



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

July 21, 2014

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

**RE: Sprint PCS-Exempt Modification - Crown Site BU: 852231**  
**Sprint PCS Site ID: CT13XC266**  
**Located at: 1630 Main Street, Hartford, CT 06120**

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 The Honorable Pedro E. Segarra, Mayor for the City of Hartford.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **1630 Main Street, Hartford, CT 06120**. 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.

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

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

Sincerely,



Jeff Barbadora  
Real Estate Specialist

Enclosures

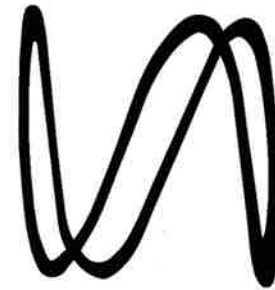
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

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

cc: The Honorable Pedro E. Segarra, Mayor  
City of Hartford  
550 Main Street, Room 200  
Hartford, CT 06103

# Sprint



## CROWN CASTLE

PROJECT: 2.5 EQUIPMENT DEPLOYMENT  
 SITE NAME: TOWER APPARTMENTS  
 SITE CASCADE: CT13XC266  
 SITE NUMBER: 852231  
 SITE ADDRESS: 1630 MAIN ST  
 HARTFORD, CT 06120  
 SITE TYPE: ROOFTOP  
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:

**Sprint**  
 6580 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:

**INFINIGY** Design-Build-Deliver.  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 890-0790  
 Fax # (518) 890-0793  
 JOB NUMBER 353-000

MLA PARTNER:

**CROWN CASTLE**

ENGINEERING LICENSE:

DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

**TOWER APPARTMENTS**

SITE CASCADE:

**CT13XC266**

SITE ADDRESS:

1630 MAIN ST  
 HARTFORD, CT 06120

SHEET DESCRIPTION:

**TITLE SHEET & PROJECT DATA**

SHEET NUMBER:

**T-1**

**SITE INFORMATION**

**ROOFTOP MANAGER:**  
 CROWN ATLANTIC COMPANY LLC  
 2000 CORPORATE DRIVE  
 CANONSBURG, PA 15317  
 (704) 405-8555

**PROPERTY OWNER:**  
 SOC GROUP II LIMITED PARTNERSHIP  
 1630 MAIN STREET  
 HARTFORD, CT 06120  
 (860) 278-4460

**LATITUDE (NAD83):**  
 41° 46' 36.201" N  
 41.776723°

**LONGITUDE (NAD83):**  
 72° 40' 35.006" W  
 -72.676391°

**COUNTY:**  
 HARTFORD

**ZONING JURISDICTION:**  
 CONNECTICUT SITING COUNCIL  
 CITY OF HARTFORD, CT

**ZONING DISTRICT:**  
 R-2 RES DIST. (HIGH DENSITY)

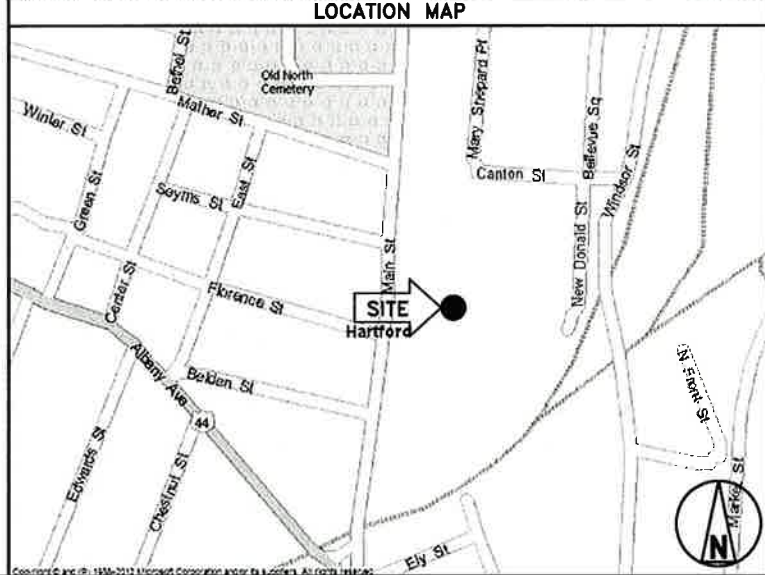
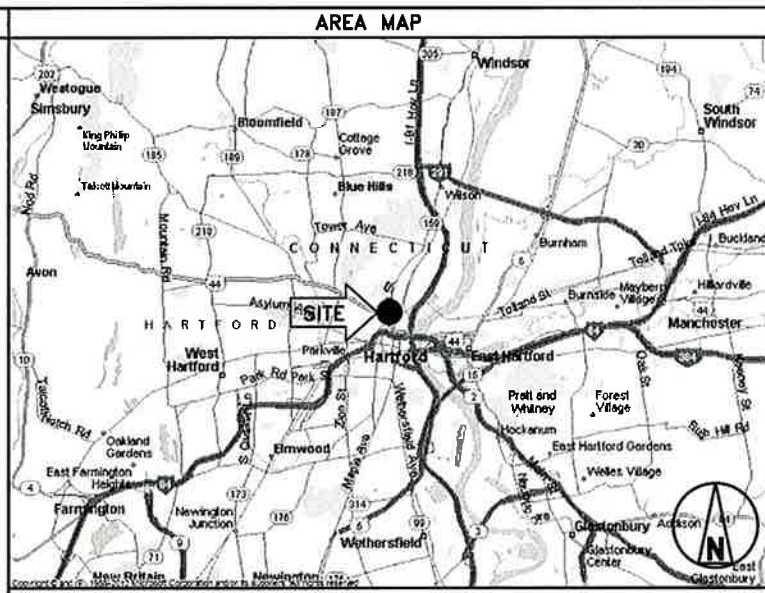
**POWER COMPANY:**  
 CL&P  
 (800) 286-2000

**AAV PROVIDER:**  
 AT&T  
 (800) 288-2020

**SPRINT PM:**  
 PETER GIRARD  
 (508) 801-0074  
 peter.girard@sprint.com

**SPRINT CM:**  
 PETER CULBERT  
 (803) 203-8446  
 (803) 959-0686  
 peter.culbert@sprint.com

**CROWN CASTLE CM:**  
 JASON D'AMICO  
 (860) 209-0104  
 JASON.D'AMICO@CROWNCastle.COM



**PROJECT DESCRIPTION**

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S NEAR ANTENNAS
- INSTALL (27) JUMPER CABLES
- INSTALL (3) FIBER CABLES
- INSTALL (4) BATTERIES IN EXISTING BBU CABINET

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

**APPLICABLE CODES**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-EIA-222-G OR LATEST EDITION
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

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A-2	BUILDING ELEVATION & CABLE PLAN	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	COLOR CODING & NOTES	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING PLAN	0
E-2	ELECTRICAL & GROUNDING DETAILS	0





THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

**SECTION 01 100 – SCOPE OF WORK**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
  - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
    - 1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
    - 5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
    - 3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
    - 4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
    - 5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
    - 6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
    - 7. AMERICAN CONCRETE INSTITUTE (ACI)
    - 8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
    - 9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
    - 10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
    - 11. PORTLAND CEMENT ASSOCIATION (PCA)
    - 12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
    - 13. BRICK INDUSTRY ASSOCIATION (BIA)
    - 14. AMERICAN WELDING SOCIETY (AWS)
    - 15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
    - 16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
    - 17. DOOR AND HARDWARE INSTITUTE (DHI)
    - 18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
    - 19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.
- 1.5 DEFINITIONS:
  - A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
  - B. COMPANY: SPRINT CORPORATION
  - C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
  - D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
  - E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
  - F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
  - G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

- 1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.
- 1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
- 1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
  - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
  - B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
  - C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.
- 1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED.
- 1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
- 1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.
 

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193
- 1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.
- 3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

**SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT:
  - A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.
  - B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
    - 1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
    - 2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
    - 3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
    - 4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
    - 5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
    - 6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 DELIVERABLES:
  - A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
  - B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.
  - C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

**SECTION 01 300 – CELL SITE CONSTRUCTION CO.**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 NOTICE TO PROCEED
  - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.
  - B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

**TOWER OWNER NOTIFICATION**  
 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.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 FUNCTIONAL REQUIREMENTS:
  - A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
  - B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
  - C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
  - D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

**TOWER APPARTMENTS**

SITE CASCADE:

**CT13XC266**

SITE ADDRESS:

**1630 MAIN ST  
HARTFORD, CT 06120**

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-1**



CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER.
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
  1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
  2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
- E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
  1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
  2. PROJECT PROGRESS REPORTS.
  3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
  4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 SUBMITTALS:
  - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
  - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
    1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
    2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
    3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
    4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
    5. CHEMICAL GROUNDING DESIGN
  - D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
  2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
  3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
  1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
  2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  3. ALL AVAILABLE JURISDICTIONAL INFORMATION
  4. PDF SCAN OF REDLINES PRODUCED IN FIELD

5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH, DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNA ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

TOWER APPARTMENTS

SITE CASCADE:

CT13XC266

SITE ADDRESS:

1630 MAIN ST  
HARTFORD, CT 06120

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2



**CONTINUE FROM SP-2**

- 7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
  - 8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
  - 9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
  - 10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  - 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
  - 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.
- 3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.
- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
- 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
  - 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
  - 3. SITE RESISTANCE TO EARTH TEST.
  - 4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
  - 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
  - 6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;
- 1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
  - 2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
  - 3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
  - 4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
  - 5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
  - 6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
  - 7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
  - 8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
  - 9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

- 3.1 WEEKLY REPORTS:
  - A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
  - B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
- 3.2 PROJECT CONFERENCE CALLS:
  - A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
  - A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.
- 3.4 ADDITIONAL REPORTING:
  - A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.
- 3.5 PROJECT PHOTOGRAPHS:
  - A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
    - 1. SHELTER AND TOWER OVERVIEW.
    - 2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
    - 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
    - 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
    - 5. PHOTOS OF TOWER SECTION STACKING.
    - 6. CONCRETE TESTING / SAMPLES.
    - 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
    - 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
    - 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
    - 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
    - 11. COAX CABLE ENTRY INTO SHELTER.
    - 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
    - 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
    - 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
    - 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
    - 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
    - 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
    - 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
    - 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
    - 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
    - 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
    - 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
    - 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

- 24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
- 25. ALL BTS GROUND CONNECTIONS.
- 26. ALL GROUND TEST WELLS.
- 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
- 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
- 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
- 30. GPS ANTENNAS.
- 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
- 32. DOGHOUSE/CABLE EXIT FROM ROOF.
- 33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
- 34. MASTER BUS BAR.
- 35. TELCO BOARD AND NIU.
- 36. ELECTRICAL DISTRIBUTION WALL.
- 37. CABLE ENTRY WITH SURGE SUPPRESSION.
- 38. ENTRANCE TO EQUIPMENT ROOM.
- 39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
- 40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
- 41. ANTENNA AND MAST GROUNDING.
- 42. LANDSCAPING - WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

**TOWER APPARTMENTS**

SITE CASCADE:

**CT13XC266**

SITE ADDRESS:

1630 MAIN ST  
HARTFORD, CT 06120

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-3**

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REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

**TOWER APPARTMENTS**

SITE CASCADE:

**CT13XC266**

SITE ADDRESS:

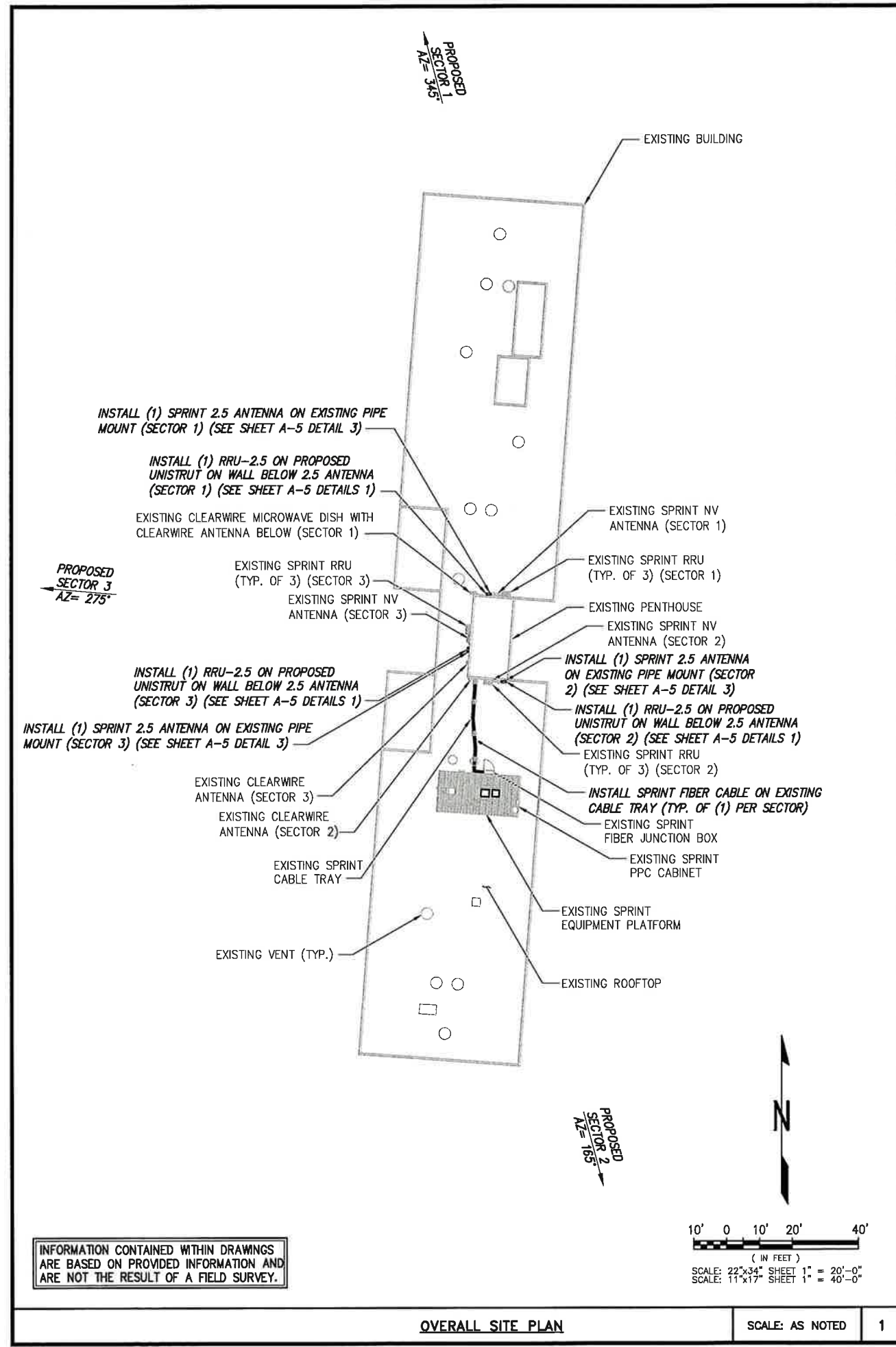
1630 MAIN ST  
HARTFORD, CT 06120

SHEET DESCRIPTION:

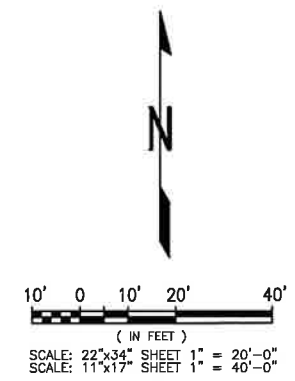
**SITE PLAN**

SHEET NUMBER:

**A-1**

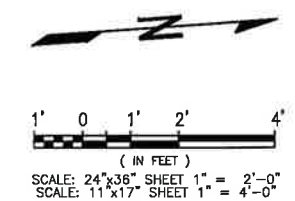
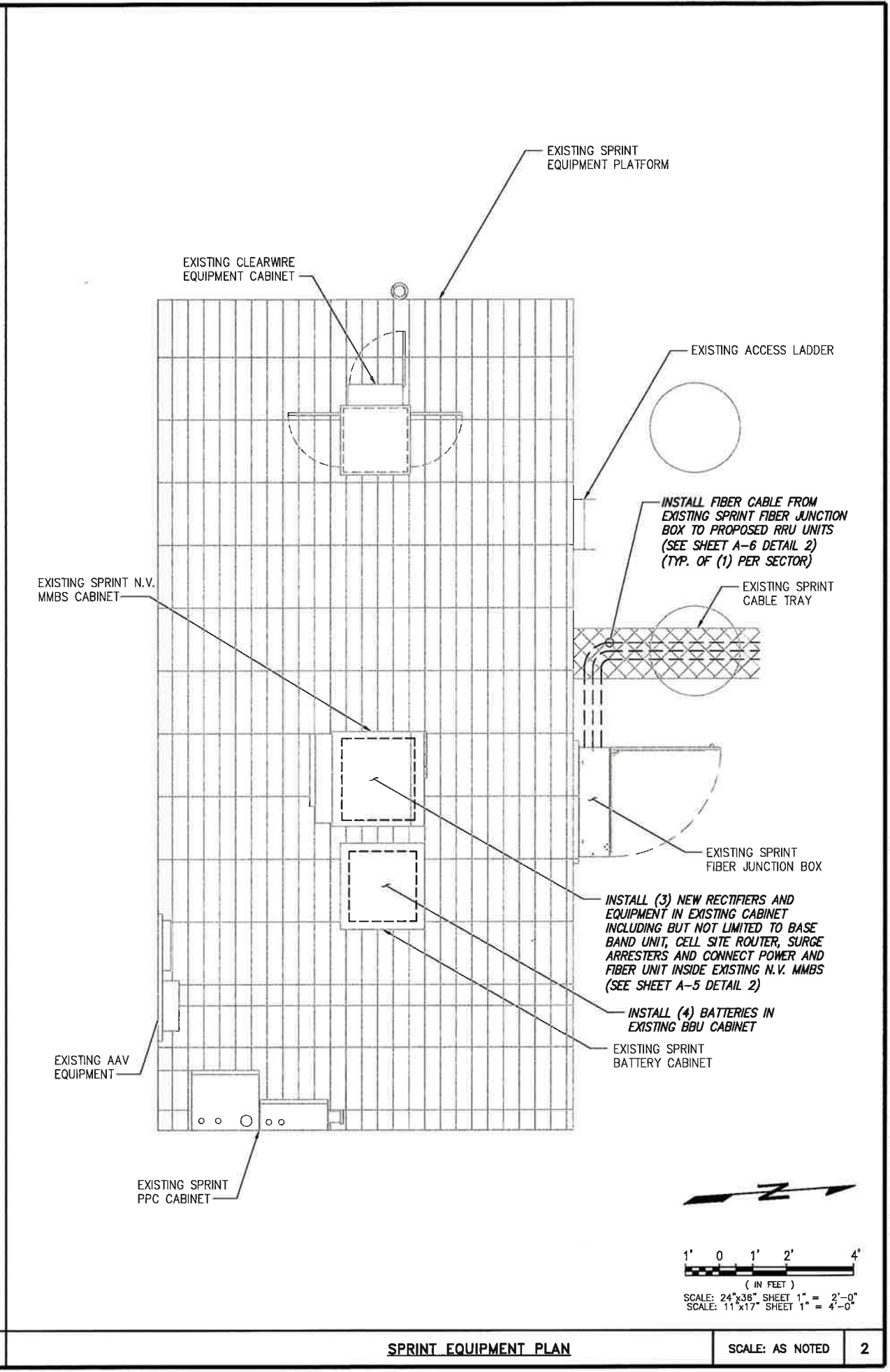


INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.



**OVERALL SITE PLAN**

SCALE: AS NOTED 1



**SPRINT EQUIPMENT PLAN**

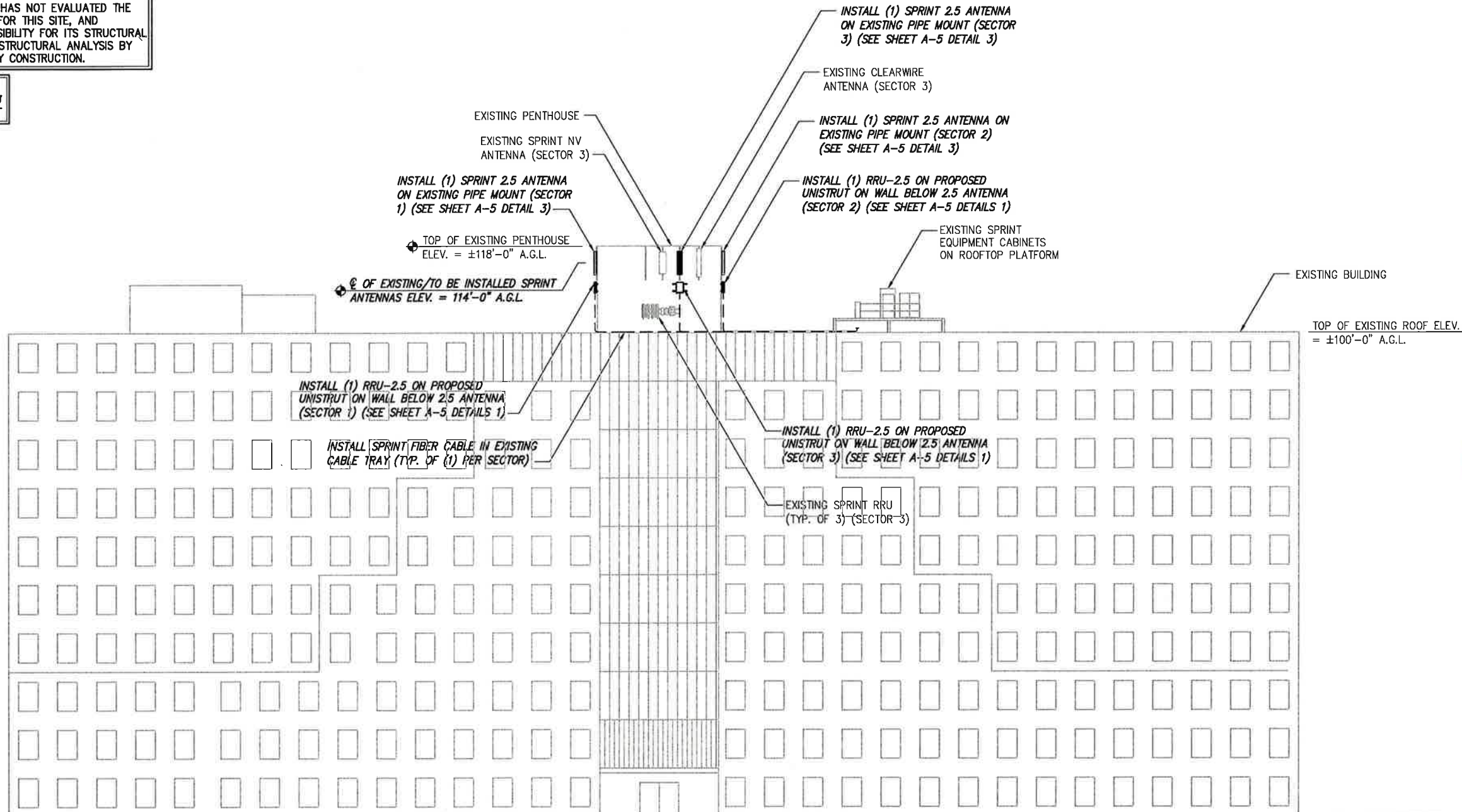
SCALE: AS NOTED 2



**NOTE:**  
SPRINT ROOFTOP WORK CONTINGENT ON FOLLOWING:  
COMPLETION OF STRUCTURAL ANALYSIS PROVIDED BY  
CROWN CASTLE, COMPLETION OF ANTENNA/RRU  
MOUNTING ASSESSMENT (PROVIDED BY AE)

**NOTE:**  
INFINIGY ENGINEERING HAS NOT EVALUATED THE  
EXISTING STRUCTURE FOR THIS SITE, AND  
ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL  
INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY  
OTHERS PRIOR TO ANY CONSTRUCTION.

**NOTE:**  
SEE DETAIL 2 ON A-3  
FOR ANTENNA LAYOUT



PLANS PREPARED FOR:



6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:




Design.  
Build.  
Deliver.


1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 650-0790  
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:



ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV
FOR PERMIT	6/26/14	AJD	0

SITE NAME:

**TOWER APPARTMENTS**

SITE CASCADE:

**CT13XC266**

SITE ADDRESS:

1630 MAIN ST  
HARTFORD, CT 06120

SHEET DESCRIPTION:

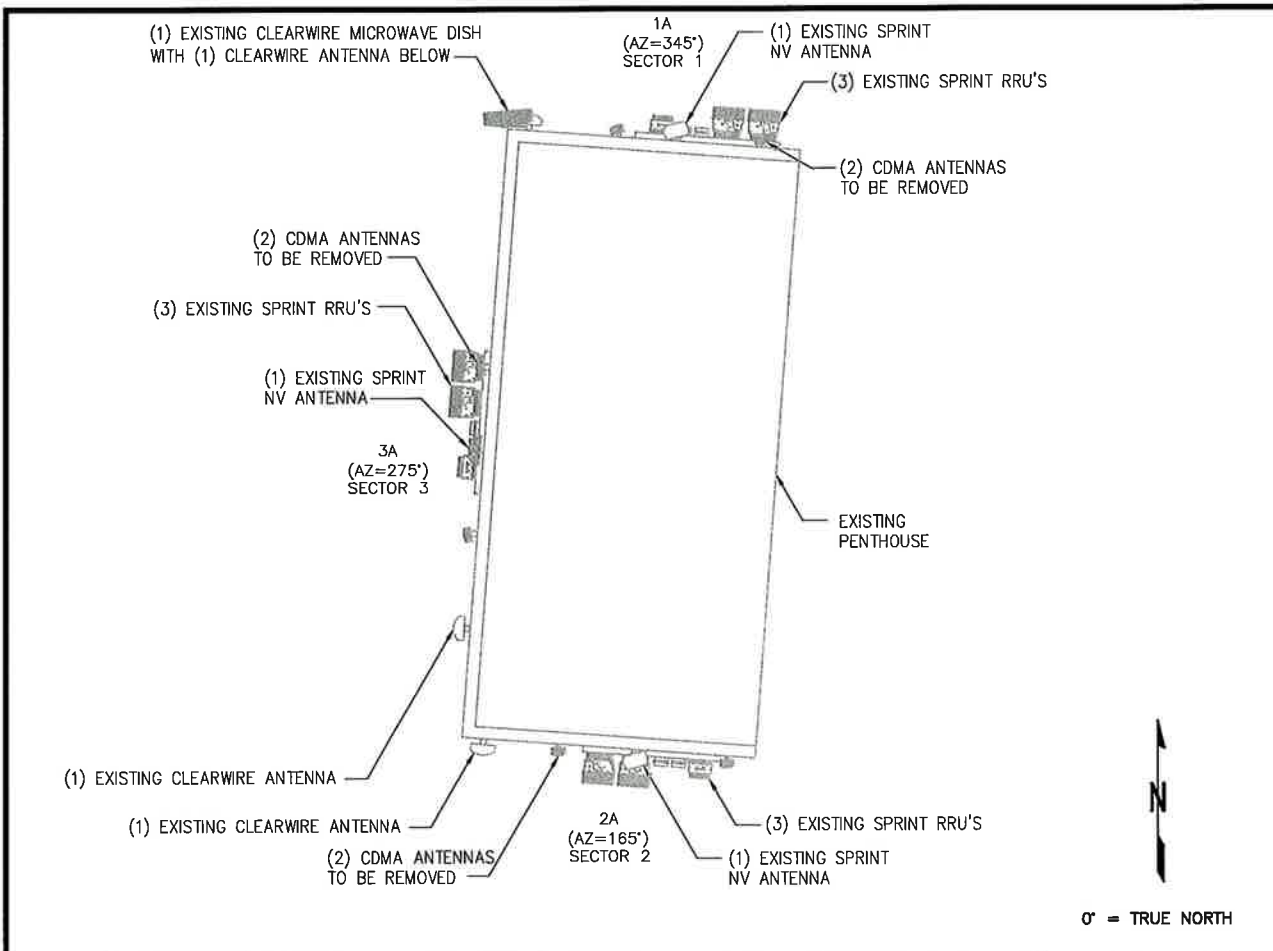
**TOWER ELEVATION & CABLE PLAN**

SHEET NUMBER:

**A-2**

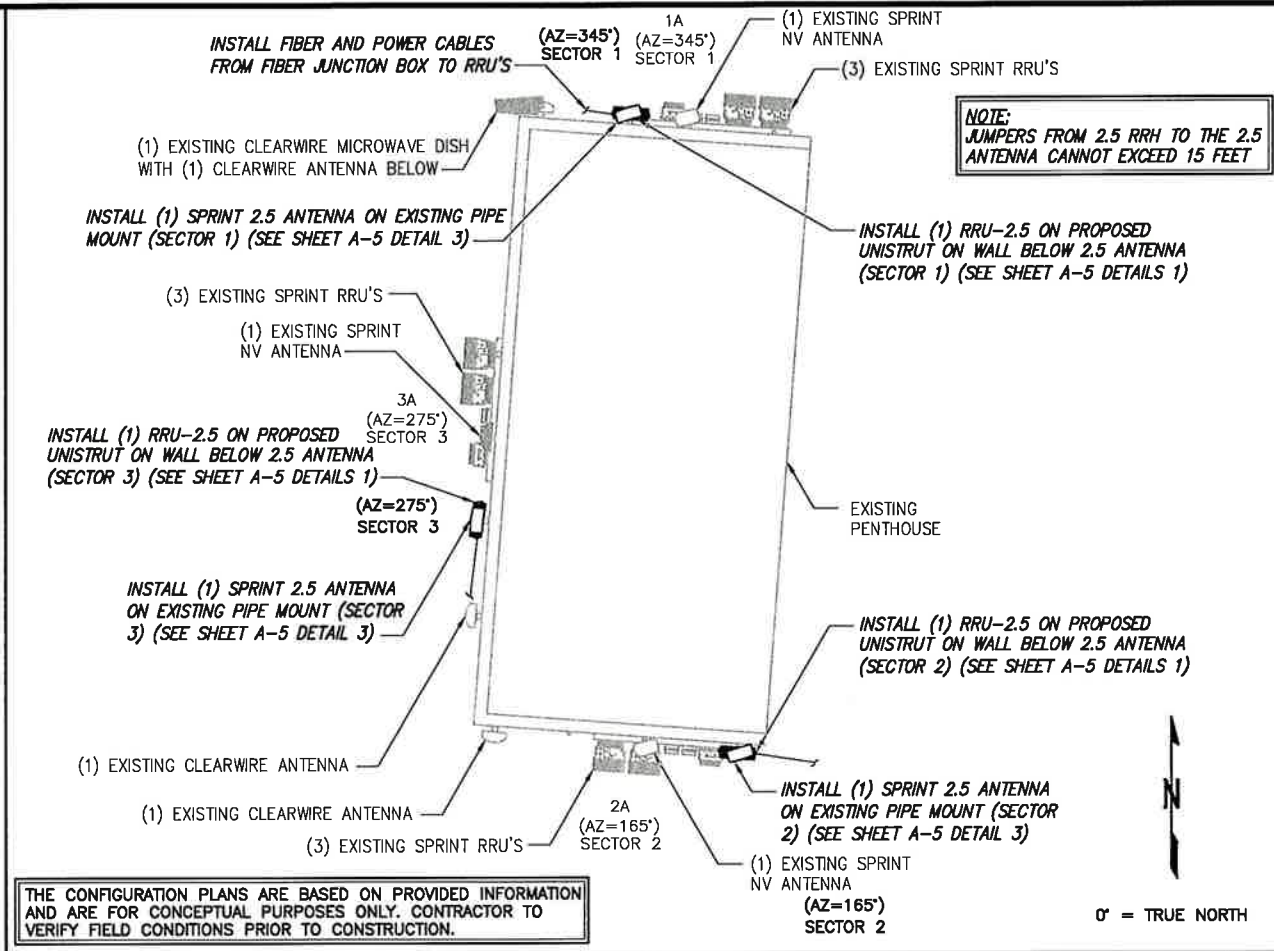
GROUND LEVEL





**EXISTING ANTENNA & RRU LAYOUT**

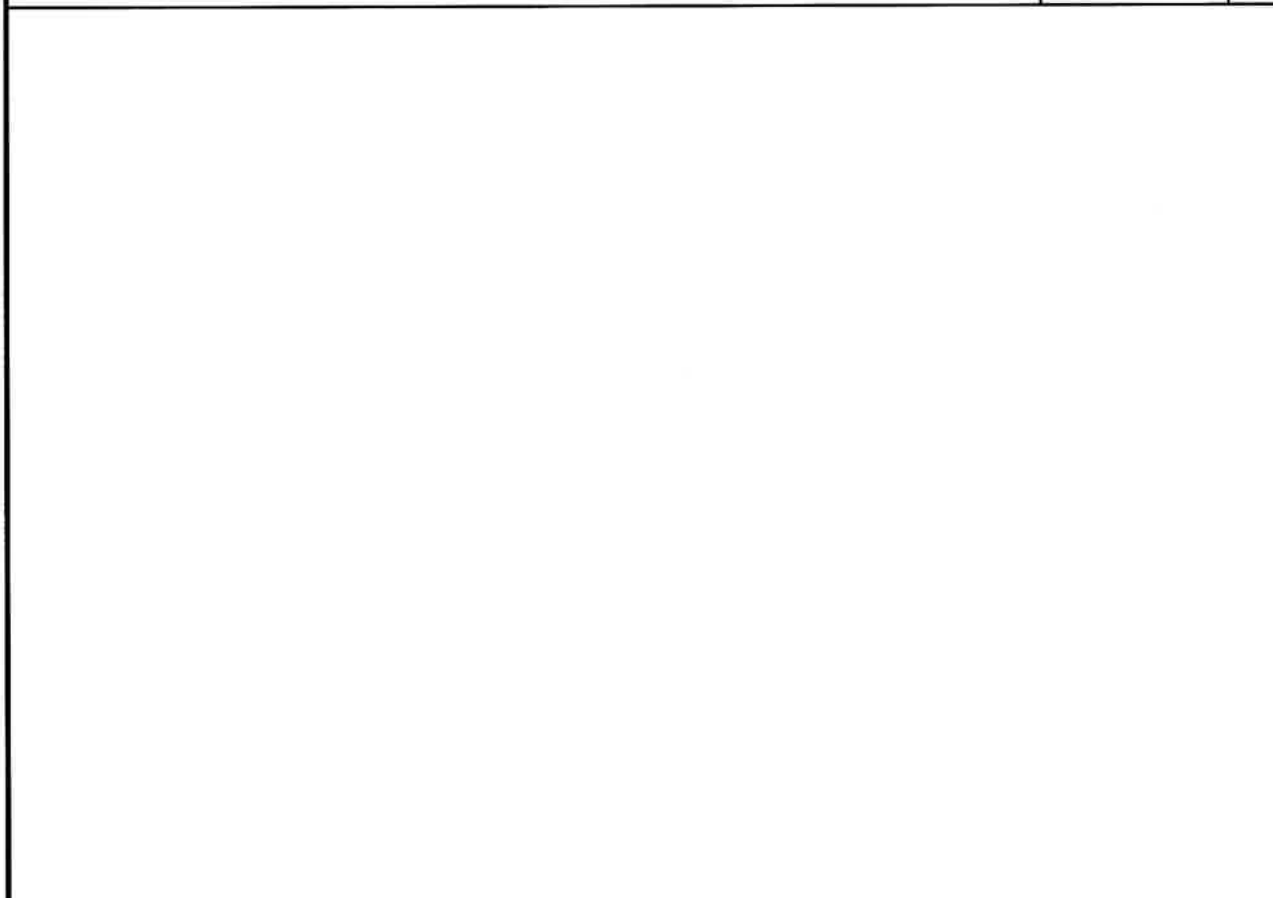
NO SCALE 1



**FINAL ANTENNA LAYOUT**

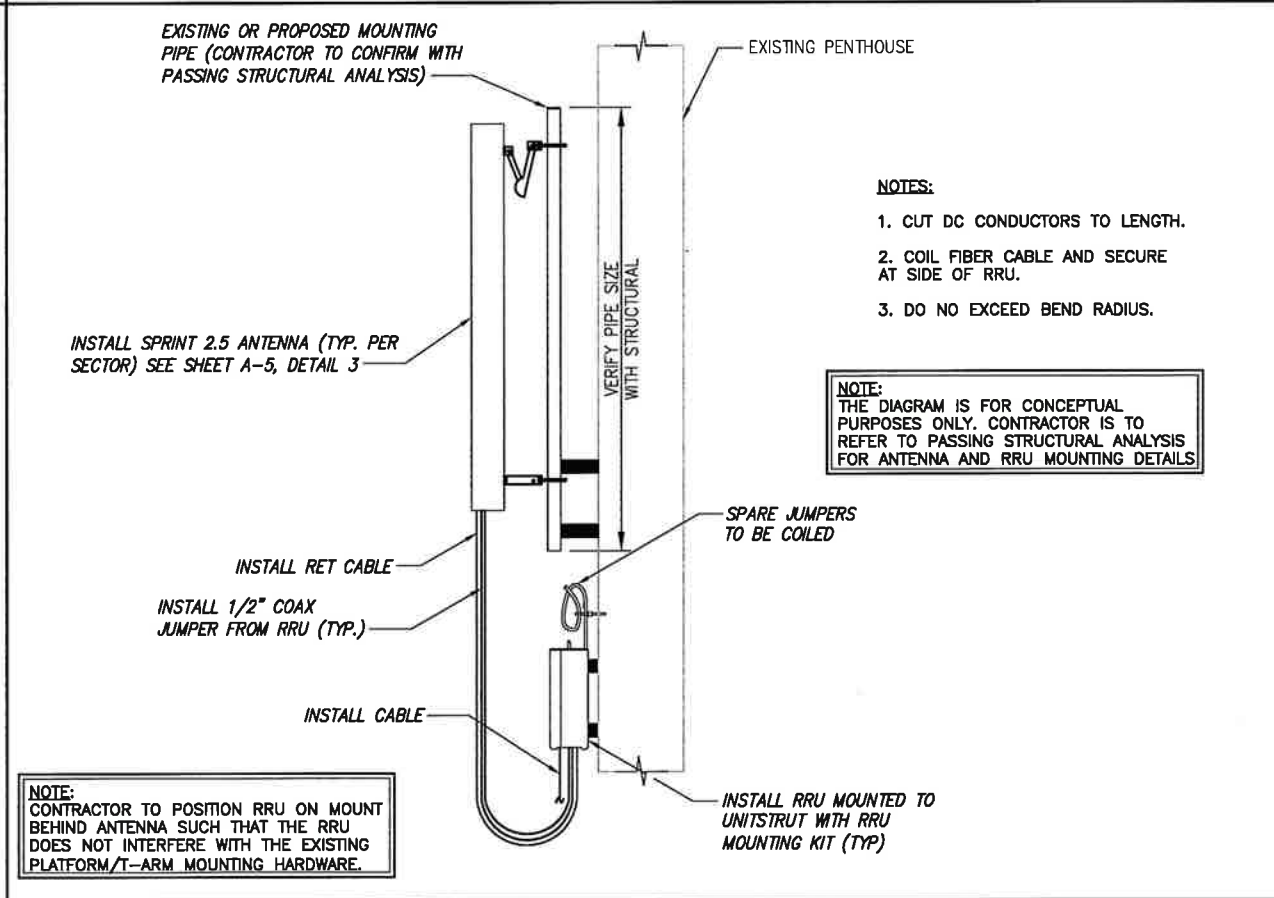
NO SCALE 2

THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.



**DETAIL NOT USED**

NO SCALE 3



**TYPICAL ANTENNA & RRU MOUNTING DETAILS**

NO SCALE 4

NOTE: CONTRACTOR TO POSITION RRU ON MOUNT BEHIND ANTENNA SUCH THAT THE RRU DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRU MOUNTING DETAILS

PLANS PREPARED FOR:

6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 353-000

MLA PARTNER:

ENGINEERING LICENSE:

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SITE NAME:  
**TOWER APPARTMENTS**

SITE CASCADE:  
**CT13XC266**

SITE ADDRESS:  
**1630 MAIN ST  
HARTFORD, CT 06120**

SHEET DESCRIPTION:  
**ANTENNA LAYOUT & MOUNTING DETAILS**

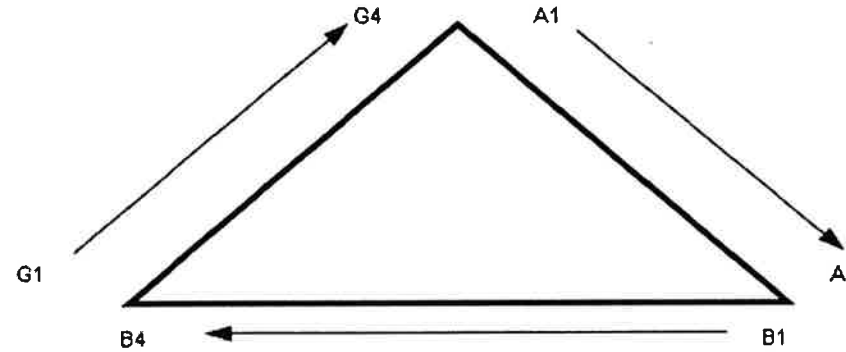
SHEET NUMBER:  
**A-3**

NV CABLES				
BAND	INDICATOR	PORT	COLOR	
800-1	YEL GRN	NV-1	GRN	
1900-1	YEL RED	NV-2	BLU	
1900-2	YEL BRN	NV-3	BRN	
1900-3	YEL BLU	NV-4	WHT	
1900-4	YEL SLT	NV-5	RED	
800-2	YEL ORG	NV-6	SLT	
SPARE	YEL WHT	NV-7	PPL	
2500	YEL PPL	NV-8	ORG	

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1	COLOR	
YEL WHT	GRN	
YEL WHT	BLU	
YEL WHT	BRN	
YEL WHT	WHT	
YEL WHT	RED	
YEL WHT	SLT	
YEL WHT	PPL	
YEL WHT	ORG	

Figure 1: Antenna Orientation



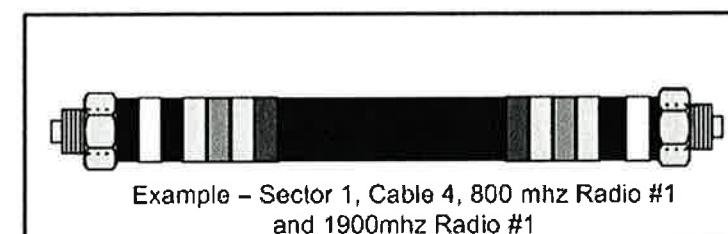
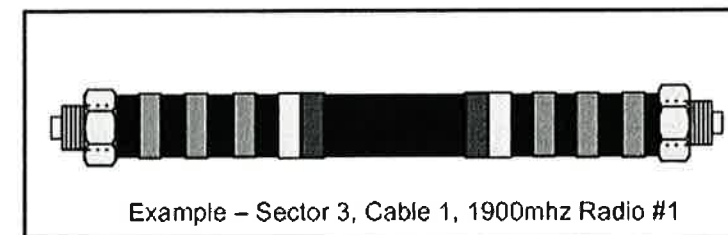
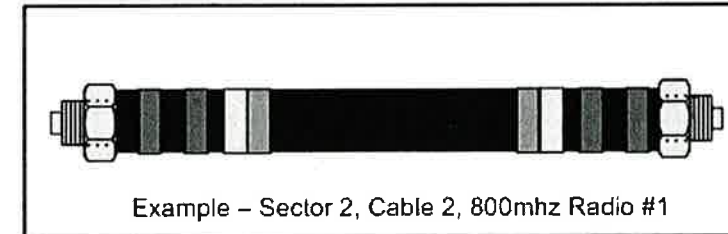
NOTES:

- ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.
- A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
- SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.
- HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
- HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
- INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
	2	Blue	No Tape	No Tape
	3	No Tape	No Tape	No Tape
	4	White	No Tape	No Tape
	5	Red	No Tape	No Tape
	6	Grey	No Tape	No Tape
	7	Purple	No Tape	No Tape
	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
	2	Blue	Blue	No Tape
	3	No Tape	No Tape	No Tape
	4	White	White	No Tape
	5	Red	Red	No Tape
	6	Grey	Grey	No Tape
	7	Purple	Purple	No Tape
	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
	2	Blue	Blue	Blue
	3	No Tape	No Tape	No Tape
	4	White	White	White
	5	Red	Red	Red
	6	Grey	Grey	Grey
	7	Purple	Purple	Purple
	8	Orange	Orange	Orange

NV FREQUENCY	INDICATOR	ID
800-1	YEL GRN	GRN
1900-1	YEL RED	RED
1900-2	YEL BRN	BRN
1900-3	YEL BLU	BLU
1900-4	YEL SLT	SLT
800-1	YEL ORG	ORG
RESERVED	YEL WHT	WHT
RESERVED	YEL PPL	PPL

2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL



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**CT13XC266**

SITE ADDRESS:

1630 MAIN ST  
HARTFORD, CT 06120

SHEET DESCRIPTION:

**COLOR CODING AND NOTES**

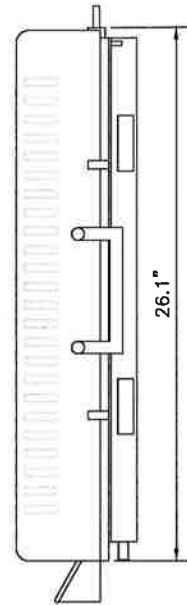
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**A-4**

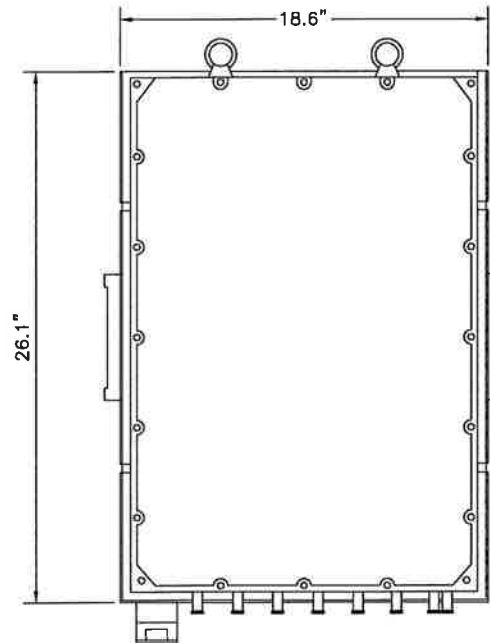


**RRU: ALCATEL LUCENT TD-RRH8X20**

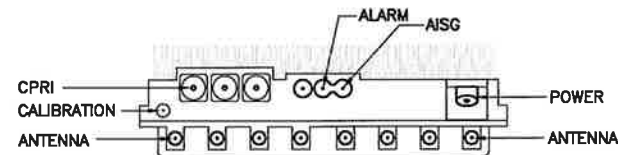
COLOR: LIGHT GREY  
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

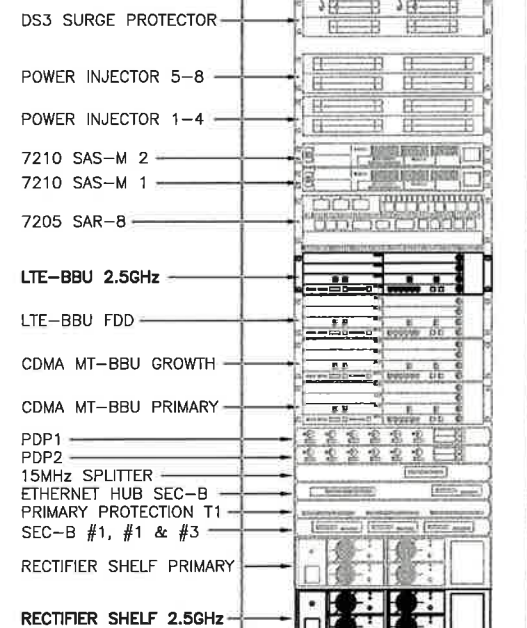
**NOTES**

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRU'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRU PACKAGES IN THE RAIN

2.5 RRU

NO SCALE

1



FRONT VIEW

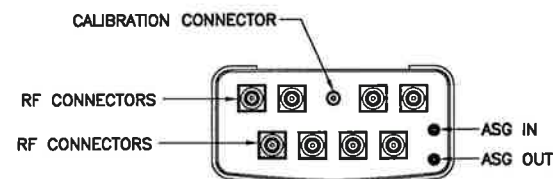
NEW EQUIPMENT IN EXISTING CABINET

NO SCALE

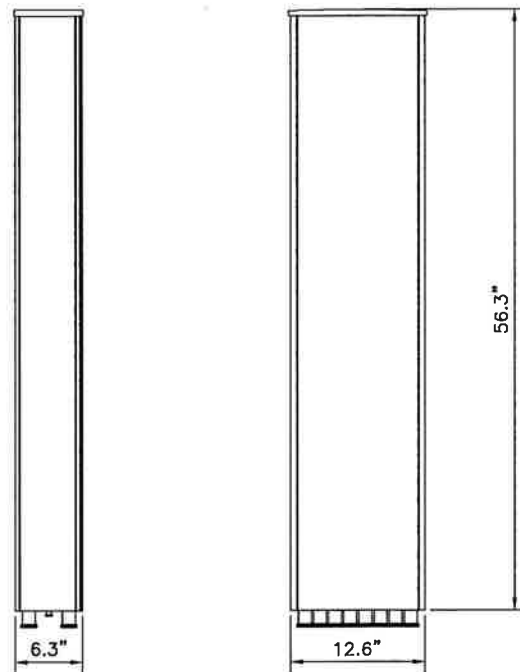
2

**ANTENNA: RFS APXVTM14-C-I20**

RADOME MATERIAL: ASA  
RADOME COLOR: LIGHT GRAY  
DIMENSIONS, HxWxD.in.(mlm): 56.3"x12.6"x6.3" (1430x320x160mm)  
WEIGHT: 52.9 lbs  
CONNECTORS: (8) 4.1/9.5 DIN FEMALE  
(1) NF - CALIBRATION CONNECTOR



PLAN VIEW



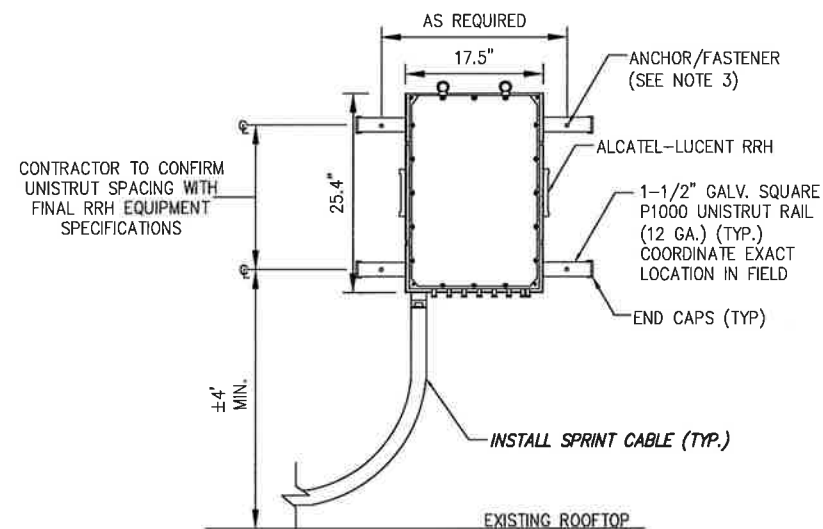
2.5 ANTENNA

NO SCALE

3

**NOTES:**

- ALCATEL-LUCENT (ALU) VIA SPRINT SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. CONTRACTOR INSTALLS RRH AND MAKES CABLE TERMINATIONS.
- A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
- INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
  - WOOD STUDS - 1/4" LAG BOLT W/ 1" EMBEDMENT IN WOOD
  - CONCRETE - 1/4" HILTI KWIK BOLT III W/ 1-1/2" EMBEDMENT OR EQUIVALENT
  - THROUGH BOLT - 1/4" A36/A307 THREADED ROD W/ NUTS AND WASHERS
 ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
- MOUNT RRH TO UNISTRUT WITH 3/8" UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.



RRU UNISTRUT WALL MOUNT

NO SCALE

4

PLANS PREPARED FOR:



PLANS PREPARED BY:



1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793

JOB NUMBER 353-000

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HARTFORD, CT 06120

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

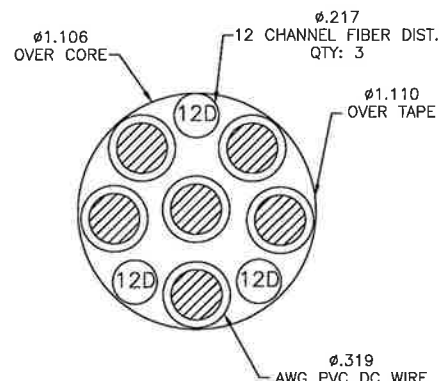
**RFS HYBRIFLEX RISER CABLE SCHEDULE**

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, 50 ft	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, 50 ft	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 pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 3/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
4 AWG Power	Hybrid cable MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

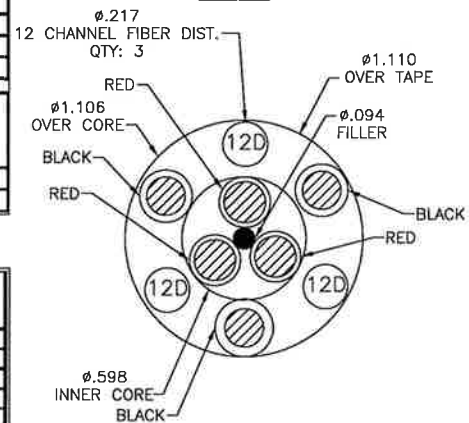
**RFS HYBRIFLEX JUMPER CABLE SCHEDULE**

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

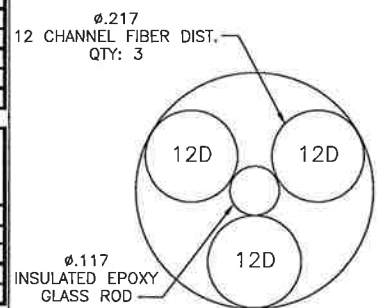
NOTE:  
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



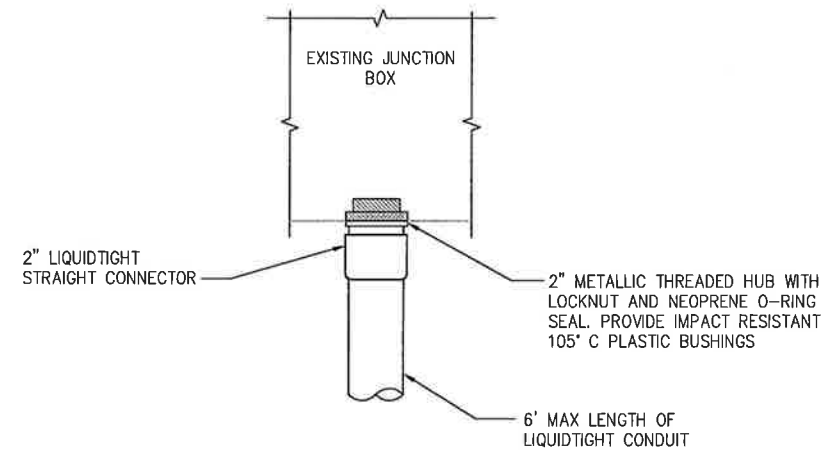
**4 AWG**



**8 & 6 AWG**



**FIBER ONLY**



**FIBER JUNCTION BOX PENETRATION**

NO SCALE

2

2.5 CABLE CROSS SECTION DATA

NO SCALE

1

DETAIL NOT USED

NO SCALE

3

PLANS PREPARED FOR:

6580 Sprint Parkway  
Overland Park, Kansas 66251

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Design. Build. Deliver.

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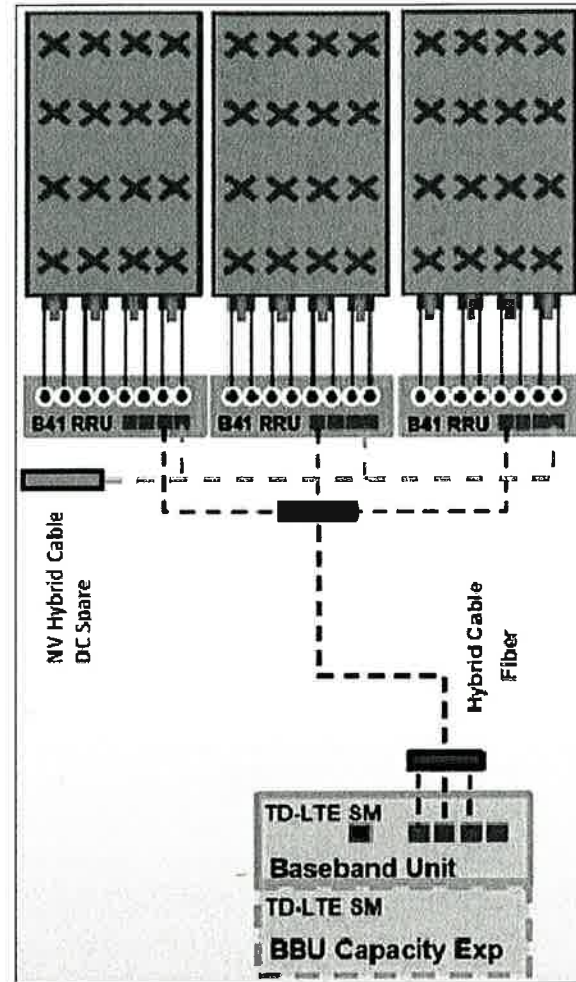
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**CIVIL DETAILS**

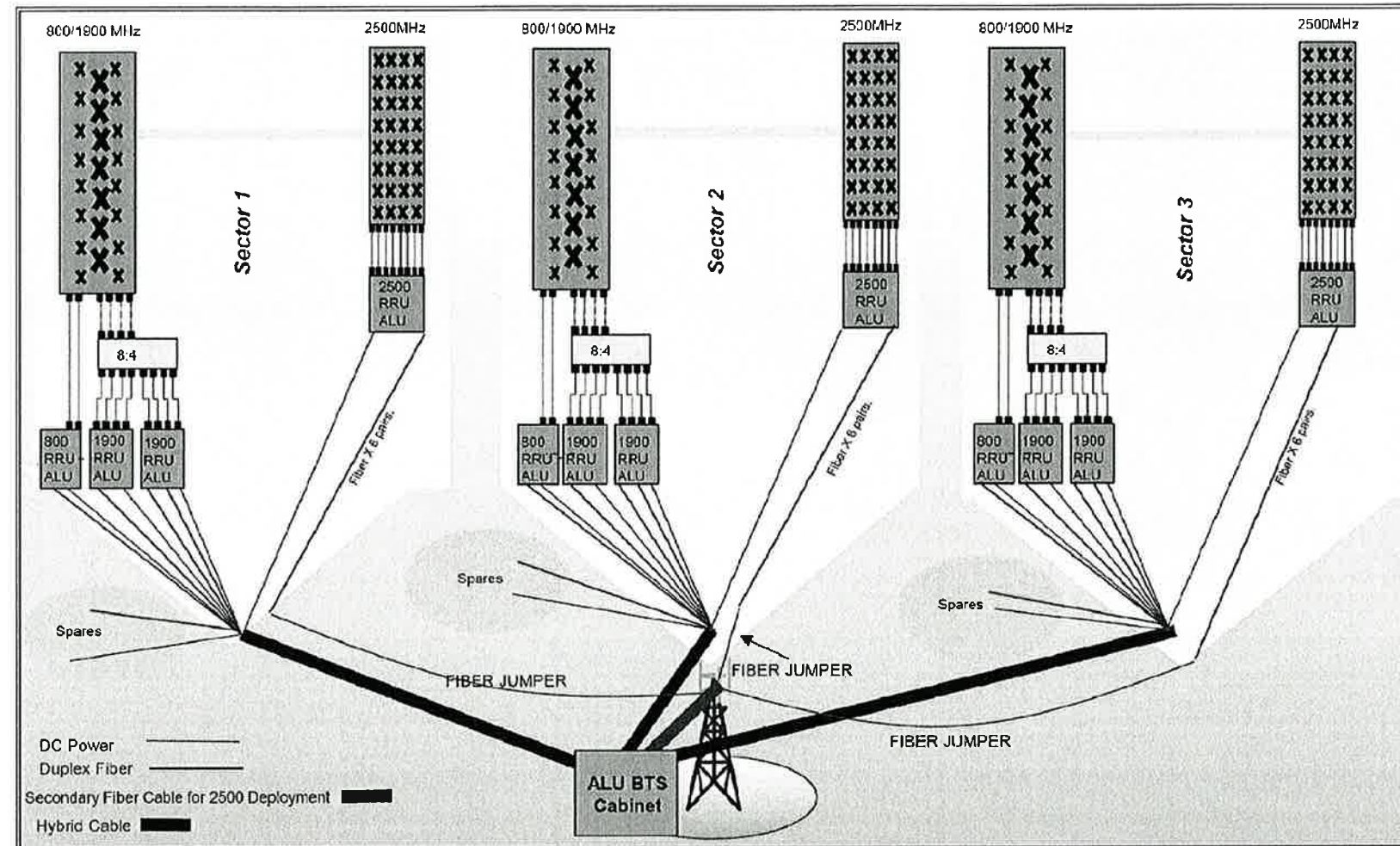
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**A-6**

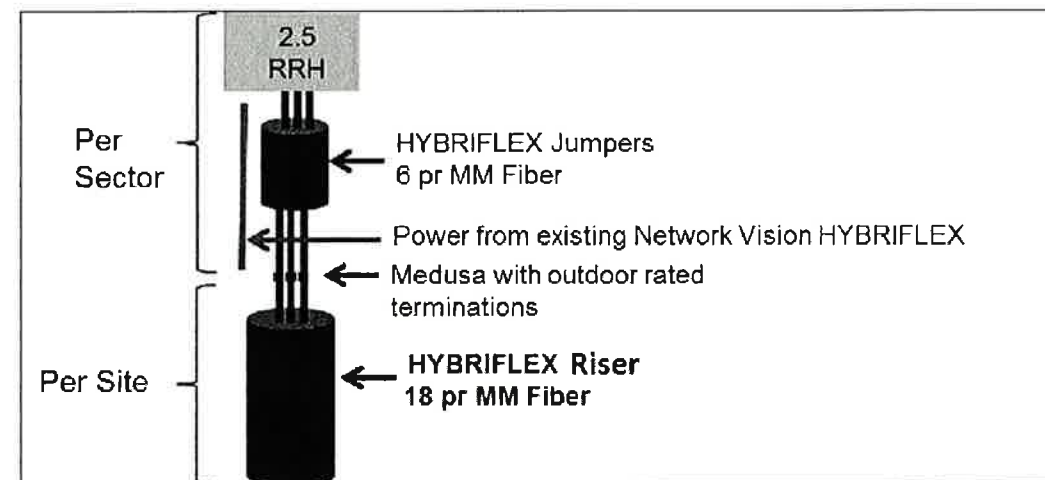




ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

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**CIVIL DETAILS**

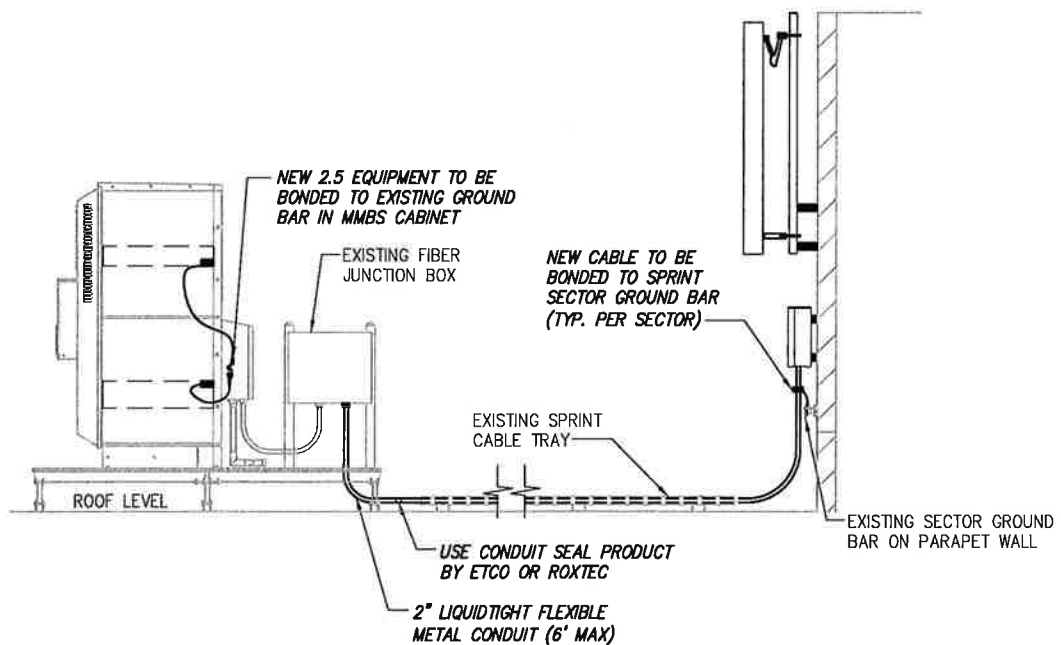
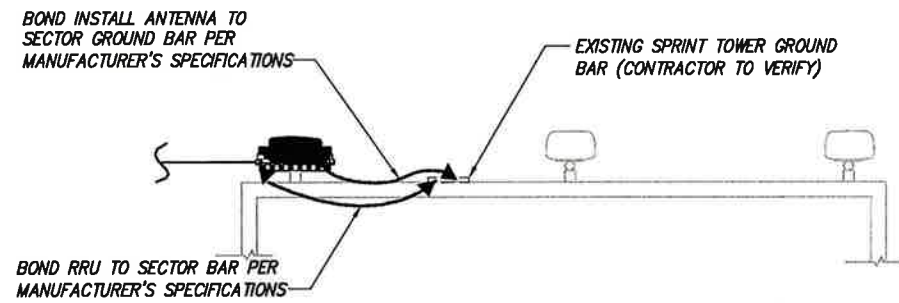
SHEET NUMBER:  
**A-7**

PLAN NOT USED

NO SCALE

1

- LEGEND:**
- G — EXISTING GROUND RING
  - CADWELD CONNECTION (EXOTHERMIC WELD)
  - ▲ MECHANICAL CONNECTION
  - ⊗ GROUND ROD
  - CABLE GROUND KIT



**NOTE:**  
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

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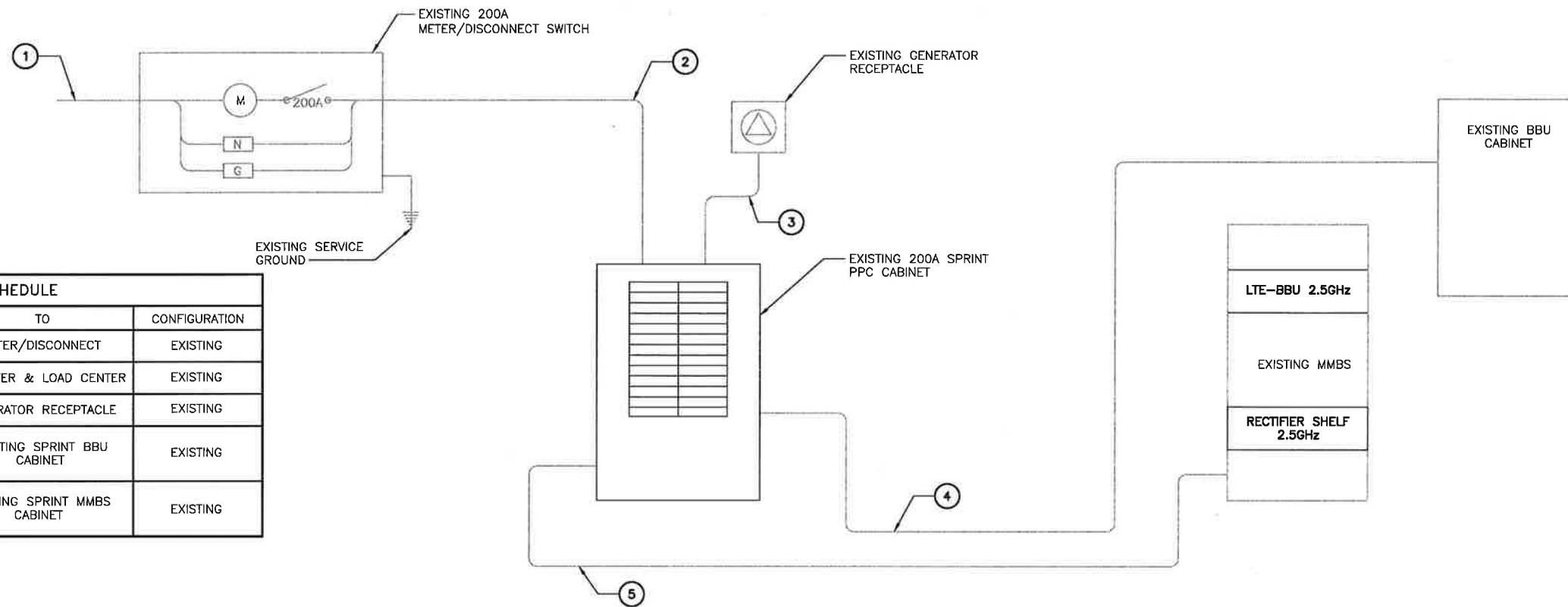
**ELECTRICAL & GROUNDING PLAN**

SHEET NUMBER:

**E-1**



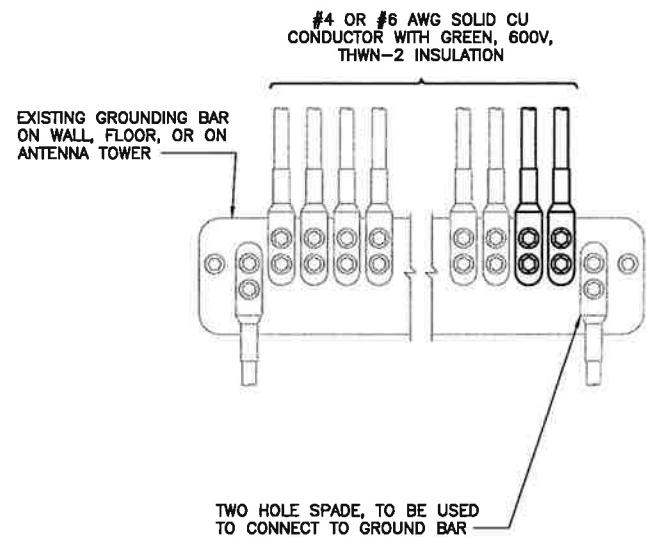
**NOTES**  
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



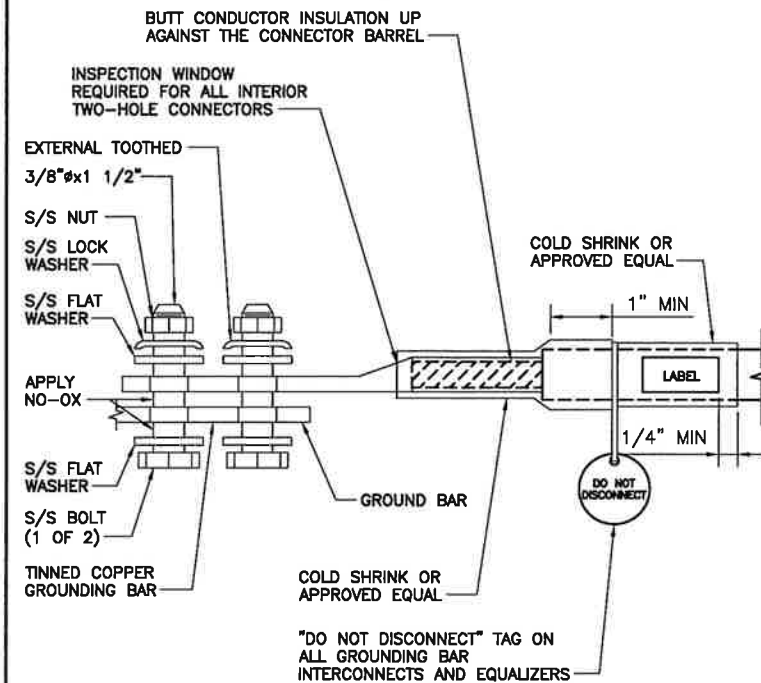
CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	EXISTING
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
③	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
④	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
⑤	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

**ELECTRICAL ONE-LINE DIAGRAM**

NO SCALE 1

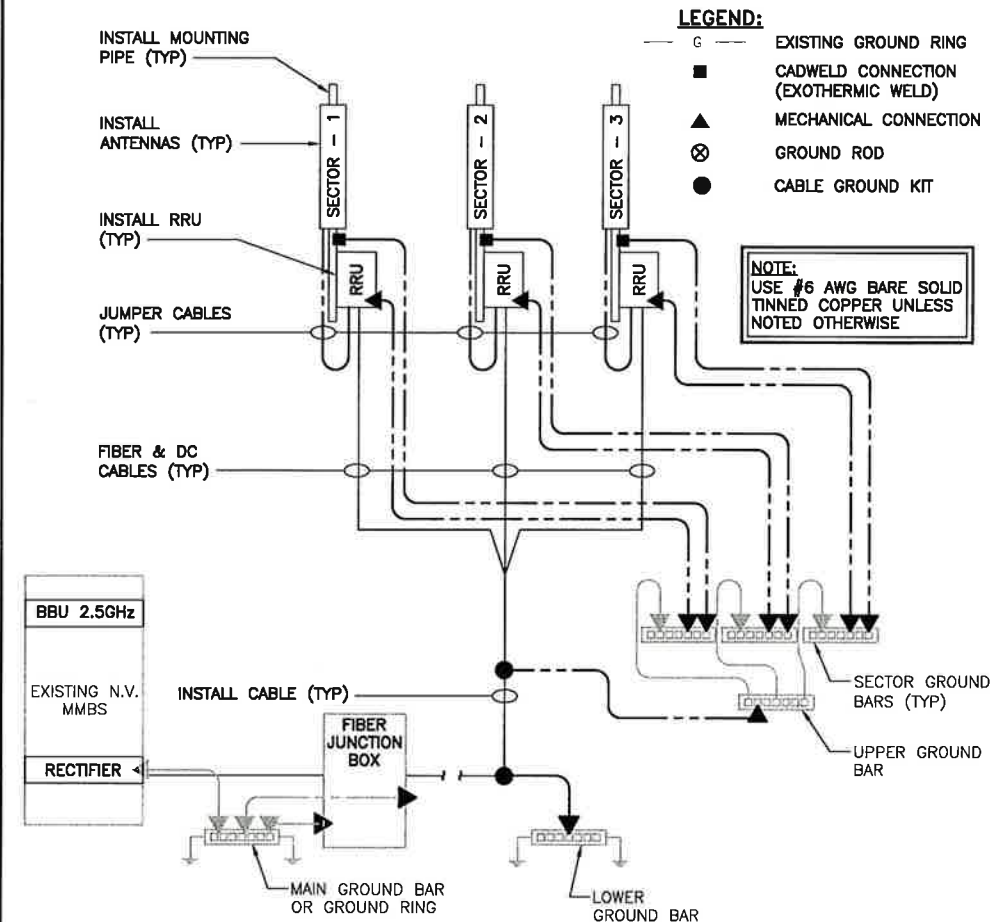


**NOTES**  
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.  
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.



**TWO HOLE LUG**

NO SCALE 3



**GROUNDING RISER DIAGRAM**

NO SCALE 4

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**Sprint**  
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 Overland Park, Kansas 66251

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**INFINIGY** Design. Build. Deliver.  
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 Albany, NY 12205  
 Office # (518) 690-0790  
 Fax # (518) 690-0783  
 JOB NUMBER 353-000

MLA PARTNER:  
**CROWN CASTLE**

ENGINEERING LICENSE:  
  
 JOHN S. STAVELAND  
 No. 24705  
 LICENSED PROFESSIONAL ENGINEER

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**ELECTRICAL & GROUNDING DETAILS**

SHEET NUMBER:  
**E-2**

**INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**

NO SCALE 2

July 16, 2014

Mr. Patrick Byrum  
Crown Castle USA  
2000 Corporate Drive  
Canonsburg, PA 15317  
(678) 259-2254



B+T Group  
1717 S. Boulder, Suite 300  
Tulsa, OK 74119  
(918) 587-4630  
btwo@btgrp.com

**Subject:** **Structural Letter**

**Crown Castle Designation:** **Site Name:** SOC Group Sprint  
CT13XC266

**Site Number:** 852231

**Engineering Firm Designation:** **B+T Group Project Number:** 93500.002.01

**Site Data:** 1630 Main Street, Hartford, CT, Hartford County  
Latitude 41.77670°, Longitude -72.67642°  
Mount Analysis

Dear Mr. Byrum,

B+T Group is pleased to submit this "Structural Letter" to determine the structural integrity of the above mentioned rooftop supported telecommunications site.

The purpose of the analysis is to determine acceptability of the building to sufficiently support the telecommunications equipment presented in this report. Based on our analysis we have determined the suitability for the structure, under the following load case, to be:

**Existing + Proposed Equipment**

Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

**Sufficient Capacity**

The analysis has been performed in accordance with the 2005 CT State Building Code and the ASCE 7 Standard with a 3-second gust wind speed of 100 mph. Exposure Category C, Topographic Category 1 and Risk Category II were used in this analysis.

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

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

Respectfully submitted by:  
B+T Engineering, Inc.



Karishma Caiado  
Project Engineer

Chad E. Tuttle, P.E.  
President  
PE# 23924 Expires: 1/31/2015



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## 1) INTRODUCTION

The proposed telecommunications equipment will be located on the rooftop of the building at 1630 Main Street, Hartford, CT, Hartford County. The proposed loading is on new wall mounts with existing antennas at the same 114' elevation. The proposed antenna loading information was obtained from the CCI work order. All information provided to B+T Group was assumed accurate and complete.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this structure in accordance with the 2009 International Building Code and the ASCE 7 Design Standard. The design wind speed for this location is a 90 mph 3-second gust.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size	Note
114	1	POWERWAVE	P40-16-XLPP-RR-A	--	--	--
	1	RFS/CELWAVE	APXVSP18-C-A20			
	3	RFS/CELWAVE	APXVTM14-C-120			
	1	RFS/CELWAVE	APXV9ERR18-C-A20			
	6	ALCATEL LUCENT	1900MHz RRH			
	3	ALCATEL LUCENT	800MHz 2X50WRRH W/FILTER			
	3	RFS/CELWAVE	IBC1900BB-1			
	3	RFS/CELWAVE	IBC1900HG-2A			
	3	ALCATEL LUCENT	TD-RRH8x20-25			

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

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

Notes:

- 1) Existing Equipment
- 2) Existing to be removed

## 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Reference	Source
Photos	--	Date: 12/13/2013	CCI
Existing Loading	CCI Application	Date: 04/12/2014	CCI
Proposed Loading			

### 3.1) Analysis Method

This building is a substantial structure and currently supports rooftop telecommunications equipment. A total (6) new antennas and associated equipment will be installed on existing pipe mounts on the penthouse wall. The mounts match the existing antenna mounts on the penthouse. The mounts are



be attached to the CMU penthouse wall with angle brackets and through bolts. The proposed antennas and feed lines weigh approximately 300 lbs. total and have a total area exposed to wind of approximately 12 square ft. per sector. This amount of additional weight and area is insignificant compared to the overall structural demand of the building design. It is our assessment that the building structure will safely support the proposed equipment.

### **3.2) Assumptions**

- 1) The structure was built in accordance with the designer's specifications.
- 2) The structure has been maintained and is free of damage.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Existing loading was assumed based on final proposed loading.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the structure.

## **4) ANALYSIS RESULTS**

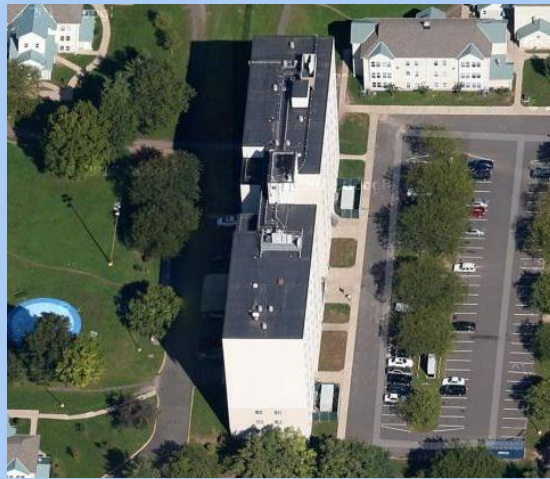
### **4.1) Recommendations**

- 1) The antennas shall be installed on the existing top mount of building in accordance with the installation drawings.

# Radio Frequency – Electromagnetic Energy (RF-EME) Compliance Report

Site No. CT13XC266  
Tower Apartments  
1630 Main Street  
Hartford, Connecticut 06120  
Hartford County  
41.776665; -72.674437 NAD83  
Rooftop

EBI Project No. 62143969  
July 16, 2014



Prepared for:  
Sprint Nextel  
c/o Crown Castle USA, Inc.  
46 Broadway  
Albany, NY 12204

Prepared by:  
 **EBI Consulting**  
environmental | engineering | due diligence



## **EXECUTIVE SUMMARY**

### **Purpose of Report**

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Sprint Nextel to conduct radio frequency electromagnetic (RF-EME) monitoring and modeling for Sprint Site CT13XC266 located at 1630 Main Street in Hartford, Connecticut to determine RF-EME exposure levels from proposed Sprint wireless communications equipment at this site. As described in greater detail in Section 11.0 of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME monitoring and modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

EBI field personnel visited this site on March 13, 2014. This report contains a detailed summary of the RF EME analysis for the site.

This document addresses the compliance of Sprint's proposed transmitting facilities independently and in relation to all existing collocated facilities at the site.

### **MPE Summary**

At the nearest walking/working surfaces to the proposed Sprint antennas, the maximum power density is 135 percent of the FCC's general public limit (27 percent of the FCC's occupational limit).

The composite exposure level from all other carriers existing on this site combined with Sprint's proposed antennas is 135 percent of the FCC's general public limit (27 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

At ground level, the maximum power density generated by the proposed Sprint antennas combined with the existing other carriers antennas on-site is 2.8 percent of the FCC's general public limit (0.56 percent of the FCC's occupational limit).

### **Statement of Compliance**

Based on worst-case predictive modeling, the worst-case emitted power density may exceed the FCC's general public limit within approximately 2 feet of Sprint's proposed antennas at the main roof level. Modeling also indicates that the worst-case emitted power density will not exceed the FCC's occupational limit at the main roof level.

Signage has been installed at the site as presented in Section 9.0. Posting of the signage and installation of the recommended barriers brings the site into compliance with FCC rules and regulations.

## **1.0 LOCATION OF ALL EXISTING ANTENNAS AND FACILITIES AND EXISTING RF LEVELS**

This project involves the removal of six (6) existing antennas replaced with three (3) proposed Sprint wireless telecommunication antennas on a rooftop located at 1630 Main Street in Hartford, Connecticut. There are three sectors (A, B, and C) proposed to be modified at the site, with one (1) antenna to be re-installed per sector. Additionally, there are six (6) existing Sprint antennas that are proposed to remain unchanged.

EBI conducted a site visit on March 13, 2014. At the time of the site visit, T-Mobile wireless antennas were collocated with the Sprint antennas on the rooftop located at 1630 Main Street in Hartford, Connecticut. Measurements were taken at the rooftop and ground to record existing RF-EME levels resulting from these antennas, in addition to the existing Sprint antennas, prior to the installation of Sprint's proposed equipment.

During the survey, no spatially averaged power density readings above 0.5708% of the FCC's occupational MPE (2.854% of the general public MPE) were encountered on any rooftop surface. In addition, no spatially averaged power density readings greater than 0.117% of the FCC's uncontrolled or general public MPE were encountered at ground level.

Monitoring results are presented in Appendix C.

## **2.0 LOCATION OR ALL APPROVED (BUT NOT INSTALLED) ANTENNAS AND FACILITIES AND EXPECTED RF LEVELS FROM THE APPROVED FACILITIES**

There are no antennas or facilities that are approved and not installed based on information provided to EBI and Sprint at the time of this report.

## **3.0 NUMBER AND TYPES OF WIRELESS TELECOMMUNICATION SITES (WTS) WITHIN 100 FEET OF THE PROPOSED SITE**

With the exception of the antennas mentioned in Section 1.0, there are no other Wireless Telecommunication Service (WTS) sites observed within 100 feet of the proposed site.

## **4.0 LOCATION AND NUMBER OF THE SPRINT ANTENNAS AND BACK-UP FACILITIES PER STRUCTURE AND NUMBER AND LOCATION OF OTHER TELECOMMUNICATION FACILITIES ON THE PROPERTY**

Sprint proposes the removal of six (6) existing antennas replaced with three (3) proposed Sprint wireless telecommunication antennas on a rooftop located at 1630 Main Street in Hartford, Connecticut. There are three sectors (A, B, and C) proposed to be modified at the site, with one (1) antenna to be re-installed per sector. In each sector, there is proposed to be one antenna transmitting in the 2500 MHz frequency range. The Sector A antenna will be oriented 345° from true north. The Sector B antenna will be oriented 165° from true north. The Sector C antenna will be oriented 275° from true north. The bottoms of the antennas will be 11.7 feet above the main rooftop. Additionally, there are six (6) existing Sprint antennas that are proposed to remain unchanged.

EBI conducted a site visit on March 13, 2014. At the time of the site visit, T-Mobile wireless antennas were collocated with the Sprint antennas on the rooftop located at 1630 Main Street in Hartford, Connecticut.



## **5.0 POWER RATING FOR ALL EXISTING AND PROPOSED BACKUP EQUIPMENT SUBJECT TO THE APPLICATION**

The operating power, for modeling purposes, was assumed to be 20 Watts per sector for the 2500 MHz antennas and there will be two (2) transmitters operating at this frequency per sector. The transmitter information used in the modeling of existing Sprint antennas that are to remain on-site is summarized in the RoofView® export file presented in Appendix B.

## **6.0 TOTAL NUMBER OF WATTS PER INSTALLATION AND THE TOTAL NUMBER OF WATTS FOR ALL INSTALLATIONS ON THE STRUCTURE**

The effective radiated power (ERP) for the 2500 MHz transmitters combined on-site is 3,937 Watts. The ERP for the existing Sprint transmitters combined on-site is 18,347 Watts. The ERP for other carriers on-site was not provided; however, based on worst-case assumptions, the combined ERP for all other carriers on-site was calculated to be 19,956 Watts.

## **7.0 PREFERRED METHOD OF ATTACHMENT OF PROPOSED ANTENNA WITH PLOT OR ROOF PLAN INCLUDING: DIRECTIONALITY OF ANTENNAS, HEIGHT OF ANTENNAS ABOVE NEAREST WALKING SURFACE, DISCUSS NEARBY INHABITED BUILDINGS**

Based on the information provided to EBI, the proposed antennas are to be pipe-mounted to the rooftop penthouse and operating in the directions, frequencies, and heights mentioned in section 4.0 above. There are multi-family residential buildings approximately 130 feet to the northeast, northwest and southwest of the proposed site. There is also a building approximately 150 feet to the south of the proposed site that appears to be of commercial use.

## **8.0 ESTIMATED AMBIENT RADIO FREQUENCY FIELDS FOR THE PROPOSED SITE**

Based on worst-case predictive modeling, the worst-case emitted power density may exceed the FCC's general public limit within approximately 2 feet of Sprint's proposed antennas at the main roof level. Modeling also indicates that the worst-case emitted power density will not exceed the FCC's occupational limit at the main roof level.

At the nearest walking/working surfaces to the proposed Sprint antennas, the maximum power density is 135 percent of the FCC's general public limit (27 percent of the FCC's occupational limit).

The composite exposure level from all other carriers existing on this site combined with Sprint's proposed antennas is 135 percent of the FCC's general public limit (27 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

At ground level, the maximum power density generated by the proposed Sprint antennas combined with the existing other carriers antennas on-site is 2.8 percent of the FCC's general public limit (0.56 percent of the FCC's occupational limit).

The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix B.

There are no modeled areas on the rooftop or ground that exceed the FCC's limits for general public or occupational exposure in front of the other carrier antennas.

## **9.0 SIGNAGE AT THE FACILITY IDENTIFYING ALL WTS EQUIPMENT AND SAFETY PRECAUTIONS FOR PEOPLE NEARING THE EQUIPMENT AS MAY BE REQUIRED BY THE APPLICABLE FCC ADOPTED STANDARDS (DISCUSS SIGNAGE FOR THOSE WHO SPEAK LANGUAGES OTHER THAN ENGLISH)**

Signs are the primary means for control of access to areas where RF exposure levels may potentially exceed the MPE. It is recommended that Notice signs be installed for the new antennas making people aware of the antennas locations. There are exposures above the FCC limits in front of the proposed antennas and therefore barriers are recommended.

Workers that are elevated above the rooftop may be exposed to power densities greater than the occupational limit. Workers should be informed about the presence of antennas and their associated fields and practice RF Safety Procedures.

At the time of the site survey, it was noted that there was a blue "Notice" sign located on the roof access door. There was also blue "Notice" sign, red "Warning" sign, and yellow "Caution" sign posted on the T-Mobile equipment compound fence.

Access to this site is accomplished via a stairwell penthouse located on the main roof. The roof access door is locked and, as such, the general public is not able to access the rooftop.

## **10.0 STATEMENT ON WHO PRODUCED THIS REPORT AND QUALIFICATIONS**

Please see the certifications attached in Appendix A below.

## **11.0 FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS**

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

**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 public/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.

**General public/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.



Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

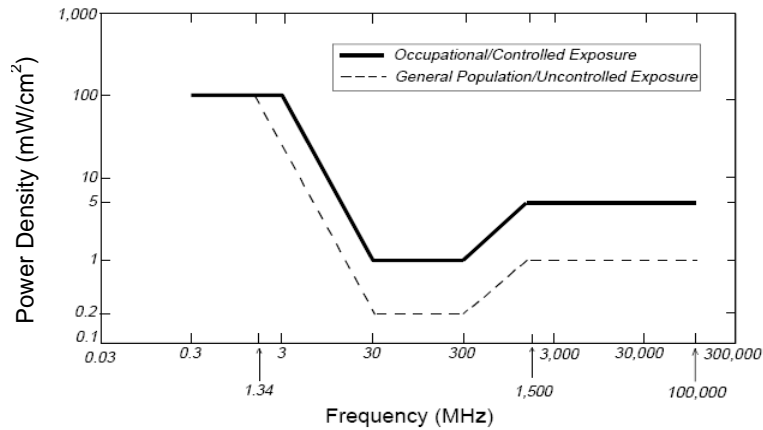
The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm<sup>2</sup>). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm<sup>2</sup>) and an uncontrolled MPE of 1 mW/cm<sup>2</sup> for equipment operating in the 1900 MHz and 2500 MHz frequency ranges. For the Sprint equipment operating at 800 MHz, the FCC's occupational MPE is 2.66 mW/cm<sup>2</sup> and an uncontrolled MPE of 0.53 mW/cm<sup>2</sup>. These limits are considered protective of these populations.

<b>Table I: Limits for Maximum Permissible Exposure (MPE)</b>				
<b>(A) Limits for Occupational/Controlled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (E) (V/m)</b>	<b>Magnetic Field Strength (H) (A/m)</b>	<b>Power Density (S) (mW/cm<sup>2</sup>)</b>	<b>Averaging Time [E]<sup>2</sup>, [H]<sup>2</sup>, or S (minutes)</b>
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
<b>(B) Limits for General Public/Uncontrolled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (E) (V/m)</b>	<b>Magnetic Field Strength (H) (A/m)</b>	<b>Power Density (S) (mW/cm<sup>2</sup>)</b>	<b>Averaging Time [E]<sup>2</sup>, [H]<sup>2</sup>, or S (minutes)</b>
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

\* Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)  
 Plane-wave Equivalent Power Density



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Cellular Telephone	870 MHz	2.90 mW/cm <sup>2</sup>	0.58 mW/cm <sup>2</sup>
Specialized Mobile Radio	855 MHz	2.85 mW/cm <sup>2</sup>	0.57 mW/cm <sup>2</sup>
Most Restrictive Freq, Range	30-300 MHz	1.00 mW/cm <sup>2</sup>	0.20 mW/cm <sup>2</sup>

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Sprint in this area operate within a frequency range of 800-1900 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Advanced Wireless Services (AWS) facilities used by Sprint in this area operate within a frequency range of 2496 - 2690 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets); and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units. Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS/AWS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.



## **FCC Compliance Requirement**

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

### **12.0 LIMITATIONS**

This report was prepared for the use of Sprint Nextel. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information collected during the site survey and provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

### **13.0 SUMMARY AND CONCLUSIONS**

EBI has prepared this Radiofrequency Emissions Compliance Report for the proposed Sprint telecommunications equipment at the site located at 1630 Main Street in Hartford, Connecticut.

EBI has conducted theoretical modeling combined with on-site monitoring to estimate the worst-case power density from proposed Sprint antennas and the other carriers' existing antennas to document potential MPE levels at this location and ensure that site control measures are adequate to meet FCC and OSHA requirements. As presented in the preceding sections, based on worst-case predictive modeling, the worst-case emitted power density may exceed the FCC's general public limit within approximately 2 feet of Sprint's proposed antennas at the main roof level. Modeling also indicates that the worst-case emitted power density will not exceed the FCC's occupational limit at the main roof level.

Based on the FCC criteria, there are no measured areas on any accessible rooftop and ground-level walking/working surface related to the existing site conditions that exceed the FCC's occupational and general public exposure limits at this site.

Signage has been installed at the site as presented in Section 9.0. Posting of the signage and installation of the recommended barriers brings the site into compliance with FCC rules and regulations.

# **Appendix A**

## **Certifications**



### Field Personnel Certification

I, Patricia Briea, state that:

I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.

- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified “occupational” under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have been trained in the proper use of the RF-EME measurement equipment, and have successfully completed EBI training in the policies and procedures for site survey protocols.
- All information collected during the site survey and contained in this report is true and accurate to the best of my knowledge and based on the data gathered.



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## Preparer Certification

I, Tama Troutman, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified “occupational” under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have reviewed the data collected during the site survey and provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.



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**Appendix B**  
**Roofview® Export File**



StartMapDefinition

Roof Max Y Roof Max X Map Max Y Map Max X Y Offset X Offset Number of envelope  
 170 160 180 170 10 10 1 \$US\$41:\$FX\$US\$41:\$FX\$210

List Of Areas  
 \$US\$41:\$FX\$210

StartSettingsData

Standard Method Uptime Scale Factor Low Thr Low Color Mid Thr Mid Color Hi Thr Hi Color Over Color Ap Ht Mult Ap Ht Method  
 4 2 3 1 100 1 500 4 5000 2 3 1.5 1

StartAntennaData

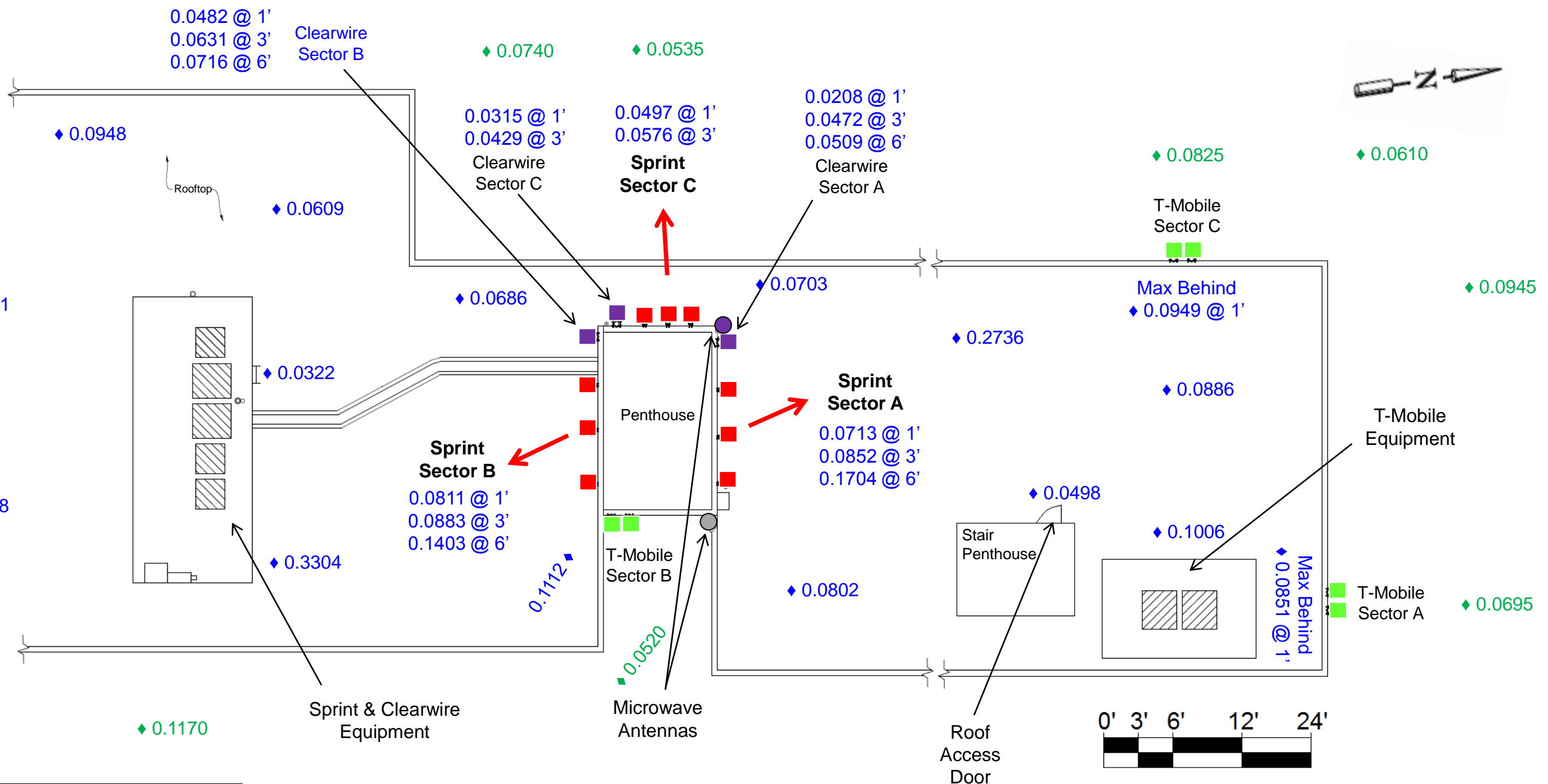
It is advisable to provide an ID (ant 1) for all antennas

ID	Name	Freq (MHz)	Trans Power	Trans Count	Coax Len	Coax Type	Other Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
SPT A1	Sprint	2500	20	2	10	1/2 LDF	0.5	33.73339	RFS	APXVTM14	38	36	11.655		4.69	15.9	65;345	ON•		
SPT B1	Sprint	2500	20	2	10	1/2 LDF	0.5	33.73339	RFS	APXVTM14	42	10	11.655		4.69	15.9	65;165	ON•		
SPT C1	Sprint	2500	20	2	10	1/2 LDF	0.5	33.73339	RFS	APXVTM14	31	19	11.655		4.69	15.9	65;275	ON•		
SPT A1	Sprint	800	20	1	10	1/2 LDF	0.5	16.8667	RFS	APXVSP1E	40	36	11		6	13.4	65;345	ON•		
SPT A1	Sprint	1900	20	6	10	1/2 LDF	0.5	101.2002	RFS	APXVSP1E	40	36	11		6	15.9	65;345	ON•		
SPT B1	Sprint	800	20	1	10	1/2 LDF	0.5	16.8667	RFS	APXV9ERR:	38	10	11		6	11.9	80;165	ON•		
SPT B1	Sprint	1900	20	6	10	1/2 LDF	0.5	101.2002	RFS	APXV9ERR:	38	10	11		6	14.9	80;165	ON•		
SPT C1	Sprint	800	20	1	10	1/2 LDF	0.5	16.8667	KMW	ET-X-TU-42	31	23	12		4	12.9	42;275	ON•		
SPT C1	Sprint	1900	20	6	10	1/2 LDF	0.5	101.2002	KMW	ET-X-TU-42	31	23	12		4	15.9	37;275	ON•		
SPT A1	Sprint WIM	2500	30	2	0	0	0.5	53.47506	Argus	LLPX310RV	33	36	12.25		3.5	16	90;355	ON•		
SPT B1	Sprint WIM	2500	30	2	0	0	0.5	53.47506	Argus	LLPX310RV	32	10	12.25		3.5	16	90;180	ON•		
SPT C1	Sprint WIM	2500	30	2	0	0	0.5	53.47506	Argus	LLPX310RV	31	15	12.25		3.5	16	90;275	ON•		
TMO A1	T-Mobile	1900	30	4	0	0	3	60.14247	Ericsson	Air 21 B4A	54	155	95		5	16	65;30	ON•		
TMO A2	T-Mobile	2100	30	4	0	0	0.5	106.9501	Ericsson	Air 21 B4A	59	154	95		5	16	65;30	ON•		
TMO B1	T-Mobile	1900	30	4	0	0	3	60.14247	Ericsson	Air 21 B4A	44	13	112		5	16	65;90	ON•		
TMO B2	T-Mobile	2100	30	4	0	0	0.5	106.9501	Ericsson	Air 21 B4A	45	16	112		5	16	65;90	ON•		
TMO C1	T-Mobile	1900	30	4	0	0	3	60.14247	Ericsson	Air 21 B4A	16	149	95		5	16	65;270	ON•		
TMO C2	T-Mobile	2100	30	4	0	0	0.5	106.9501	Ericsson	Air 21 B4A	16	142	95		5	16	65;270	ON•		

StartSymbolData

Sym	Map Mark	Roof X	Roof Y	Map Label	Description ( notes for this table only )
Sym			5	35 AC Unit	Sample symbols
Sym		14		5 Roof Access	
Sym		45		5 AC Unit	
Sym		45		20 Ladder	

**Appendix C**  
**Monitoring Plan**



**LEGEND**

	Sprint Antennas
	T-Mobile Antennas
	Clearwire
	Unknown Carrier Antennas
	Blue numbers are Spatially-Averaged Measurements % FCC Occupational Limit
	Green numbers are Spatially-Averaged Measurements % FCC General Public Limit

**Site Plan with Monitoring Results**

Facility Operator: Sprint  
 Site Number: CT13XC266  
 Site Name: TOWER APARTMENTS  
 Site Visit Date: 03-13-2014





## **Appendix D**

### **Site Photos**



1. Site overview



2. Roof access door and existing signage



3. Roof access door existing signage detail



4. Existing signage on T-Mobile equipment compound fence\_1



5. Existing signage on T-Mobile equipment compound fence\_1



6. Sprint (3 left antennas) and Clearwire (right antenna) Sector A; microwave antennas to the left and right



**7.** Sprint (3 right antennas) and Clearwire (left antenna) Sector B; T-Mobile Sector B to the right of Sprint



**10.** Sprint/Clearwire Sector A transmission direction



**8.** Sprint (3 left antennas) and Clearwire (right antenna) Sector C looking NE



**11.** Sprint/Clearwire Sector B transmission direction



**9.** Sprint (3 left antennas) and Clearwire (right antenna) Sector C looking SW



**12.** Sprint/Clearwire Sector C transmission direction





13. Building aspect looking towards Sprint/Clearwire Sector C



16. T-Mobile Sector A - ground view 1



14. Sprint and Clearwire equipment



17. T-Mobile Sector A - ground view 2



15. T-Mobile Sector A – roof view



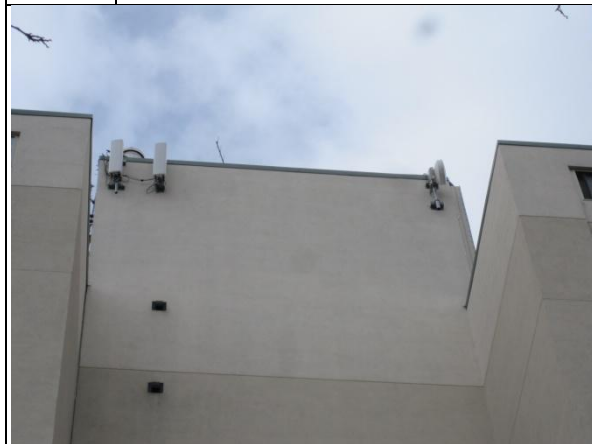
18. T-Mobile Sector B (Sprint B3 antenna to the left) roof view



19. T-Mobile Sector B - ground view 1



22. T-Mobile Sector C - ground view 1



20. T-Mobile Sector B - ground view 2



23. T-Mobile Sector C - ground view 2



21. T-Mobile Sector C



24. T-Mobile equipment compound





25. T-Mobile equipment cabinets



28. Penthouse with roof access



26. Roof overview looking South towards Sprint Sector A



29. Grounds aspect looking



27. Roof overview looking North towards Sprint Sector B



30. Grounds aspect looking





31. Building aspect looking



32. Property overview