



Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

September 1, 2017

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

**RE: Notice of Exempt Modification for Sprint/ Crown Site BU: 876319**  
**Sprint Site ID: CT03XC035**  
**280 Elm Street Naugatuck, CT 06770**  
**Latitude: 41° 28' 52.72"/ Longitude: -73° 03' 13.47"**

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 150-foot level of the existing 150-foot monopole tower at 280 Elm Street in Naugatuck, CT. The tower is owned by Crown Castle. The property is owned by Southington Tower Development LLC and AT&T is a co-owner. Sprint intends to install (3) antennas and (3) RRUs with (1) hybrid cable.

This facility was approved by the Naugatuck Zoning Commission on September 17, 1997.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent N. Warren "Pete" Hess III, the Mayor of Naugatuck, the Town Planner Sue Goggin, ZEO/WEO, and Chemtura Corporation the landowner. Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

**The Foundation for a Wireless World.**

CrownCastle.com

Melanie A. Bachman

September 1, 2017

Page 2

For the foregoing reasons, Sprint respectfully submits that 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: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora  
Real Estate Specialist  
12 Gill Street, Suite 5800, Woburn, MA 01801  
781-729-0053  
[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

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: The Honorable N. Warren "Pete" Hess III  
Borough of Naugatuck  
229 Church Street  
4th Floor  
Naugatuck, CT 06770

Town Planner Sue Goggin, ZEO/WEO  
Borough of Naugatuck  
229 Church Street  
Naugatuck, CT 06770

Chemtura Corporation  
199 Benson Road  
Middlebury, CT 06749



Property Information

Property Location	0 ELM ST
Owner	CHEMTURA CORPORATION
Co-Owner	
Mailing Address	199 BENSON RD MIDDLEBURY CT 06749
Land Use	4400 VACANT IND
Land Class	I
Zoning Code	
Census Tract	
Sub Lot	
Neighborhood	J
Acreage	86.56
Utilities	
Lot Setting/Desc	
Survey Map	
Additional Info	

Photo



Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	



# Borough of Naugatuck, CT

Property Listing Report

Map Block Lot

5.5-20W20

Account

068-7770

## Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings		
Extras		
Outbuildings		
Land		
<b>Total</b>		

## Outbuilding and Extra Items

Type	Description
CELL TOWER	150 HEIGHT
Patio	60 S.F.

## Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
<b>Total Area</b>		<b>0</b>

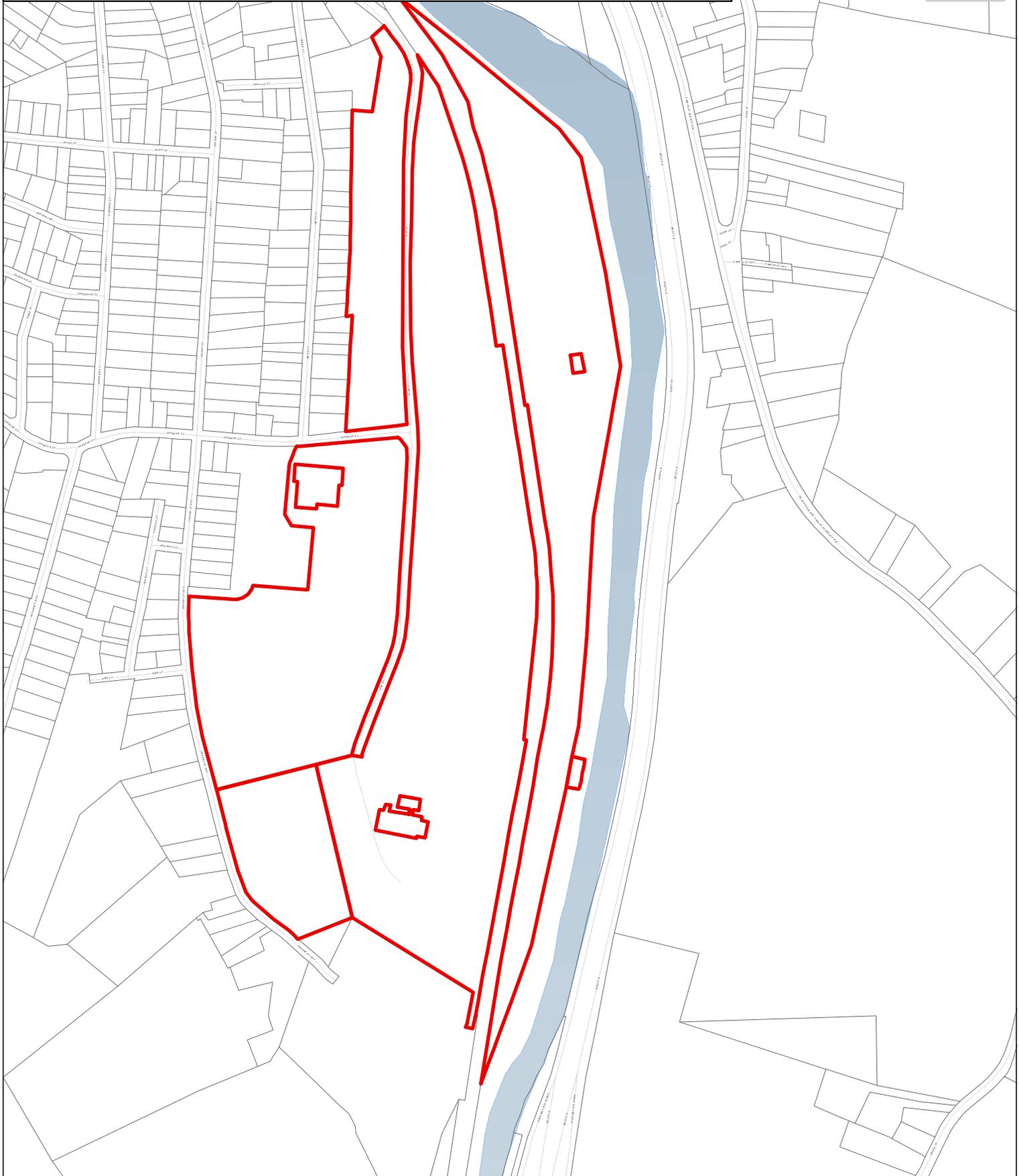
## Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
CHEMTURA CORPORATION	842/ 475	2/17/2009	
UNIROYAL CHEMICAL CO INC	601/ 217	3/31/2003	
UNIROYAL CHEMICAL CO INC	601/ 216	3/31/2003	
CROMPTON MANUFACTURING	584/ 275	11/27/2002	
UNIROYAL CHEMICAL CO INC	271/ 213	10/25/1985	

**Borough of Naugatuck, Connecticut - Assessment Parcel Map**

**Parcel Account Number: 068-7770**

**Address: 0 ELM ST**



Disclaimer: This map is for informational purposes only.  
All information is subject to verification by any user.  
The Borough of Naugatuck and its mapping contractors  
assume no legal responsibility for the information contained herein.

**Map Produced March 2017**

**HARRIS  
BEACH &  
WILCOX**

A LIMITED LIABILITY PARTNERSHIP

ATTORNEYS AT LAW

147 NORTH BROAD STREET  
P.O. BOX 112  
MILFORD, CONNECTICUT 06460-0112  
(203) 877-6000  
(203) 878-9800 (Fax)

**MEMORANDUM**

DATE: September 18, 1997  
TO: Christine Rosenthal  
FROM: John W. Knuff, Esq.  
RE: Naugatuck; Site No. 035  
CC: Steve Paisner  
Steve Kotfila  
Scott Chasse  
Steve Crotty

Pete Gardell and I appeared before the Naugatuck Zoning Commission to present Sprint's application for a Special Permit and Site Plan review. The commission closed the public hearing and voted 4-1 to approve the application.

I will record the Special Permit as soon as I receive it and a building application can be submitted.

COPENHAGEN  
COPENHAGEN  
AFFILIATES  
LIVORNO  
LONDON

PARIS  
OSLO

WASHINGTON, DC  
MILFORD, CT  
NACHTENBACH, NJ

ALBANY  
BUFFALO

NEW YORK  
ITHACA  
NEW YORK CITY  
ROCHESTER  
SYRACUSE



# 2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:  
CT03XC035

SITE NAME:  
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

**APPROVED**  
By Susan Vale at 9:07 am, May 04, 2015

CROWN ID#: 876319  
CROWN SITE NAME: NAUGATUCK 2 UNIROYAL

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

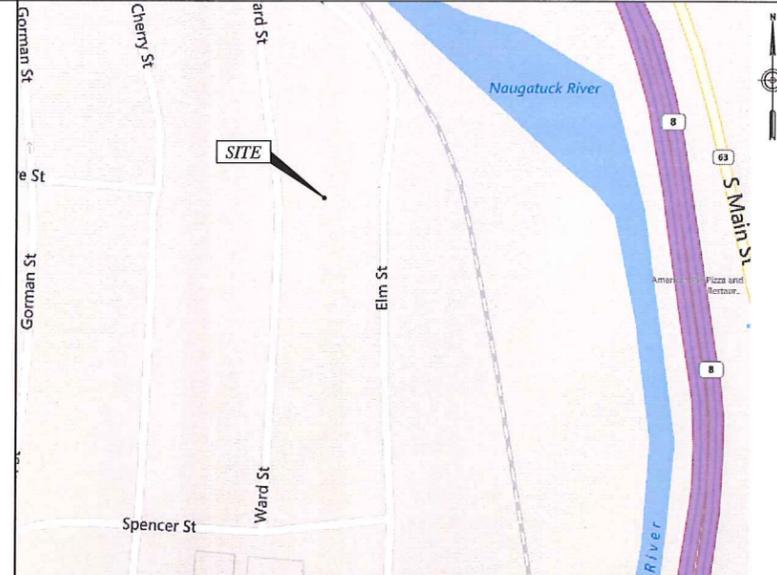


**TECTONIC**  
PLANNING  
ENGINEERING  
SURVEYING  
CONSTRUCTION  
MANAGEMENT  
TECTONIC Engineering & Surveying  
Consultants P.C.  
1279 Route 300  
Newburgh, NY 12550  
Phone: (845) 567-6656  
Fax: (845) 567-8703  
www.tectonicengineering.com

### SHEET INFORMATION

SITE NUMBER:	CT03XC035	LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
SITE NAME:	NAUGATUCK 2 UNIROYAL	LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 286-2000
SITE ADDRESS:	280 ELM ST NAUGATUCK, CT 06770	APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251
COUNTY:	NEW HAVEN	ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 JQuicksell@tectonicengineering.com
COORDINATES: (NAD 83)	41° 28' 52.72"N 73° 03' 13.47"W	SPRINT CM:	PETER CULBERT (803) 203-6446 Peter.Culbert@sprint.com
GROUND ELEV:	239'± AMSL	CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico@crowncastle.com
STRUCTURE TYPE:	MONOPOLE		
STRUCTURE HEIGHT:	150'-0"± AGL		
ANTENNA RAD CENTER:	150'-0"± AGL		
ZONING CLASSIFICATION:	I-VACANT IND		
PARCEL ID:	5.5-20W20		

### VICINITY MAP (NOT TO SCALE)



### SHEET INDEX

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

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### SUBMITTALS

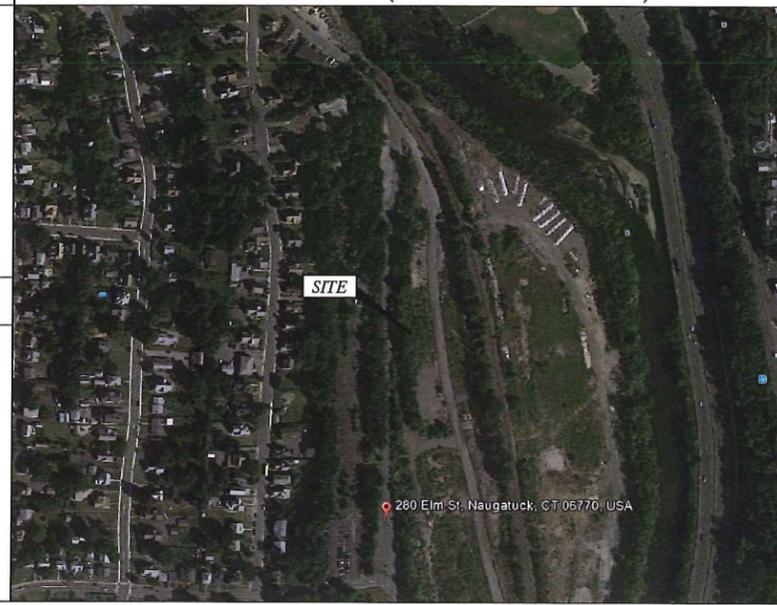
NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/11/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/11/15	JMQ

### GENERAL NOTES

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

### AERIAL VIEW (NOT TO SCALE)



### APPROVALS

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

CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_

LEASING/  
SITE ACQUISITION: \_\_\_\_\_ DATE: \_\_\_\_\_

LANDLORD/  
PROPERTY OWNER: \_\_\_\_\_ DATE: \_\_\_\_\_

R.F. ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_



### PROJECT DESCRIPTION

- (1) NEW 2.5 EQUIPMENT RACK INSIDE EXIST MMBTS CABINET.
- (3) NEW RFS APXVTM14-C-120 ANTENNAS.
- (3) NEW TD-RRH8x20-25 RRH.
- (1) NEW 5/8" FIBER CABLE.
- (1) REPLACEMENT COMMSCOPE MC-PA12L-12-72 ANTENNA MOUNT.
- REMOVE ALL EXIST CLEARWIRE RRH AND PANEL ANTENNAS.



SITE NUMBER:  
CT03XC035

SITE NAME:  
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

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 TO CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATION OF ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER.
14. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
16. THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
17. THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS-BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
18. REFER TO: CONSTRUCTION STANDARDS--SPRINT DOCUMENT EXHIBIT A--STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0-- 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A--WIHRPRF--STD CONSTR SPECS\_157201110421855492.DOCM.
20. REFER TO: COLOR CODING--SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000--CONCRETE

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

DIVISION 05000 -- METALS

- PART 1 -- GENERAL
- 1.01 WORK INCLUDED
- A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED. AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDING ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK AND ALL ITEMS INCIDENTAL AS SPECIFIED AND AS SHOWN ON THE DRAWINGS:
1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.
  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 VSUAL INSPECTION IS ACCEPTABLE.
  - D. STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING CAPACITOR DISCHARGE STUD WELDER.
  - E. PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.
  - F. FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.
- 2.03 BOLTING
- A. BOLTS SHALL BE CONFORMING TO ASTM A35 HIGH STRENGTH HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
  - B. BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED, ASTM A153 NUTS SHALL BE HEAVY HEX TYPE.
  - C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
  - D. EXCEPT WHERE SHOWN, ALL BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS SHALL 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.



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SUBMITTALS

PROJECT NO: 7225.CT03XC035			
NO	DATE	DESCRIPTION	BY
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1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMG



SITE NUMBER:  
CT03XC035

SITE NAME:  
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
GENERAL NOTES

SHEET NO:  
SP-1

DIVISION 13000--SPECIAL CONSTRUCTION ANTENNA INSTALLATION

PART 1 - GENERAL

1.01 WORK INCLUDED

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

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

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

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

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

G. ANTENNA AND HYBRIFLEX CABLE GROUNDING:

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

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

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

1.03 REQUIREMENTS OF REGULATOR AGENCIES

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

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

1. EIA - ELECTRONIC INDUSTRIES ASSOCIATION RS-22. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

2. FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7480-1H, CONSTRUCTION MARKING AND LIGHTING.

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

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

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

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

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

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
--- o --- o ---	GROUND WIRE
--- E --- E ---	ELECTRIC
--- T --- T ---	TELEPHONE
--- O --- O --- O --- O ---	OVERHEAD WIRE
--- P --- P ---	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, KANSAS 66251

TECTONIC Engineering & Surveying Consultants P.C.  
1279 Route 300  
Newburgh, NY 12550  
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SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMQ

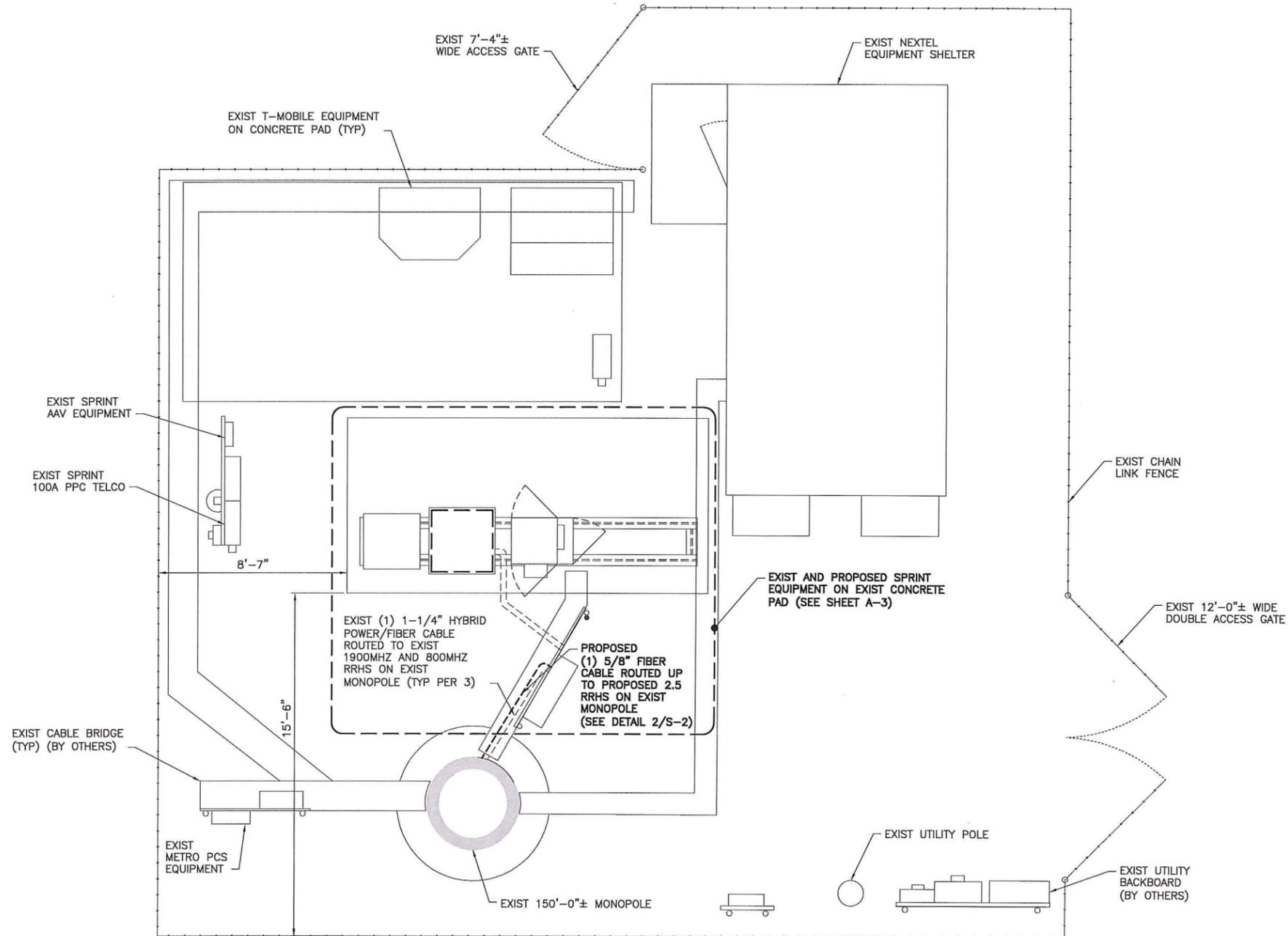
MANOJ KUMAR  
No. 22098  
PROFESSIONAL ENGINEER

SITE NUMBER:  
CT03XC035  
SITE NAME:  
NAUGATUCK 2 UNIROYAL  
SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
GENERAL NOTES

SHEET NO:  
SP-2

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



1  
A-1  
**SITE PLAN**  
 SCALE: 3/8" = 1'-0"

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

**CROWN CASTLE**

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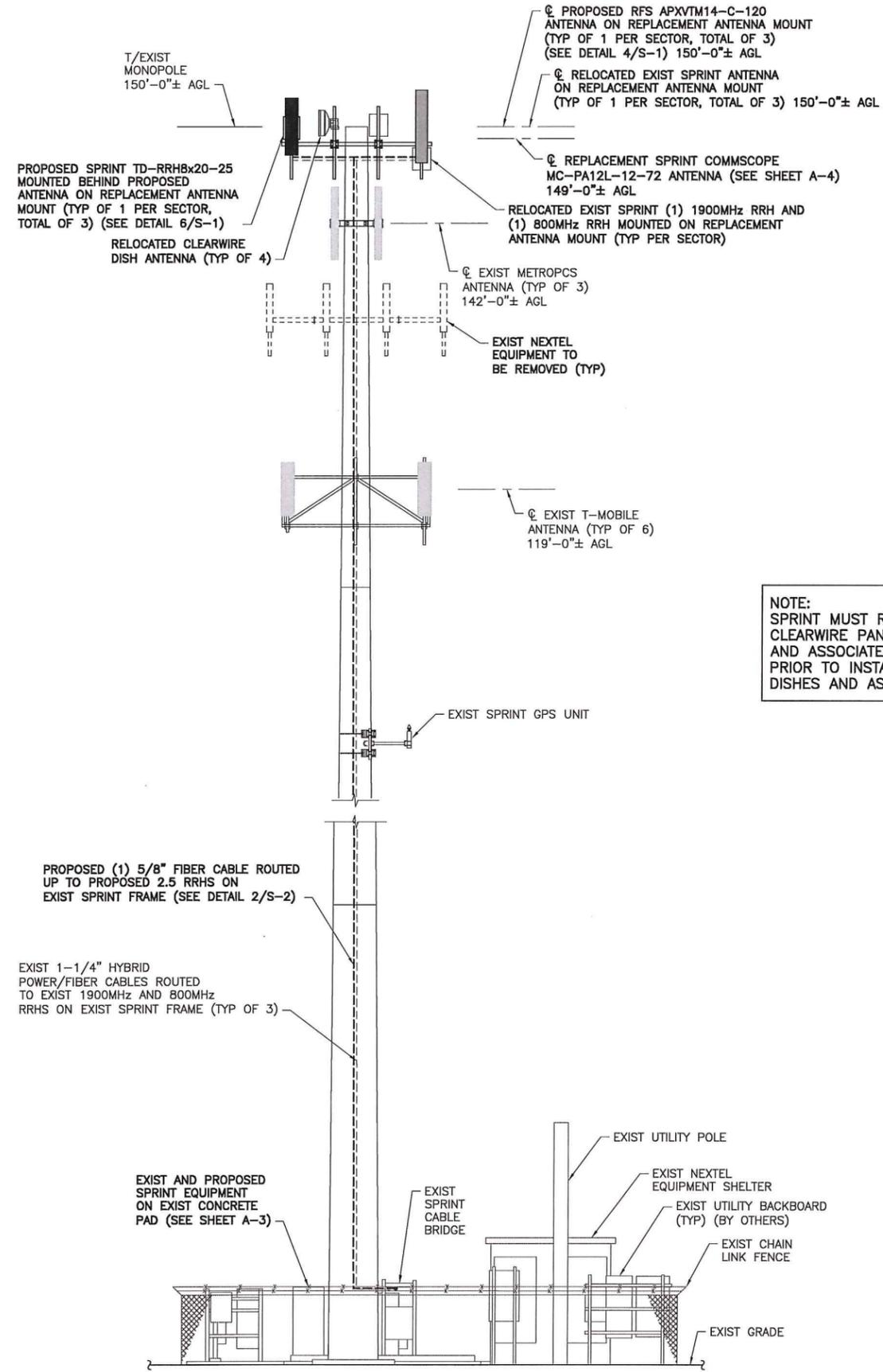
DATE: 5/1/15  
 REVIEWED BY: [Signature]



SITE NUMBER:  
 CT03XC035  
 SITE NAME:  
 NAUGATUCK 2 UNIROYAL  
 SITE ADDRESS:  
 280 ELM ST  
 NAUGATUCK, CT 06770

SHEET TITLE:  
 SITE PLAN

SHEET NO:  
 A-1

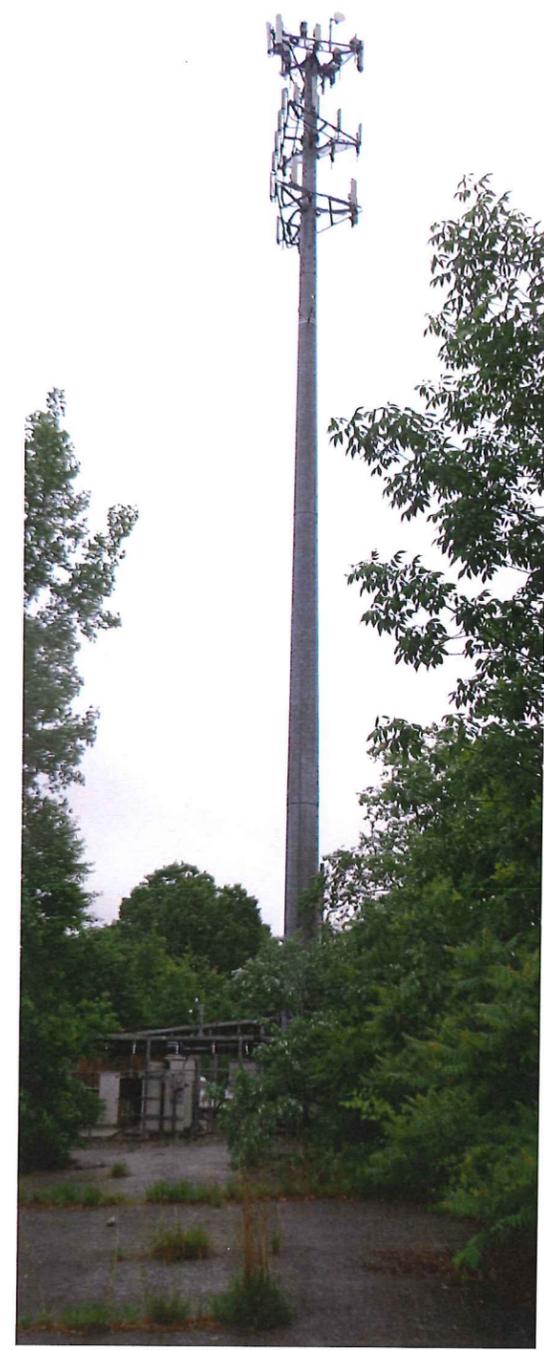


**NOTE:**  
 SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT, CLEARWIRE PANEL ANTENNAS, CLEARWIRE RRHS AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION. CLEARWIRE MICROWAVE DISHES AND ASSOCIATED CABLES TO REMAIN.

1  
 A-2 **ELEVATION**  
 SCALE: 3/16" = 1'-0"

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

THE PROPOSED REPLACEMENT MOUNT IS STRUCTURALLY ADEQUATE TO SUPPORT THE PROPOSED DESIGN BASED ON LOAD COMPARISON ONLY AS DETAILED IN THE MOUNT ASSESSMENT LETTER BY TECTONIC ENGINEERING, DATED 5/1/2015, REV 1. A FULL STRUCTURAL MOUNT ANALYSIS WAS NOT PERFORMED.



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

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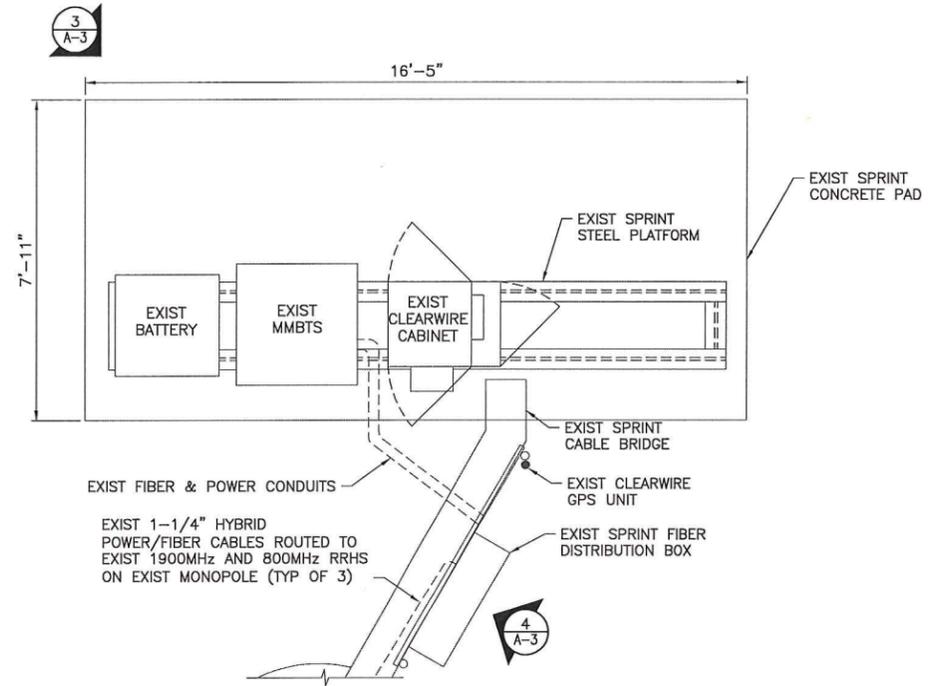
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 NAUGATUCK 2 UNIROYAL

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 NAUGATUCK, CT 06770

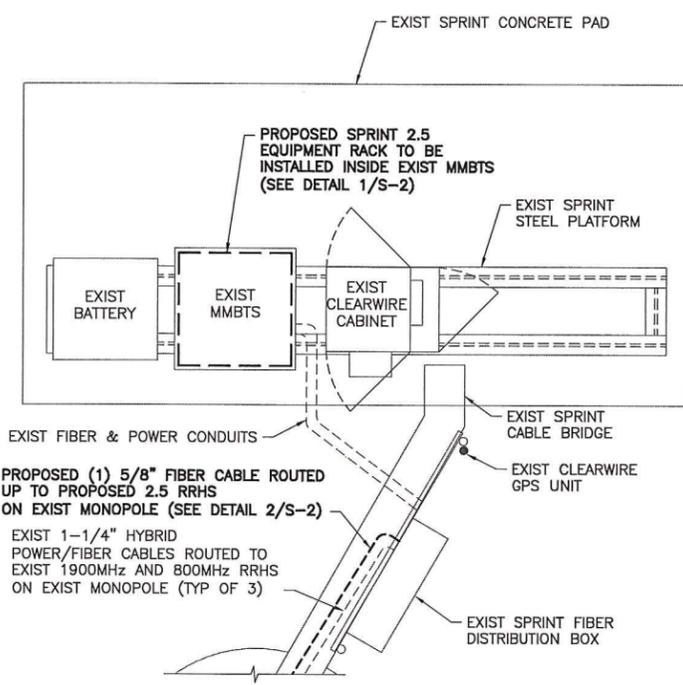
SHEET TITLE:  
 ELEVATION

SHEET NO:  
 A-2

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



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



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



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



4 EXIST FIBER DISTRIBUTION BOX  
SCALE: N.T.S.

**Sprint**  
2.5 EQUIPMENT DEPLOYMENT  
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OVERLAND PARK, KANSAS 66251

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2	5/1/15	FOR CONSTRUCTION	DC

DATE: 5/1/15  
REVIEWED BY: JMO



SITE NUMBER:  
CT03XC035  
SITE NAME:  
NAUGATUCK 2 UNIROYAL  
SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO:  
A-3

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

THE PROPOSED REPLACEMENT MOUNT IS STRUCTURALLY ADEQUATE TO SUPPORT THE PROPOSED DESIGN BASED ON LOAD COMPARISON ONLY AS DETAILED IN THE MOUNT ASSESSMENT LETTER BY TECTONIC ENGINEERING, DATED 5/1/2015, REV 1. A FULL STRUCTURAL MOUNT ANALYSIS WAS NOT PERFORMED.

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

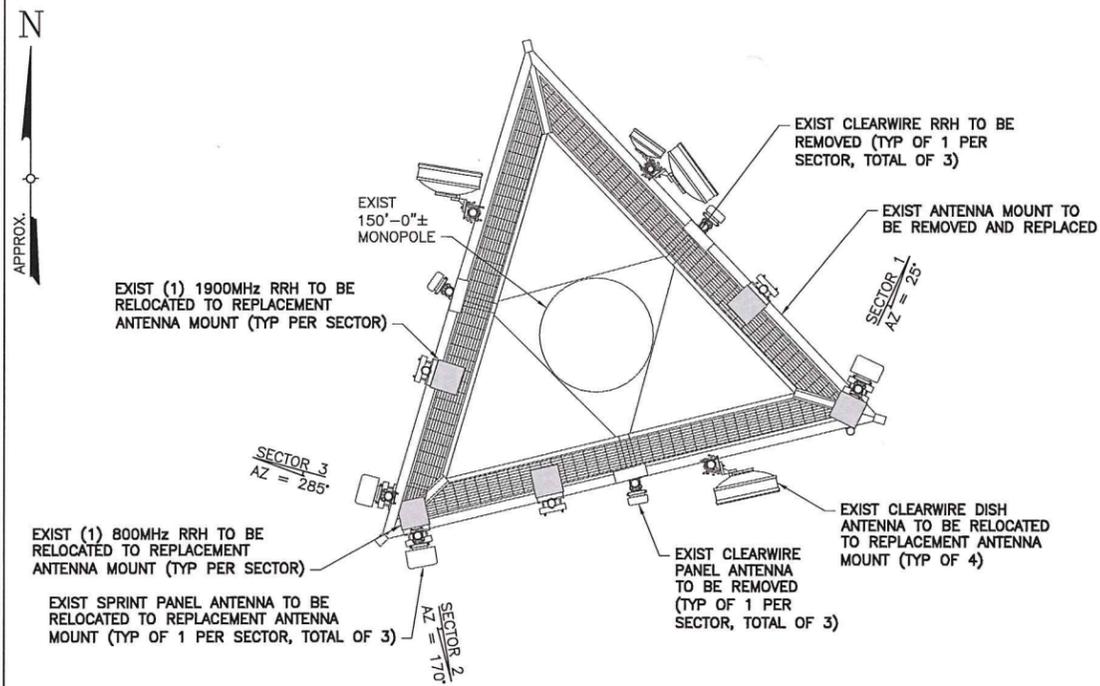
**CROWN CASTLE**

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EXIST CLEARWIRE DISH ANTENNA TO BE RELOCATED TO REPLACEMENT ANTENNA MOUNT (TYP OF 4)

EXIST CLEARWIRE PANEL ANTENNA TO BE REMOVED (TYP OF 1 PER SECTOR, TOTAL OF 3)

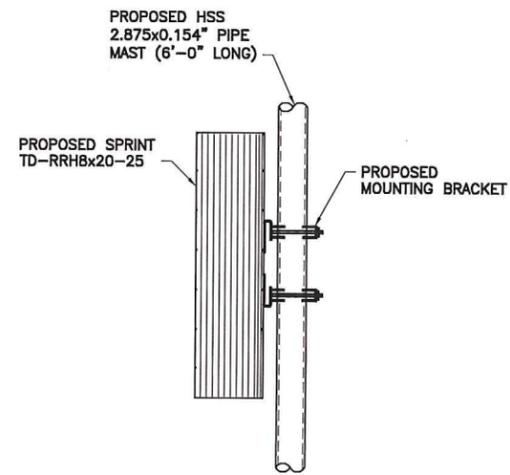


EXIST SPRINT PANEL ANTENNA TO BE RELOCATED TO REPLACEMENT ANTENNA MOUNT (TYP OF 1 PER SECTOR, TOTAL OF 3)

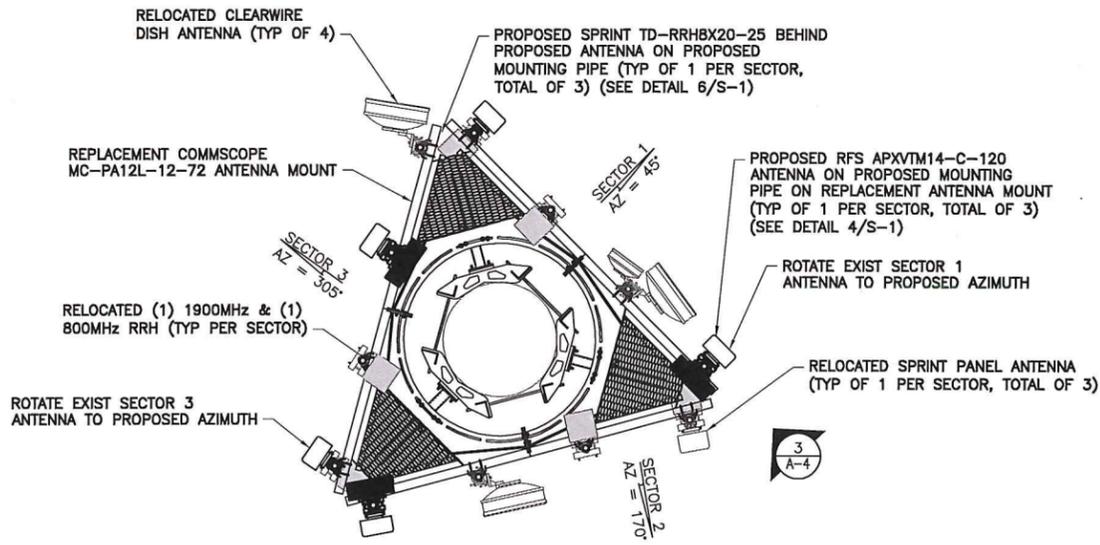
EXIST (1) 1900MHz RRH AND (1) 800MHz RRH TO BE RELOCATED TO REPLACEMENT ANTENNA MOUNT (TYP PER SECTOR)

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

**NOTE:**  
SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT, CLEARWIRE PANEL ANTENNAS, CLEARWIRE RRHS AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION. CLEARWIRE MICROWAVE DISHES AND ASSOCIATED CABLES TO REMAIN.



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



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

**ANTENNA DATA**

Status	Exist (Proposed)	Proposed
Antenna Manufacturer	RFS-CELWAVE	RFS-CELWAVE
Antenna Model Number	APXVSP18-C-A20	APXVTM14-C-120
Number of Antennas	3	3
Antenna RAD Center	150'	150'
Antenna Azimuth	25/170/285 (45/170/305)	45/170/305
Antenna RRH Model Number	800MHz/1900MHz	TD-RRH8x20-25
Number of RRH	6	3

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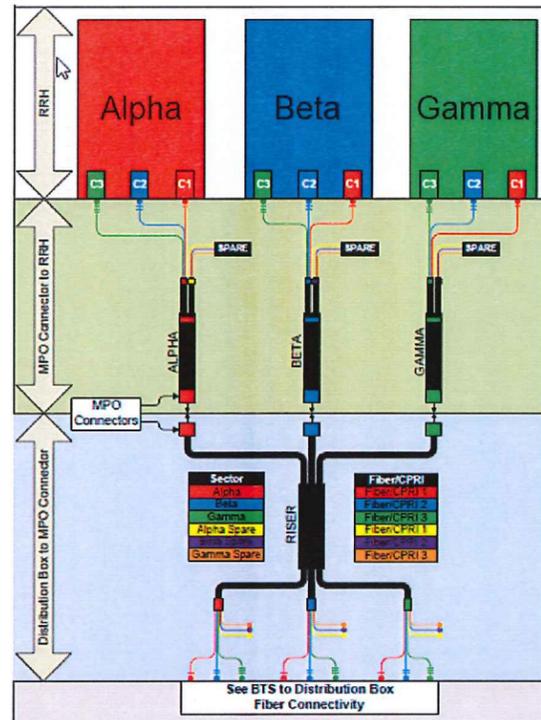
SITE NUMBER:  
CT03XC035

SITE NAME:  
NAUGATUCK 2 UNIROYAL

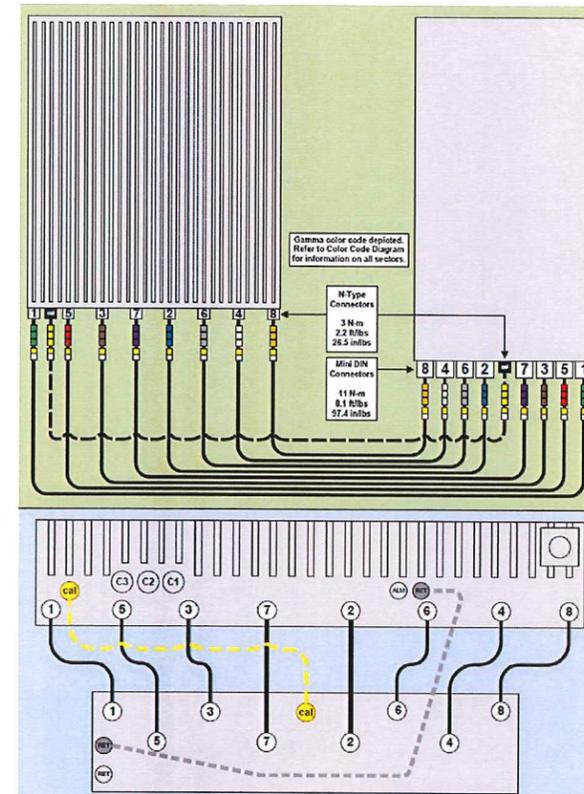
SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
ANTENNA LAYOUT PLANS

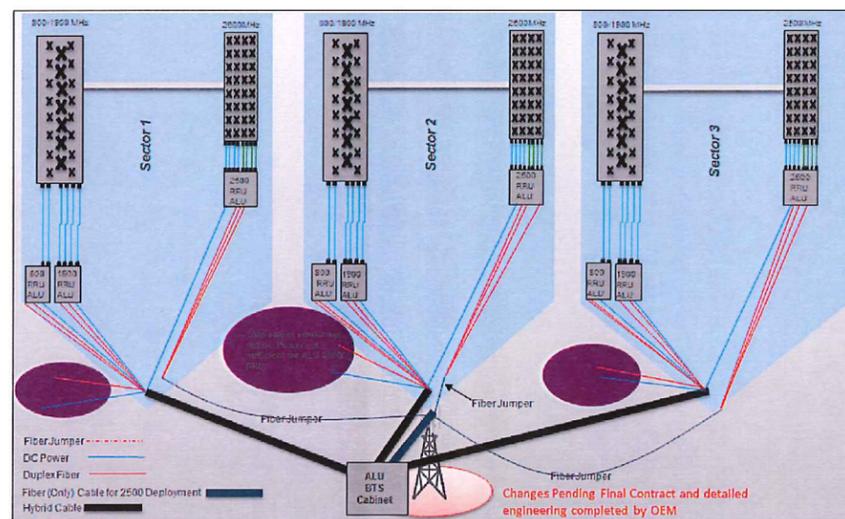
SHEET NO:  
A-4



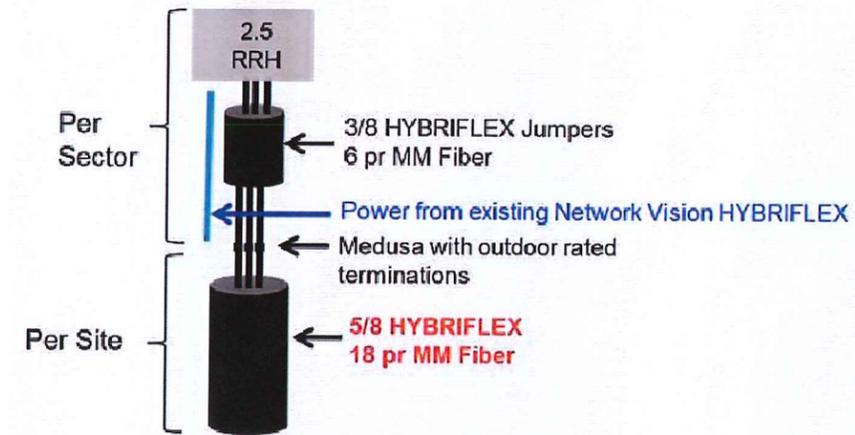
1 2.5 CABLE COLOR CODING  
A-5 SCALE: N.T.S.



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



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



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

**Sprint**  
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6580 SPRINT PARKWAY  
OVERLAND PARK, KANSAS 66251

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SUBMITTALS			
PROJECT NO: 7225.CT03XC035			
NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMO



SITE NUMBER:  
CT03XC035  
SITE NAME:  
NAUGATUCK 2 UNIROYAL  
SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
RAN WIRING DIAGRAM

SHEET NO:  
A-5

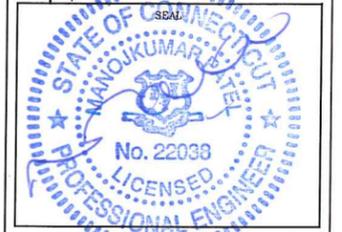
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**SUBMITTALS**

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DATE	REVIEWED BY
5/1/15	JMG



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**CT03XC035**

SITE NAME:  
**NAUGATUCK 2 UNIROYAL**

SITE ADDRESS:  
**280 ELM ST  
 NAUGATUCK, CT 06770**

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

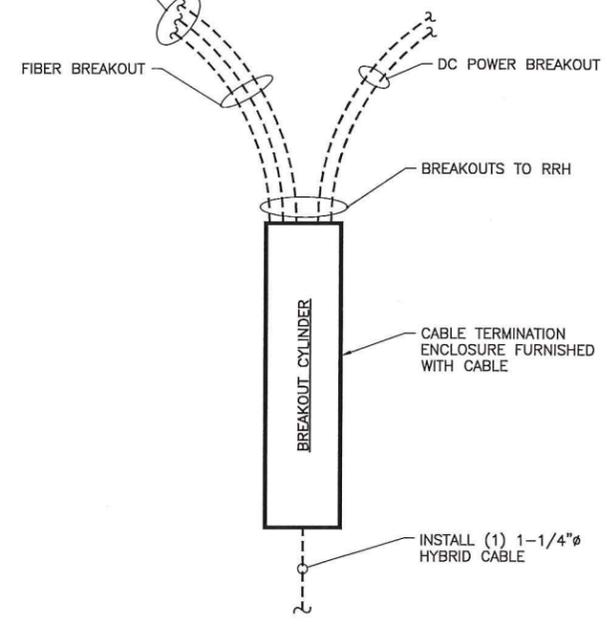


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

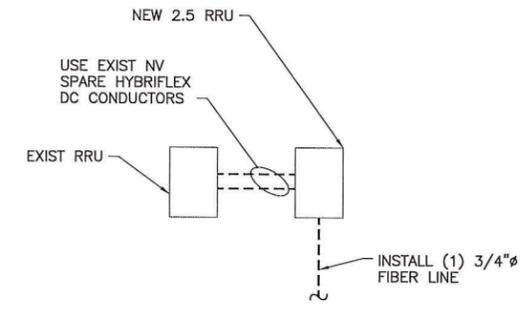


**1** HYBRIFLEX RISER/JUMPER CONNECTION DETAILS  
 A-6 SCALE: N.T.S.

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



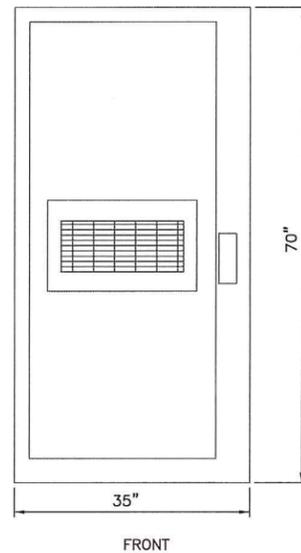
**2** 2.5 HYBRID CABLE W/FIBER & DC FEEDERS  
 A-6 SCALE: N.T.S.



FIBER ONLY TRUNK LINES

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

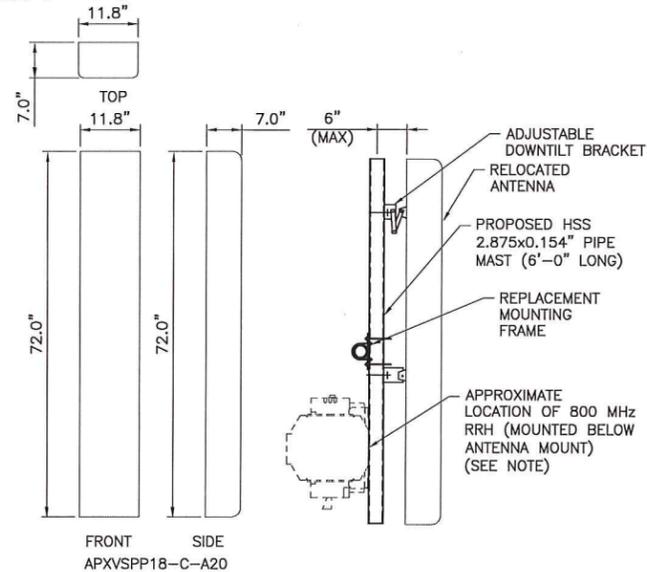
- SPECIAL NOTES: CABLE MARKINGS AT RAD CENTER AND ALL WALL/BLDG. PENETRATIONS**
- ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE.
  - ALL COLOR BANDS INSTALLED AT THE TOWER TOP SHALL BE A MINIMUM OF 3" WIDE AND SHALL HAVE A MINIMUM OF 3/4" OF SPACING BETWEEN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



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

1 (EXIST) MMBTS CABINET

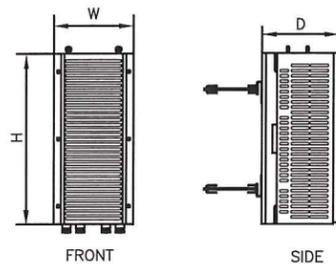
S-1 SCALE: 1" = 1'-0"



NOTE: THE 1900MHz RRH MUST BE INSTALLED ON A SEPARATE MOUNTING PIPE AS PER THE FINAL CONFIGURATION ON 2/A-4.

3 (EXIST) ANTENNA DETAIL

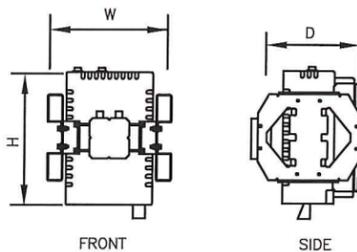
S-1 SCALE: 3/4"=1'-0"



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

5 (EXIST) RRH DETAILS

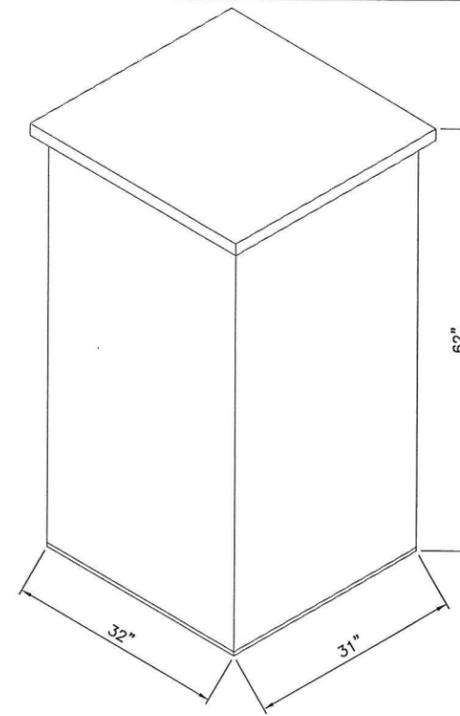
S-1 SCALE: 1 1/2"=1'-0"



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

6 (PROPOSED) RRH DETAIL

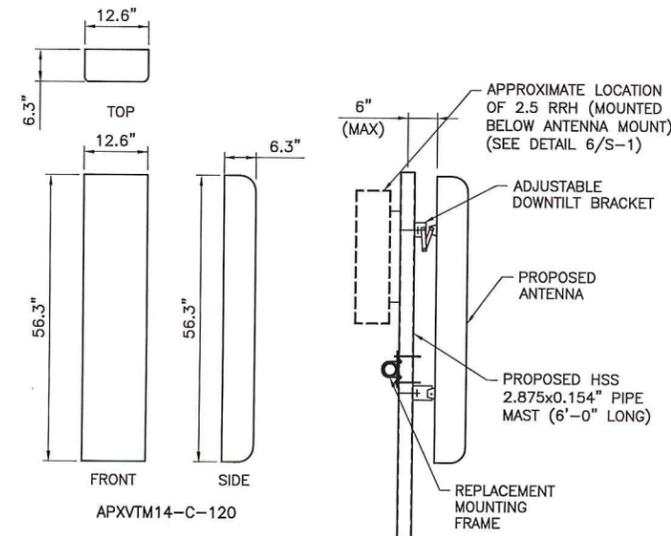
S-1 SCALE: N.T.S.



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

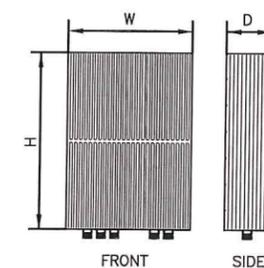
2 (EXIST) BATTERY CABINET

S-1 SCALE: 1" = 1'-0"



4 (PROPOSED) ANTENNA DETAIL

S-1 SCALE: 3/4"=1'-0"



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

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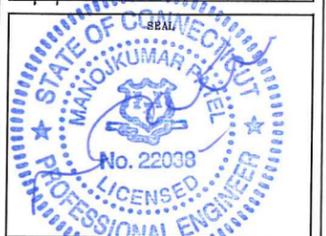
TECTONIC Engineering & Surveying Consultants P.C.  
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2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMQ



SITE NUMBER: CT03XC035
SITE NAME: NAUGATUCK 2 UNIROYAL
SITE ADDRESS: 280 ELM ST NAUGATUCK, CT 06770
SHEET TITLE: EQUIPMENT DETAILS
SHEET NO: S-1

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SUBMITTALS			
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NO	DATE	DESCRIPTION	BY
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DATE	REVIEWED BY
5/1/15	JMG



SITE NUMBER: CT03XC035
SITE NAME: NAUGATUCK 2 UNIROYAL
SITE ADDRESS: 280 ELM ST NAUGATUCK, CT 06770
SHEET TITLE: EQUIPMENT SCHEMATIC DETAILS
SHEET NO: S-2

RFS HYBRIFLEX RISER CABLES SCHEDULE

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

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

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

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

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable	Length
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

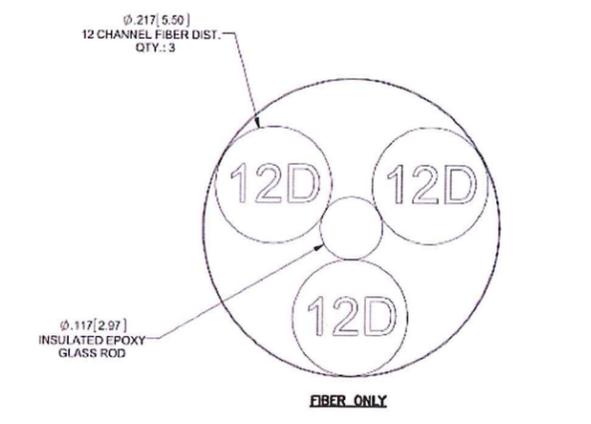
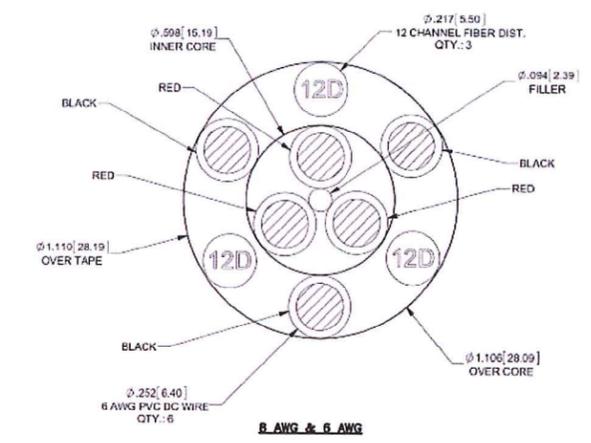
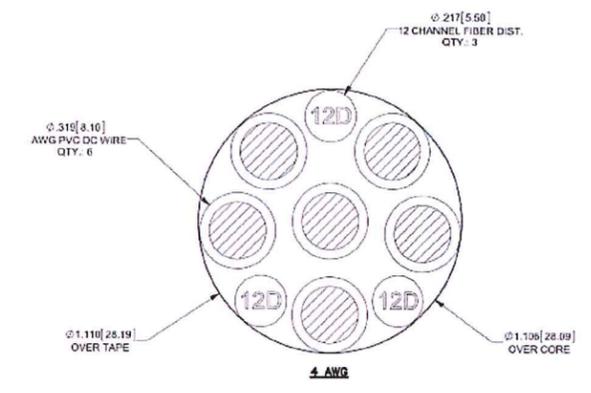
8 AWG Power	Hybrid Jumper cable	Length
MN: HBF058-08U1M3-5F1	5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
MN: HBF058-08U1M3-10F1		10 ft
MN: HBF058-08U1M3-15F1		15 ft
MN: HBF058-08U1M3-20F1		20 ft
MN: HBF058-08U1M3-25F1		25 ft
MN: HBF058-08U1M3-30F1		30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

6 AWG Power	Hybrid Jumper cable	Length
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

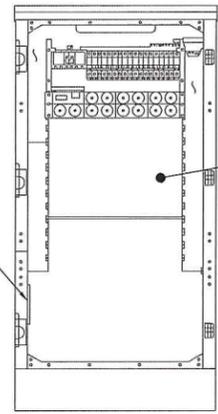
4 AWG Power	Hybrid Jumper cable	Length
MN: HBF078-21U1M3-5F1	5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
MN: HBF078-21U1M3-10F1		10 ft
MN: HBF078-21U1M3-15F1		15 ft
MN: HBF078-21U1M3-20F1		20 ft
MN: HBF078-21U1M3-25F1		25 ft
MN: HBF078-21U1M3-30F1		30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

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

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



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.



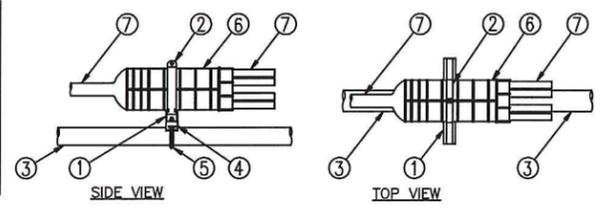
INSTALL NEW 2.5 EQUIPMENT IN EXIST MMBTS CABINET INCLUDING BUT NOT LIMITED TO BASE BAND UNIT, CELL SITE ROUTER AND SURGE ARRESTORS. GROUND EQUIPMENT TO EXIST INTERIOR CABINET GROUND BAR

EXIST GROUND BAR TO BE UTILIZED

FRONT ELEVATION (CABINET INTERIOR)

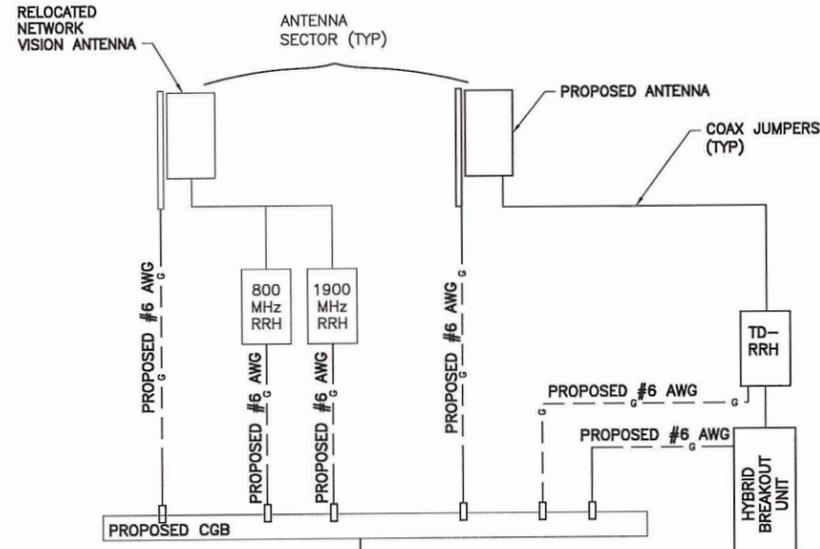
1 MMBTS INTERIOR DETAIL  
 S-2 SCALE: N.T.S.

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.

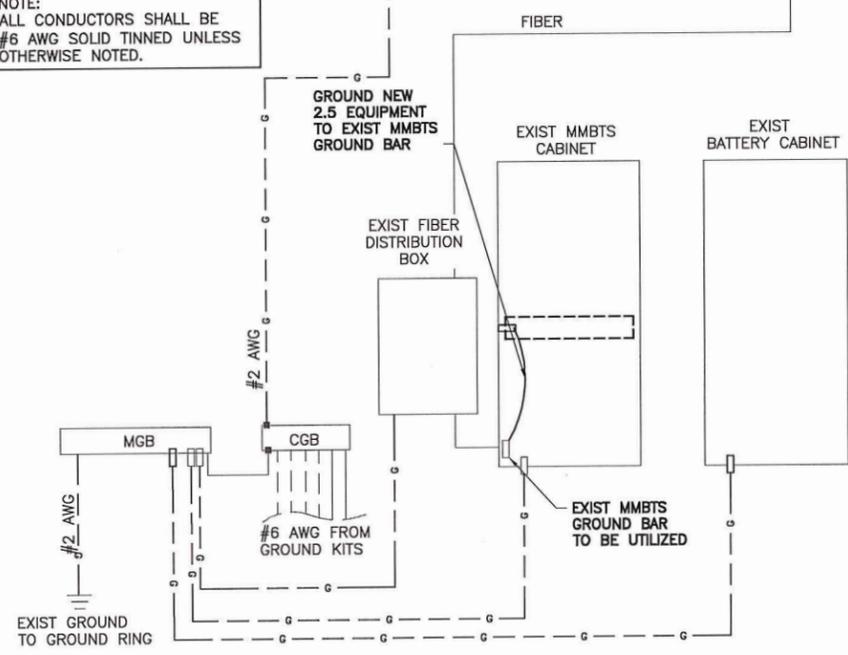


3 MEDUSA HEAD DETAIL  
 S-2 SCALE: NTS

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

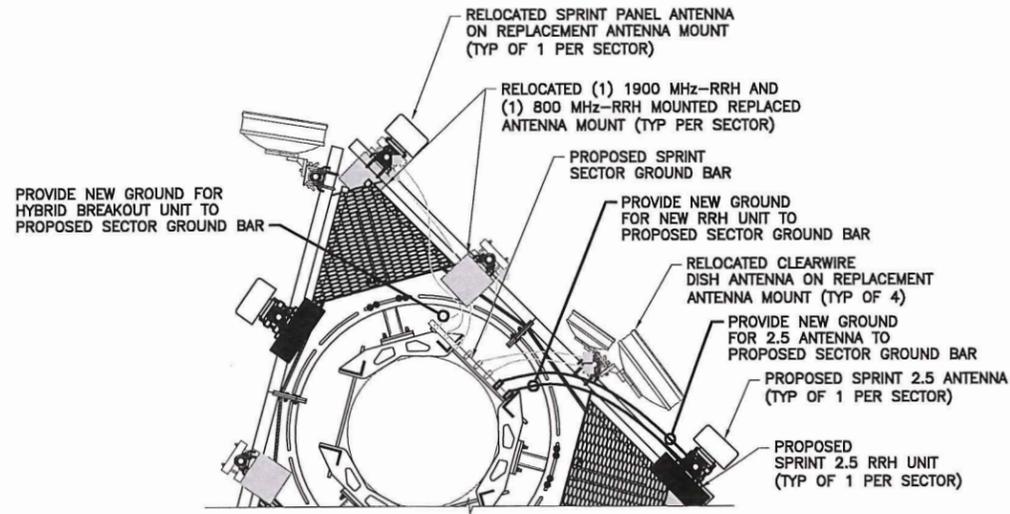


NOTE:  
ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.

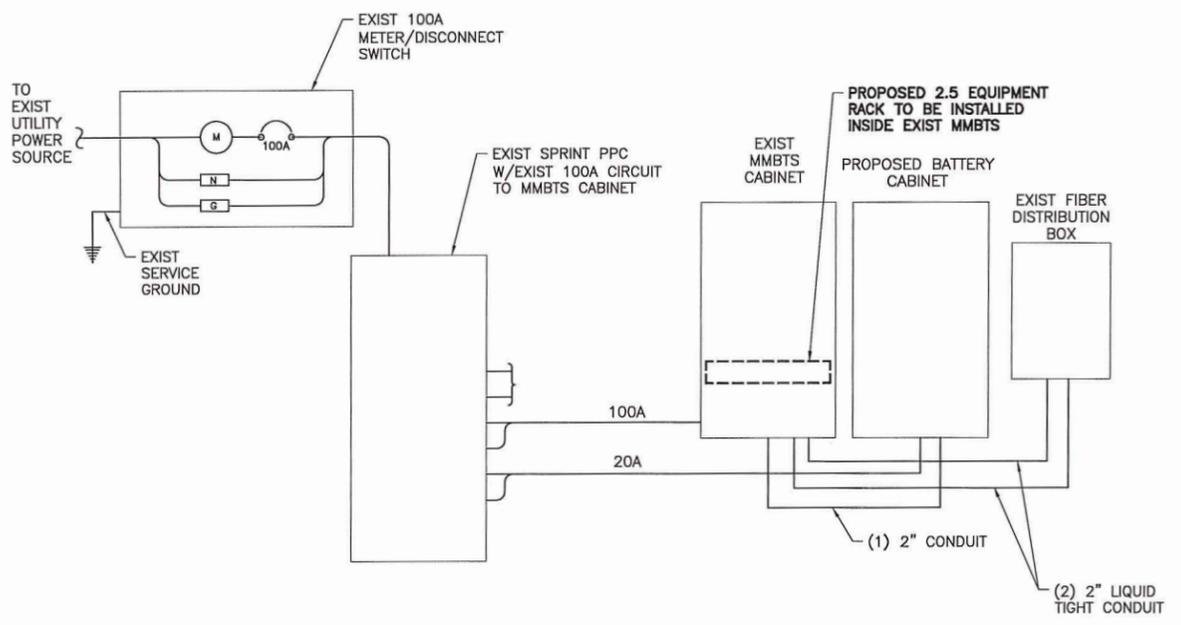


LEGEND  
 ■ CADWELDED CONNECTION  
 □ MECHANICAL CONNECTION  
 ● COMPRESSION CONNECTION

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**  
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 OVERLAND PARK, KANSAS 66251

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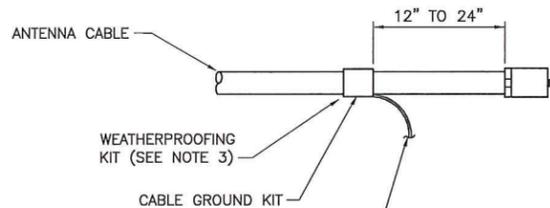
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1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE: 5/1/15  
 REVIEWED BY: DMG  
 STATE OF CONNECTICUT  
 MANOJKUMAR PATEL  
 No. 22038  
 LICENSED PROFESSIONAL ENGINEER

SITE NUMBER: CT03XC035  
 SITE NAME: NAUGATUCK 2 UNIROYAL  
 SITE ADDRESS: 280 ELM ST NAUGATUCK, CT 06770

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

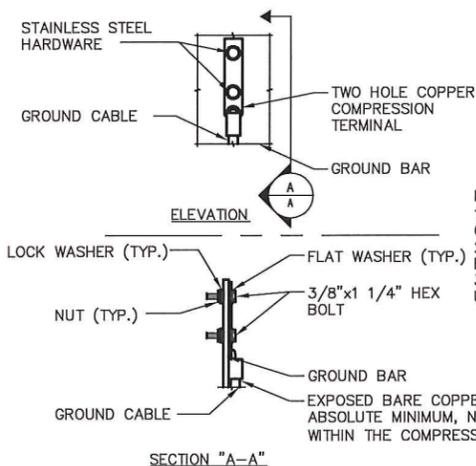
**NOTES:**

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.

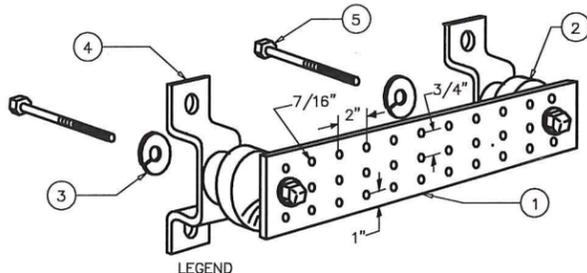
WEATHER PROOFING SHALL BE (TYPE AND PART NUMBER) AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER AND APPROVED BY CONTRACTOR.

**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.

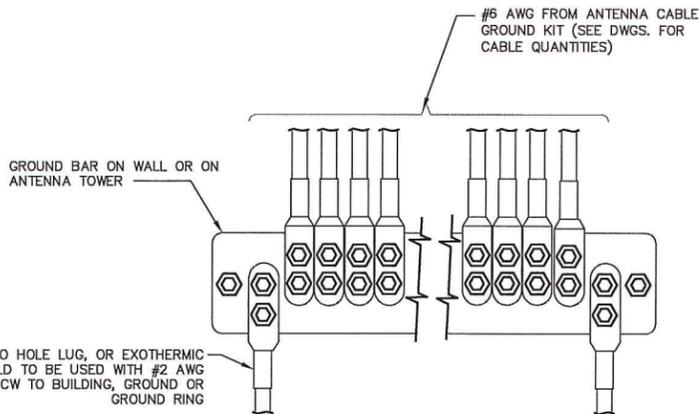
**2 GROUNDING BAR CONN. DETAIL**  
E-2 SCALE: NTS



- 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, KANSAS 66251

**CROWN CASTLE**

**TECTONIC**  
- PLANNING  
- ENGINEERING  
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- CONSTRUCTION MANAGEMENT

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**SUBMITTALS**

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMO



SITE NUMBER:  
CT03XC035

SITE NAME:  
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:  
280 ELM ST  
NAUGATUCK, CT 06770

SHEET TITLE:  
GROUNDING DETAILS & NOTES

SHEET NO:  
E-2



Date: **August 2, 2017**

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

Velocitel, Inc. d.b.a. FDH Velocitel  
6521 Meridien Drive, Suite 107  
Raleigh, NC 27616  
(919) 755-1012

**Subject: Structural Analysis Report**

**Carrier Designation:** **Sprint PCS Co-Locate**  
**Carrier Site Number:** CT03XC035  
**Carrier Site Name:** CT03XC035

**Crown Castle Designation:** **Crown Castle BU Number:** 876319  
**Crown Castle Site Name:** Naugatuck 2 Uniroyal  
**Crown Castle JDE Job Number:** 447244  
**Crown Castle Work Order Number:** 1437246  
**Crown Castle Application Number:** 397057 Rev. 1

**Engineering Firm Designation:** **FDH Velocitel Project Number:** 17QJIZ1400

**Site Data:** **280 Elm Street, Naugatuck, New Haven County, CT**  
**Latitude 41° 28' 52.54", Longitude -73° 3' 11.67"**  
**150 Foot - Monopole Tower**

Dear Charles Trask,

FDH Velocitel 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 1064386, in accordance with application 397057, revision 1.

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

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

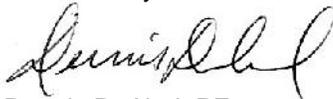
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 121 mph converted to a nominal 3-second gust wind speed of 94 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor,  $K_{zt}$ , of 1.000 and Risk Category II were used in this analysis.

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

Respectfully submitted by:

  
Jay Balk  
Project Engineer II

Reviewed by:

  
Dennis D. Abel, PE  
Director  
CT PE License No. 23247



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## 1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Summit Manufacturing, Inc. in August of 1997. 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-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 94 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1.

**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
150.0	150.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-C-120			
		1	commscope	MC-PA12L-12-B Platform Mount			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note			
150.0	153.0	1	dragonwave	A-ANT-23G-1-C	3	1-1/4 1/4 5/16 1/2 2" Conduit	1			
	152.0	3	dragonwave	A-ANT-23G-2-C						
	150.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER						
		3	alcatel lucent	800MHZ RRH						
		3	alcatel lucent	1900MHz RRH (65MHz)						
		9	rfs celwave	ACU-A20-N						
		3	rfs celwave	APXVSP18-C-A20						
	1	crown mounts	Platform Mount [LP 1201-1]							
	148.0	3	argus technologies	LLPX310R				-	-	1
		6	samsung telecomm.	FDD_R6_RRH						
142.0	142.0	3	rfs celwave	APXV18-206517S-C	-	-	1			
		1	crown mounts	Pipe Mount [PM 601-3]						
134.0	135.0	12	decibel	844G90VTA-SX	12	1-1/4	4			
	134.0	1	crown mounts	Platform Mount [LP 1201-1]						
119.0	120.0	3	ericsson	AIR -32 B2A/B66AA	12	1-5/8	1			
		3	andrew	LNx-6515DS-VTM						
		3	ericsson	ERICSSON AIR 21 B2A B4P						
		3	ericsson	RRUS 11 B12						
	119.0	1	crown mounts	Platform Mount [LP 303-1]						
		3	ericsson	KRY 112 144/1						

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	1	lucent	KS24019-L112A	1	1/2	1
	99.0	1	crown mounts	Side Arm Mount [SO 702-1]			

Notes:

- 1) Existing equipment
- 2) Reserved equipment
- 3) Existing equipment to be removed; not considered in this analysis
- 4) Abandoned equipment; considered in this analysis

**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)
150.0	150.0	1	--	14' Low Profile Mount	--	--
		1	--	5/8" Lightning Rod		
		12	--	DB980H PCS		
130.0	130.0	1	--	14' Low Profile Mount	--	--
		12	--	DB980H PCS		
110.0	110.0	1	--	14' Low Profile Mount	--	--
		12	--	DB980H PCS		
100.0	100.0	1	--	GPS Antenna with Mount	--	--

**3) ANALYSIS PROCEDURE**

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	Summit, Job# 2249, Dated: 08/14/1997	1446973	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit, Job# 2249, Dated: 08/14/1997	1447037	CCISITES
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, PE, PC, Dated: 07/22/1997	1529732	CCISITES
4-SITE PLAN/CONSTRUCTION DRAWING OF COMPOUND	Crown Castle, Dated: May 1, 2015	5663715	CCISITES
4-MOUNT ANALYSIS REPORTS	Tectonic, Dated: May 1, 2015	Site No. CT03XC035	ON FILE

**3.1) Analysis Method**

tnxTower (version 7.0.7.0), 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.

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Velocitel 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 - 108	Pole	TP30.401x22x0.25	1	-13.62	1459.26	43.0	Pass
L2	108 - 69.75	Pole	TP37.553x29.1509x0.3125	2	-20.49	2264.07	61.1	Pass
L3	69.75 - 32.5	Pole	TP44.379x35.9778x0.375	3	-29.95	3445.83	59.8	Pass
L4	32.5 - 0	Pole	TP50.13x42.5288x0.4375	4	-43.02	4671.47	58.1	Pass
							Summary	
						Pole (L2)	61.1	Pass
						RATING =	61.1	Pass

**Table 6 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0.0	56.0	Pass
1	Base Plate		57.1	Pass
1	Base Foundation		38.6	Pass
1	Base Foundation Soil Interaction		29.0	Pass

<b>Structure Rating (max from all components) =</b>	<b>61.1%</b>
---	--------------

Notes:

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

### 4.1) Recommendations

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



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

SPRINT Existing Facility

Site ID: CT03XC035

Naugatuck 2 Uniroyal  
280 Elm Street  
Naugatuck, CT 06770

**August 21, 2017**

**EBI Project Number: 6217003714**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>7.20 %</b>



August 21, 2017

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

## Emissions Analysis for Site: **CT03XC035 – Naugatuck 2 Uniroyal**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **280 Elm Street, Naugatuck, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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 population 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 population 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.

Population 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 limits for the 850 MHz Band is approximately  $567 \mu\text{W}/\text{cm}^2$ . The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 SPRINT Wireless antenna facility located at **280 Elm Street, Naugatuck, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20** and the **RFS APXVTM14-C-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **150 feet** above ground level (AGL) for **Sector A**, **150 feet** above ground level (AGL) for **Sector B** and **150 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.



# EBI Consulting

environmental | engineering | due diligence

## SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	1.48 %	Antenna B1 MPE%	1.48 %	Antenna C1 MPE%	1.48 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	1.08 %	Antenna B2 MPE%	1.08 %	Antenna C2 MPE%	1.08 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.56 %
Nextel	0.37 %
Verizon Wireless	1.08 %
Clearwire	0.09 %
T-Mobile	3.10 %
<b>Site Total MPE %:</b>	<b>7.20 %</b>

SPRINT Sector A Total:	2.56 %
SPRINT Sector B Total:	2.56 %
SPRINT Sector C Total:	2.56 %
<b>Site Total:</b>	<b>7.20 %</b>

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	150	0.76	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	437.55	150	1.52	850 MHz	567	0.27%
Sprint 1900 MHz (PCS) CDMA	5	622.47	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	778.09	150	10.79	2500 MHz (BRS)	1000	1.08%
						<b>Total:</b>	<b>2.56%</b>



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.56 %
Sector B:	2.56 %
Sector C:	2.56 %
SPRINT Maximum Total (per sector):	2.56 %
Site Total:	7.20 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **7.20 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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