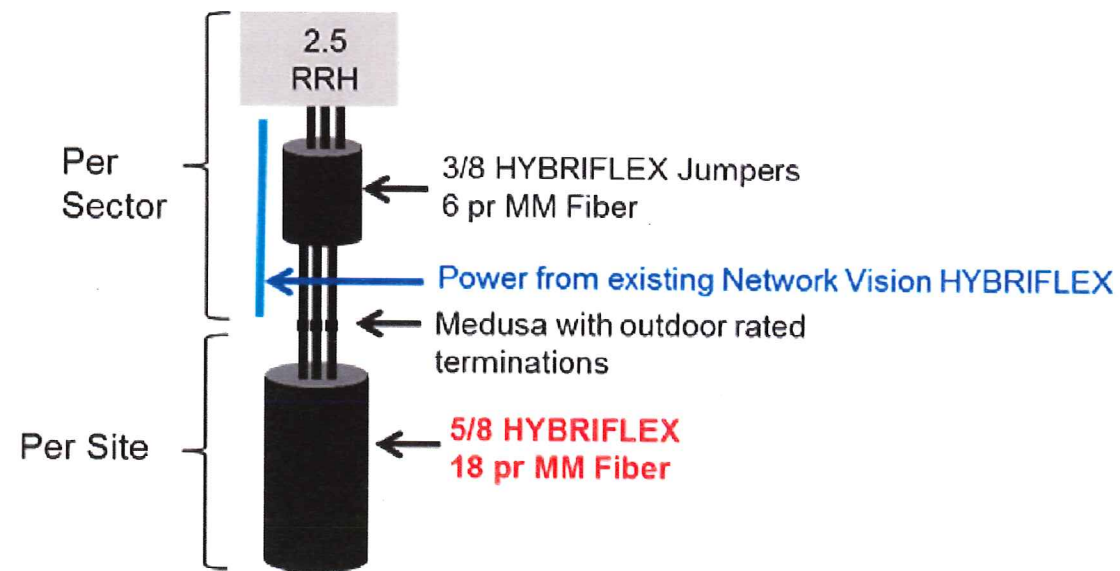
1 2.5 CABLE COLOR CODING
A-5 SCALE: N.T.S.



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



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



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

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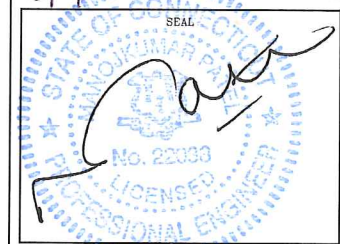
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DATE	REVIEWED BY
8/1/14	JMA



SITE NUMBER:
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SITE NAME:
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SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
RAN WIRING DIAGRAM

SHEET NO:
A-5

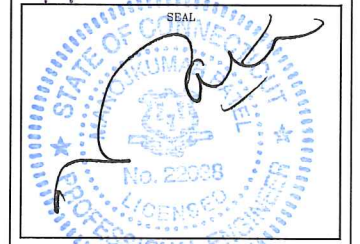
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CT03XC034

SITE NAME:
RIMMON ST.

SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
CABLE DETAILS

SHEET NO:
A-6

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

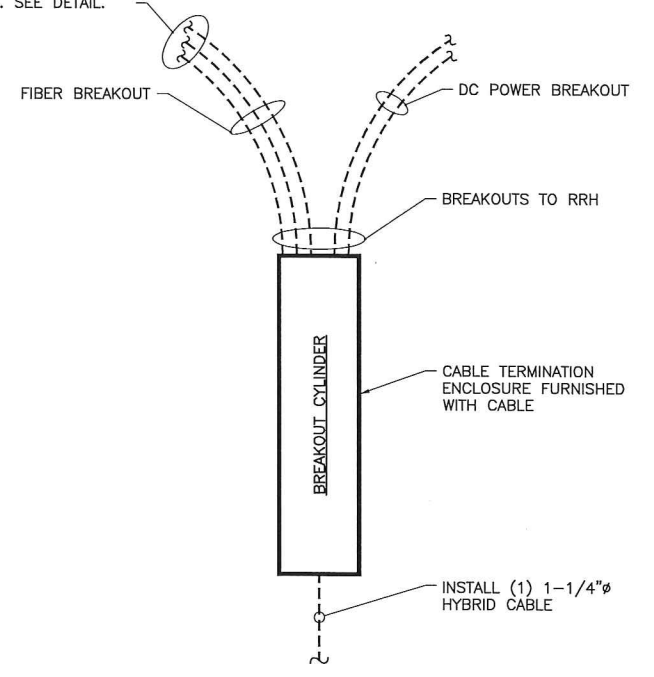


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

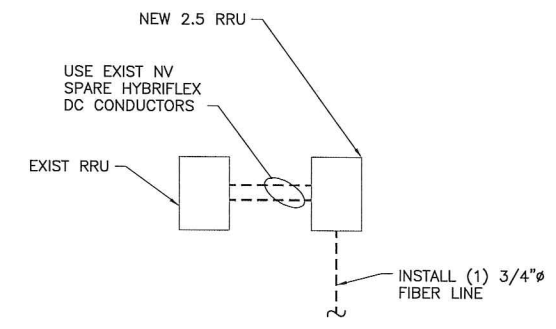


1 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS
 A-6 SCALE: N.T.S.

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



2 2.5 HYBRID CABLE W/FIBER & DC FEEDERS
 A-6 SCALE: N.T.S.

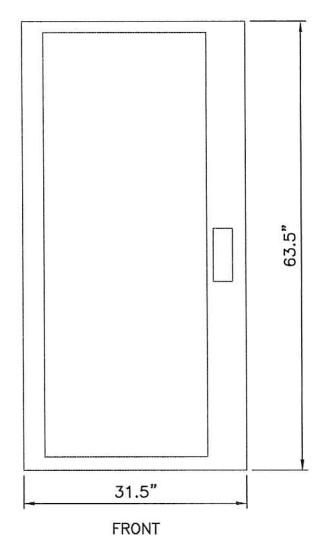


2 FIBER ONLY TRUNK LINES
 A-6 SCALE: N.T.S.

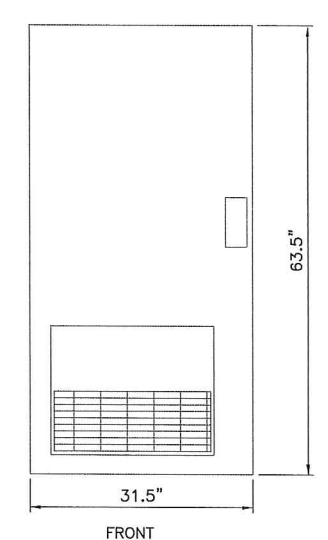
SPECIAL NOTES: CABLE MARKINGS AT RAD CENTER AND ALL WALL/BLDG. PENETRATIONS

- 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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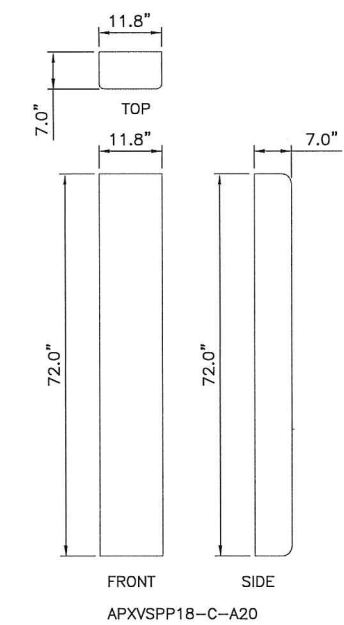
9927 MMBTS MODULAR CELL	
SPECIFICATIONS:	
HEIGHT:	63.5"
WIDTH:	31.5"
DEPTH:	38.0"



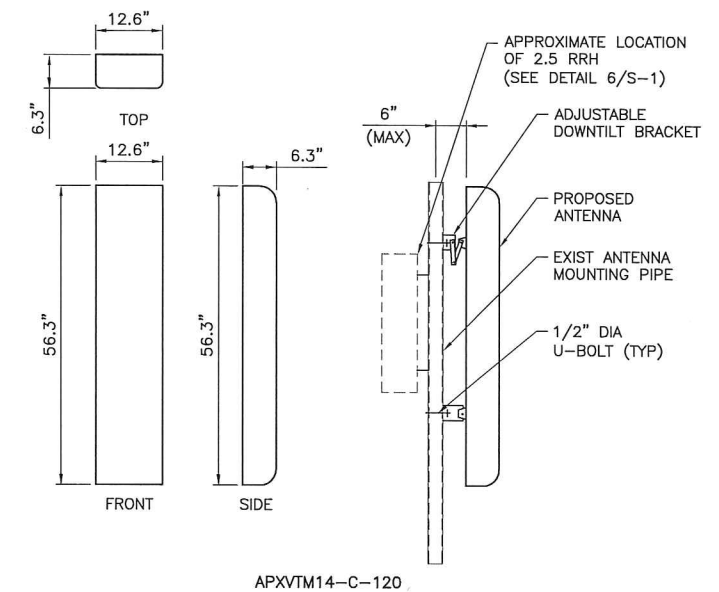
BATTERY	
SPECIFICATIONS:	
HEIGHT:	63.5"
WIDTH:	31.5"
DEPTH:	28.0"

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

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



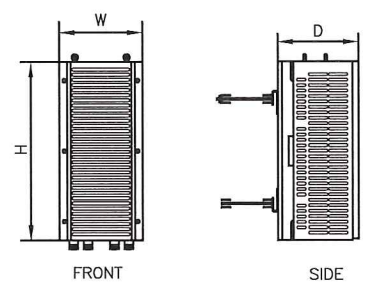
APXVSP18-C-A20



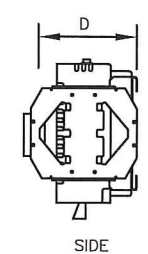
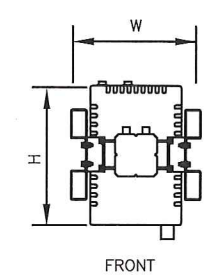
APXVM14-C-120

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

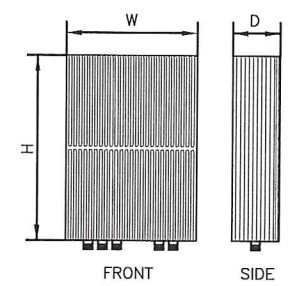
4 (PROPOSED) ANTENNA DETAILS
 S-1 SCALE: 3/4" = 1'-0"



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



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



TYPE:	2.5 RRH
MODEL #:	TD-RRH8x20-25
HEIGHT:	26.1"
WIDTH:	18.6"
DEPTH:	6.7"
WEIGHT:	±70 LBS

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

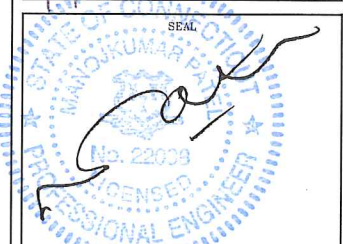
6 (PROPOSED) RRH DETAIL
 S-1 SCALE: 1" = 1'-0"

SUBMITTALS

PROJECT NO: 7225.CT03XC034

NO	DATE	DESCRIPTION	BY
0	07/09/14	FOR COMMENT	MP
1	07/25/14	FOR CONSTRUCTION	DC
2	08/01/14	PER COMMENTS	KA

DATE	REVIEWED BY
8/1/14	JMG



SITE NUMBER:
CT03XC034

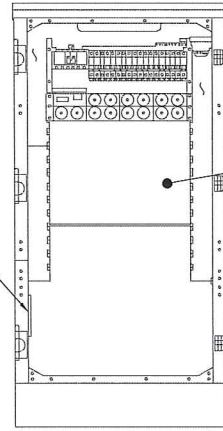
SITE NAME:
RIMMON ST.

SITE ADDRESS:
**34 RIMMON STREET
 SEYMOUR, CT 06483**

SHEET TITLE:
EQUIPMENT DETAILS

SHEET NO:
S-1

NOTE:
LOCATIONS SHOWN FOR
INSTALLATION OF NEW
EQUIPMENT IN EXISTING
CABINET ARE APPROXIMATE.
ACTUAL SPACE AVAILABLE
TO BE VERIFIED IN FIELD
ON A SITE BY SITE BASIS.



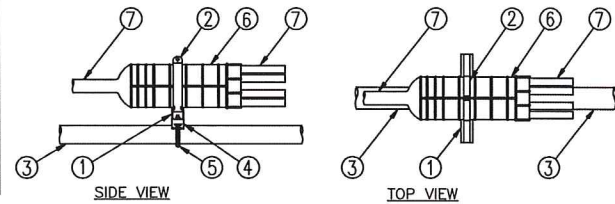
INSTALL NEW 2.5
EQUIPMENT IN EXIST MMBTS
CABINET INCLUDING BUT
NOT LIMITED TO BASE BAND
UNIT, CELL SITE ROUTER
AND SURGE ARRESTORS.
GROUND EQUIPMENT TO
EXIST INTERIOR CABINET
GROUND BAR

EXIST GROUND
BAR TO BE UTILIZED

FRONT ELEVATION
(CABINET INTERIOR)

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

- LEGEND:
1. P1000T-HG UNISTRUT, 12" LONG.
 2. 6" PIPE HANGER.
 3. EXISTING SUPPORT PIPE.
 4. NEW STANDOFF BRACKET, ANDREW PART# 30848-4.
 5. NEW ROUND MEMBER ADAPTER SIZED FOR EXISTING PIPE SUPPORT.
 6. BREAKOUT UNIT.
 7. CABLE.



3 MEDUSA HEAD DETAIL
S-2 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	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

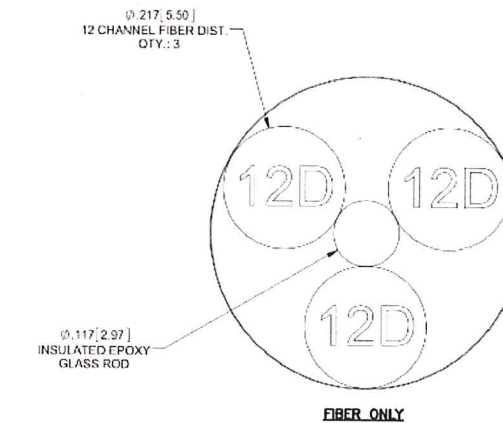
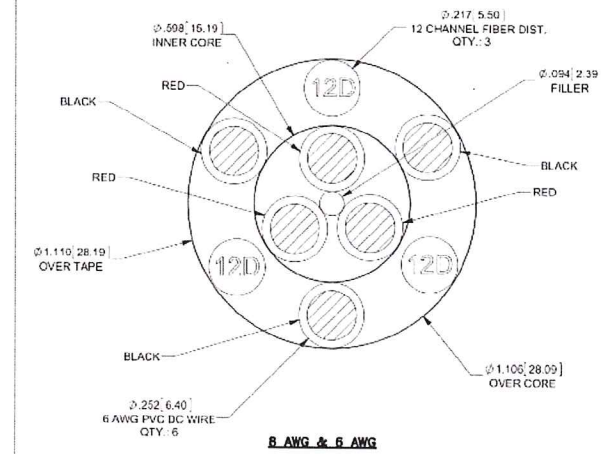
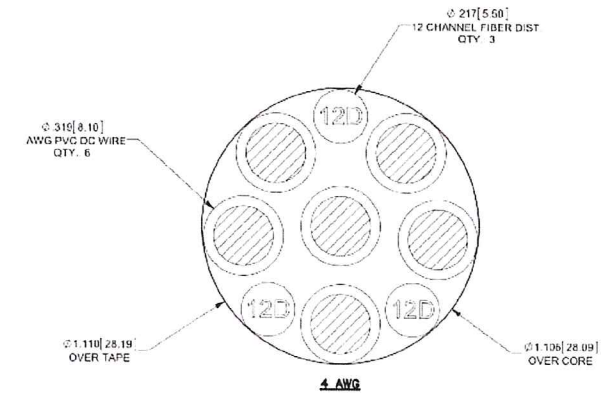
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft

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

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

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

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



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

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

CROWN CASTLE

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

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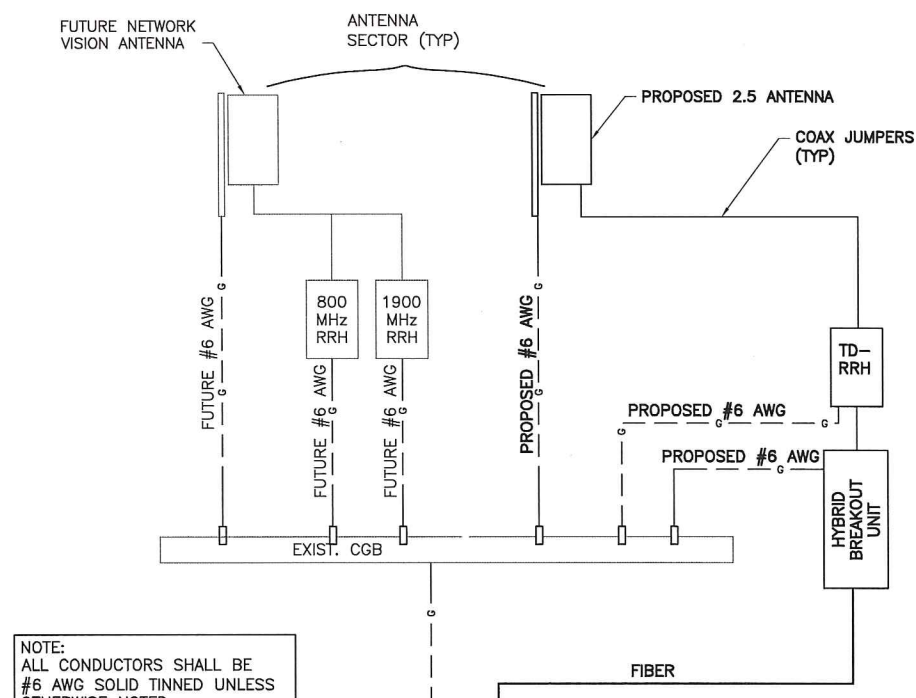
DATE	REVIEWED BY
8/1/14	JMG



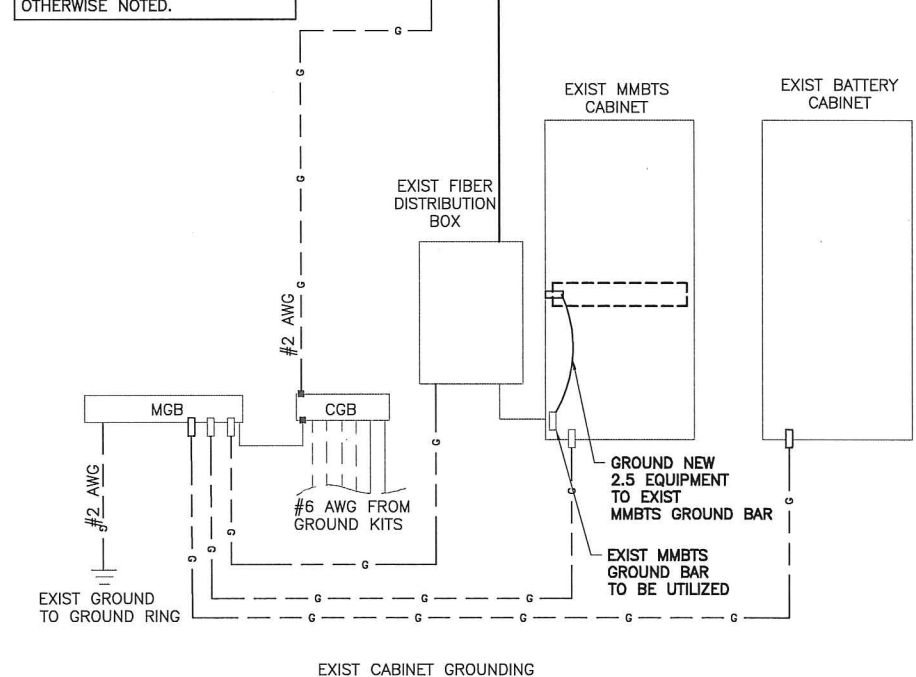
SITE NUMBER:
CT03XC034
SITE NAME:
RIMMON ST.
SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
EQUIPMENT
SCHEMATIC DETAILS

SHEET NO:
S-2

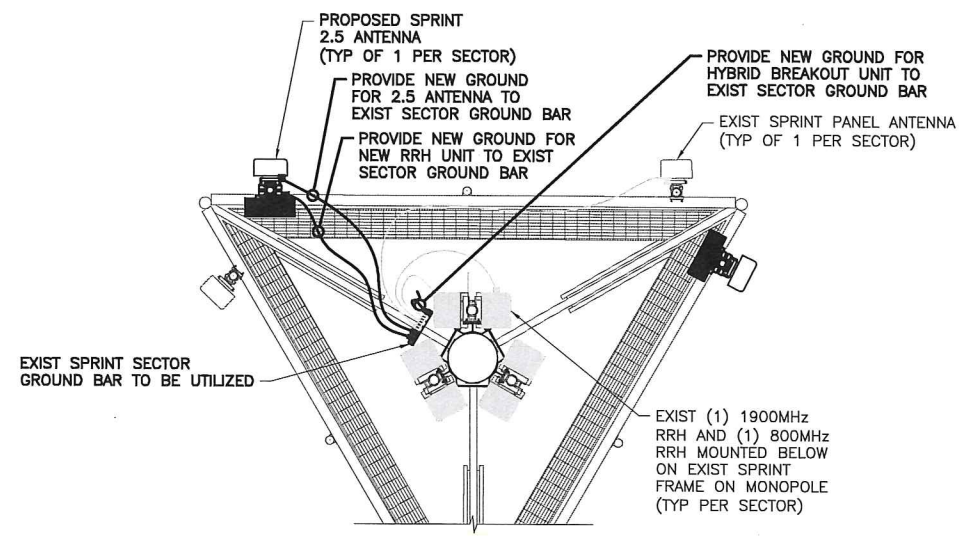


NOTE:
ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.

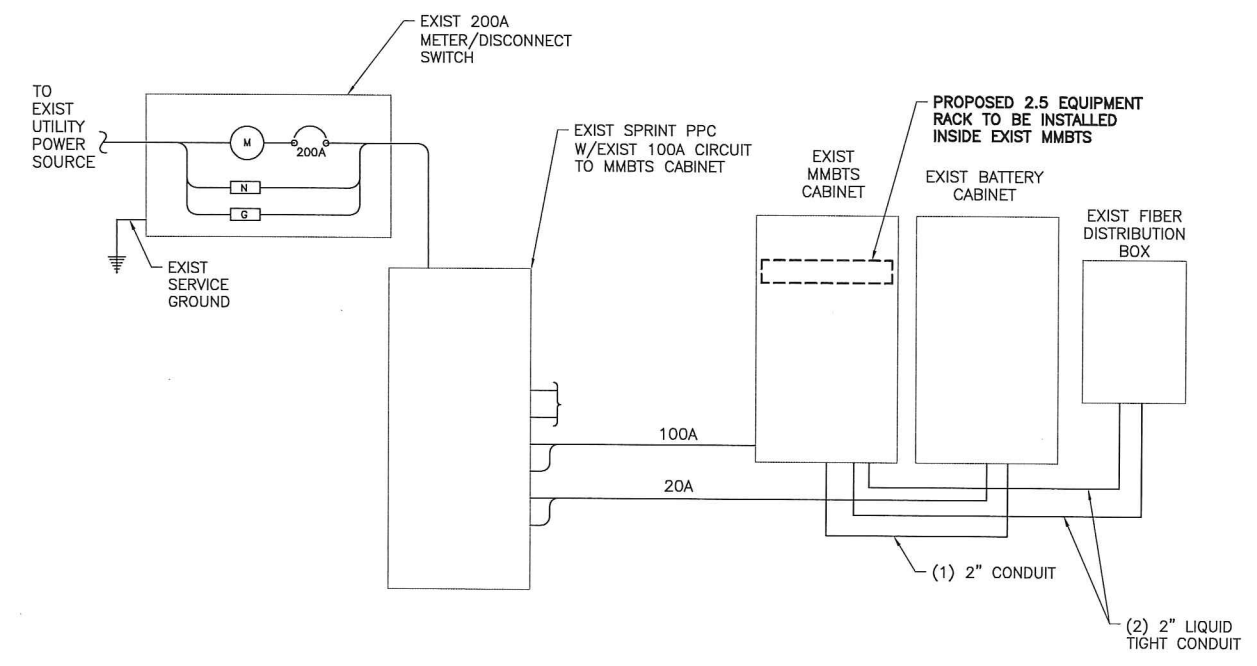


LEGEND
 ■ CADWELD CONNECTION
 □ MECHANICAL CONNECTION
 ● COMPRESSION CONNECTION

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



2 TYPICAL ANTENNA GROUNDING PLAN
E-1 SCALE: NTS



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

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

CROWN CASTLE

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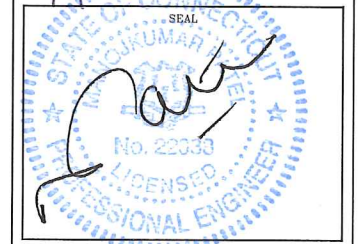
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DATE	REVIEWED BY
8/1/14	JMA



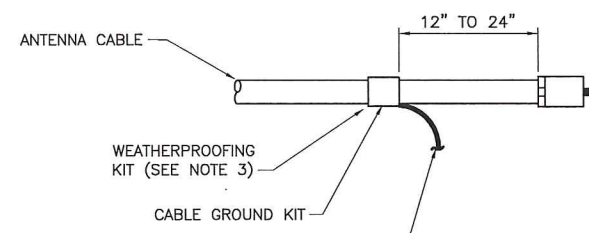
SITE NUMBER:
CT03XC034

SITE NAME:
RIMMON ST.

SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
ELECTRICAL & GROUNDING PLANS

SHEET NO:
E-1



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

CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

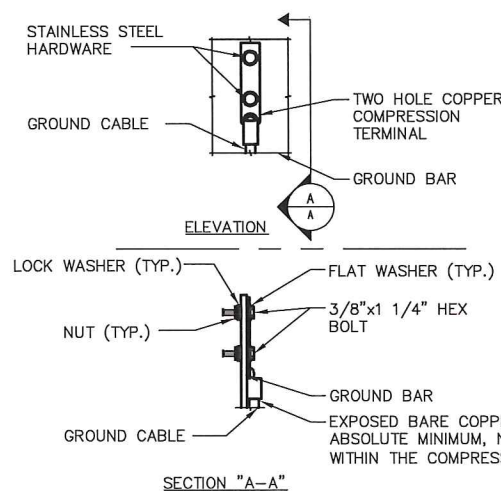
NOTES:

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

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

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

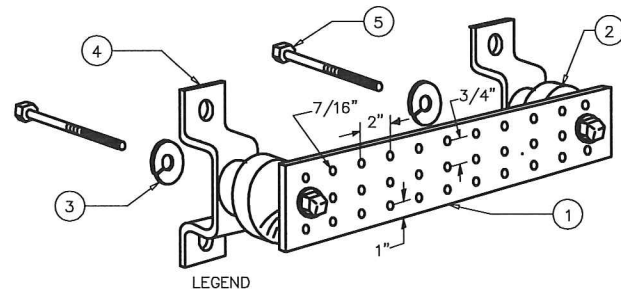
1 CABLE GROUNDING KIT DETAIL
E-2 SCALE: N.T.S.



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

SECTION "A-A"

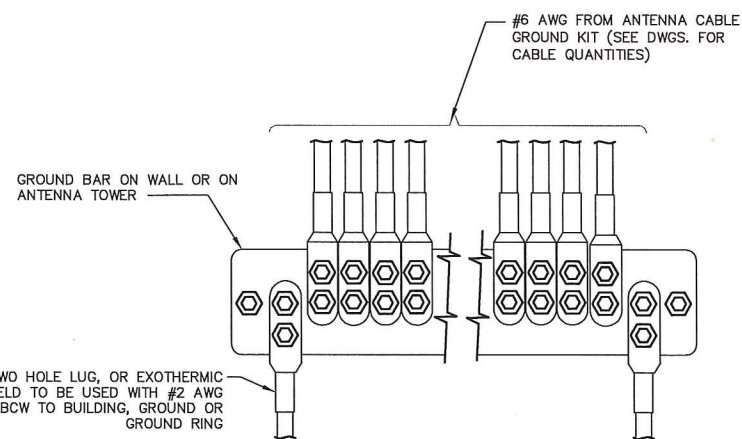
2 GROUNDING BAR CONN. DETAIL
E-2 SCALE: NTS



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

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

3 GROUNDING BAR DETAIL
E-2 SCALE: NTS



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

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

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

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

4 ANTENNA GROUND BAR DETAIL
E-2 SCALE: NTS

GROUNDING NOTES:

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

PROTECTIVE GROUNDING SYSTEM GENERAL NOTES:

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

ELECTRICAL AND GROUNDING NOTES

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

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

CROWN CASTLE

TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
1279 Route 300
Newburgh, NY 12550
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SUBMITTALS

PROJECT NO: 7225.CT03XC034

NO	DATE	DESCRIPTION	BY
0	07/09/14	FOR COMMENT	MP
1	07/25/14	FOR CONSTRUCTION	DC
2	08/01/14	PER COMMENTS	KA

DATE: 8/1/14 REVIEWED BY: SMD

SEAL
STATE OF CALIFORNIA
PROFESSIONAL ENGINEER
No. 22339

SITE NUMBER:
CT03XC034

SITE NAME:
RIMMON ST.

SITE ADDRESS:
34 RIMMON STREET
SEYMOUR, CT 06483

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2

Date: **June 14, 2014**

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2149

Subject: Structural Analysis Report

Carrier Designation: **Sprint PCS Co-Locate** **Scenario 2.5B**
Carrier Site Number: CT03XC034

Crown Castle Designation: **Crown Castle BU Number:** 876318
Crown Castle Site Name: RIMMON ST.
Crown Castle JDE Job Number: 288078
Crown Castle Work Order Number: 773536
Crown Castle Application Number: 245817 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 773536

Site Data: **34 Rimmon Street, SEYMOUR, New Haven County, CT**
Latitude 41° 24' 7.93", Longitude -73° 4' 20.16"
150 Foot - Monopole Tower

Dear Veronica Harris,

Crown Castle 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 773536, in accordance with application 245817, revision 0.

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

LC5: Existing + Proposed Equipment

Sufficient Capacity

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 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.

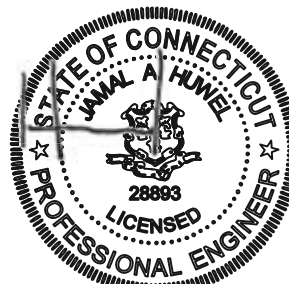
We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Drew Skupien, E.I.T. / CMS

Respectfully submitted by:

Jamal A. Huwel, P.E.
Manager Engineering

A handwritten signature in black ink that reads 'Jamal'.



Date Signed: 06/14/2014

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1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Pittsburg Monopole Division in December of 1996. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 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
148.0	150.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	150.0	9	rfs celwave	ACU-A20-N	3	1-1/4	1
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
	148.0	1	tower mounts	Platform Mount [LP 1001-1]			
146.0	149.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	-	-	1
		3	alcatel lucent	TME-800MHZ 2X50W RRH w/ mount pipe			
		3	alcatel lucent	TME-PCS 1900MHZ 4x45W-65MHZ			
	146.0	1	tower mounts	Side Arm Mount [SO 102-3]			
137.0	138.0	3	kathrein	742 213	6	1-5/8	1
	137.0	1	tower mounts	Pipe Mount [PM 601-3]			
118.0	120.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	118.0	1	tower mounts	Side Arm Mount [SO 701-1]			
86.0	86.0	1	tower mounts	Pipe Mount [PM 601-1]	1	1/2	1
	85.5	1	decibel	DB225-2-D			
75.0	75.0	1	decibel	DB225-2-D	1	1/2	1
		1	tower mounts	Pipe Mount [PM 601-1]			

Notes:

- Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150	150	12	-	4 SQ FT w/ Platform	-	-
130	130	12	-	4 SQ FT w/ Platform	-	-
110	110	12	-	4 SQ FT w/ Platform	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Goodkind & O'Dea, Inc.	1619384	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Pittsburg Monopole Division	1620580	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Pittsburg Monopole Division	1619418	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.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	150 - 120	Pole	P24x3/8	1	-7.540	779.117	54.5	Pass
L2	120 - 80	Pole	P36x1/2	2	-16.050	1560.983	53.8	Pass
L3	80 - 40	Pole	P48x1/2	3	-27.125	2078.280	63.3	Pass
L4	40 - 0	Pole	P54x5/8	4	-42.215	2933.706	58.1	Pass
							Summary	
						Pole (L3)	63.3	Pass
						Rating =	63.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	60.9	Pass
1	Base Plate	0	28.2	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	65.1	Pass
1	Flange Bolts at 40'	40	63.7	Pass
1	Flange Plates at 40'	40	29.0	Pass
1	Flange Bolts at 80'	80	55.4	Pass
1	Flange Plates at 80'	80	38.7	Pass
1	Flange Bolts at 120'	120	56.8	Pass
1	Flange Plates at 120'	120	43.7	Pass

Structure Rating (max from all components) =	65.1%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

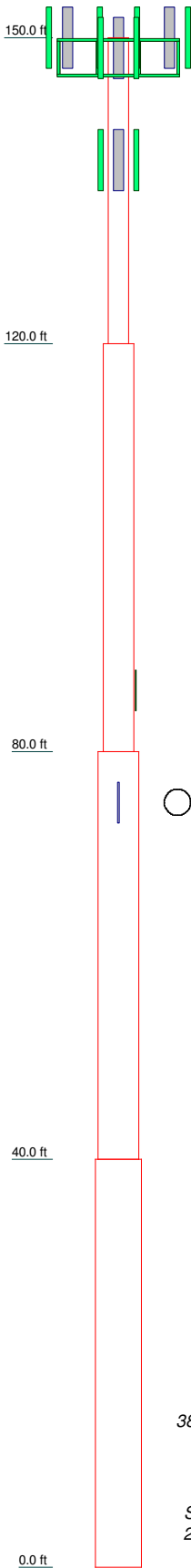
TYPE	ELEVATION	TYPE	ELEVATION
APXVSP18-C-A20 w/ Mount Pipe	148	TME-800MHZ 2X50W RRH w/ mount pipe	146
APXVSP18-C-A20 w/ Mount Pipe	148	800 EXTERNAL NOTCH FILTER	146
APXVSP18-C-A20 w/ Mount Pipe	148	800 EXTERNAL NOTCH FILTER	146
(3) ACU-A20-N	148	800 EXTERNAL NOTCH FILTER	146
(3) ACU-A20-N	148	800 EXTERNAL NOTCH FILTER	146
(3) ACU-A20-N	148	TME-PCS 1900MHz 4x45W-65MHz	146
APXVTM14-C-120 w/ Mount Pipe	148	TME-PCS 1900MHz 4x45W-65MHz	146
APXVTM14-C-120 w/ Mount Pipe	148	TME-PCS 1900MHz 4x45W-65MHz	146
APXVTM14-C-120 w/ Mount Pipe	148	Side Arm Mount [SO 102-3]	146
TD-RRH8x20-25	148	742 213	137
TD-RRH8x20-25	148	742 213	137
TD-RRH8x20-25	148	742 213	137
6' x 2" Mount Pipe	148	Pipe Mount [PM 601-3]	137
6' x 2" Mount Pipe	148	OG-860/1920/GPS-A	118
6' x 2" Mount Pipe	148	Side Arm Mount [SO 701-1]	118
Platform Mount [LP 1001-1]	148	DB225-2-D	86
TME-800MHZ 2X50W RRH w/ mount pipe	146	Pipe Mount [PM 601-1]	86
TME-800MHZ 2X50W RRH w/ mount pipe	146	DB225-2-D	75
TME-800MHZ 2X50W RRH w/ mount pipe	146	Pipe Mount [PM 601-1]	75

MATERIAL STRENGTH

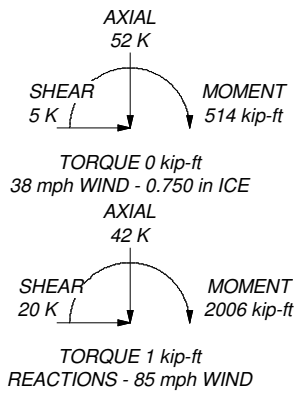
GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 63.3%



Section	Size	Length (ft)	Grade	Weight (K)
1	P24x3/8	30.000	A53-B-35	2.8
2	P36x1/2	40.000	A53-B-35	7.6
3	P48x1/2	40.000	A53-B-35	10.2
4	P54x5/8	40.000	A53-B-35	14.3
				34.9



<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 We Are Solutions Phone: (724) 416-2149 FAX: (724) 416-4594</p>	Job: BU# 876318		
	Project:		
	Client: Crown Castle	Drawn by: jskupien	App'd:
	Code: TIA/EIA-222-F	Date: 06/10/14	Scale: NTS
	Path: X:\ENG Work Area\DSkupien\876318\876318.dwg		
			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:

- 2) Tower is located in New Haven County, Connecticut.
- 3) Basic wind speed of 85 mph.
- 4) Nominal ice thickness of 0.750 in.
- 5) Ice thickness is considered to increase with height.
- 6) Ice density of 56.000 pcf.
- 7) A wind speed of 38 mph is used in combination with ice.
- 8) Temperature drop of 50.000 °F.
- 9) Deflections calculated using a wind speed of 50 mph.
- 10) A non-linear (P-delta) analysis was used.
- 11) Pressures are calculated at each section.
- 12) Stress ratio used in pole design is 1.333.
- 13) 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
--	--	--

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	150.000-120.000	30.000	P24x3/8	A53-B-35 (35 ksi)	
L2	120.000-80.000	40.000	P36x1/2	A53-B-35 (35 ksi)	
L3	80.000-40.000	40.000	P48x1/2	A53-B-35 (35 ksi)	
L4	40.000-0.000	40.000	P54x5/8	A53-B-35 (35 ksi)	

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 150.000-				1	1	1		

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
120.000								
L2 120.000-80.000				1	1	1		
L3 80.000-40.000				1	1	1		
L4 40.000-0.000				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	r	klf
								in	in	
*										

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	klf
HB114-1-0813U4-M5J(1 1/4")	B	No	Inside Pole	148.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
HB114-21U3M12-XXXF(1-1/4")	B	No	Inside Pole	148.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
* CR 50 1873(1-5/8")	B	No	Inside Pole	137.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
* LDF4-50A(1/2")	B	No	Inside Pole	118.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000 0.000
* LDF4-50A(1/2")	B	No	Inside Pole	86.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000 0.000
* Climbing Ladder	A	No	CaAa (Out Of Face)	150.000 - 5.000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.290 0.550 0.810 1.330 2.370	0.008 0.011 0.013 0.019 0.029
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section n	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	150.000-120.000	A	0.000	0.000	0.000	8.700	0.237
		B	0.000	0.000	0.000	0.000	0.220
		C	0.000	0.000	0.000	0.000	0.000
L2	120.000-80.000	A	0.000	0.000	0.000	11.600	0.316
		B	0.000	0.000	0.000	0.000	0.399
		C	0.000	0.000	0.000	0.000	0.000
L3	80.000-40.000	A	0.000	0.000	0.000	11.600	0.316
		B	0.000	0.000	0.000	0.000	0.404
		C	0.000	0.000	0.000	0.000	0.000
L4	40.000-0.000	A	0.000	0.000	0.000	10.150	0.277
		B	0.000	0.000	0.000	0.000	0.404
		C	0.000	0.000	0.000	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_{AA} In Face ft^2	C_{AA} Out Face ft^2	Weight K
L1	150.000-120.000	A	0.888	0.000	0.000	0.000	22.555	0.381
		B		0.000	0.000	0.000	0.000	0.220
		C		0.000	0.000	0.000	0.000	0.000
L2	120.000-80.000	A	0.857	0.000	0.000	0.000	29.426	0.501
		B		0.000	0.000	0.000	0.000	0.399
		C		0.000	0.000	0.000	0.000	0.000
L3	80.000-40.000	A	0.807	0.000	0.000	0.000	28.376	0.490
		B		0.000	0.000	0.000	0.000	0.404
		C		0.000	0.000	0.000	0.000	0.000
L4	40.000-0.000	A	0.750	0.000	0.000	0.000	23.800	0.418
		B		0.000	0.000	0.000	0.000	0.404
		C		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	150.000-120.000	0.000	-0.380	0.000	-0.778
L2	120.000-80.000	0.000	-0.397	0.000	-0.854
L3	80.000-40.000	0.000	-0.406	0.000	-0.879
L4	40.000-0.000	0.000	-0.360	0.000	-0.769

Discrete Tower Loads

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	
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	148.000	No Ice	8.498	6.946	0.083
			0.000			1/2"	9.149	8.127	0.151
			2.000			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909
APXVSP18-C-A20 w/	B	From Leg	4.000	0.000	148.000	No Ice	8.498	6.946	0.083
						4" Ice			

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
Mount Pipe			0.000 2.000			1/2" Ice 9.149 9.767	8.127 9.021	0.151 0.227
						1" Ice 11.031	10.844	0.406
						2" Ice 13.679	14.851	0.909
						4" Ice		
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 9.149 9.767	6.946 8.127 9.021	0.083 0.151 0.227
						1" Ice 11.031	10.844	0.406
						2" Ice 13.679	14.851	0.909
						4" Ice		
(3) ACU-A20-N	A	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 0.078 0.121 0.173	0.136 0.189 0.251	0.001 0.002 0.004
						1" Ice 0.302	0.400	0.012
						2" Ice 0.665	0.802	0.045
						4" Ice		
(3) ACU-A20-N	B	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 0.078 0.121 0.173	0.136 0.189 0.251	0.001 0.002 0.004
						1" Ice 0.302	0.400	0.012
						2" Ice 0.665	0.802	0.045
						4" Ice		
(3) ACU-A20-N	C	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 0.078 0.121 0.173	0.136 0.189 0.251	0.001 0.002 0.004
						1" Ice 0.302	0.400	0.012
						2" Ice 0.665	0.802	0.045
						4" Ice		
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 7.134 7.662 8.183	4.959 5.754 6.472	0.074 0.128 0.190
						1" Ice 9.256	8.010	0.335
						2" Ice 11.526	11.412	0.749
						4" Ice		
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 7.134 7.662 8.183	4.959 5.754 6.472	0.074 0.128 0.190
						1" Ice 9.256	8.010	0.335
						2" Ice 11.526	11.412	0.749
						4" Ice		
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 7.134 7.662 8.183	4.959 5.754 6.472	0.074 0.128 0.190
						1" Ice 9.256	8.010	0.335
						2" Ice 11.526	11.412	0.749
						4" Ice		
TD-RRH8x20-25	A	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 4.720 5.014 5.316	1.703 1.920 2.145	0.070 0.097 0.128
						1" Ice 5.948	2.622	0.201
						2" Ice 7.314	3.680	0.397
						4" Ice		
TD-RRH8x20-25	B	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 4.720 5.014 5.316	1.703 1.920 2.145	0.070 0.097 0.128
						1" Ice 5.948	2.622	0.201
						2" Ice 7.314	3.680	0.397
						4" Ice		
TD-RRH8x20-25	C	From Leg	4.000 0.000 2.000	0.000	148.000	No Ice 1/2" Ice 4.720 5.014 5.316	1.703 1.920 2.145	0.070 0.097 0.128
						1" Ice 5.948	2.622	0.201
						2" Ice 7.314	3.680	0.397
						4" Ice		

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
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						Ice	2.294	2.294	0.048
						1" Ice	3.060	3.060	0.090
						2" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						Ice	2.294	2.294	0.048
						1" Ice	3.060	3.060	0.090
						2" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						Ice	2.294	2.294	0.048
						1" Ice	3.060	3.060	0.090
						2" Ice	4.702	4.702	0.231
Platform Mount [LP 1001-1]	C	None		0.000	148.000	No Ice	47.700	47.700	3.017
						1/2" Ice	59.500	59.500	3.621
						Ice	71.300	71.300	4.225
						1" Ice	94.900	94.900	5.433
						2" Ice	142.100	142.100	7.849

TME-800MHZ 2X50W RRH w/ mount pipe	A	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	2.490	2.068	0.053
						1/2" Ice	2.706	2.271	0.074
						Ice	2.931	2.481	0.098
						1" Ice	3.407	2.928	0.157
						2" Ice	4.462	3.927	0.318
TME-800MHZ 2X50W RRH w/ mount pipe	B	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	2.490	2.068	0.053
						1/2" Ice	2.706	2.271	0.074
						Ice	2.931	2.481	0.098
						1" Ice	3.407	2.928	0.157
						2" Ice	4.462	3.927	0.318
TME-800MHZ 2X50W RRH w/ mount pipe	C	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	2.490	2.068	0.053
						1/2" Ice	2.706	2.271	0.074
						Ice	2.931	2.481	0.098
						1" Ice	3.407	2.928	0.157
						2" Ice	4.462	3.927	0.318
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	0.770	0.375	0.011
						1/2" Ice	0.890	0.465	0.017
						Ice	1.018	0.563	0.024
						1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
800 EXTERNAL NOTCH FILTER	B	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	0.770	0.375	0.011
						1/2" Ice	0.890	0.465	0.017
						Ice	1.018	0.563	0.024
						1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	0.770	0.375	0.011
						1/2" Ice	0.890	0.465	0.017
						Ice	1.018	0.563	0.024
						1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	1.000 0.000 3.000	0.000	146.000	No Ice	2.709	2.611	0.060
						1/2" Ice	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz Lateral ft	Vert ft						
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	1.000 0.000 3.000	0.000	0.000	146.000	2" Ice	4.862	4.744	0.347
							4" Ice			
							No Ice	2.709	2.611	0.060
							1/2" Ice	2.948	2.847	0.083
							1" Ice	3.195	3.092	0.110
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	1.000 0.000 3.000	0.000	0.000	146.000	2" Ice	4.862	4.744	0.347
							4" Ice			
							No Ice	2.709	2.611	0.060
							1/2" Ice	2.948	2.847	0.083
							1" Ice	3.195	3.092	0.110
Side Arm Mount [SO 102-3]	C	None		0.000	0.000	146.000	1" Ice	3.716	3.608	0.173
							2" Ice	4.862	4.744	0.347
							4" Ice			
							No Ice	3.000	3.000	0.081
							1/2" Ice	3.480	3.480	0.111
* 742 213	A	From Leg	1.000 0.000 1.000	0.000	0.000	137.000	Ice	6.090	3.946	0.078
							1" Ice	7.074	4.893	0.158
							2" Ice	9.130	6.876	0.394
							4" Ice			
							No Ice	5.135	2.869	0.022
742 213	B	From Leg	1.000 0.000 1.000	0.000	0.000	137.000	Ice	6.090	3.946	0.078
							1" Ice	7.074	4.893	0.158
							2" Ice	9.130	6.876	0.394
							4" Ice			
							No Ice	5.135	2.869	0.022
742 213	C	From Leg	1.000 0.000 1.000	0.000	0.000	137.000	Ice	6.090	3.946	0.078
							1" Ice	7.074	4.893	0.158
							2" Ice	9.130	6.876	0.394
							4" Ice			
							No Ice	5.135	2.869	0.022
Pipe Mount [PM 601-3]	C	None		0.000	0.000	137.000	Ice	6.090	3.946	0.078
							1" Ice	7.074	4.893	0.158
							2" Ice	9.130	6.876	0.394
							4" Ice			
							No Ice	4.390	4.390	0.195
* OG-860/1920/GPS-A	A	From Leg	3.000 0.000 2.000	0.000	0.000	118.000	Ice	0.548	0.632	0.011
							1" Ice	0.802	0.894	0.026
							2" Ice	1.414	1.521	0.080
							4" Ice			
							No Ice	0.329	0.404	0.003
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	0.000	118.000	Ice	0.548	0.632	0.011
							1" Ice	0.802	0.894	0.026
							2" Ice	1.414	1.521	0.080
							4" Ice			
							No Ice	0.850	1.670	0.065
* DB225-2-D	B	From Leg	1.000 0.000 -0.500	0.000	0.000	86.000	Ice	6.032	6.032	0.090
							1" Ice	9.744	9.744	0.123
							2" Ice	17.168	17.168	0.190
							4" Ice			
							No Ice	2.320	2.320	0.056

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Pipe Mount [PM 601-1]	B	From Leg	0.500 0.000 0.000	0.000	86.000	No Ice	3.000	0.900	0.065
						1/2" Ice	3.740	1.120	0.079
						Ice	4.480	1.340	0.093
						1" Ice	5.960	1.780	0.122
						2" Ice	8.920	2.660	0.178
						4" Ice			
* DB225-2-D	A	From Leg	1.000 0.000 0.000	0.000	75.000	No Ice	2.320	2.320	0.056
						1/2" Ice	4.176	4.176	0.073
						Ice	6.032	6.032	0.090
						1" Ice	9.744	9.744	0.123
						2" Ice	17.168	17.168	0.190
						4" Ice			
Pipe Mount [PM 601-1]	A	From Leg	0.500 0.000 0.000	0.000	75.000	No Ice	3.000	0.900	0.065
						1/2" Ice	3.740	1.120	0.079
						Ice	4.480	1.340	0.093
						1" Ice	5.960	1.780	0.122
						2" Ice	8.920	2.660	0.178
						4" Ice			
*									

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

Comb. No.	Description
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 120	Pole	Max Tension	8	0.000	0.000	0.000
			Max. Compression	14	-11.332	0.000	0.381
			Max. Mx	5	-7.540	-221.601	0.244
			Max. My	2	-7.540	0.002	221.836
			Max. Vy	5	8.978	-221.601	0.244
			Max. Vx	2	-8.978	0.002	221.836
			Max. Torque	11			-0.065
L2	120 - 80	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-21.638	-0.336	1.252
			Max. Mx	5	-16.050	-659.619	0.572
			Max. My	2	-16.052	0.004	658.363
			Max. Vy	5	12.878	-659.619	0.572
			Max. Vx	2	-12.794	0.004	658.363
			Max. Torque	11			-0.478
L3	80 - 40	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-34.784	-0.336	2.705
			Max. Mx	5	-27.126	-1259.324	0.035
			Max. My	2	-27.126	1.512	1258.591
			Max. Vy	5	16.877	-1259.324	0.035
			Max. Vx	2	-16.877	1.512	1258.591
			Max. Torque	6			0.856
L4	40 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-51.878	-0.336	3.646
			Max. Mx	5	-42.215	-2003.462	-0.840
			Max. My	2	-42.215	3.016	2003.331
			Max. Vy	5	20.283	-2003.462	-0.840
			Max. Vx	2	-20.282	3.016	2003.331
			Max. Torque	6			0.951

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	51.878	0.000	0.000
	Max. H _x	11	42.220	20.272	0.037
	Max. H _z	2	42.220	0.037	20.271
	Max. M _x	2	2003.331	0.037	20.271
	Max. M _z	5	2003.462	-20.272	-0.037
	Max. Torsion	6	0.951	-17.574	-10.168
	Min. Vert	38	42.220	3.518	6.081
	Min. H _x	5	42.220	-20.272	-0.037
	Min. H _z	8	42.220	-0.037	-20.271
	Min. M _x	8	-1998.503	-0.037	-20.271
	Min. M _z	11	-2002.984	20.272	0.037
	Min. Torsion	12	-0.950	17.574	10.168

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	42.220	0.000	0.000	-2.369	-0.234	0.000
Dead+Wind 0 deg - No Ice	42.220	-0.037	-20.271	-2003.331	3.016	0.274
Dead+Wind 30 deg - No Ice	42.220	10.103	-17.537	-1733.632	-999.033	-0.232
Dead+Wind 60 deg - No Ice	42.220	17.537	-10.103	-1000.054	-1733.455	-0.676
Dead+Wind 90 deg - No Ice	42.220	20.272	0.037	0.840	-2003.462	-0.939
Dead+Wind 120 deg - No Ice	42.220	17.574	10.168	1000.862	-1736.709	-0.951
Dead+Wind 150 deg - No Ice	42.220	10.168	17.574	1732.057	-1004.670	-0.707
Dead+Wind 180 deg - No Ice	42.220	0.037	20.271	1998.503	-3.494	-0.275
Dead+Wind 210 deg - No Ice	42.220	-10.103	17.537	1728.803	998.554	0.232
Dead+Wind 240 deg - No Ice	42.220	-17.537	10.103	995.225	1732.976	0.676
Dead+Wind 270 deg - No Ice	42.220	-20.272	-0.037	-5.669	2002.984	0.939
Dead+Wind 300 deg - No Ice	42.220	-17.574	-10.168	-1005.691	1736.230	0.950
Dead+Wind 330 deg - No Ice	42.220	-10.168	-17.574	-1736.886	1004.191	0.707
Dead+Ice+Temp	51.878	0.000	0.000	-3.646	-0.336	0.000
Dead+Wind 0 deg+Ice+Temp	51.878	-0.010	-5.008	-513.733	0.559	0.114
Dead+Wind 30 deg+Ice+Temp	51.878	2.496	-4.332	-444.954	-255.041	-0.101
Dead+Wind 60 deg+Ice+Temp	51.878	4.334	-2.495	-257.954	-442.397	-0.290
Dead+Wind 90 deg+Ice+Temp	51.878	5.011	0.010	-2.838	-511.305	-0.400
Dead+Wind 120 deg+Ice+Temp	51.878	4.344	2.513	252.035	-443.303	-0.404
Dead+Wind 150 deg+Ice+Temp	51.878	2.514	4.342	438.372	-256.611	-0.299
Dead+Wind 180 deg+Ice+Temp	51.878	0.010	5.008	506.244	-1.253	-0.114
Dead+Wind 210 deg+Ice+Temp	51.878	-2.496	4.332	437.466	254.347	0.102
Dead+Wind 240 deg+Ice+Temp	51.878	-4.334	2.495	250.465	441.702	0.290
Dead+Wind 270 deg+Ice+Temp	51.878	-5.011	-0.010	-4.650	510.611	0.401
Dead+Wind 300 deg+Ice+Temp	51.878	-4.344	-2.513	-259.523	442.608	0.404
Dead+Wind 330 deg+Ice+Temp	51.878	-2.514	-4.342	-445.860	255.917	0.299
Dead+Wind 0 deg - Service	42.220	-0.013	-7.014	-694.858	0.887	0.095
Dead+Wind 30 deg - Service	42.220	3.496	-6.068	-601.525	-345.885	-0.080
Dead+Wind 60 deg - Service	42.220	6.068	-3.496	-347.662	-600.041	-0.234
Dead+Wind 90 deg - Service	42.220	7.014	0.013	-1.289	-693.481	-0.325
Dead+Wind 120 deg - Service	42.220	6.081	3.518	344.781	-601.167	-0.329
Dead+Wind 150 deg - Service	42.220	3.518	6.081	597.821	-347.835	-0.245
Dead+Wind 180 deg - Service	42.220	0.013	7.014	690.027	-1.366	-0.095
Dead+Wind 210 deg - Service	42.220	-3.496	6.068	596.695	345.406	0.080
Dead+Wind 240 deg - Service	42.220	-6.068	3.496	342.831	599.562	0.234
Dead+Wind 270 deg - Service	42.220	-7.014	-0.013	-3.542	693.002	0.325
Dead+Wind 300 deg - Service	42.220	-6.081	-3.518	-349.612	600.688	0.329
Dead+Wind 330 deg - Service	42.220	-3.518	-6.081	-602.652	347.357	0.245

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-42.220	0.000	0.000	42.220	0.000	0.000%
2	-0.037	-42.220	-20.271	0.037	42.220	20.271	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
3	10.103	-42.220	-17.537	-10.103	42.220	17.537	0.000%
4	17.537	-42.220	-10.103	-17.537	42.220	10.103	0.000%
5	20.272	-42.220	0.037	-20.272	42.220	-0.037	0.000%
6	17.574	-42.220	10.168	-17.574	42.220	-10.168	0.000%
7	10.168	-42.220	17.574	-10.168	42.220	-17.574	0.000%
8	0.037	-42.220	20.271	-0.037	42.220	-20.271	0.000%
9	-10.103	-42.220	17.537	10.103	42.220	-17.537	0.000%
10	-17.537	-42.220	10.103	17.537	42.220	-10.103	0.000%
11	-20.272	-42.220	-0.037	20.272	42.220	0.037	0.000%
12	-17.574	-42.220	-10.168	17.574	42.220	10.168	0.000%
13	-10.168	-42.220	-17.574	10.168	42.220	17.574	0.000%
14	0.000	-51.878	0.000	0.000	51.878	0.000	0.000%
15	-0.010	-51.878	-5.008	0.010	51.878	5.008	0.000%
16	2.496	-51.878	-4.332	-2.496	51.878	4.332	0.000%
17	4.334	-51.878	-2.495	-4.334	51.878	2.495	0.000%
18	5.011	-51.878	0.010	-5.011	51.878	-0.010	0.000%
19	4.344	-51.878	2.513	-4.344	51.878	-2.513	0.000%
20	2.514	-51.878	4.342	-2.514	51.878	-4.342	0.000%
21	0.010	-51.878	5.008	-0.010	51.878	-5.008	0.000%
22	-2.496	-51.878	4.332	2.496	51.878	-4.332	0.000%
23	-4.334	-51.878	2.495	4.334	51.878	-2.495	0.000%
24	-5.011	-51.878	-0.010	5.011	51.878	0.010	0.000%
25	-4.344	-51.878	-2.513	4.344	51.878	2.513	0.000%
26	-2.514	-51.878	-4.342	2.514	51.878	4.342	0.000%
27	-0.013	-42.220	-7.014	0.013	42.220	7.014	0.000%
28	3.496	-42.220	-6.068	-3.496	42.220	6.068	0.000%
29	6.068	-42.220	-3.496	-6.068	42.220	3.496	0.000%
30	7.014	-42.220	0.013	-7.014	42.220	-0.013	0.000%
31	6.081	-42.220	3.518	-6.081	42.220	-3.518	0.000%
32	3.518	-42.220	6.081	-3.518	42.220	-6.081	0.000%
33	0.013	-42.220	7.014	-0.013	42.220	-7.014	0.000%
34	-3.496	-42.220	6.068	3.496	42.220	-6.068	0.000%
35	-6.068	-42.220	3.496	6.068	42.220	-3.496	0.000%
36	-7.014	-42.220	-0.013	7.014	42.220	0.013	0.000%
37	-6.081	-42.220	-3.518	6.081	42.220	3.518	0.000%
38	-3.518	-42.220	-6.081	3.518	42.220	6.081	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00001771
3	Yes	4	0.00000001	0.00043350
4	Yes	4	0.00000001	0.00045173
5	Yes	4	0.00000001	0.00003895
6	Yes	4	0.00000001	0.00042176
7	Yes	4	0.00000001	0.00045108
8	Yes	4	0.00000001	0.00001899
9	Yes	4	0.00000001	0.00043988
10	Yes	4	0.00000001	0.00042329
11	Yes	4	0.00000001	0.00004120
12	Yes	4	0.00000001	0.00045894
13	Yes	4	0.00000001	0.00042796
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00031917
16	Yes	4	0.00000001	0.00032784
17	Yes	4	0.00000001	0.00032764
18	Yes	4	0.00000001	0.00031763
19	Yes	4	0.00000001	0.00032490
20	Yes	4	0.00000001	0.00032378
21	Yes	4	0.00000001	0.00031379
22	Yes	4	0.00000001	0.00032266
23	Yes	4	0.00000001	0.00032369
24	Yes	4	0.00000001	0.00031705

25	Yes	4	0.00000001	0.00032785
26	Yes	4	0.00000001	0.00032813
27	Yes	4	0.00000001	0.00000636
28	Yes	4	0.00000001	0.00002463
29	Yes	4	0.00000001	0.00002694
30	Yes	4	0.00000001	0.00000807
31	Yes	4	0.00000001	0.00002325
32	Yes	4	0.00000001	0.00002666
33	Yes	4	0.00000001	0.00000633
34	Yes	4	0.00000001	0.00002532
35	Yes	4	0.00000001	0.00002341
36	Yes	4	0.00000001	0.00000814
37	Yes	4	0.00000001	0.00002778
38	Yes	4	0.00000001	0.00002395

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	10.958	38	0.693	0.001
L2	120 - 80	6.898	38	0.541	0.001
L3	80 - 40	3.032	38	0.349	0.000
L4	40 - 0	0.773	38	0.171	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.000	APXVSP18-C-A20 w/ Mount Pipe	38	10.674	0.683	0.001	50951
146.000	TME-800MHZ 2X50W RRH w/ mount pipe	38	10.389	0.672	0.001	50951
137.000	742 213	38	9.124	0.627	0.001	19596
118.000	OG-860/1920/GPS-A	38	6.659	0.531	0.001	8730
86.000	DB225-2-D	38	3.503	0.377	0.000	12736
75.000	DB225-2-D	38	2.664	0.326	0.000	13348

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	31.598	12	1.997	0.002
L2	120 - 80	19.894	12	1.561	0.002
L3	80 - 40	8.746	12	1.007	0.001
L4	40 - 0	2.230	12	0.495	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.000	APXVSP18-C-A20 w/ Mount Pipe	12	30.777	1.968	0.002	17718

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
146.000	TME-800MHZ 2X50W RRH w/ mount pipe	12	29.958	1.939	0.002	17718
137.000	742 213	12	26.312	1.807	0.002	6814
118.000	OG-860/1920/GPS-A	12	19.203	1.532	0.002	3035
86.000	DB225-2-D	12	10.103	1.087	0.001	4419
75.000	DB225-2-D	12	7.684	0.941	0.001	4629

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	150 - 120 (1)	P24x3/8	30.000	0.000	0.0	21.000	27.833	-7.540	584.484	0.013
L2	120 - 80 (2)	P36x1/2	40.000	0.000	0.0	21.000	55.763	-16.050	1171.030	0.014
L3	80 - 40 (3)	P48x1/2	40.000	0.000	0.0	20.896	74.613	-27.125	1559.100	0.017
L4	40 - 0 (4)	P54x5/8	40.000	0.000	0.0	21.000	104.802	-42.215	2200.830	0.019

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 120 (1)	P24x3/8	221.83 7	16.447	23.100	0.712	0.000	0.000	23.100	0.000
L2	120 - 80 (2)	P36x1/2	659.61 9	16.216	23.100	0.702	0.000	0.000	23.100	0.000
L3	80 - 40 (3)	P48x1/2	1260.7 17	17.253	20.896	0.826	0.000	0.000	20.896	0.000
L4	40 - 0 (4)	P54x5/8	2006.4 67	17.417	23.100	0.754	0.000	0.000	23.100	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 120 (1)	P24x3/8	8.978	0.645	14.000	0.046	0.000	0.000	14.000	0.000
L2	120 - 80 (2)	P36x1/2	12.878	0.462	14.000	0.033	0.336	0.004	14.000	0.000
L3	80 - 40 (3)	P48x1/2	16.910	0.453	14.000	0.032	0.856	0.006	12.934	0.000
L4	40 - 0 (4)	P54x5/8	20.315	0.388	14.000	0.028	0.950	0.004	14.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

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	150 - 120 (1)	0.013	0.712	0.000	0.046	0.000	0.727	1.333	H1-3+VT ✓
L2	120 - 80 (2)	0.014	0.702	0.000	0.033	0.000	0.717	1.333	H1-3+VT ✓
L3	80 - 40 (3)	0.017	0.826	0.000	0.032	0.000	0.844	1.333	H1-3+VT ✓
L4	40 - 0 (4)	0.019	0.754	0.000	0.028	0.000	0.774	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	150 - 120	Pole	P24x3/8	1	-7.540	779.117	54.5	Pass
L2	120 - 80	Pole	P36x1/2	2	-16.050	1560.983	53.8	Pass
L3	80 - 40	Pole	P48x1/2	3	-27.125	2078.280	63.3	Pass
L4	40 - 0	Pole	P54x5/8	4	-42.215	2933.706	58.1	Pass
Summary								
Pole (L3)							63.3	Pass
RATING =							63.3	Pass

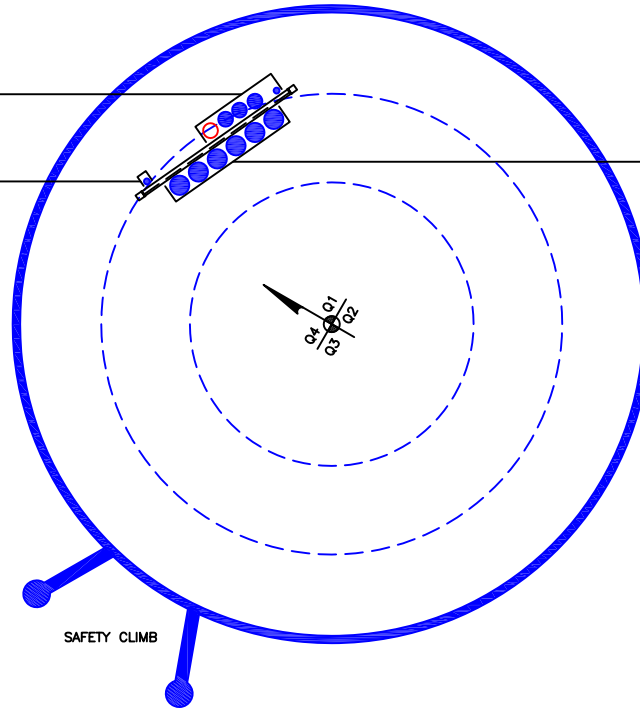
APPENDIX B
BASE LEVEL DRAWING



(PROPOSED)
(1) 1-1/4" TO 148 FT LEVEL
(INSTALLED)
(1) 1/2" TO 118 FT LEVEL
(3) 1-1/4" TO 148 FT LEVEL

(INSTALLED-SHARED)
(1) 1/2" TO 75 & 86 FT LEVELS

(INSTALLED)
(6) 1-5/8" TO 137 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: 876318	
Site Name: RIMMON ST.	
App #: 245817 Rev.0	
Pole Manufacturer:	Other

Reactions		
Moment:	2006	ft-kips
Axial:	42	kips
Shear:	20	kips

Anchor Rod Data		
Qty:	32	
Diam:	2	in
Rod Material:	Other	
Strength (Fu):	58	ksi
Yield (Fy):	36	ksi
Bolt Circle:	60	in

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

Anchor Rod Results

Maximum Rod Tension: 48.8 Kips
 Allowable Tension: 80.2 Kips
 Anchor Rod Stress Ratio: 60.9% Pass

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	66	in
Thick:	3.25	in
Grade:	36	ksi
Single-Rod B-eff:	5.30	in

Base Plate Results

Base Plate Stress: 10.2 ksi
 Allowable Plate Stress: 36.0 ksi
 Base Plate Stress Ratio: 28.2% Pass

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
26.15

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

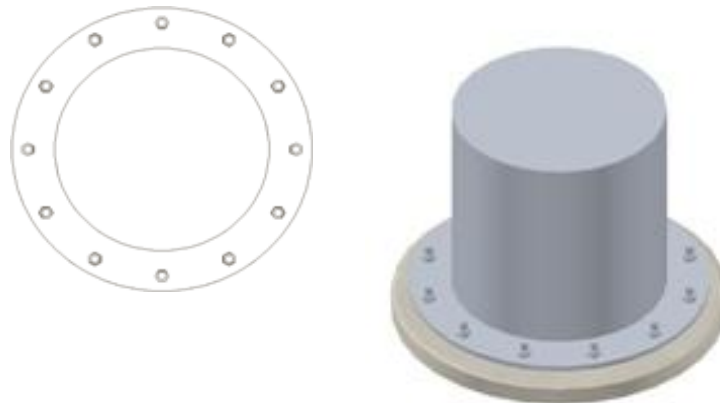
Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	54	in
Thick:	0.625	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	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

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

Site Data	
BU#:	876318
Site Name:	RIMMON ST.
App #:	245817 Rev.0

Reactions		
Moment:	221.84	ft-kips
Axial:	7.54	kips
Shear:	8.98	kips
Exterior Flange Run, T+Q:	14.73	kips

Manufacturer:	Other
---------------	-------

Elevation: 120 feet

Bolt Data		
Qty:	24	
Diam:	0.75	
Bolt Material:	A325	
N/A:	100	<-- Disregard
N/A:	75	<-- Disregard
Circle:	29.5	in

Bolt Fu:	120
Bolt Fy:	92
Bolt Fty:	44.00

Interior Flange Bolt Results

Maximum Bolt Tension:	14.7 Kips, Ext. T=Interior T
Allowable Tension:	25.9 Kips
Bolt Stress Ratio:	56.8% Pass

Plate Data		
Plate Outer Diam:	35	in
Plate Inner Diam:	24.25	in (Hole @ Ctr)
Thick:	1.875	in
Grade:	36	ksi
Effective Width:	4.58	in

Interior Flange Plate Results

Controlling Bolt Axial Force:	15.4 Kips, Ext. C= Interior C
Plate Stress:	15.7 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	43.7% Pass

Flexural Check

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

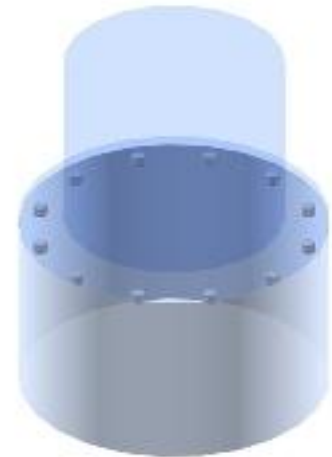
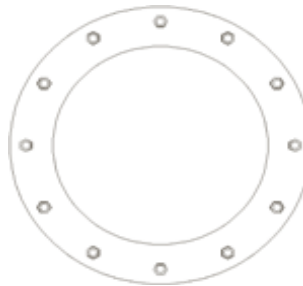
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a
----------------------------	-----

Pole Data		
Pole OuterDiam:	36	in
Thick:	0.5	in
Pole Inner Diam:	35	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

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

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

Site Data

BU#: 876318
 Site Name: RIMMON ST.
 App #: 245817 Rev.0

Pole Manufacturer: Other

Bolt Data

Qty:	24	Bolt Fu:	120
Diameter (in.):	0.75	Bolt Fy:	92
Bolt Material:	A325	Bolt Fty:	44.00
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	29.5		

Plate Data

Diam:	34.75	in
Thick, t:	1.875	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.14	in

Stiffener Data (Welding at Both Sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	24	in
Thick:	0.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu:	63	ksi
Reinf. Fillet Weld:	0	"0" if None

Stress Increase Factor

ASIF:	1.333
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Reactions	
Moment:	221.84 ft-kips
Axial:	7.54 kips
Shear:	8.98 kips
Elevation:	120 feet

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

Flange Bolt Results

Bolt Tension Capacity, B :	25.91 kips
Max Bolt directly applied T:	14.73 Kips
Min. PL "tc" for B cap. w/o Pry :	1.807 in
Min PL "treq" for actual T w/ Pry :	1.032 in
Min PL "t1" for actual T w/o Pry :	1.362 in
T allowable w/o Prying:	25.91 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	14.73 kips
Non-Prying Bolt Stress Ratio, T/B:	56.8% Pass

Rigid
Service, ASD
Fty*ASIF

$\alpha' < 0$ case

Exterior Flange Plate Results

Compression Side Plate Stress:	12.9 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	35.8% Pass
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	30.3% Pass

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
17.15

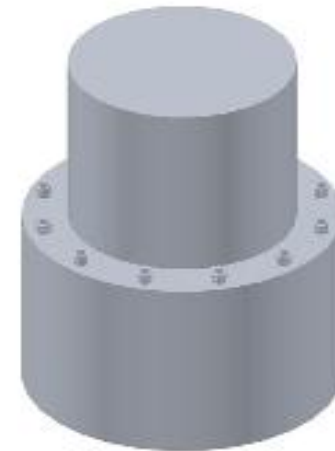
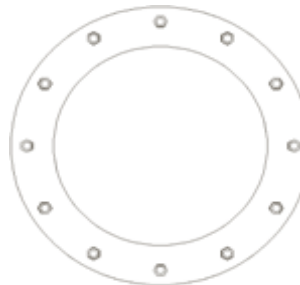
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Stiffener Results

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



* 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

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

Site Data	
BU#:	876318
Site Name:	RIMMON ST.
App #:	245817 Rev.0

Reactions		
Moment:	659.62	ft-kips
Axial:	16.05	kips
Shear:	12.88	kips
Exterior Flange Run, T+Q:	14.36	kips

Manufacturer:	Other
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Elevation: 80 feet

Bolt Data		
Qty:	52	
Diam:	0.75	
Bolt Material:	A325	
N/A:	100	<-- Disregard
N/A:	75	<-- Disregard
Circle:	41.5	in

Bolt Fu:	120
Bolt Fy:	92
Bolt Fty:	44.00

Interior Flange Bolt Results

Maximum Bolt Tension:	14.4 Kips, Ext. T=Interior T
Allowable Tension:	25.9 Kips
Bolt Stress Ratio:	55.4% Pass

Plate Data		
Plate Outer Diam:	47	in
Plate Inner Diam:	36.25	in (Hole @ Ctr)
Thick:	2.5	in
Grade:	36	ksi
Effective Width:	2.84	in

Interior Flange Plate Results

Controlling Bolt Axial Force:	15.0 Kips, Ext. C= Interior C
Plate Stress:	13.9 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	38.7% Pass

Flexural Check

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

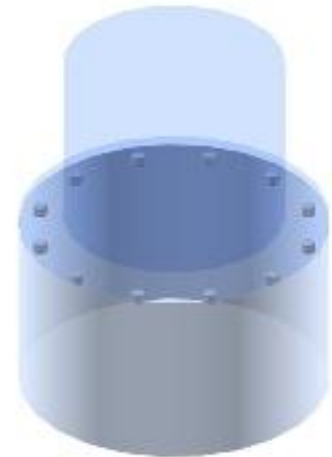
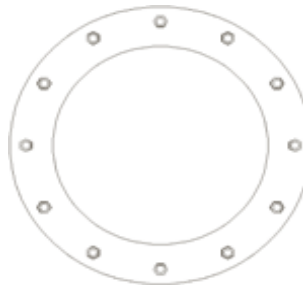
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a
----------------------------	-----

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.5	in
Pole Inner Diam:	47	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

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

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

Site Data

BU#: 876318
 Site Name: RIMMON ST.
 App #: 245817 Rev.0

Pole Manufacturer: Other

Bolt Data

Qty:	52		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	41.5		

Plate Data

Diam:	46.75	in
Thick, t:	2.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.17	in

Stiffener Data (Welding at Both Sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	36	in
Thick:	0.5	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu:	63	ksi
Reinf. Fillet Weld:	0	"0" if None

Stress Increase Factor

ASIF: 1.333

Reactions

Moment:	659.62	ft-kips
Axial:	16.05	kips
Shear:	12.88	kips
Elevation:	80	feet

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

Flange Bolt Results

Bolt Tension Capacity, B:	25.91 kips
Max Bolt directly applied T:	14.36 Kips
Min. PL "tc" for B cap. w/o Pry:	2.172 in
Min PL "treq" for actual T w/ Pry:	1.268 in
Min PL "t1" for actual T w/o Pry:	1.617 in
T allowable w/o Prying:	25.91 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	14.36 kips
Non-Prying Bolt Stress Ratio, T/B:	55.4% Pass

Rigid
Service, ASD
Fty*ASIF

$\alpha' < 0$ case

Exterior Flange Plate Results

Compression Side Plate Stress:	10.7 ksi	Flexural Check
Allowable Plate Stress:	36.0 ksi	
Compression Plate Stress Ratio:	29.7% Pass	
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	25.7% Pass	

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
20.65

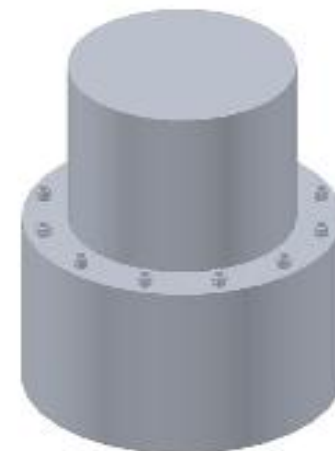
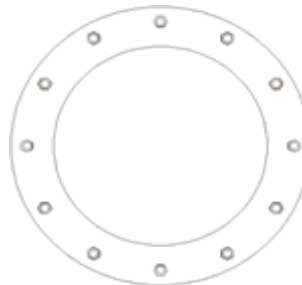
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Stiffener Results

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



* 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

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

Site Data	
BU#:	876318
Site Name:	RIMMON ST.
App #:	245817 Rev.0

Reactions		
Moment:	1260.72	ft-kips
Axial:	27.13	kips
Shear:	16.91	kips
Exterior Flange Run, T+Q:	29.35	kips

Manufacturer:	Other
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Elevation: 40 feet

Bolt Data		
Qty:	40	
Diam:	1	
Bolt Material:	A325	Bolt Fu: 120
N/A:	100	Bolt Fy: 92
N/A:	75	Bolt Fty: 44.00
Circle:	50.375	in

Interior Flange Bolt Results

Maximum Bolt Tension:	29.4 Kips, Ext. T=Interior T
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	63.7% Pass

Plate Data		
Plate Outer Diam:	52.75	in
Plate Inner Diam:	48.25	in (Hole @ Ctr)
Thick:	2.25	in
Grade:	36	ksi
Effective Width:	4.14	in

Interior Flange Plate Results

Controlling Bolt Axial Force:	30.7 Kips, Ext. C= Interior C
Plate Stress:	10.4 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	29.0% Pass

Flexural Check

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

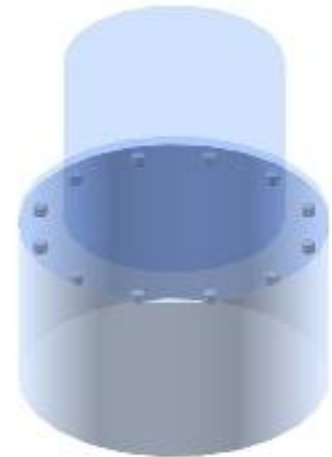
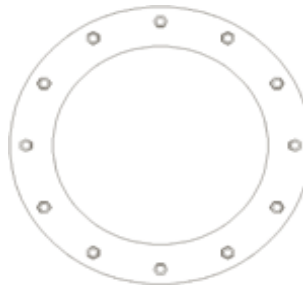
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, $f_b/F_b+(f_v/F_v)^2$:	n/a
Plate Tension+Shear, $f_t/F_t+(f_v/F_v)^2$:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a
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Pole Data		
Pole OuterDiam:	54	in
Thick:	0.625	in
Pole Inner Diam:	52.75	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

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

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

Site Data

BU#: 876318
 Site Name: RIMMON ST.
 App #: 245817 Rev.0

Pole Manufacturer: Other

Bolt Data

Qty:	40		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	50.375		

Plate Data

Diam:	52.5	in
Thick, t:	2.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

Stiffener Data (Welding at Both Sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	48	in
Thick:	0.5	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu:	63	ksi
Reinf. Fillet Weld:	0	"0" if None

Stress Increase Factor

ASIF: 1.333

Reactions

Moment:	1260.72	ft-kips
Axial:	27.13	kips
Shear:	16.91	kips
Elevation:	40	feet

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

Flange Bolt Results

Bolt Tension Capacity, B :	46.07 kips
Max Bolt directly applied T:	29.35 Kips
Min. PL "tc" for B cap. w/o Pry :	1.183 in
Min PL "treq" for actual T w/ Pry :	0.721 in
Min PL "t1" for actual T w/o Pry :	0.945 in
T allowable w/o Prying:	46.07 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	29.35 kips
Non-Prying Bolt Stress Ratio, T/B:	63.7% Pass

Rigid
Service, ASD
Fty*ASIF

$\alpha' < 0$ case

Exterior Flange Plate Results

Compression Side Plate Stress:	7.5 ksi	Flexural Check
Allowable Plate Stress:	36.0 ksi	
Compression Plate Stress Ratio:	21.0% Pass	
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	10.3% Pass	

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
15.29

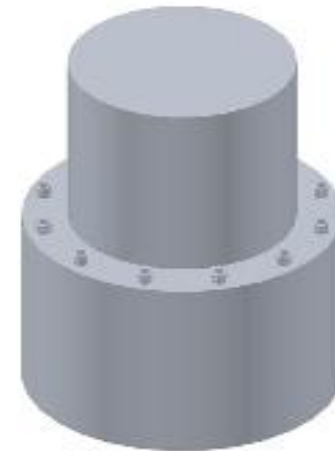
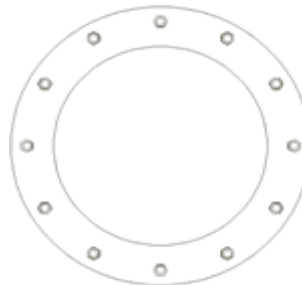
n/a

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



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

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

FOUNDATION REACTION COMPARISON

BU# 876318
WO# 773536

REACTIONS	DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	3080.0	2006.0	65.1%
SHEAR (kips)	30.0	20.0	66.7%

Design loads from: CCIsites Doc #1619418

Although the shear capacity is at 66.7%, the moment reaction is the governing criteria for a monopole drilled pier foundation. Therefore, the overall capacity for this foundation is 65.1%.

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

Sprint Existing Facility

Site ID: CT03XC034

Rimmon Street

34 Rimmon Street
Seymour, CT 06483

September 15, 2014

EBI Project Number: 62144680

September 15, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC034 - Rimmon Street

Site Total: 6.28% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **34 Rimmon Street, Seymour, 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 **34 Rimmon Street, Seymour, 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) 3 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 **150 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	CT03XC034 - Rimmon Street
Site Address	34 Rimmon Street, Seymour, CT, 06483
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	3	60	5.9	150	144	1/2 "	0.5	0	208.04	0.36%
1a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
Sector total Power Density Value:																0.90%

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	3	60	5.9	150	144	1/2 "	0.5	0	208.04	0.36%
2a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
Sector total Power Density Value:																0.90%

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	3	60	5.9	150	144	1/2 "	0.5	0	208.04	0.36%
3a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
Sector total Power Density Value:																0.90%

Site Composite MPE %	
Carrier	MPE %
Sprint	2.71%
MetroPCS	3.57%
Total Site MPE %	6.28%

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 **2.71% (0.90% from sector 1, 0.90% from sector 2 and 0.90% 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 **6.28%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Scott Heffernan
RF Engineering Director

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