



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

December 06, 2018

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

**RE: Notice of Exempt Modification for Sprint DO Macro: 876363**  
**Sprint Site ID: CT23XC550**  
**219 New Park Ave. Hartford, CT 06141-0270**  
**Latitude: 41° -45' -2.79"/ Longitude: 72° -42' 43.23"**

Dear Ms. Bachman:

Sprint currently maintains six (6) antennas at the 99-foot level of the existing 108-foot monopole tower at 219 New park Ave. Hartford, CT 06141-0270. The tower is owned by Crown Castle. The Connecticut Light and Power Company own the property. Sprint now intends to replace three (3) older antennas with three (3) new antennas. Sprint also intends to replace one (1) hybrid cable and remove three (3) RRH's.

**This facility was approved by the City of Hartford in the mid-2000 and an email was sent to the town on 12/06/2018 in an effort to ascertain the original zoning documents.**

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mayor Luke Bronin, City of Hartford, John Collins, Building Official, City of Hartford, the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

**The Foundation for a Wireless World.**

CrownCastle.com

Melanie A. Bachman

December 06, 2018

Page 2

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,



Jeffrey Barbadora

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

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

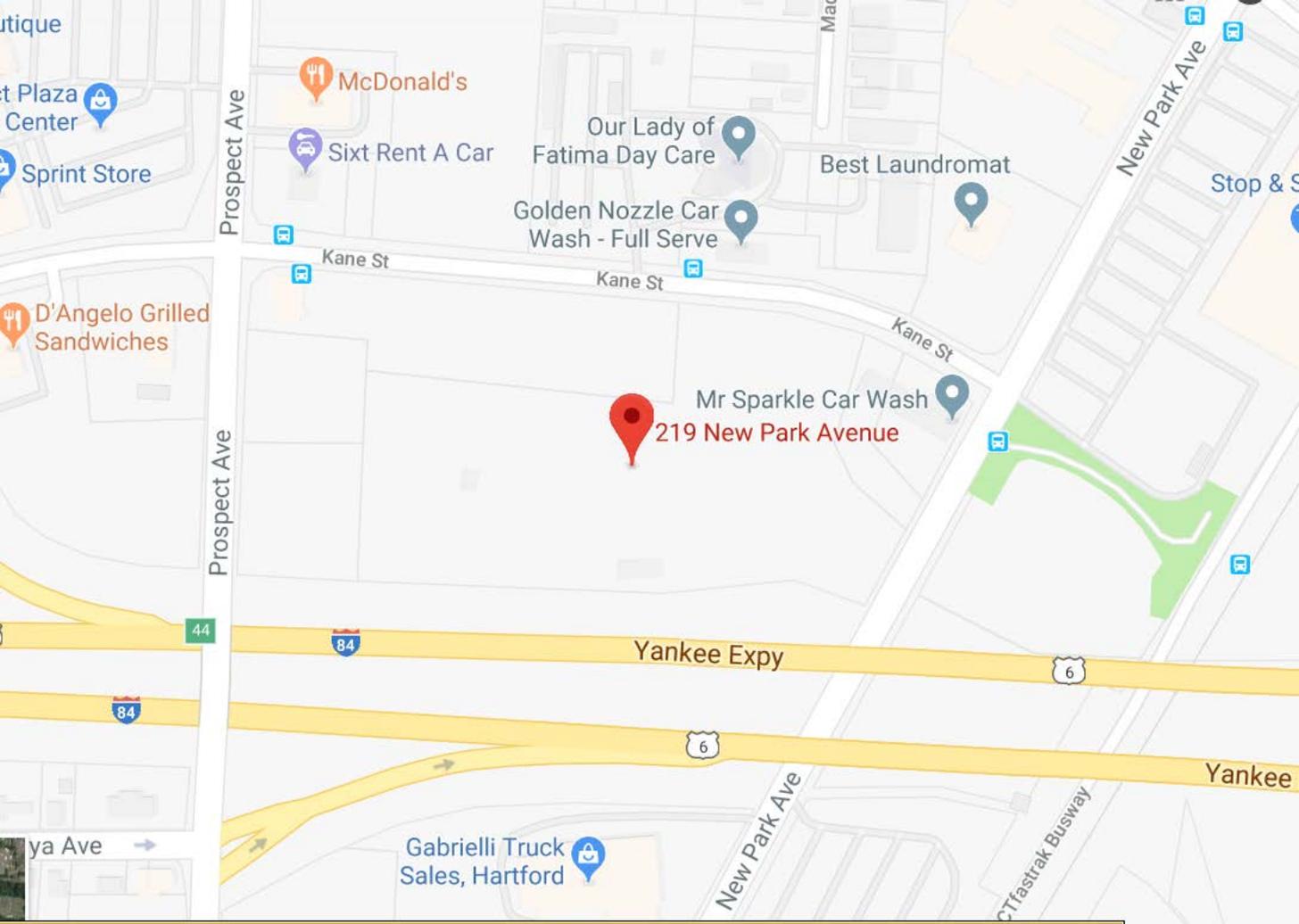
Tab 2: Exhibit-2: Structural Modification Report

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

cc: Town Manager Luke Bronin  
550 Main St #1,  
Hartford, CT 06103

Building Official John Collins  
550 Main St #1,  
Hartford, CT 06103

Connecticut Light and Power  
107 Selden St.  
C/O corporate Property  
Management Department  
Berlin, CT 06037



McDonald's

Sixt Rent A Car

Our Lady of Fatima Day Care

Best Laundromat

Golden Nozzle Car Wash - Full Serve

D'Angelo Grilled Sandwiches

Mr Sparkle Car Wash

219 New Park Avenue

Yankee Expy

Yankee

Gabielli Truck Sales, Hartford

## Unofficial Property Record Card - City of Hartford, CT

### General Property Data

Parcel ID <b>138-472-001</b>	Account Number
Prior Parcel ID	Property Location <b>219 NEW PARK AVE HARTFORD</b>
Property Owner <b>CONN LIGHT &amp; POWER CO</b>	Property Use <b>OTHER UTILITY</b>
Mailing Address <b>PO BOX 270</b>	Most Recent Sale Date <b>7/2/1982</b>
City <b>HARTFORD</b>	Legal Reference <b>01977 0129</b>
Mailing State <b>CT</b> Zip <b>06141-0270</b>	Grantor
Parcel Zoning <b>MS-3</b>	Sale Price <b>0</b>
	Land Area <b>311,018.000 square feet</b>

### Current Property Assessment

Card 1 Value	Building Value <b>12,460</b>	Xtra Features Value <b>10,570</b>	Land Value <b>1,094,870</b>	Total Value <b>1,117,900</b>
--------------	------------------------------	-----------------------------------	-----------------------------	------------------------------

### Building Description

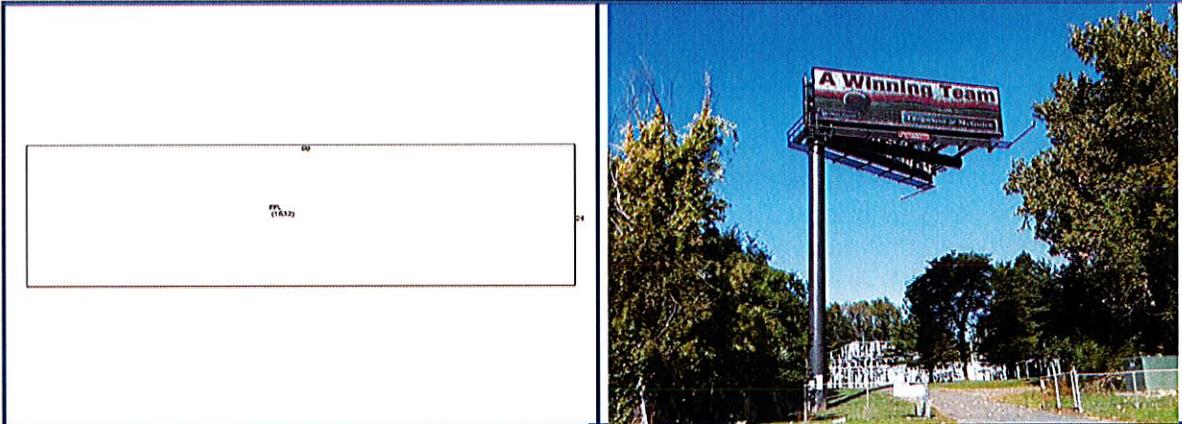
Building Style <b>WAREHSE</b>	Foundation Type <b>Concrete</b>	Flooring Type <b>COMBINATION</b>
# of Living Units <b>0</b>	Frame Type <b>Steel Light</b>	Basement Floor <b>N/A</b>
Year Built <b>1978</b>	Roof Structure <b>GABLE/HIP</b>	Heating Type <b>Electric</b>
Building Grade <b>Economy</b>	Roof Cover <b>Metal</b>	Heating Fuel <b>Electric</b>
Building Condition <b>N/A</b>	Siding <b>Metal</b>	Air Conditioning <b>0%</b>
Finished Area (SF) <b>1632</b>	Interior Walls <b>DRYWALL</b>	# of Bsmt Garages <b>0</b>
Number Rooms <b>0</b>	# of Bedrooms <b>0</b>	# of Full Baths <b>0</b>
# of 3/4 Baths <b>0</b>	# of 1/2 Baths <b>0</b>	# of Other Fixtures <b>0</b>

### Legal Description

#### Narrative Description of Property

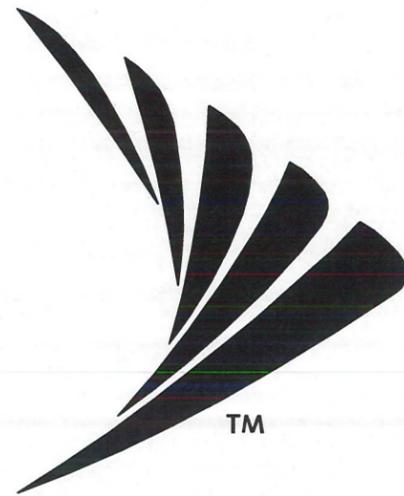
This property contains 311,018.000 square feet of land mainly classified as OTHER UTILITY with a(n) WAREHSE style building, built about 1978 , having Metal exterior and Metal roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

### Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted. The Property Use designation depicted on this website is for assessment purposes only, it does not guarantee or imply rights to such use or approval of the premises for such use. Any questions regarding the approved or allowed use of a property should be confirmed with the Planning & Economic Development Division of the City of Hartford.

# Sprint®



PROJECT:

SPRINT MASSIVE MIMO

SITE NAME:

HARTFORD - NU (SSUSA)

SITE CASCADE:

CT23XC550

CROWN CASTLE ID:

876363

SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SITE TYPE:

108'-0" MONOPOLE



CROWN CASTLE  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

NO.	DATE	DESCRIPTION
1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710



JIANG YU, P.E.  
CONNECTICUT LICENSE NO. 0023222  
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50062961

JOB NUMBER: 50103802

SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

SITE INFORMATION

**SITE MANAGER:**  
CROWN CASTLE  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

CROWN PROJECT MANAGER:  
SCOTT WIATROSKI: (201) 236-9228  
SCOTT.WIATROSKI@CROWNCastle.COM

CROWN CONSTRUCTION MANAGER:  
MAHENDRA PERSAUD: (917) 670-9360  
MAHENDRA.PERSAUD@CROWNCastle.COM

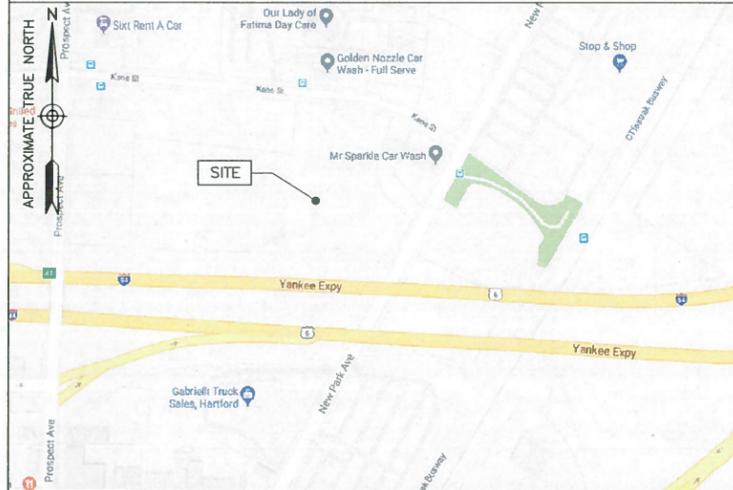
**SITE ADDRESS:**  
219 NEW PARK AVENUE  
HARTFORD, CT 06106

**GEOGRAPHIC COORDINATES:**  
LATITUDE: 41°-45'-02.79" N, (41.750775°)  
LONGITUDE: 72°-42'-43.23" W, (-72.713675°)

**COUNTY:**  
HARTFORD COUNTY

**SPRINT CONSTRUCTION MANAGER:**  
NAME: MARC MASON  
E-MAIL: MARC.MASON@SPRINT.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

- REMOVE (3) 2.5 GHz PANEL ANTENNAS
- REMOVE (3) 2.5 GHz REMOTE RADIO HEADS
- INSTALL (1) HANDRAIL KIT ON EXISTING ANTENNA PLATFORM, PER MOUNT STRUCTURAL ANALYSIS
- INSTALL (3) 2.5 GHz MIMO ANTENNAS
- REMOVE (1) 5/8"Ø HYBRID CABLE
- INSTALL (1) 1-1/4"Ø HYBRID CABLE
- INSTALL (1) mMIMO AIRSCALE BBU IN MMBTS CABINET
- INSTALL (1) TOP HAT ON MMBTS CABINET
- INSTALL (2) AMOB UNITS ON BATTERY CABINET

APPLICABLE CODES

- ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH 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. BUILDING CODE: 2016 CONNECTICUT STATE BUILDING CODE.
  2. ANSI/TIA (TELECOMMUNICATIONS INDUSTRY ASSOCIATION) 222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES.
  3. LIGHTNING PROTECTION CODE: NFPA 780-2014 LIGHTNING PROTECTION CODE.
  4. ELECTRICAL CODE: NATIONAL ELECTRICAL CODE 2017 (NEC 2017).
  5. ALL STEEL WORK TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
  6. ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION.



ONE CALL 811 OR  
PHONE #: 1-800-922-4455  
www.cbyd.com

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**

**THE WORK:**  
SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF. ALSO SEE SPRINT METHOD OF PROCEDURE (MOP) AND SPRINT STANDARDS AT THE TIME OF CONSTRUCTION START.

**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 ALONG WITH SPRINT CONSTRUCTION MANAGER APPROVAL.

**SITE FAMILIARITY:**  
CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

**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.

**DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE:**  
THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

- A. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
- B. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
- C. MARK THE FIELD SET OF DRAWINGS IN RED, DOCUMENTING ANY CHANGES FROM THE CONSTRUCTION DOCUMENTS.

**METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION:**  
CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS. CONTRACTOR IS RESPONSIBLE TO USE LATEST MOP'S.

- A. BASE BAND UNIT IN EXISTING UNIT
- B. INSTALLATION OF BATTERIES
- C. INSTALLATION OF FIBER CABLE
- D. INSTALLATION OF RRU'S
- E. CABLING
- F. TS-0200 REV 5 – ANTENNA LINE ACCEPTANCE STANDARDS
- G. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.
- H. COMMISSIONING MOPS

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

COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DRAWINGS.

CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT TO ENSURE IT IS PROTECTED AND HANDLED PROPERLY THROUGHOUT THE CONSTRUCTION DURATION.

CONTRACTOR RESPONSIBLE FOR RECEIPT OF SPRINT FURNISHED EQUIPMENT AT CELL SITE OR CONTRACTOR'S LOCATION. CONTRACTOR TO COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE. CONTRACTOR MAY BE REQUIRED TO PICK UP MATERIAL AT LOCATION PRESCRIBED BY SPRINT.

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

**NOTICE TO PROCEED:**  
NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF WORK ORDER.

**SITE CLEANLINESS:**  
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.

**SECTION 01 400 – SUBMITTALS & TESTS**

**ALTERNATES:**  
AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINTS CONSTRUCTION MANAGER FOR APPROVAL. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED.

**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 5 ANTENNA LINE ACCEPTANCE STANDARDS.
  - 2. AZIMUTH AND DOWNTILT PROVIDE AN AUTOMATED REPORT UPLOADED TO SITERRA USING A COMMERCIAL MADE-FOR-THE-PURPOSE ELECTRONIC ANTENNA ALIGNMENT TOOL (AAT). INSTALLED AZIMUTH, CENTERLINE AND DOWNTILT MUST CONFORM WITH RF CONFIGURATION DATA
  - 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.
  - 4. ALL TESTING REQUIRED BY APPLICABLE INSTALLATION MOPS.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

- 1. AZIMUTH, DOWNTILT, AGL FROM SUNSIGHT INSTRUMENTS OR 3Z – ANTENNA ALIGN ALIGNMENT TOOL (AAT)
- 2. SWEEP AND FIBER TESTS
- 3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
- 4. ALL AVAILABLE JURISDICTIONAL INFORMATION
- 5. PDF SCAN OF REDLINES PRODUCED IN FIELD
- 6. A PDF SCAN OF REDLINE MARK-UPS SUITABLE FOR USE IN ELECTRONIC AS-BUILT DRAWING PRODUCTION
- 7. LIEN WAIVERS
- 8. FINAL PAYMENT APPLICATION
- 9. REQUIRED FINAL CONSTRUCTION PHOTOS
- 10. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
- 11. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).
- 12. CLOSEOUT PHOTOGRAPHS:
  - (i) BACK MAIN HYBRID CABLE ROUTE (MINIMUM TWO PHOTOS)
  - (ii) OF EACH ANTENNA AND RRU
  - (iii) MANUFACTURERS NAME TAG FOR ALL SERIALIZED EQUIPMENT
  - (iv) PULL AND DISTRIBUTION BOXES INTERMEDIATE BETWEEN RRU'S AND MMBS (DOOR OPEN)
  - (v) MMBS CABINET WITH DOOR OPEN SHOWING MODIFICATIONS
  - (vi) POWER CABINET, DOORS OPEN, BATTERIES INSTALLED
  - (vii) BREAK OUT CYLINDERS
  - (viii) ASR SIGNAGE FOR SPRINT OWNED TOWERS
  - (ix) RADIATION EXPOSURE WARNING SIGNS
  - (x) PHOTOGRAPH FROM EACH SECTOR FROM APPROXIMATELY RAD CENTER OF ANY NEW ANTENNA AT HORIZON.

E. LOAD PHOTOS TO SITERRA PROJECT LIBRARY 15. IN 15 CREATE NEW CATEGORY; 2.5 DEPLOYMENT, AND SECTION; PERMANENT CONSTRUCTION. LABEL PHOTOS WITH SITE CASCADE AND VIEW BEING DEPICTED. CAMERAS USED TO TAKE PHOTOGRAPHS SHALL GPS ENABLED SUCH THAT THE GPS COORDINATES ARE INCLUDED IN THE PHOTO MEDIA-FILE INFORMATION.

**COMMISSIONING:**  
PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

**INTEGRATION:**  
PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

**SECTION 11 700 – ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION**

**SUMMARY:**  
THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

**ANTENNAS AND RRU'S:**  
THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

**HYBRID CABLE:**  
HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

**JUMPERS AND CONNECTORS:**  
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MIN LENGTH FOR JUMPER SHALL BE SO AS TO ALLOW FOR THE PROPER BEND RADIUS PER MANUFACTURER OR SPRINT SPECIFICATIONS.

**REMOTE ELECTRICAL TILT (RET) CABLES:**

**MISCELLANEOUS:**  
INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

**ANTENNA INSTALLATION:**  
THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.

- A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.
- B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

**FIBER CABLE INSTALLATION:**

- A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADI.
- C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

- 1. FASTENING MAIN FIBER CABLES:
  - a. **LATTICE AND GUYED TOWERS:**  
ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
  - b. **MONOPOLE:**  
ALL CABLES SHALL BE PERMANENTLY SUPPORTED WITH HOISTING GRIPS AT INTERVALS OF NO MORE THAN 200 FEET (ONE HOISTING GRIP PER COAX). A HOISTING GRIP SHOULD BE INSTALLED AT MID-POINT IF CABLE RUN EXCEEDS 200' AS WELL AS TOP SIDE.
- 2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
  - a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
  - b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
- 3. FASTENING JUMPERS: FASTENING OR SECURING JUMPERS SHOULD CONSIST OF STAINLESS STEEL CLIPS, 18" FROM REAR OF CONNECTOR AND 24" THEREAFTER AND AT NO TIME SHALL THEY CONTACT TOWER OR STRUCTURAL STEEL.
- 4. CABLE INSTALLATION:
  - a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
  - b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSEOVERS.
  - c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURERS RECOMMENDED MAXIMUM BEND RADIUS.



CROWN CASTLE  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

**CONSTRUCTION DRAWINGS**

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710



JIANG YU, P.E.  
CONNECTICUT LICENSE NO. 0023222  
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50062961

JOB NUMBER: 50103802

SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

SPRINT SPECIFICATIONS I

SHEET NUMBER

SP-1



**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL

**Dewberry®**  
Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710



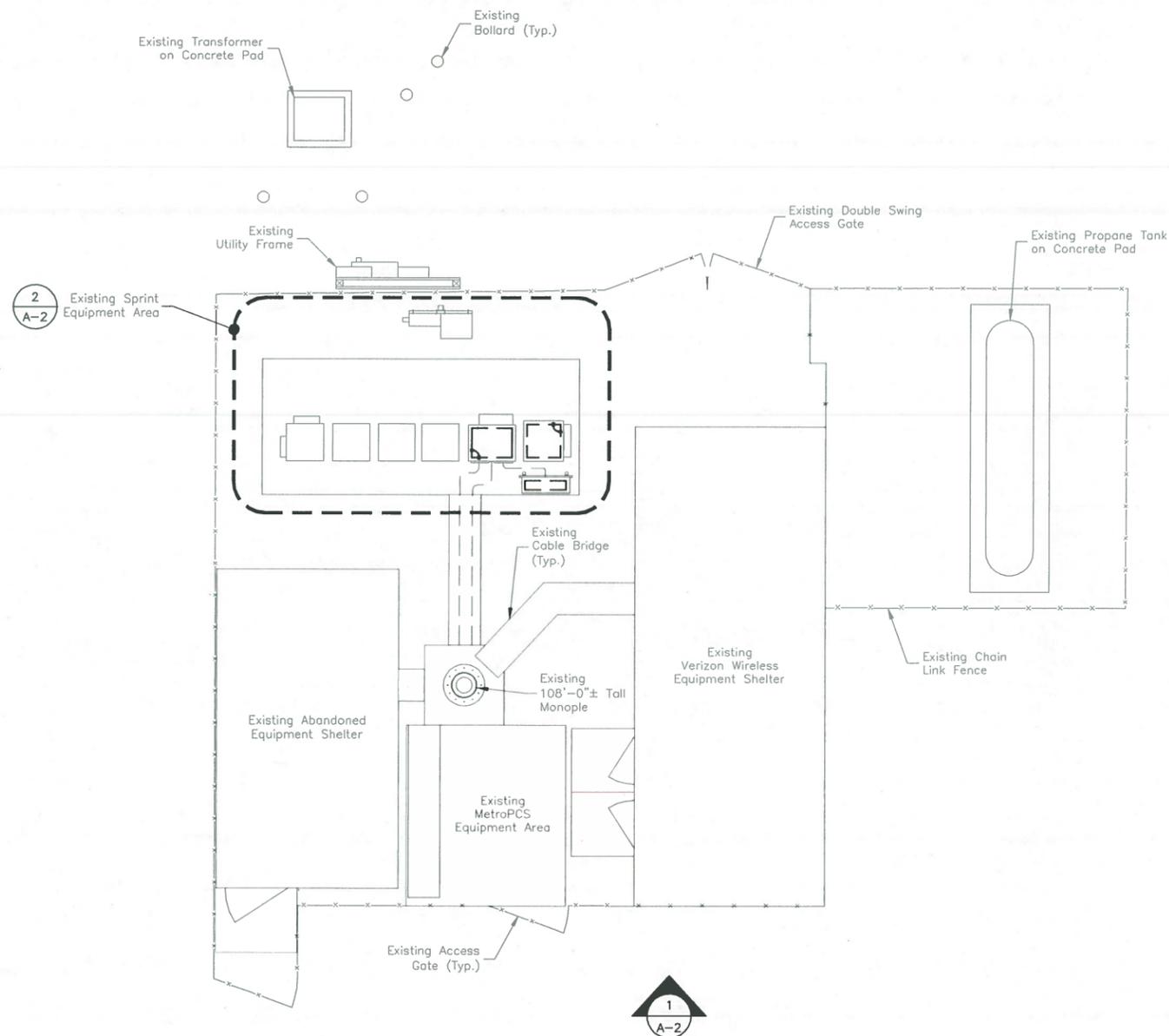
CONNECTICUT LICENSE NO. 0023222  
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY:	MR
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50062961
JOB NUMBER:	50103802
SITE ADDRESS:	

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE	COMPOUND PLAN
SHEET NUMBER	

A-1



**COMPOUND PLAN**

SCALE: 1"=10' FOR 11"x17"  
1"=5' FOR 22"x34"



**NOTE:**  
EXISTING INFORMATION SHOWN HEREON IS BASED ON EXISTING PLANS PROVIDED BY CROWN CASTLE.



**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL

**Dewberry**

Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.738.8400  
FAX: 973.738.8710



JIANG YU, P.E.  
CONNECTICUT LICENSE NO. 0023222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50062961

JOB NUMBER: 50103802

SITE ADDRESS:

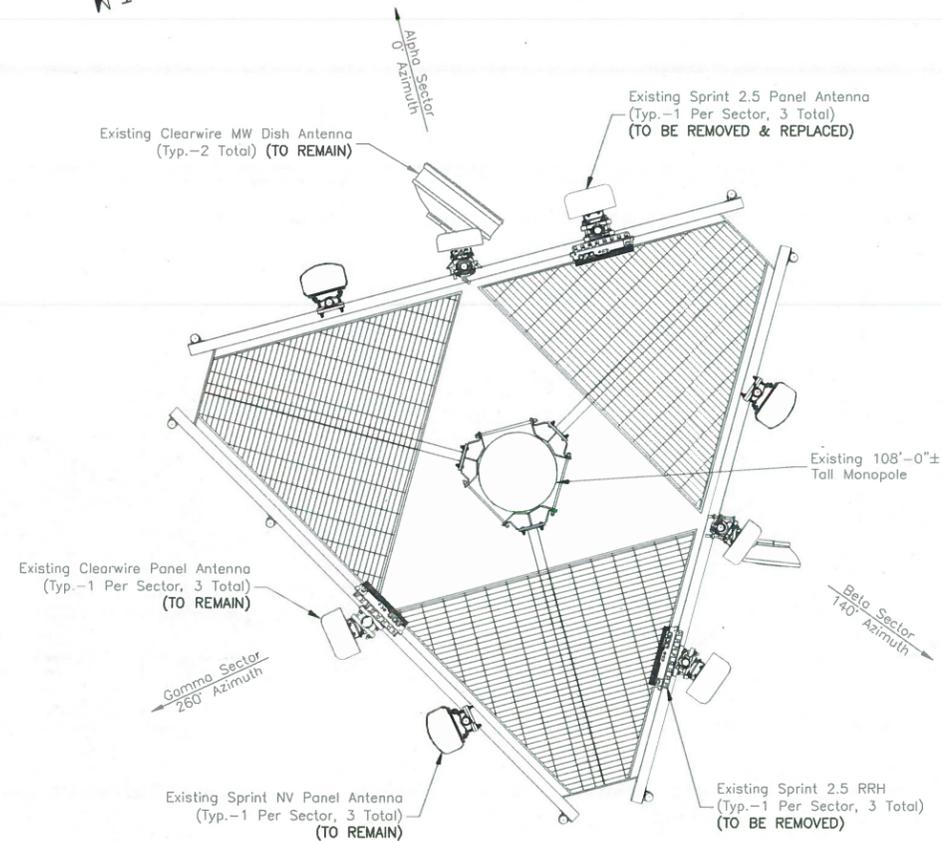
219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

EXISTING & PROPOSED  
ANTENNA PLANS

SHEET NUMBER

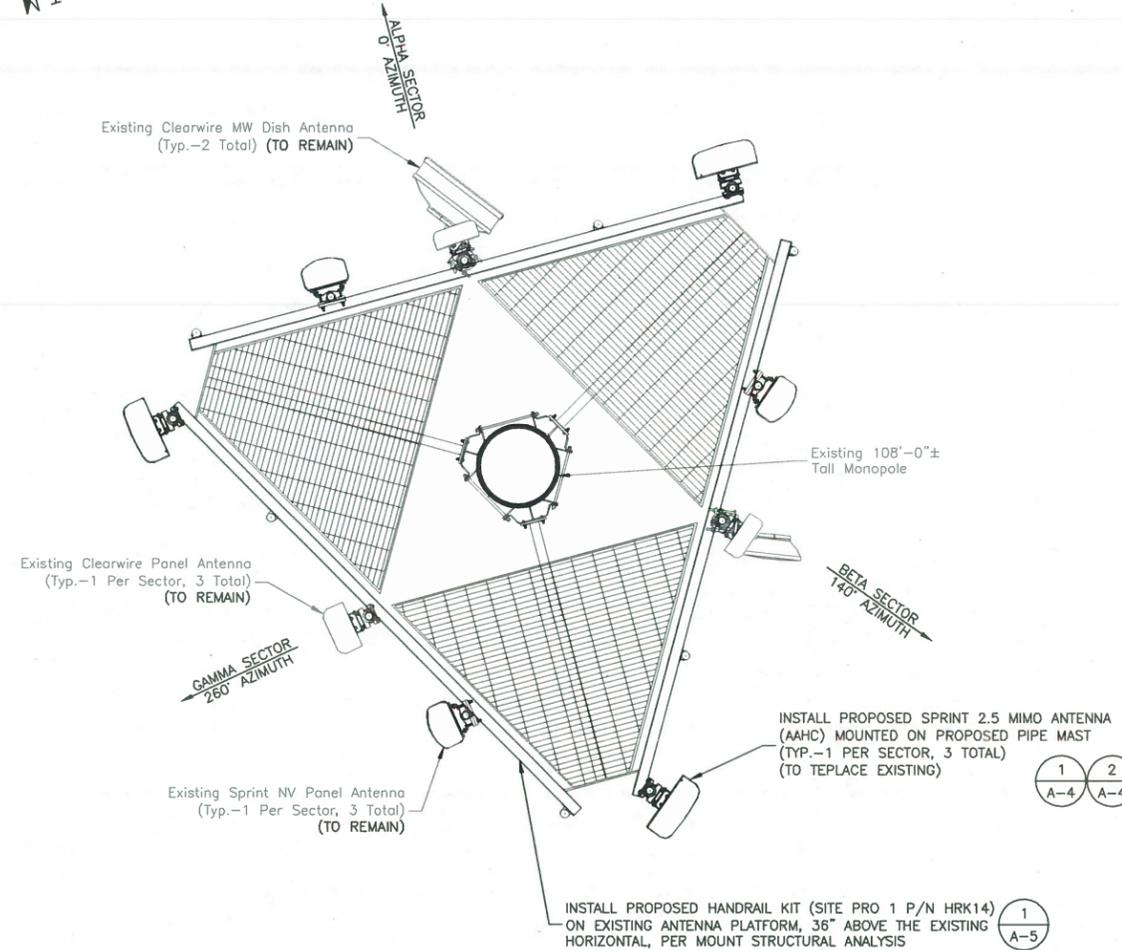
A-3



**EXISTING ANTENNA LAYOUT**

SCALE: N.T.S.

1



**PROPOSED ANTENNA LAYOUT**

SCALE: N.T.S.

2

**NOTE:**

PROPOSED MIMO ANTENNAS MUST BE LOCATED AS SHOWN AND IN ACCORDANCE WITH THE ANTENNA MOUNT ANALYSIS BY INFINIGY ENGINEERING, PLLC (DATED: 08/07/18). NO WORK IS TO BE PERFORMED PRIOR TO ALL MODIFICATIONS BEING COMPLETED AS SHOWN IN THE MOUNT ANALYSIS. ALL APPROPRIATE HARDWARE MUST BE UTILIZED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

**NOTE:**

EXISTING INFORMATION SHOWN HEREON IS BASED ON EXISTING PLANS PROVIDED BY CROWN CASTLE.

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL



**Dewberry Engineers Inc.**  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710

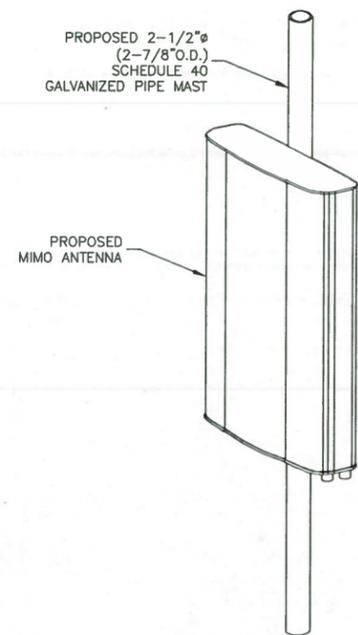


JIANG YU, P.E.  
CONNECTICUT LICENSE NO. 0023222  
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR  
REVIEWED BY: BSH  
CHECKED BY: GHN  
PROJECT NUMBER: 50062961  
JOB NUMBER: 50103802  
SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE  
**ANTENNA &  
EQUIPMENT DETAILS**  
SHEET NUMBER



ANTENNA SPECIFICATIONS	
MANUFACTURER	NOKIA
MODEL NUMBER	AAHC
DIMENSIONS (HxWxD)	25.6" x 19.7" x 9.64"
WEIGHT	103.7 LBS

CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND IDENTIFYING ANY EXISTING CONFLICTS (INCLUDING BUT NOT LIMITED TO EXISTING COAXIAL CABLES, SAFETY CLIMBS, ETC) AND DETERMINING TEMPORARY BRACING OR RELOCATION REQUIRED FOR INSTALLATION OF THE PROPOSED EQUIPMENT. CONTRACTOR TO CONTACT ENGINEER AND SPRINT CM IMMEDIATELY IN CASE OF ANY CONFLICTS. THE CONTRACTOR SHALL RESTORE ALL RELOCATED ITEMS TO PREVIOUS CONDITIONS.

NOTES:

1. INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATIONS.
2. WEIGHT DOES NOT INCLUDE MOUNTING BRACKETS.

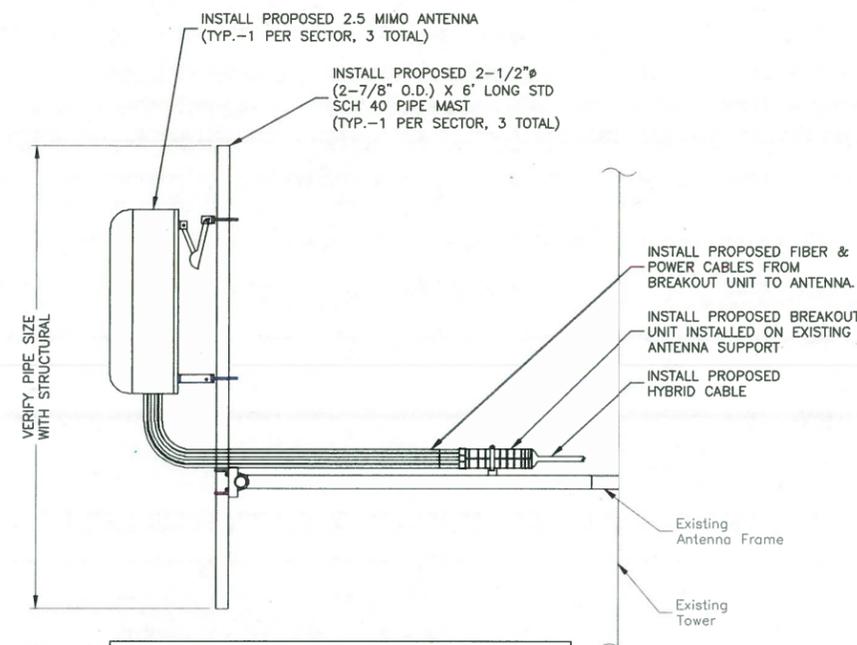
**MIMO ANTENNA DETAIL**  
SCALE: N.T.S.

1

ANTENNA SECTOR EQUIPMENT SCHEDULE							
SECTOR	ANTENNA MODEL	TECHNOLOGY	AZIMUTH	RAD CENTER	RRH COUNT	CABLE FEEDER	
ALPHA	(E) NV PANEL ANTENNA	800/1900 MHz	0°	99'-0"	1	(E) 800 RRH	(E) HYBRID
	(P) MIMO ANTENNA	2.5 GHz	0°	99'-0"	2	(E) 1900 RRH	
BETA	(E) NV PANEL ANTENNA	800/1900 MHz	140°	99'-0"	1	(E) 800 RRH	(E) HYBRID
	(P) MIMO ANTENNA	2.5 GHz	140°	99'-0"	2	(E) 1900 RRH	
GAMMA	(E) NV PANEL ANTENNA	800/1900 MHz	260°	99'-0"	1	(E) 800 RRH	(E) HYBRID
	(P) MIMO ANTENNA	2.5 GHz	260°	99'-0"	2	(E) 1900 RRH	

**ANTENNA SCHEDULE**  
SCALE: N.T.S.

3



CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND IDENTIFYING ANY EXISTING CONFLICTS (INCLUDING BUT NOT LIMITED TO EXISTING COAXIAL CABLES, SAFETY CLIMBS, ETC) AND DETERMINING TEMPORARY BRACING OR RELOCATION REQUIRED FOR INSTALLATION OF THE PROPOSED EQUIPMENT. CONTRACTOR TO CONTACT ENGINEER AND SPRINT CM IMMEDIATELY IN CASE OF ANY CONFLICTS. THE CONTRACTOR SHALL RESTORE ALL RELOCATED ITEMS TO PREVIOUS CONDITIONS.

NOTES:

1. MOUNT ANTENNA PER MANUFACTURER'S RECOMMENDATIONS.
2. WEIGHT DOES NOT INCLUDE MOUNTING BRACKETS.
3. DETAIL IS DIAGRAMMATICAL & FOR REFERENCE ONLY.

**ANTENNA MOUNTING DETAIL**  
SCALE: N.T.S.

2

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL



**Dewberry Engineers Inc.**  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.738.9400  
FAX: 973.738.9710



J. WANG, P.E.  
CONNECTICUT LICENSE NO. 0023222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: MR

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50062961

JOB NUMBER: 50103802

SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

HANDRAIL KIT DETAIL

SHEET NUMBER

A-5

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.36

**TOLERANCE NOTES**  
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:  
SAWED, SHEARED AND GAS CUT EDGES ( $\pm 0.030"$ )  
DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES  
LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES  
BENDS ARE  $\pm 1/2$  DEGREE  
ALL OTHER MACHINING ( $\pm 0.030"$ )  
ALL OTHER ASSEMBLY ( $\pm 0.060"$ )

**PROPRIETARY NOTE:**  
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION		HANDRAIL KIT FOR 14'-6" FACE	
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK14
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER	BMC 7/13/2014
DWG. NO.		HRK14	

**SITE PRO** Engineering Support Team: 1-888-753-7448  
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

REVISION HISTORY

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/11/2014

NOTE:

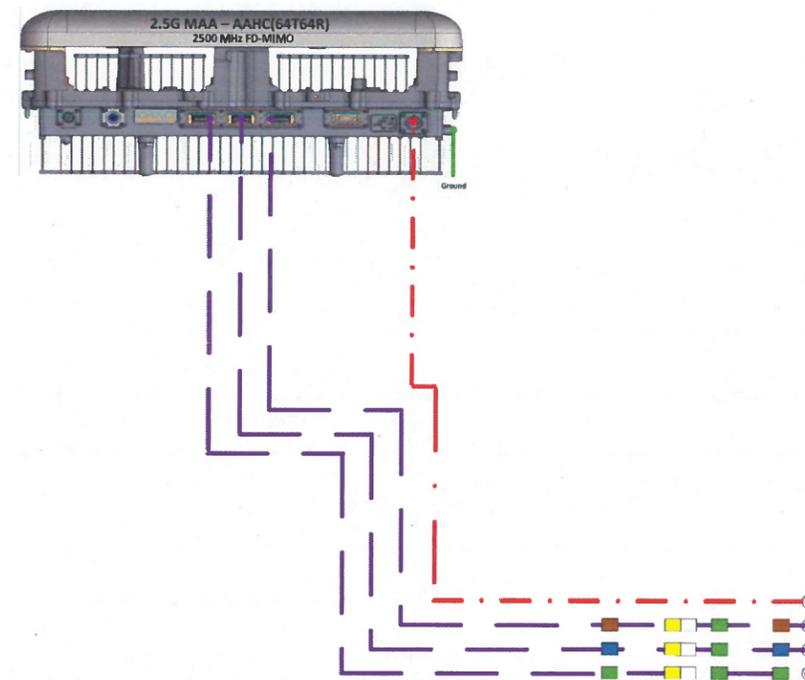
- INSTALL PROPOSED HANDRAIL KIT 36" ABOVE THE EXISTING ANTENNA PLATFORM HORIZONTAL PER THE MOUNT STRUCTURAL ANALYSIS BY INFINIGY ENGINEERING, PLLC DATED 08/07/18.

**HANDRAIL KIT DETAIL**

SCALE: N.T.S.

1

ALU mMIMO



RRH 1900		RET Control Cable	
RRH 800		Fiber Optic Cable	
Sector Number		DC Power Cable	
Frequency/Radio		RF Coax Jumper Cable	
*Additional Color Code Information can be Found in the Sprint TS-0200 Document		Calibration Cable	

Not to Scale

**PLUMBING DIAGRAM**  
SCALE: N.T.S.

1

NOTE:

1. PLUMBING DIAGRAM IS SHOWN AS CONCEPTUAL. CONFIRM FINAL PLUMBING DIAGRAM WITH THE LATEST RF DESIGN SHEET.



CROWN CASTLE  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07064  
PHONE: 973.739.9400  
FAX: 973.739.9710



JIANG YU, P.E.  
CONNECTICUT LICENSE NO. 0023222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50062961

JOB NUMBER: 50103802

SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

PLUMBING DIAGRAM

SHEET NUMBER

A-6

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

CONSTRUCTION DRAWINGS

1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL

**Dewberry®**  
Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710

CONNECTICUT LICENSE No. 23222  
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: MR  
REVIEWED BY: BSH  
CHECKED BY: GHN  
PROJECT NUMBER: 50062961  
JOB NUMBER: 50103802  
SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE

CABLE ROUTING & COLOR CODING INFORMATION

SHEET NUMBER

POWER AND FIBER	
CABLE	ID
#1	GREEN
#2	RED
#3	BROWN
#4	BLUE
#5	GREY
#6	ORANGE
#7	WHITE
#8	PURPLE

2.5MM BAND			
2.5 FREQUENCY	2500 RADIO1		ID
	2500 #1	YELLOW	
2500 #2	YELLOW	WHITE	RED
2500 #3	YELLOW	WHITE	BROWN
2500 #4	YELLOW	WHITE	BLUE
2500 #5	YELLOW	WHITE	GREY
2500 #6	YELLOW	WHITE	ORANGE
2500 #7	YELLOW	WHITE	WHITE
2500 #8	YELLOW	WHITE	PURPLE

FIGURE 1: ANTENNA ORIENTATION

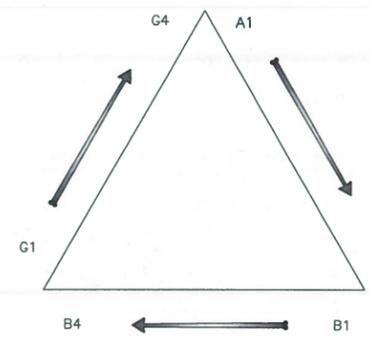
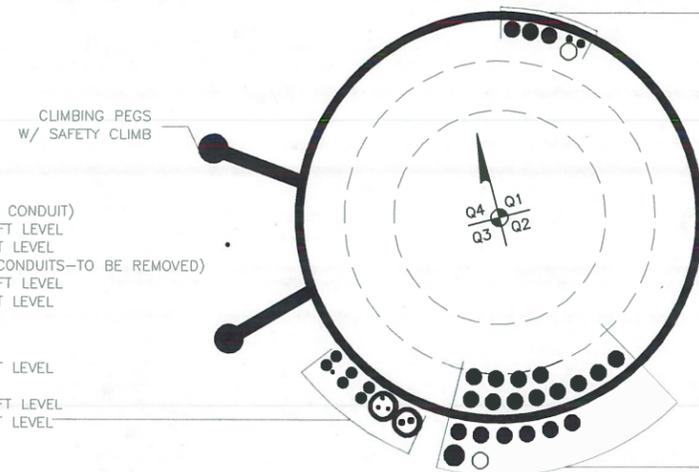


FIGURE 19.2: COLOR CODE

2.5 FREQUENCY	INDICATOR		ID
2500 #1	YELLOW	WHITE	GREEN
2500 #2	YELLOW	WHITE	RED
2500 #3	YELLOW	WHITE	BROWN
2500 #4	YELLOW	WHITE	BLUE
2500 #5	YELLOW	WHITE	GREY
2500 #6	YELLOW	WHITE	ORANGE
2500 #7	YELLOW	WHITE	WHITE
2500 #8	YELLOW	WHITE	PURPLE

FIGURE 19.1: CABLE COLOR CODE

(PROPOSED)  
(1) 1-1/4" TO 98 FT LEVEL  
(INSTALLED-TO BE REMOVED)  
(1) 5/8" TO 98 FT LEVEL  
(INSTALLED)  
(1) 1/2" TO 74 FT LEVEL  
(3) 1-1/4" TO 98 FT LEVEL  
(SPRINT PCS)



(NOT INSTALLED-IN CONDUIT)  
(3) 5/16" TO 98 FT LEVEL  
(1) 1/2" TO 98 FT LEVEL  
(INSTALLED-IN 2" CONDUITS-TO BE REMOVED)  
(3) 5/16" TO 98 FT LEVEL  
(2) 1/2" TO 98 FT LEVEL  
(CLEARWIRE CORP)

(NOT INSTALLED)  
(6) 7/8" TO 81 FT LEVEL  
(INSTALLED)  
(1) 5/16" TO 81 FT LEVEL  
(6) 7/8" TO 81 FT LEVEL  
(METRO PCS)

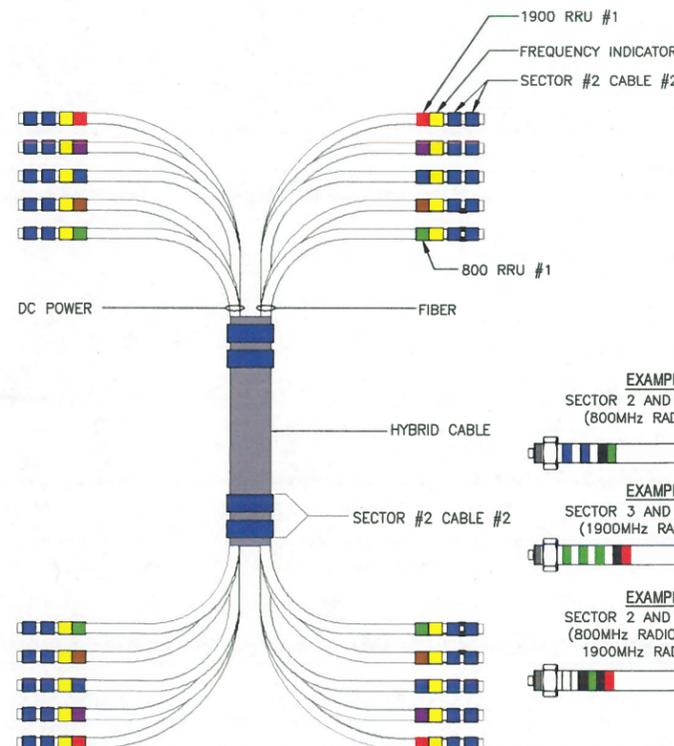
(PROPOSED)  
(1) 1-1/4" TO 105 FT LEVEL  
(INSTALLED-TO BE REMOVED)  
(12) 1-1/4" TO 105 FT LEVEL  
(INSTALLED)  
(6) 1-1/4" TO 105 FT LEVEL  
(1) 1-5/8" TO 105 FT LEVEL  
(VERIZON WIRELESS)

**BASE LEVEL DETAIL**  
SCALE: N.T.S.

1

NOTES:

- ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE, STENCIL TAG COLORED TAPE, OR COLORED HEAT SHRINK TUBING.
- COLORED TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRIC. UV STABILIZED TAPE OR HEAT SHRINK ARE PREFERRED.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE, AND THERE SHALL BE A 1" SPACE BETWEEN EACH RING.
- THE CABLE COLOR CODE SHALL BE APPLIED IN ACCORDANCE TO TABLE 19-1
- 4.A. TABLE 19-1 ONLY SHOWS 3 SECTORS, BUT ADDITIONAL SECTORS ARE EASILY SUPPORTED BY ADDING THE APPROPRIATE NUMBER OF COLORED RINGS TO THE CABLE COLOR CODE.
- AFTER THE CABLE COLOR CODE IS APPLIED, THE FREQUENCY COLOR CODE, TABLE 19-2, MUST BE APPLIED FOR THE SPECIFIC FREQUENCY BAND IN USE ON A GIVEN LINE.
- 5.A. 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE.
- 5.B. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- WRAP 2" COLORED TAPE A MINIMUM OF 3 TIMES AROUND THE COAX, AND KEEP THE TAPE IN THE SAME AREA AS MUCH AS POSSIBLE. THIS WILL ALLOW REMOVAL OF TAPE THAT FADES OR DISCOLORS DUE TO WEATHER.
- EXAMPLES OF THE CABLE AND FREQUENCY COLOR CODES ARE SHOWN IN FIGURE 19-1 AND FIGURE 19-2



EXAMPLE  
SECTOR 2 AND CABLE 2,  
(800MHz RADIO #1)

EXAMPLE  
SECTOR 3 AND CABLE 1,  
(1900MHz RADIO #1)

EXAMPLE  
SECTOR 2 AND CABLE 4,  
(800MHz RADIO #1 AND  
1900MHz RADIO #1)

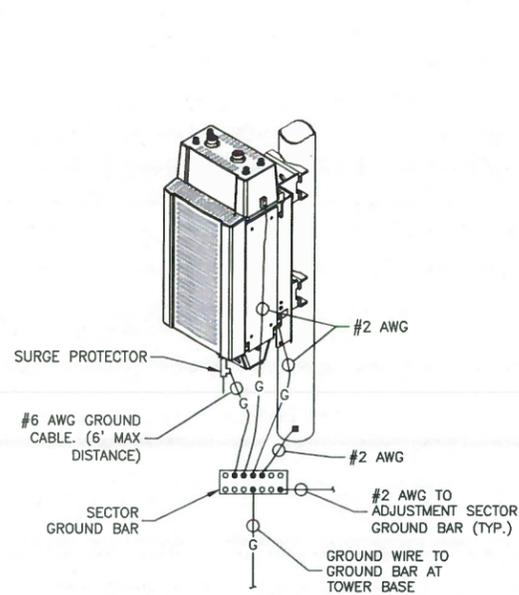
SPRINT CABLE COLOR CODE

SECTOR	CABLE	FIRST RING	SECOND RING	THIRD RING
1 ALPHA	1	GREEN	NO TAPE	NO TAPE
	2	BLUE	NO TAPE	NO TAPE
	3	BROWN	NO TAPE	NO TAPE
	4	WHITE	NO TAPE	NO TAPE
	5	RED	NO TAPE	NO TAPE
2 BETA	6	GREY	NO TAPE	NO TAPE
	7	PURPLE	NO TAPE	NO TAPE
	8	ORANGE	NO TAPE	NO TAPE
	1	GREEN	GREEN	NO TAPE
	2	BLUE	BLUE	NO TAPE
	3	BROWN	BROWN	NO TAPE
	4	WHITE	WHITE	NO TAPE
	5	RED	RED	NO TAPE
3 GAMMA	6	GREY	GREY	NO TAPE
	7	PURPLE	PURPLE	NO TAPE
	8	ORANGE	ORANGE	NO TAPE
	1	GREEN	GREEN	GREEN
	2	BLUE	BLUE	BLUE
	3	BROWN	BROWN	BROWN
	4	WHITE	WHITE	WHITE
	5	RED	RED	RED
	6	GREY	GREY	GREY
	7	PURPLE	PURPLE	PURPLE
	8	ORANGE	ORANGE	ORANGE

**COLOR CODE INFORMATION**

SCALE: N.T.S.

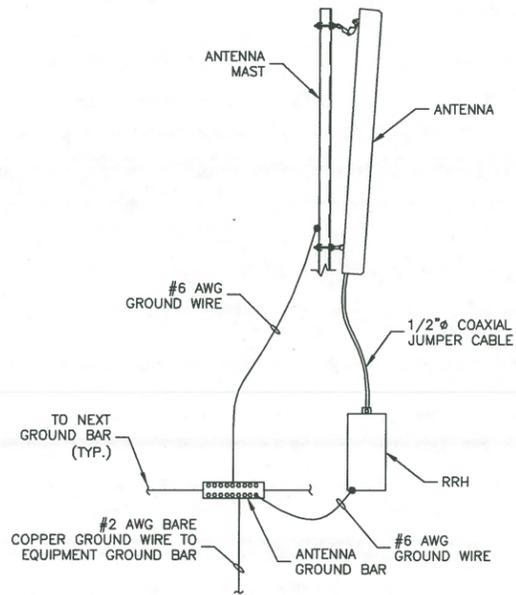
2



**RRH POLE MOUNT  
GROUNDING DETAIL**

SCALE: N.T.S.

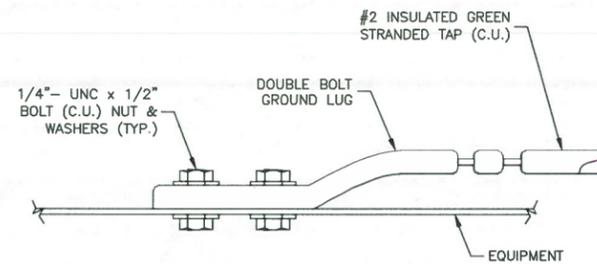
1



**TYPICAL ANTENNA  
GROUNDING DETAIL**

SCALE: N.T.S.

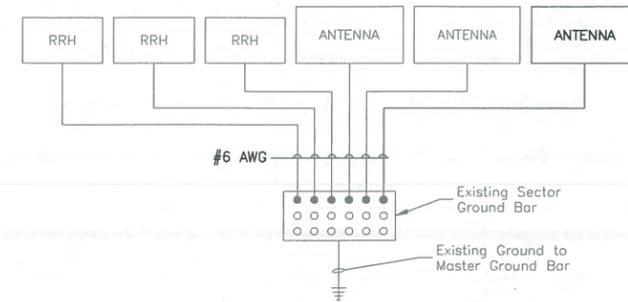
2



**CONNECTION TO EQUIPMENT DETAIL**

SCALE: N.T.S.

3



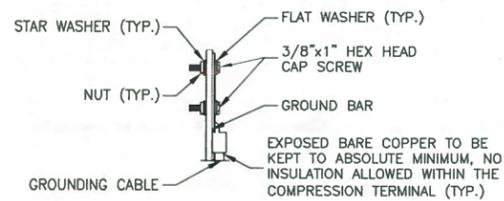
**NOTES:**

- BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
- BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
- TYPICAL FOR FOR ALL SECTORS.

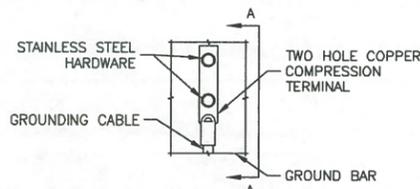
**SCHEMATIC GROUNDING DIAGRAM**

SCALE: N.T.S.

4



**SECTION 'A-A'**



**ELEVATION**

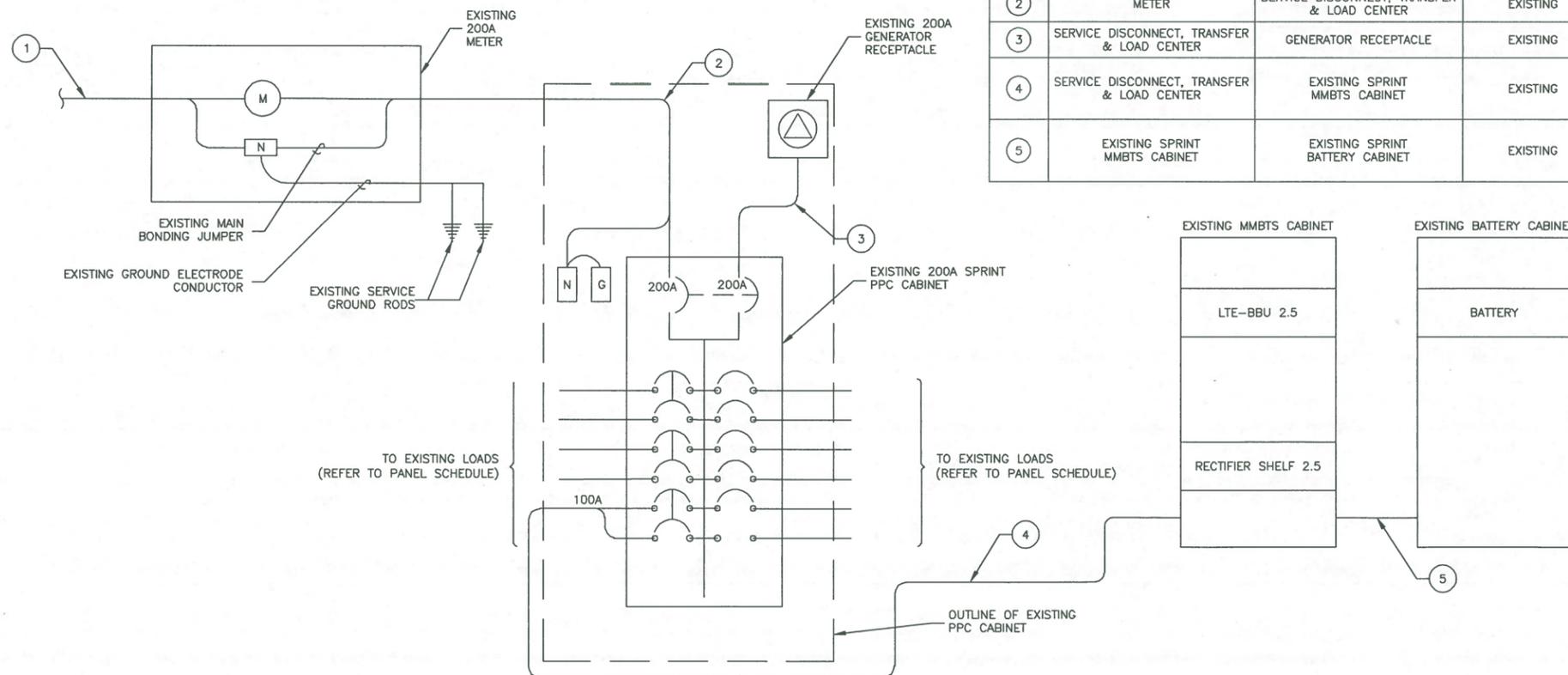
**NOTES:**

- DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

**TYPICAL GROUND BAR  
MECHANICAL CONNECTION DETAIL**

SCALE: N.T.S.

5



**ONE-LINE DIAGRAM**

SCALE: N.T.S.

6

CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER	EXISTING
2	METER	SERVICE DISCONNECT, TRANSFER & LOAD CENTER	EXISTING
3	SERVICE DISCONNECT, TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	SERVICE DISCONNECT, TRANSFER & LOAD CENTER	EXISTING SPRINT MMBTS CABINET	EXISTING
5	EXISTING SPRINT MMBTS CABINET	EXISTING SPRINT BATTERY CABINET	EXISTING



CROWN CASTLE  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

**HARTFORD - NU  
(SSUSA)  
CT23XC550**

**CONSTRUCTION DRAWINGS**

NO	DATE	DESCRIPTION
1	11/02/18	ISSUED AS FINAL
0	10/09/18	ISSUED AS FINAL

**Dewberry**  
Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.8400  
FAX: 973.739.8710



DRAWN BY: MR  
REVIEWED BY: BSH  
CHECKED BY: GHN  
PROJECT NUMBER: 50062961  
JOB NUMBER: 50103802  
SITE ADDRESS:

219 NEW PARK AVENUE  
HARTFORD, CT 06106

SHEET TITLE  
**ELECTRICAL ONE-LINE  
DIAGRAM &  
GROUNDING DETAILS**  
SHEET NUMBER



## McKay, Kristian

---

**From:** McKay, Kristian  
**Sent:** Thursday, December 6, 2018 4:52 PM  
**To:** 'vanessa.walton@hartford.gov'  
**Subject:** Original zoning docs

Hello Zoning Department,

I work for Crown Castle and have an inquiry regarding the original zoning documents for a tower and I am hoping your office can provide more information.

We are applying for CSC Zoning Approval for Sprint to modify their antennas and new requirements ask that we attempt to procure original zoning documents from the jurisdiction, if possible. However, if these documents are not available, please let me know.

The tower is located at 219 New Park Ave. and according to lease documents I believe would have been constructed sometime in the late 2000. Connecticut light and power company owned the property at the time and continues to do so.

If you have any questions, please don't hesitate to call or e-mail me.

Thank you,

Kristian McKay  
Real Estate Specialist – East Area  
T: (704) 405-6612 | M: (704) 713-5728 | F: (724) 416-6496

CROWN CASTLE  
3530 Toringdon Way, Suite 300, Charlotte, NC 28277  
Crowncastle.com

Date: **August 7, 2018**

Elizabeth Sweeney  
Crown Castle  
3 Corporate Dr., St 101  
Clifton Park, NY 12065

**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
Infinigy Engineering, PLLC  
1033 Watervliet Shaker Road  
Albany, NY 12205  
518-690-0790  
structural@infinigy.com

**Subject:** Mount Structural Analysis

**Carrier Designation:** *Sprint Change-Out*  
**Carrier Site Number:** CT23XC550  
**Carrier Site Name:** CT23XC550S18.2

**Crown Castle Designation:** **Crown Castle BU Number:** 876363  
**Crown Castle Site Name:** Hartford - NU (SSUSA)  
**Crown Castle JDE Job Number:** 520336  
**Crown Castle Application Number:** 451563, Rev.2

**Engineering Firm Designation:** **Infinigy Report Designation:** 600-002

**Site Data:** **219 New Park Road, Hartford, Hartford County, CT 06106-2949**  
**Latitude 41°45'2.79" Longitude -72°42'49.23"**

**Structure Information:** **Tower Height & Type:** 108 Monopole  
**Mount Elevation:** 98 ft  
**Mount Type:** 14 ft Platform

Dear Elizabeth Sweeney,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural integrity of Sprint's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

Based upon our analysis, we have determined the adequacy of the antenna mounting system that will support the existing and proposed loading to be:

**Platform** **Sufficient**  
**\*Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis has been performed in accordance with the 2012 International Building Code and 2016 Connecticut State Building Code and the Infinigy Engineering, PLLC wind speed requirement of a 97 mph 3-second gust wind speed as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1. Exposure Category C and Risk Category II were used in this analysis.

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

Mount structural analysis prepared by: Dmitriy Albul, P.E.

Respectfully Submitted by:

Joe Johnston, P.E.  
VP Structural Engineering / Principal



## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Loading Information

Table 2 - Existing Loading Information

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 4 - Mount Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

Wire Frame and Rendered Models

### 6) APPENDIX B

Software Input Calculations

### 7) APPENDIX C

Software Analysis Output

### 8) APPENDIX D

Reference Material

## 1) INTRODUCTION

The mount consists of a 14-ft Platform at the 98-ft elevation. The existing and proposed antenna loading was obtained from the Application provided by CCI, Application Number 451563, Revision 2 and the Mount Photos.

## 2) ANALYSIS CRITERIA

The structural analysis was performed in accordance with the requirements of TIA 222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch escalated ice thickness, Exposure Category C and Topographic Category I. In addition, the Platform been analyzed for various live loading conditions consisting of a 250-pound man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust wind speed of 30 mph.

**Table 1 - Proposed Equipment Loading Information**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
98.0	99.0	3	Nokia	AAHC	-	1

Notes:

- 1) Proposed equipment

**Table 2 - Existing and Cable Information**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
98.0	99.0	1	RFS	APXV9ERR18-C-A20	14' Platform	1
		2	RFS	APXVSPP18-C-A20		
	98.0	3	RFS	IBC1900BB-1		
		3	RFS	IBC1900HG-2A		
96.0	96.0	3	Alcatel Lucent	800MHZ 2X50W RRH w/Filter	Side Arm Mount	1
		3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ		
	95.0	3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ		
74.0	76.0	1	Lucent	KS24019-L112A	Side Arm Mount	
98.0	102.0	1	Dragonwave	A-ANT-23G-1-C	-	2
		1	Dragonwave	A-ANT-18G-2-C		
		2	Dragonwave	Horizon Compact		
	99.0	3	Argus Tech	LLPX310R		
		3	Samsung	WIMAX DAP HEAD		
		3	Alcatel Lucent	TD-RRH8x20-25		
		3	RFS	APXVTM14-C-120		

Notes:

- 1) Existing equipment to remain  
 2) Existing equipment to be removed, not considered in this analysis

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Reference	Source
Crown Application	Sprint Application	451563, Rev.2	CCI Sites
Site Visit	Photos	876363	CCI Sites
Mount Design	14' Low Profile Platform	Summit Job # 11049	Summit

#### 3.1) Analysis Method

RISA-3D (Version 16.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool 3.0.2, a tool internally developed by Infinigy, was used to calculate member loading for various load cases. Selected output from the analysis is included in Appendix B.

#### 3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) Steel grades have been assumed as follows:
 

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the antenna mounting system.

#### 4) ANALYSIS RESULTS

**Table 4 - Mount Component Stresses vs. Capacity (Platform)**

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1,2	Arm	98.0	40.8%	Pass
	Frame Rail		81.4%	Pass
	Corners		17.7%	Pass
	Mount Pipe		49.6%	Pass
	Handrail		37.6%	Pass

<b>Structure Rating (max from all components) =</b>	<b>81.4%</b>
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.
- 2) All sectors are typical

#### 4.1) Recommendations

Completion of the modifications listed below are/is required to bring the mount into compliance.

- Add Site Pro 1 HRK14-HD handrails 36 inches upper from the existing bottom rail. Connect the new handrails with the existing mount pipes using crossover plates.



August 09, 2018

Amanda Brown  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277  
(704) 405-6575

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

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **Sprint PCS Co-Locate**  
**Carrier Site Number:** CT23XC550  
**Carrier Site Name:** CT23XC550S18.2

**Crown Castle Designation:** **Crown Castle BU Number:** 876363  
**Crown Castle Site Name:** Hartford - NU (SSUSA)  
**Crown Castle JDE Job Number:** 520336  
**Crown Castle Work Order Number:** 1609407  
**Crown Castle Order Number:** 451563 Rev. 2

**Engineering Firm Designation:** **B+T Group Project Number:** 85565.007.01

**Site Data:** **219 New Park Rd., HARTFORD, Hartford County, CT**  
**Latitude 41° 45' 2.79", Longitude -72° 42' 49.23"**  
**108 Foot - Monopole**

Dear Amanda Brown,

B+T Group is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 1232405, in accordance with order 451563, revision 2.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by: Xavier Jones

Respectfully submitted by: B+T Engineering, Inc.  
COA: PEC.0001564 Expires: 02/10/2019

Chad E. Tuttle, P.E.

tnxTower Report - version 8.0.2.1



## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

### 3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 – Tower Components vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Base Level Drawing

### 7) APPENDIX C

Additional Calculations

## 1) INTRODUCTION

This tower is a 108 ft. Monopole designed by Summit in October of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This tower has been modified multiple times and those modifications were incorporated in this analysis.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
98.0	99.0	3	Nokia	AAHC	1	1-1/4	--

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

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
105.0	105.0	3	Alcatel Lucent	B13 RRH 4X30	1	1-5/8	2	
		3	Alcatel Lucent	B25 RRH4X30				
		3	Alcatel Lucent	RRH4X45-AWS4 B66				
		6	Commscope	SBNHH-1D65B				
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z	12	1-1/4	1	
		3	Antel	BXA-171063-12BF				
		3	Antel	BXA-70063/6CF				
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z				
1	--	Sector Mount [SM 402-3]	1	1-5/8				
98.0	102.0	1	Dragonwave	A-ANT-18G-2-C	2	1/2	1	
		1	Dragonwave	A-ANT-23G-1-C				
		2	Dragonwave	HORIZON COMPACT				
	99.0	3	Argus Tech.	LLPX310R	3	5/16	1	
		3	Samsung Tele.	WIMAX DAP HEAD				
		3	<b>Alcatel Lucent</b>	<b>TD-RRH8x20-25</b>	1	5/8		
		3	<b>Rfs Celwave</b>	<b>APXVTM14-C-120</b>				
	98.0	99.0	1	Rfs Celwave	APXV9ERR18-C-A20	3	1-1/4	1
			2	Rfs Celwave	APXVSP18-C-A20			
			3	Rfs Celwave	IBC1900BB-1			
3			Rfs Celwave	IBC1900HG-2A				
1	--	Platform Mount [LP 1201-1]						
96.0	96.0	3	Alcatel Lucent	800MHz 2X50W RRH W/Filter	--	--	1	
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz				
		1	--	Side Arm Mount [SO 102-3]				
	95.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
81.0	81.0	1	--	T-Arm Mount [TA 602-3]	6	7/8	1
	80.0	3	Andrew	HBX-6516DS-VTM	1	5/16	
74.0	76.0	1	Lucent	KS24019-L112A	1	1/2	1
	74.0	1	--	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment To Be Removed; Not Considered In This Analysis

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
98	98	12	Dapa	48000 PCS Panel	--	--
		1	Generic	14' Low Profile Platform		
88	88	12	Dapa	48000 PCS Panel	--	--
		1	Generic	14' Low Profile Platform		
76	76	1	GPS	Antenna w/ Mount	--	--

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
Online Order Information	Sprint PCS Co-Locate Rev. 2	451563	CCI Sites
Tower Manufacturer Drawing	Summit, Job No. 11049	1947570	CCI Sites
Tower Modification Drawings	Vertical Solutions, Date: 01/28/2009	2445633	CCI Sites
Post Modification Inspection	PJF, Date: 10/25/2010	2445631	CCI Sites
Tower Modification Drawings	B+T Group, Date: 10/15/2012	3348853	CCI Sites
Post Modification Inspection	TEP, Date: 12/20/2013	4424435	CCI Sites
Tower Modification Drawings	B+T Group, Date: 05/16/2017	6859034	CCI Sites
Post Modification Inspection	ETS, Date: 12/07/2017	7243678	CCI Sites
Foundation Drawings	Summit, Job No. 11049	1613616	CCI Sites
Geotech Report	FDH, Project No. 08-10012E G1	2337384	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 07/30/2018	CCI Sites

#### 3.1) Analysis Method

tnxTower (version 8.0.2.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Mount areas and weights are assumed based on photographs provided.
- 5) The existing base plate grout was not considered in this analysis.

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 tower.

### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	108 - 103	Pole	TP8.625x8.625x0.313	1	-1.815	257.065	22.1%	Pass
L2	103 - 98.5	Pole	TP8.625x8.625x0.313	2	-2.031	257.065	72.0%	Pass
L3	98.5 - 98	Pole	TP16.5x16.5x0.313	3	-2.073	500.599	20.7%	Pass
L4	98 - 93	Pole	TP17.3x16.5x0.188	4	-6.412	756.639	39.2%	Pass
L5	93 - 88	Pole	TP18.101x17.3x0.188	5	-6.774	792.024	56.8%	Pass
L6	88 - 83	Pole	TP18.901x18.101x0.188	6	-7.183	827.409	72.2%	Pass
L7	83 - 82.33	Pole	TP19.008x18.901x0.188	7	-7.246	831.494	74.2%	Pass
L8	82.33 - 82.08	Pole	TP19.048x19.008x0.325	8	-7.281	1434.920	64.0%	Pass
L9	82.08 - 77.08	Pole	TP19.848x19.048x0.319	9	-8.863	1467.950	78.0%	Pass
L10	77.08 - 76.25	Pole	TP19.981x19.848x0.319	10	-8.966	1477.940	80.2%	Pass
L11	76.25 - 76	Pole	TP20.021x19.981x0.456	11	-9.015	2104.990	63.2%	Pass
L12	76 - 74.5	Pole	TP20.261x20.021x0.45	12	-9.251	2102.300	66.5%	Pass
L13	74.5 - 74.25	Pole	TP20.301x20.261x0.588	13	-9.307	2731.160	58.3%	Pass
L14	74.25 - 69.25	Pole	TP21.102x20.301x0.575	14	-10.259	2783.260	67.8%	Pass
L15	69.25 - 64.25	Pole	TP21.902x21.102x0.55	15	-11.163	2769.280	76.8%	Pass
L16	64.25 - 59.25	Pole	TP22.702x21.902x0.544	16	-12.091	2841.230	85.3%	Pass
L17	59.25 - 58.08	Pole	TP22.89x22.702x0.538	17	-12.311	2833.100	88.6%	Pass
L18	58.08 - 57.73	Pole	TP22.946x22.89x0.713	18	-12.400	3735.520	65.3%	Pass
L19	57.73 - 57.5	Pole	TP22.982x22.946x0.713	19	-12.453	3741.700	65.6%	Pass
L20	57.5 - 52.5	Pole	TP23.783x22.982x0.688	20	-13.550	3744.210	71.9%	Pass
L21	52.5 - 47	Pole	TP24.663x23.783x0.688	21	-14.065	3802.600	74.7%	Pass
L22	47 - 45.25	Pole	TP24.568x23.768x0.75	22	-15.907	4212.440	75.4%	Pass
L23	45.25 - 40.5	Pole	TP25.328x24.568x0.725	23	-17.117	4206.270	80.4%	Pass
L24	40.5 - 40.25	Pole	TP25.368x25.328x0.725	24	-17.192	4213.110	80.7%	Pass
L25	40.25 - 35.25	Pole	TP26.168x25.368x0.7	25	-18.478	4204.040	85.8%	Pass
L26	35.25 - 30.25	Pole	TP26.969x26.168x0.688	26	-19.798	4260.730	90.7%	Pass
L27	30.25 - 27.75	Pole	TP27.369x26.969x0.675	27	-20.466	4248.940	94.1%	Pass
L28	27.75 - 27.5	Pole	TP27.409x27.369x0.725	28	-20.550	4561.970	82.4%	Pass
L29	27.5 - 22.5	Pole	TP28.209x27.409x0.7	29	-21.958	4540.880	86.5%	Pass
L30	22.5 - 19.5	Pole	TP28.689x28.209x0.688	30	-22.822	4539.660	88.9%	Pass
L31	19.5 - 19.25	Pole	TP28.729x28.689x0.8	31	-22.909	5268.830	83.0%	Pass
L32	19.25 - 14.25	Pole	TP29.529x28.729x0.775	32	-24.430	5254.990	86.6%	Pass
L33	14.25 - 14	Pole	TP29.569x29.529x0.775	33	-24.517	5262.310	86.8%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L34	14 - 13.75	Pole	TP29.609x29.569x0.775	34	-24.599	5269.620	87.5%	Pass
L35	13.75 - 12.98	Pole	TP29.733x29.609x0.8	35	-24.852	5458.140	82.7%	Pass
L36	12.98 - 12.73	Pole	TP29.773x29.733x0.8	36	-24.943	5465.690	82.9%	Pass
L37	12.73 - 7.73	Pole	TP30.573x29.773x0.788	37	-26.619	5531.210	86.2%	Pass
L38	7.73 - 2.73	Pole	TP31.373x30.573x0.775	38	-28.325	5591.940	89.4%	Pass
L39	2.73 - 0	Pole	TP31.81x31.373x0.763	39	-29.264	5582.560	91.1%	Pass
							Summary	
						Pole (L7)	74.2	Pass
						Reinforcement	94.1	Pass
						Rating =	94.1	Pass

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

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	98'	77.4	Pass
1	Anchor Rods	Base	77.7	Pass
1	Base Plate	Base	68.3	Pass
1	Base Foundation (Structure)	Base	98.7	Pass
1	Base Foundation (Soil Interaction)	Base	52.6	Pass

<b>Structure Rating (max from all components) =</b>	<b>98.7%</b>
---	--------------

Notes:

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

#### 4.1) Recommendations

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



# RF EMISSIONS COMPLIANCE REPORT

## Crown Castle on behalf of Sprint

Sprint Cascade Number: CT23XC550  
Crown Castle ID: 876363  
Site Name: HARTFORD - NU (SSUSA)

219 New Park Rd.  
HARTFORD, CT  
12/6/2018

**Report Status:**

**Sprint Is Compliant**

**Prepared By:**

**Sitesafe, LLC**

Engineering Statement in Re:  
Electromagnetic Energy Analysis  
Sprint  
HARTFORD, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of Sprint (See attached Site Summary and Carrier documents), and that Sprint 's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "HARTFORD - NU (SSUSA)" ("the site"); and

That Sprint proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by Sprint and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of Sprint 's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed Sprint operation is no more than 0.052% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 3.179% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that Sprint 's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

**Sprint**  
**HARTFORD - NU (SSUSA)**  
**Site Summary**

<b>Carrier</b>	<b>Area Maximum Percentage MPE</b>
Clearwire	0 %
Clearwire	0 %
Clearwire	0.001 %
Clearwire	0.001 %
Clearwire	0.057 %
Metro PCS	0.629 %
Sprint	0.183 %
Sprint	0.232 %
Sprint (Proposed)	0.052 %
Verizon Wireless	0.353 %
Verizon Wireless	0.718 %
Verizon Wireless	0.501 %
Verizon Wireless	0.453 %
<b>Composite Site MPE:</b>	<b>3.179 %</b>

**Clearwire  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 17915 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.00144  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00014 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	VHLP2-18	102	200	16	0.001443	0.000144	0.001443	0.000144

**Clearwire  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 17815 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.00144  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00014 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	VHLP2-18	102	200	16	0.001443	0.000144	0.001443	0.000144

**Clearwire  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 23225 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.00761  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00076 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	VHLP1-23	102	52	73	0.007605	0.000761	0.007605	0.000761

**Clearwire  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 23125 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.00761  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00076 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	VHLP1-23	102	52	73	0.007605	0.000761	0.007605	0.000761

**Clearwire  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 2500 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.57014  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.05701 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ARGUS	LLPX310R	99	5	355	0.299068	0.029907	0.536861	0.053686
ARGUS	LLPX310R	99	125	355	0.299068	0.029907	0.536861	0.053686
ARGUS	LLPX310R	99	245	355	0.29679	0.029679	0.536861	0.053686

**Metro PCS  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 2100 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 6.28739  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.62874 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	HBX-6516DS-VTM	80	0	2334	3.915916	0.391592	6.115126	0.611513
ANDREW	HBX-6516DS-VTM	80	130	2334	3.828925	0.382893	6.115126	0.611513
ANDREW	HBX-6516DS-VTM	80	240	2334	3.828925	0.382893	6.115126	0.611513

**Sprint**  
**HARTFORD - NU (SSUSA)**  
**Carrier Summary**

Frequency: 862 MHz  
Maximum Permissible Exposure (MPE): 574.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.05306  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.18325 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVSPP18-C-A20	99	0	1084	0.826527	0.143827	0.843368	0.146758
RFS	APXVSPP18-C-A20	99	140	1084	0.826527	0.143827	0.843368	0.146758
RFS	APXVSPP18-C-A20	99	260	1084	0.826527	0.143827	0.843368	0.146758

**Sprint**  
**HARTFORD - NU (SSUSA)**  
**Carrier Summary**

Frequency: 1900 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 2.3179  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.23179 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVSP18-C-A20	99	0	1902	0.763614	0.076361	1.824778	0.182478
RFS	APXVSP18-C-A20	99	140	1902	0.763614	0.076361	1.824778	0.182478
RFS	APXVSP18-C-A20	99	260	1902	0.763614	0.076361	1.824778	0.182478

**Sprint (Proposed)  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 2500 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.51794  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.05179 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Nokia	AAHC	99	0	530	0.368578	0.036858	0.467349	0.046735
Nokia	AAHC	99	140	530	0.368578	0.036858	0.467349	0.046735
Nokia	AAHC	99	260	530	0.368578	0.036858	0.467349	0.046735

**Verizon Wireless  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 850 MHz  
 Maximum Permissible Exposure (MPE): 566.67  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 1.99822  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.35263 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Antel	BXA-70063-6CF	105	350	1127	1.608558	0.283863	1.967678	0.347237
Antel	BXA-70063-6CF	105	120	1127	1.608558	0.283863	1.967678	0.347237
Antel	BXA-70063-6CF	105	240	1127	1.608558	0.283863	1.967678	0.347237

**Verizon Wireless  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 751 MHz  
 Maximum Permissible Exposure (MPE): 500.67  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 3.59415  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.71787 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Antel	BXA-70063-6CF	105	350	1005	1.413882	0.2824	1.76233	0.351997
Antel	BXA-70063-6CF	105	350	1005	1.413882	0.2824	1.76233	0.351997
Antel	BXA-70063-6CF	105	120	1005	1.413882	0.2824	1.76233	0.351997
Antel	BXA-70063-6CF	105	120	1005	1.413882	0.2824	1.76233	0.351997
Antel	BXA-70063-6CF	105	240	1005	1.413882	0.2824	1.76233	0.351997
Antel	BXA-70063-6CF	105	240	1005	1.413882	0.2824	1.76233	0.351997

**Verizon Wireless  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 2100 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 5.00633  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.50063 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	SBNHH-1D65B	105	350	3866	3.099876	0.309988	4.755611	0.475561
ANDREW	SBNHH-1D65B	105	110	3866	3.099876	0.309988	4.755611	0.475561
ANDREW	SBNHH-1D65B	105	240	3866	3.099876	0.309988	4.755612	0.475561

**Verizon Wireless  
HARTFORD - NU (SSUSA)  
Carrier Summary**

Frequency: 1900 MHz  
 Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 4.53412  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.45341 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	SBNHH-1D65B	105	350	2292	3.7011	0.37011	4.47908	0.447908
ANDREW	SBNHH-1D65B	105	110	2292	3.677775	0.367777	4.47908	0.447908
ANDREW	SBNHH-1D65B	105	240	2292	3.649115	0.364911	4.47908	0.447908



December 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **773906002662**.

---

**Delivery Information:**

<b>Status:</b>	Delivered	<b>Delivered to:</b>	Receptionist/Front Desk
<b>Signed for by:</b>	A.ACOSTA	<b>Delivery location:</b>	550 MAIN ST 1 HARTFORD, CT 06103
<b>Service type:</b>	FedEx Priority Overnight	<b>Delivery date:</b>	Dec 7, 2018 09:51
<b>Special Handling:</b>	Deliver Weekday		



---

**Shipping Information:**

<b>Tracking number:</b>	773906002662	<b>Ship date:</b>	Dec 6, 2018
		<b>Weight:</b>	1.0 lbs/0.5 kg

**Recipient:**  
Luke Bronin  
City of Hartford  
550 Main st. #1  
HARTFORD, CT 06103 US

**Shipper:**  
Kristian McKay  
3530 Toringdon Way  
STE 300  
CHARLOTTE, NC 28277 US

**Reference** 1766.6680

Thank you for choosing FedEx.



December 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **773906073827**.

---

**Delivery Information:**

<b>Status:</b>	Delivered	<b>Delivered to:</b>	Mailroom
<b>Signed for by:</b>	K.HAJADIZ	<b>Delivery location:</b>	107 SELDEN ST BERLIN, CT 06037
<b>Service type:</b>	FedEx Priority Overnight	<b>Delivery date:</b>	Dec 7, 2018 09:09
<b>Special Handling:</b>	Deliver Weekday		



---

**Shipping Information:**

<b>Tracking number:</b>	773906073827	<b>Ship date:</b>	Dec 6, 2018
		<b>Weight:</b>	1.0 lbs/0.5 kg

**Recipient:**  
Corporate Property Management  
connecticut Light and Power  
107 Selden St.  
BERLIN, CT 06037 US

**Shipper:**  
Kristian McKay  
3530 Toringdon Way  
STE 300  
CHARLOTTE, NC 28277 US

**Reference**

1766.6680

Thank you for choosing FedEx.



December 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **773882822070**.

---

**Delivery Information:**

<b>Status:</b>	Delivered	<b>Delivered to:</b>	Receptionist/Front Desk
<b>Signed for by:</b>	J.COLLINS	<b>Delivery location:</b>	220 MAIN ST HARTFORD, CT 06103
<b>Service type:</b>	FedEx Priority Overnight	<b>Delivery date:</b>	Dec 6, 2018 13:28
<b>Special Handling:</b>	Deliver Weekday		



---

**Shipping Information:**

<b>Tracking number:</b>	773882822070	<b>Ship date:</b>	Dec 5, 2018
		<b>Weight:</b>	1.0 lbs/0.5 kg

**Recipient:**

John Collins  
Town of Hartford  
220 Main St  
HARTFORD, CT 06103 US

**Reference**

**Shipper:**

Kristian McKay  
3530 Toringdon Way  
STE 300  
CHARLOTTE, NC 28277 US

1766.6680

Thank you for choosing FedEx.