Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

March 21, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 806369**
Sprint PCS Site ID: CT43XC805
Located at: 439-455 Homestead Avenue, Hartford, CT 06105

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 **439-455 Homestead Avenue, Hartford, CT 06105**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint's additional antennas will be located at the same elevation on the existing tower.

2. There will be no proposed modifications to the ground and no extension of boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. A Structural Modification Report confirming that the tower and foundation can support Sprint's proposed modifications is included as Exhibit-2.

5. The operation of the additional antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for Sprint's modified facility is included as Exhibit-3.

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

Sincerely,

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:	(F) HARTFORD - CROWN ATLANTIC
SITE CASCADE:	CT43XC805
SITE NUMBER:	806369
SITE ADDRESS:	439-455 HOMESTEAD AVENUE HARTFORD, CT 06105
SITE TYPE:	MONOPOLE TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
CROWN ATLANTIC COMPANY, LLC
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

LATITUDE (NAD83):
41° 47' 1.61" N
41.783781°

LONGITUDE (NAD83):
72° 42' 13.66" W
-72.703794°

COUNTY:
HARTFORD

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

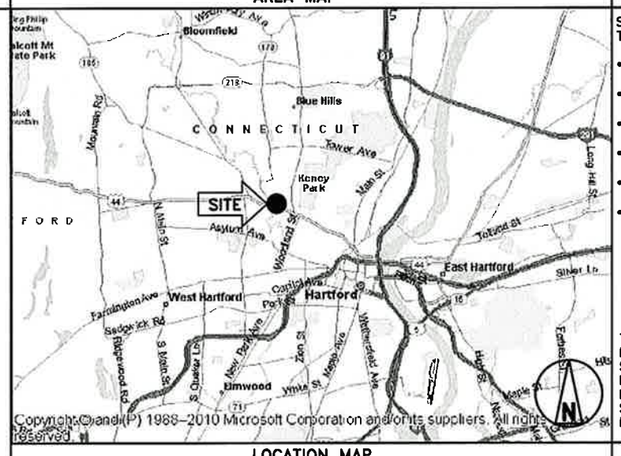
ZONING DISTRICT:
RESIDENTIAL

POWER COMPANY:
CONNECTICUT LINE AND POWER
(800) 286-2000

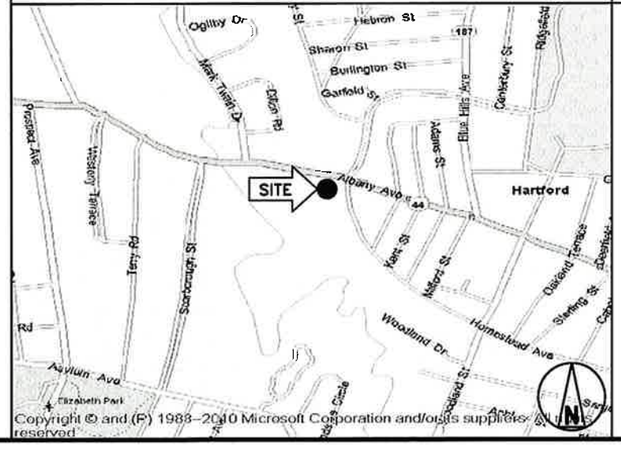
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) HYBRID CABLE
- INSTALL (8) 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-F 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

811 Know what's below. Call before you dig. www.call811.com

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV
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A-7	PLUMBING DIAGRAM	B
E-1	ELECTRICAL & GROUNDING PLAN	B
E-2	ELECTRICAL & GROUNDING DETAILS	B

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) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

ENGINEERING:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:
(F) HARTFORD - CROWN ATLANTIC

SITE CASCADE:
CT43XC805

SITE ADDRESS:
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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.

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:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:

(F) HARTFORD - CROWN ATLANTIC

SITE CASCADE:

CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

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 ANTENNAL 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, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, 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 – ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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Albany, NY 12205
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JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:

(F) HARTFORD - CROWN ATLANTIC

SITE CASCADE:

CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

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. 1SHELTER 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:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
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Fax # (518) 690-0793
JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:
(F) HARTFORD - CROWN ATLANTIC

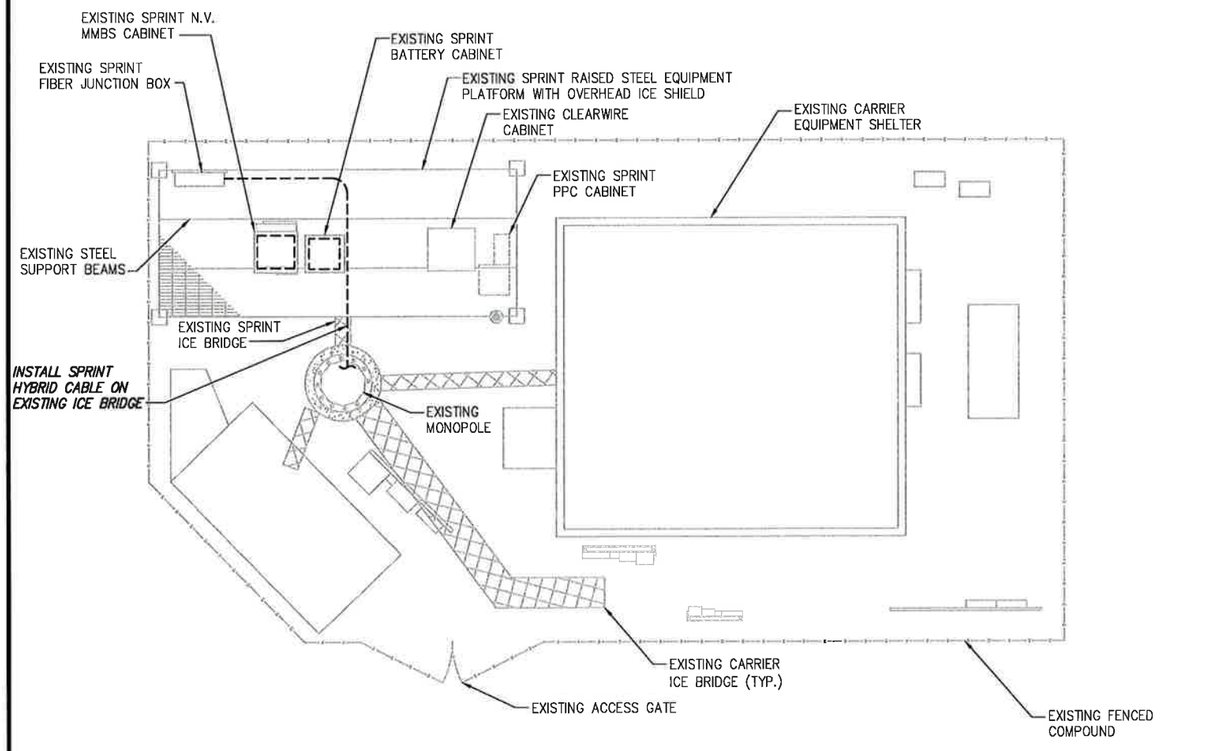
SITE CASCADE:
CT43XC805

SITE ADDRESS:
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

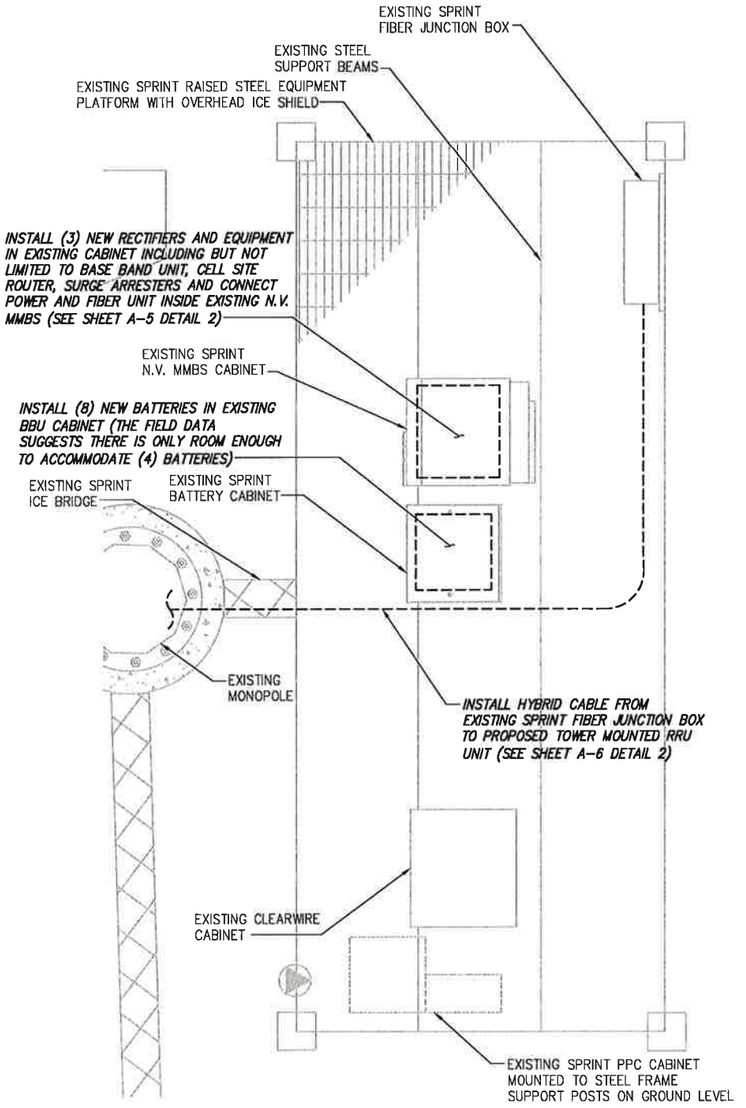
SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-3

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

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
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SITE CASCADE:
CT43XC805

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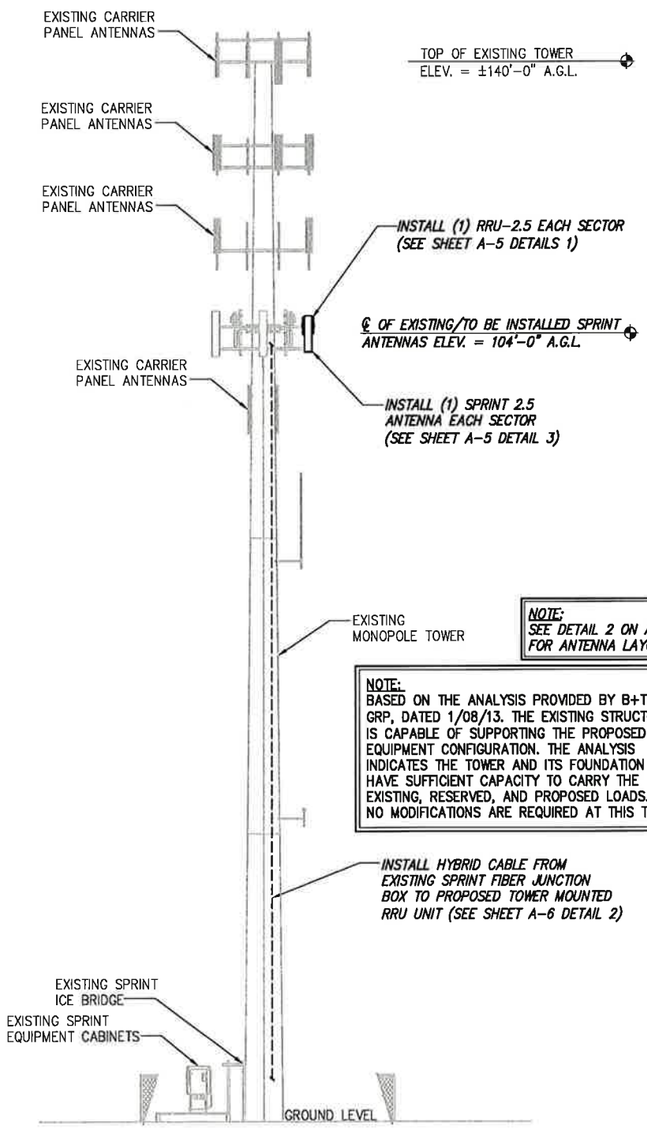
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1

NOTE:
SPRINT TOWER TOP WORK CONTINGENT ON FOLLOWING: COMPLETION OF STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, COMPLETION OF ANTENNA/RRH MOUNTING ASSESSMENT (PROVIDED BY AE)

NOTE:
CONTRACTOR SHALL NOT INSTALL THE 2.5 RRU'S SUCH THAT THEY IMPEDE CLIMBING ACCESS ON THE TOWER.



NOTE:
BASED ON THE ANALYSIS PROVIDED BY B+T GRP, DATED 1/08/13. THE EXISTING STRUCTURE IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION. THE ANALYSIS INDICATES THE TOWER AND ITS FOUNDATION HAVE SUFFICIENT CAPACITY TO CARRY THE EXISTING, RESERVED, AND PROPOSED LOADS. NO MODIFICATIONS ARE REQUIRED AT THIS TIME.

TOWER ELEVATION	NO SCALE	1

DETAIL NOT USED	NO SCALE	2

DETAIL NOT USED	NO SCALE	3

DETAIL NOT USED	NO SCALE	4

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DRAWING NOTICE:

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DESCRIPTION	DATE	BY	REV
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SITE CASCADE:

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SITE ADDRESS:

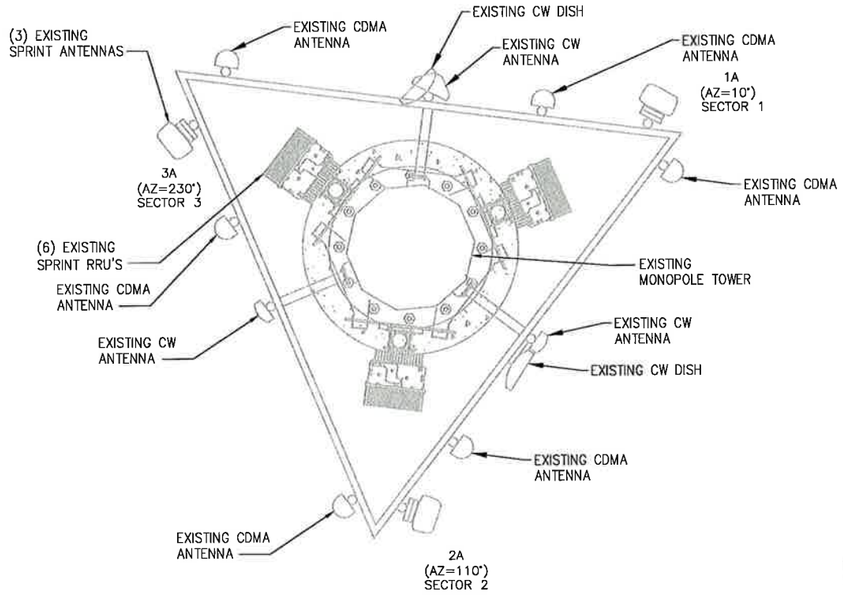
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

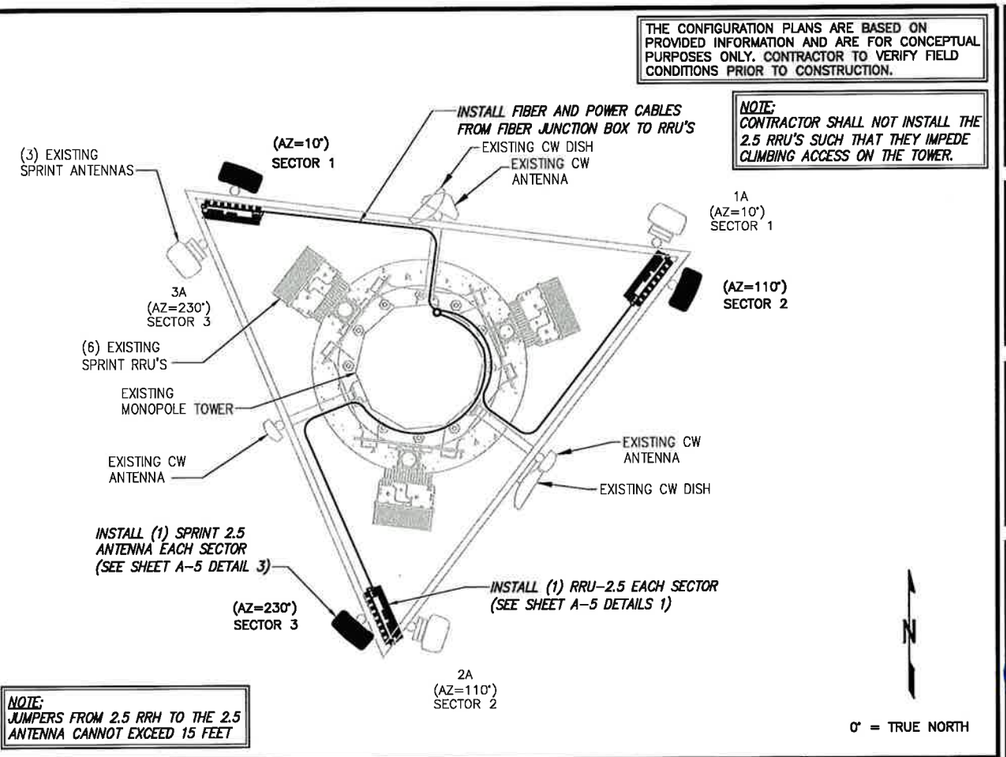
TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:

A-2

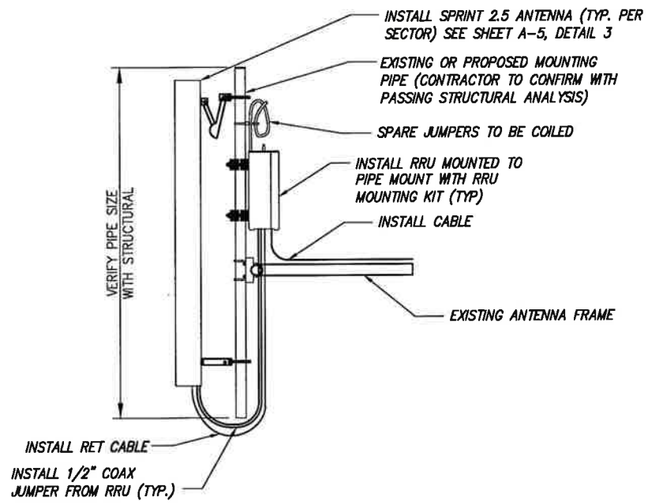


EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1



FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRU.
3. DO NO EXCEED BEND RADIUS.

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: SPARE DC CABLES ARE COILED UP ON NV RRHS AT SPRINT ARRAY. THESE ARE TO BE USED TO POWER UP THE 2.5 RRHS AND TIED INTO EXISTING DC BREAKERS INSIDE THE FIBER JUNCTION BOX LOCATED AT EQUIPMENT.

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

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

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) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:

(F) HARTFORD - CROWN ATLANTIC

SITE CASCADE:

CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

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

NOTES:

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.

2. 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.

3. 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.

4. 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.

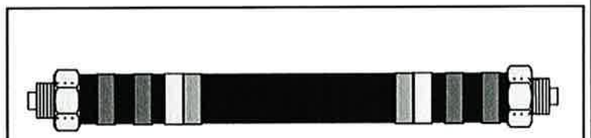
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.

6. 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.

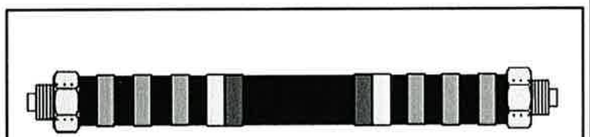
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.

8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

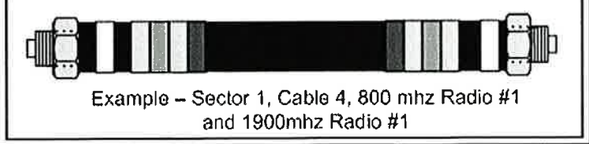
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue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



Example – Sector 2, Cable 2, 800mhz Radio #1



Example – Sector 3, Cable 1, 1900mhz Radio #1



Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

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6580 Sprint Parkway
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) 690-0793
JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

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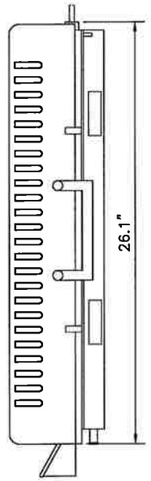
SITE CASCADE:
CT43XC805

SITE ADDRESS:
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

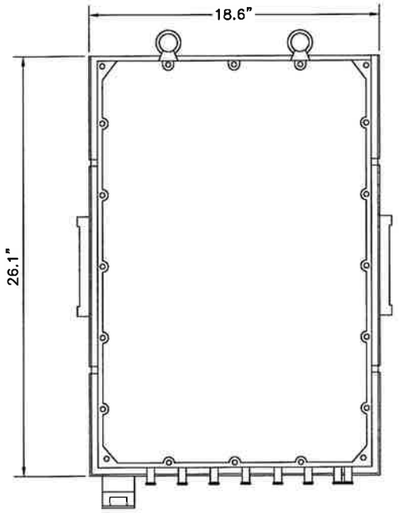
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

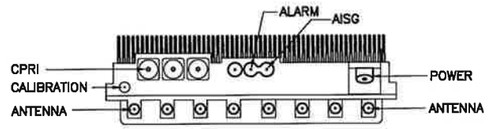
RRU: ALCATEL LUCENT TD-RRH8X20



SIDE VIEW



FRONT VIEW

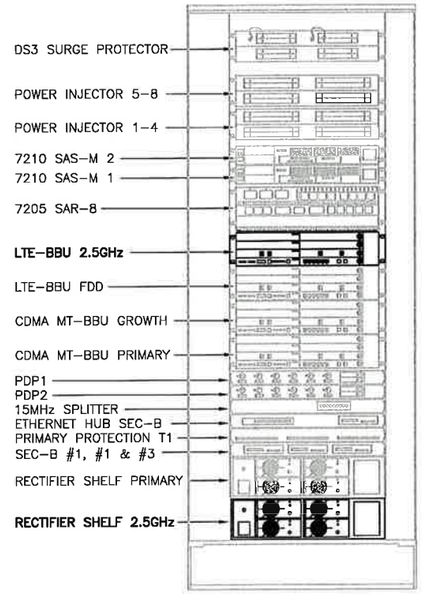


PLAN VIEW

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'S | NO SCALE | 1

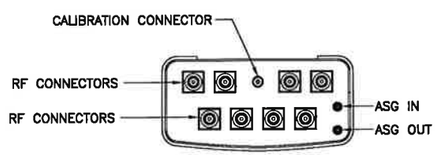


FRONT VIEW

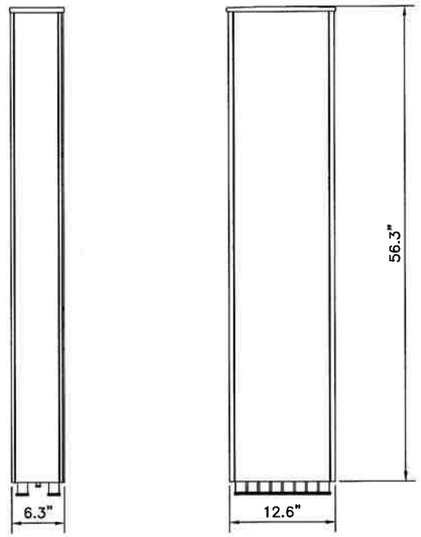
NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

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

DETAIL NOT USED | NO SCALE | 4

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) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

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SITE CASCADE:

CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

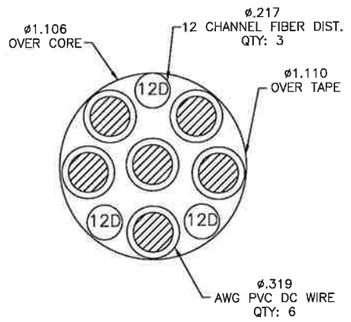
RFS HYBRIFLEX RISER CABLE SCHEDULE

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 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 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

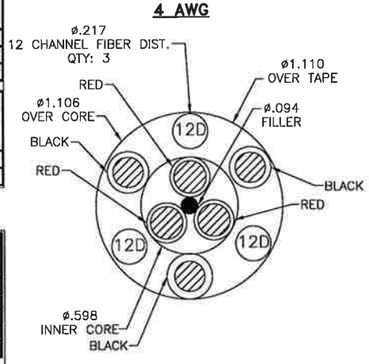
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

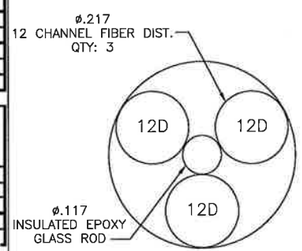
NOTE:
SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG

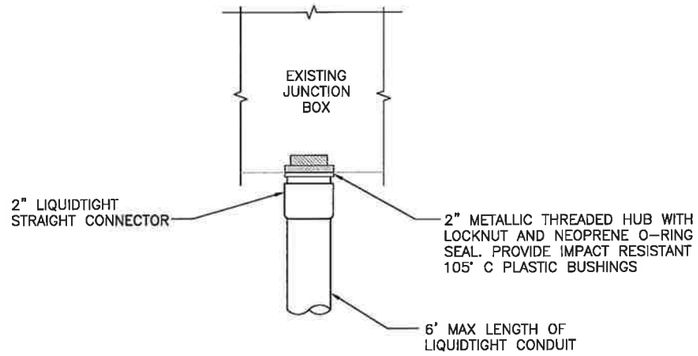


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0763

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER

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SITE CASCADE:

CT43XC805

SITE ADDRESS:

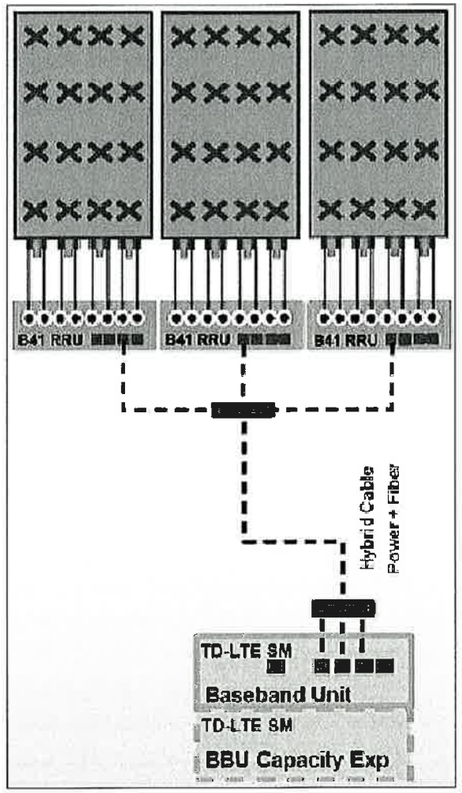
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

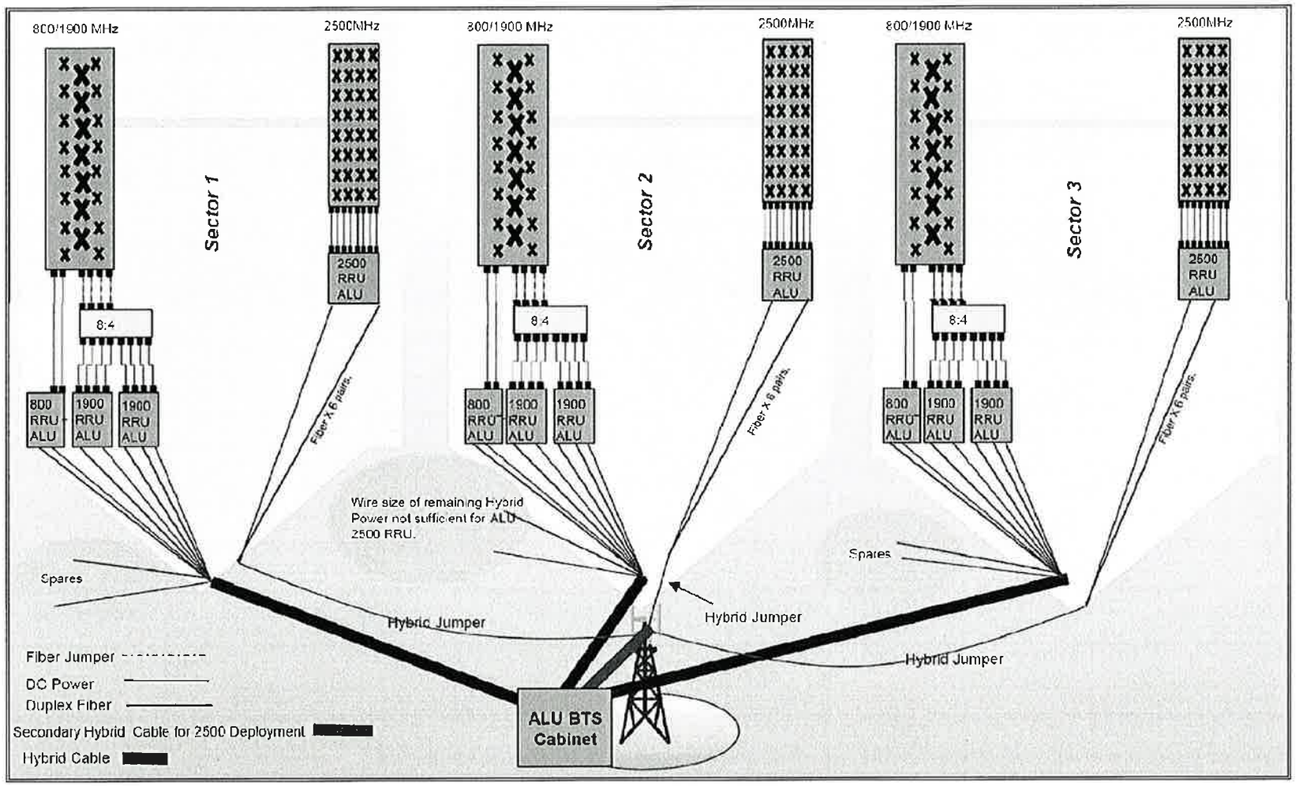
CIVIL DETAILS

SHEET NUMBER:

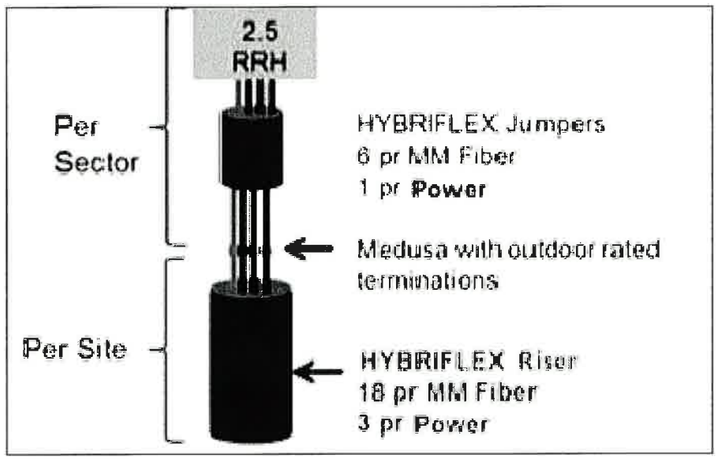
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

PLUMBING DIAGRAM

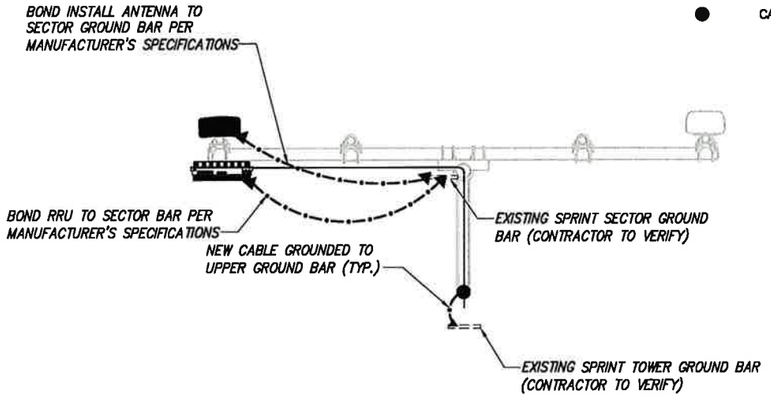
SHEET NUMBER:

A-7

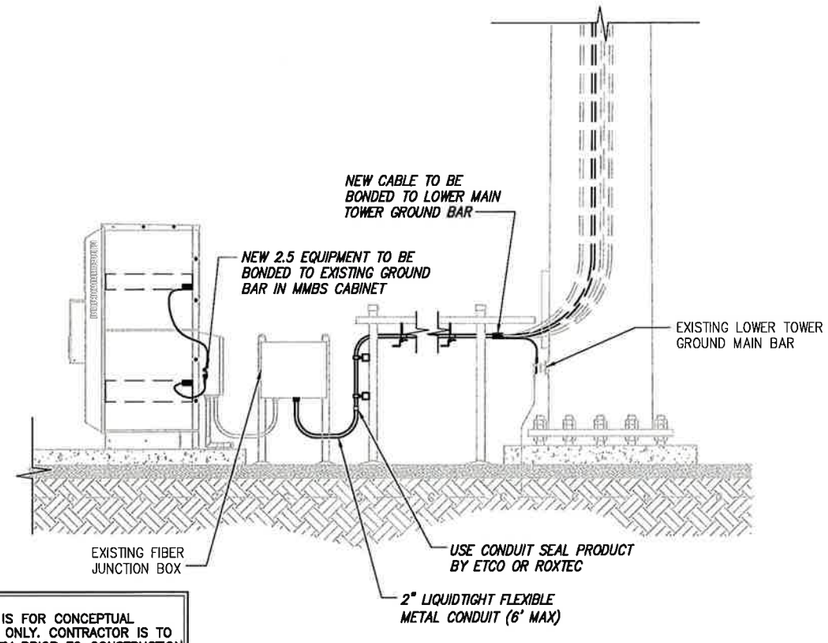
PLAN NOT USED | NO SCALE | 1

LEGEND:

- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

PLANS PREPARED FOR:

Sprint

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Overland Park, Kansas 66251

PLANS PREPARED BY:

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CT43XC805

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439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

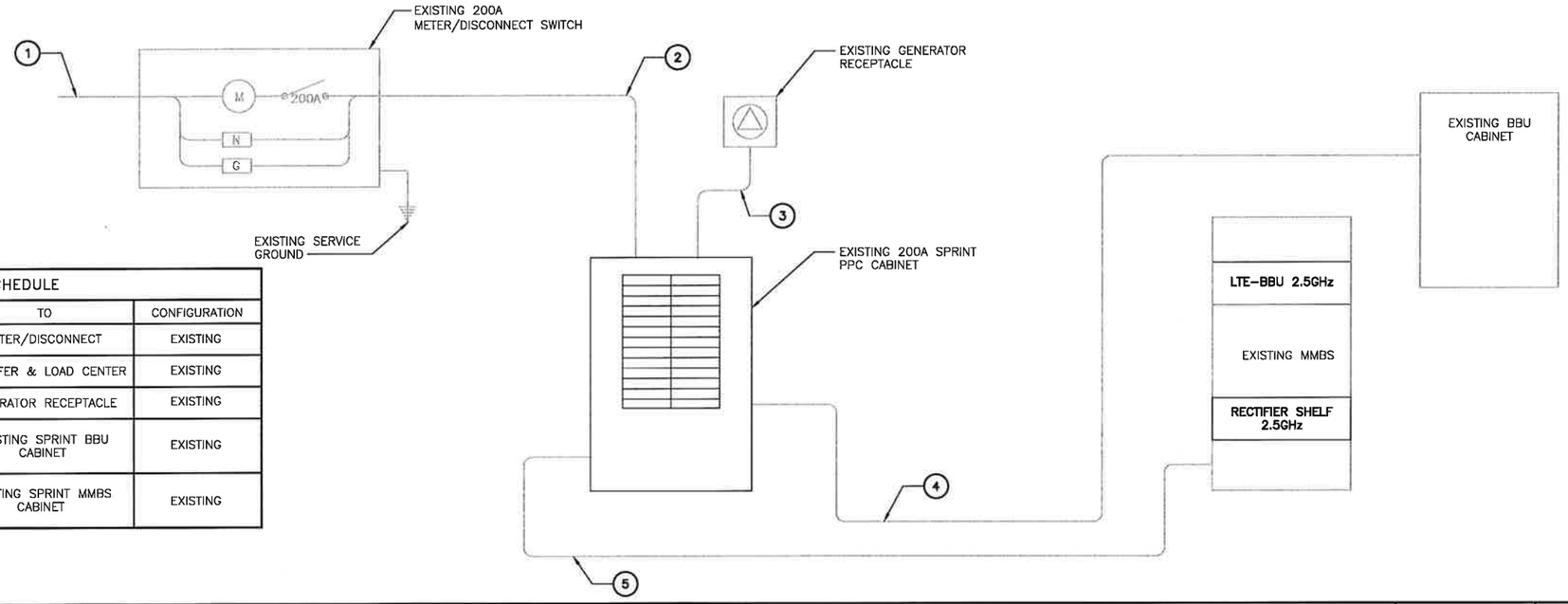
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

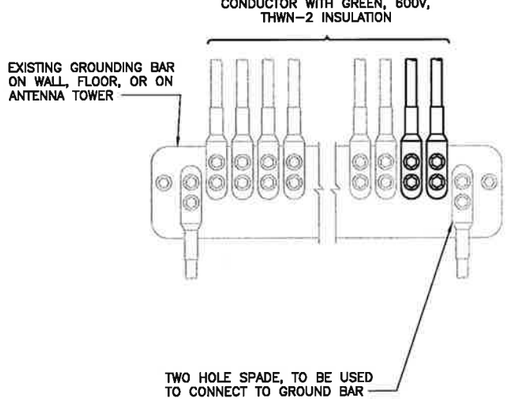
NOTES

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

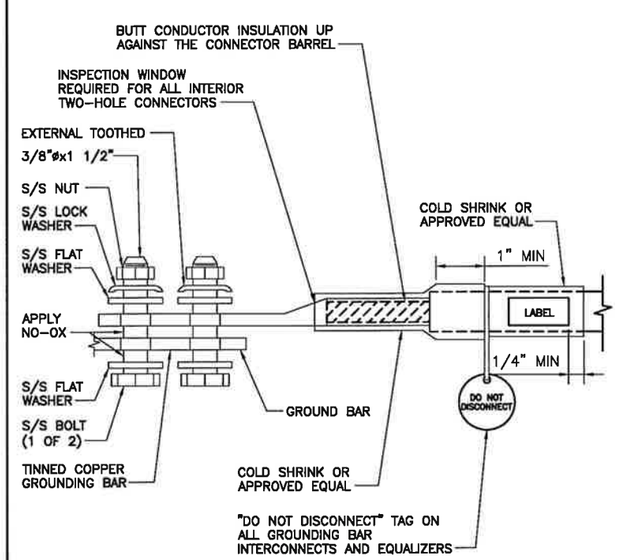
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



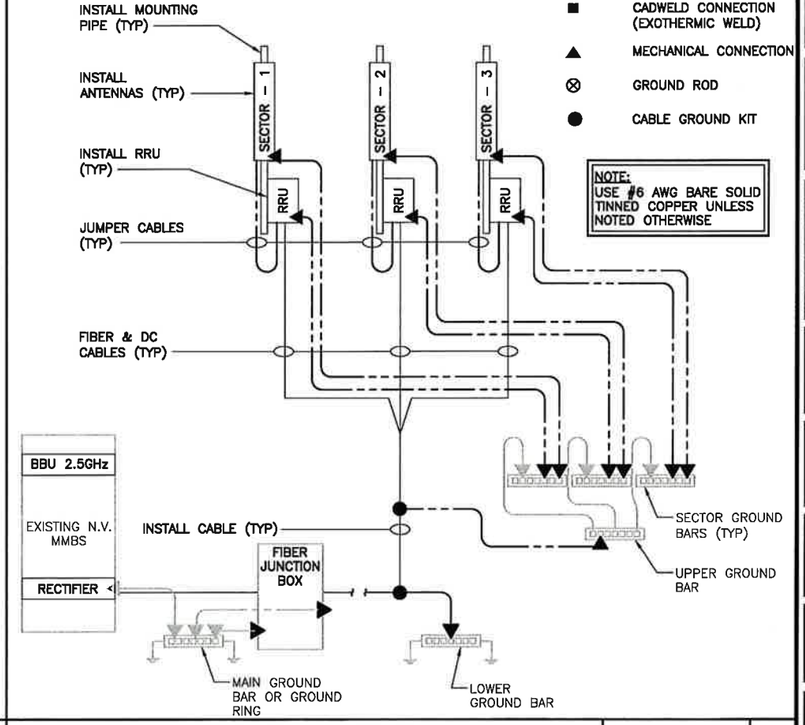
NOTES

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.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR — NO SCALE — 2



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

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) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT · JOHN S. STEVENS · No. 24705 · LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/07/14	SKB	B
ISSUED FOR REVIEW	01/10/14	MAP	A

SITE NAME:

(F) HARTFORD - CROWN ATLANTIC

SITE CASCADE:

CT43XC805

SITE ADDRESS:

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

January 08, 2014

Patrick Byrum
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6532

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** **Scenario 2.5B**
Carrier Site Number: CT43XC805
Carrier Site Name: (F) HARTFORD - CROWN

ATLANTIC

Crown Castle Designation:
Crown Castle BU Number: 806369
Crown Castle Site Name: HRT 094 943225
Crown Castle JDE Job Number: 251888
Crown Castle Work Order Number: 695222
Crown Castle Application Number: 205578 Rev. 2

Engineering Firm Designation: **B+T Group Project Number:** 89233.001.01

Site Data: **439-455 Homestead Ave, Hartford, Hartford County, CT**
Latitude *41° 47' 1.61"*, Longitude *-72° 42' 13.66"*
140 Foot - Monopole Tower

Dear Patrick Byrum,

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 606650, in accordance with application 205578, 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.

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

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

We at *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.

Respectfully submitted by:
B+T Engineering, Inc.

Jyoti Ojha
Project Engineer

Chad E. Tuttle, P.E.
President

STATE OF CONNECTICUT
CHAD E. TUTTLE
No. 23824
LICENSED
PROFESSIONAL ENGINEER
1/8/14

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by VALMONT in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
102.0	104.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	
		3	Rfs Celwave	APXVTM14-C-120			

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
142.0	142.0	3	Antel	BXA-70063/6CF	--	--	1
		6	Rfs Celwave	FD9R6004/1C-3L			
		1	--	Platform Mount (LP 101-1)			
		3	Amphenol	BXA-80063-4BF-EDIN-X	13	1-5/8	2
		3	Antel	BXA-171063-8BF-EDIN-2			
		3	Antel	BXA-171063/8CF-EDIN-2			
	140.0	3	Alcatel Lucent	RRH2x40-AWS			
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z			
126.0	128.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1-5/8	2
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
		3	Rfs Celwave	ATMAA1412D-1A20			
	126.0	1	--	Platform Mount (LP 101-1)	12	1-5/8	1
115.0	117.0	6	Ericsson	RRUS-11	12 2 1	1-5/8 ¾ 3/8	1
		1	Kmw Communications	AM-X-CD-16-65-00T-RET			
		2	Powerwave Technologies	P65-17-XLH-RR			
	116.0	6	Powerwave Technologies	7770.00			
		12	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
	115.0	1	--	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
103.0	104.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
	103.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			1
		1	--	Collar Mount [SO 102-3]			
	102.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER			
102.0	108.0	1	Andrew	VHLP2-180	3 3 3	5/16 ½ 1/4	1
		1	Andrew	VHLP2.5-11			
		2	Dragonwave	HORIZON COMPACT			
	104.0	3	Argus Technologies	LLPX310R-V1			
		3	Samsung Telecommunications	WIMAX DAP HEAD			
		1	Powerwave Technologies	P40-16-XLPP-RR-A	3	1-1/4	
		2	Rfs Celwave	APXVSPP18-C-A20			
	102.0	3	Rfs Celwave	IBC1900BB-1			
		3	Rfs Celwave	IBC1900HG-2A			
		1	--	Platform Mount [LP 602-1]			
	104.0	**6**	**Decibel**	**950F40T4E-M**	**6**	**1-5/8**	**3**
94.0	94.0	3	Kathrein	742 213	6	1 5/8	1
		1	--	Pipe Mount [PM 602-3]			
74.0	80.0	1	Antel	BCD-87010	1	7/8	1
	74.0	1	--	Side Arm Mount [SO 701-1]			
40.0	41.0	1	Lucent	KS24019-L112A	1	1/2	1
	40.0	1	--	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

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)
137	137	12	swedcom	ALP 9212-N	--	--
124	124	6	rfs celwave	APN199015	--	--
114	114	9	allgon	7184.15	--	--

3) ANALYSIS PROCEDURE

tnxTower Report - version 6.1.4.1

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint PCS., Co-Locate Rev# 2	205578	CCI Sites
Tower Manufacturing Drawing	Valmont, Order No. 18915-69	823121	CCI Sites
Tower Mapping Report	TEP., No. 081972	2294379	CCI Sites
Foundation Mapping Report	TEP., No. 081972	2294380	CCI Sites
Geo-Tech Report	TEP., Project Number: 081972.03	2294838	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 12/30/2013	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided..

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	140 - 86.8333	Pole	TP39.223x26.216x0.313	1	-15.898	1962.962	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.212x0.406	2	-28.288	3294.136	64.2	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-45.741	4900.574	64.5	Pass
							Summary	
						Pole (L3)	64.5	Pass
						RATING =	**64.5**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	69.0	Pass
1	Base Plate	Base	32.2	Pass
1	Base Foundation	Base	48.6	Pass

Structure Rating (max from all components) =	69.0%

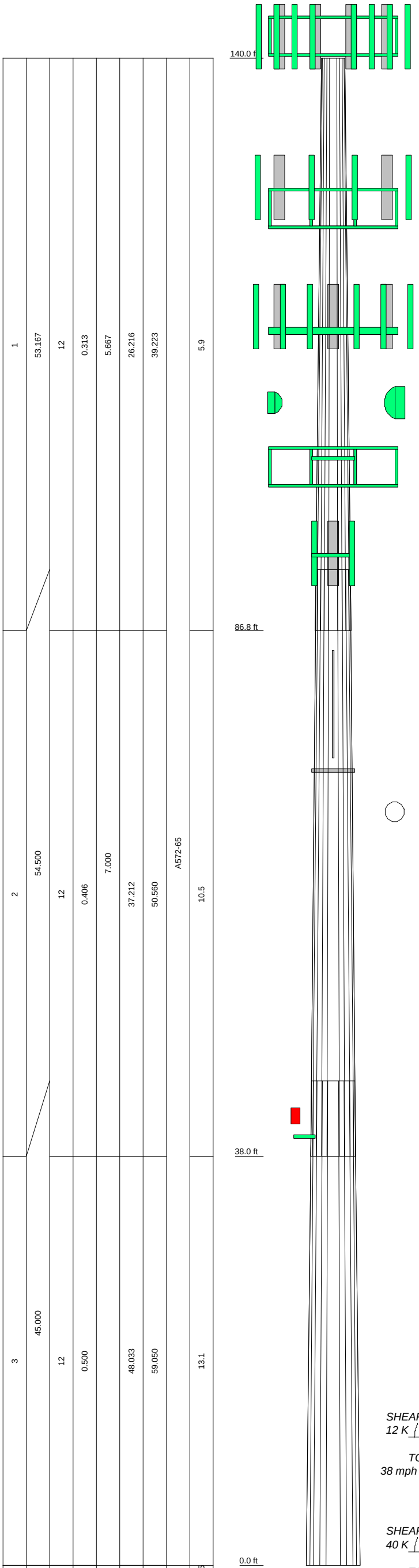
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



Section	1	2	3
Length (ft)	53.167	54.500	45.000
Number of Sides	12	12	12
Thickness (in)	0.313	0.406	0.500
Socket Length (ft)	5.667	7.000	
Top Dia (in)	26.216	37.212	48.033
Bot Dia (in)	39.223	50.560	59.050
Grade		A572-65	
Weight (K)	5.9	10.5	13.1

29.5

AXIAL
80 K
SHEAR
12 K
MOMENT
1117 kip-ft

TORQUE 1 kip-ft
38 mph WIND - 1.000 in ICE

AXIAL
46 K
SHEAR
40 K
MOMENT
3710 kip-ft

TORQUE 3 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe (E)	142	(4) LGP21401 (E)	115
BXA-70063/6CF w/ Mount Pipe (E)	142	DC6-48-60-18-8F (E)	115
BXA-70063/6CF w/ Mount Pipe (E)	142	8'x2" Antenna Mount Pipe (E)	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	142	8'x2" Antenna Mount Pipe (E)	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	142	8'x2" Antenna Mount Pipe (E)	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	142	Platform Mount [LP 712-1] (E)	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	142	800MHz 2X50W RRH W/FILTER (E)	103
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	142	800MHz 2X50W RRH W/FILTER (E)	103
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	142	800MHz 2X50W RRH W/FILTER (E)	103
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	142	PCS 1900MHz 4x45W-65MHz (E)	103
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	142	PCS 1900MHz 4x45W-65MHz (E)	103
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	142	PCS 1900MHz 4x45W-65MHz (E)	103
(2) FD9R6004/1C-3L (E)	142	PCS 1900MHz 4x45W-65MHz (E)	103
(2) FD9R6004/1C-3L (E)	142	PCS 1900MHz 4x45W-65MHz (E)	103
(2) FD9R6004/1C-3L (E)	142	PCS 1900MHz 4x45W-65MHz (E)	103
RRH2x40-AWS (R)	142	Collar Mount [SO 102-3] (E)	103
RRH2x40-AWS (R)	142	APXVSPP18-C-A20 w/ Mount Pipe (E)	102
RRH2x40-AWS (R)	142	P40-16-XLPP-RR-A w/ Mount Pipe (E)	102
DB-T1-6Z-8AB-0Z (R)	142	APXVSPP18-C-A20 w/ Mount Pipe (E)	102
Platform Mount (LP 101-1) (E)	142	IBC1900BB-1 (E)	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	126	IBC1900BB-1 (E)	102
		IBC1900BB-1 (E)	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	126	IBC1900HG-2A (E)	102
		IBC1900HG-2A (E)	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	126	IBC1900HG-2A (E)	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	126	TD-RRH8x20-25 (P)	102
		APXVTM14-C-120 w/ Mount Pipe (P)	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	126	TD-RRH8x20-25 (P)	102
		APXVTM14-C-120 w/ Mount Pipe (P)	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	126	TD-RRH8x20-25 (P)	102
		APXVTM14-C-120 w/ Mount Pipe (P)	102
ATMAA1412D-1A20 (R)	126	LLPX310R-V1 w/ Mount Pipe (E)	102
ATMAA1412D-1A20 (R)	126	LLPX310R-V1 w/ Mount Pipe (E)	102
ATMAA1412D-1A20 (R)	126	LLPX310R-V1 w/ Mount Pipe (E)	102
(2) 5' x 2" Pipe Mount (R)	126	WIMAX DAP HEAD (E)	102
(2) 5' x 2" Pipe Mount (R)	126	WIMAX DAP HEAD (E)	102
(2) 5' x 2" Pipe Mount (R)	126	WIMAX DAP HEAD (E)	102
Platform Mount (LP 101-1) (E)	126	HORIZON COMPACT (E)	102
(2) 7770.00 w/ Mount Pipe (E)	115	HORIZON COMPACT (E)	102
(2) 7770.00 w/ Mount Pipe (E)	115	Platform Mount [LP 602-1] (E)	102
(2) 7770.00 w/ Mount Pipe (E)	115	VHLP2.5-11 (E)	102
P65-17-XLH-RR w/ Mount Pipe (E)	115	VHLP2-180 (E)	102
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	115	742 213 (E)	94
P65-17-XLH-RR w/ Mount Pipe (E)	115	Pipe Mount [PM 602-3] (E)	94
(2) RRUS-11 (E)	115	742 213 (E)	94
(2) RRUS-11 (E)	115	742 213 (E)	94
(2) RRUS-11 (E)	115	BCD-87010 (E)	74
(4) LGP21401 (E)	115	Side Arm Mount [SO 701-1] (E)	74
(4) LGP21401 (E)	115	KS24019-L112A (E)	40
		Side Arm Mount [SO 701-1] (E)	40

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 64.5%

B+T Group
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587 - 4630 x140
FAX: (918) 295-0265

Job:	89233.001.01 - HRT 094 943225, CT (BU# 80636		
Project:			
Client: Crown Castle	Drawn by: Jojha	App'd:	
Code: TIA/EIA-222-F	Date: 01/08/14	Scale: NTS	
Path: C:\Users\jojha\Desktop\89233.001\Tnx\89233_001_01_HRT 094 943225_CT.er		Dwg No. E-1	

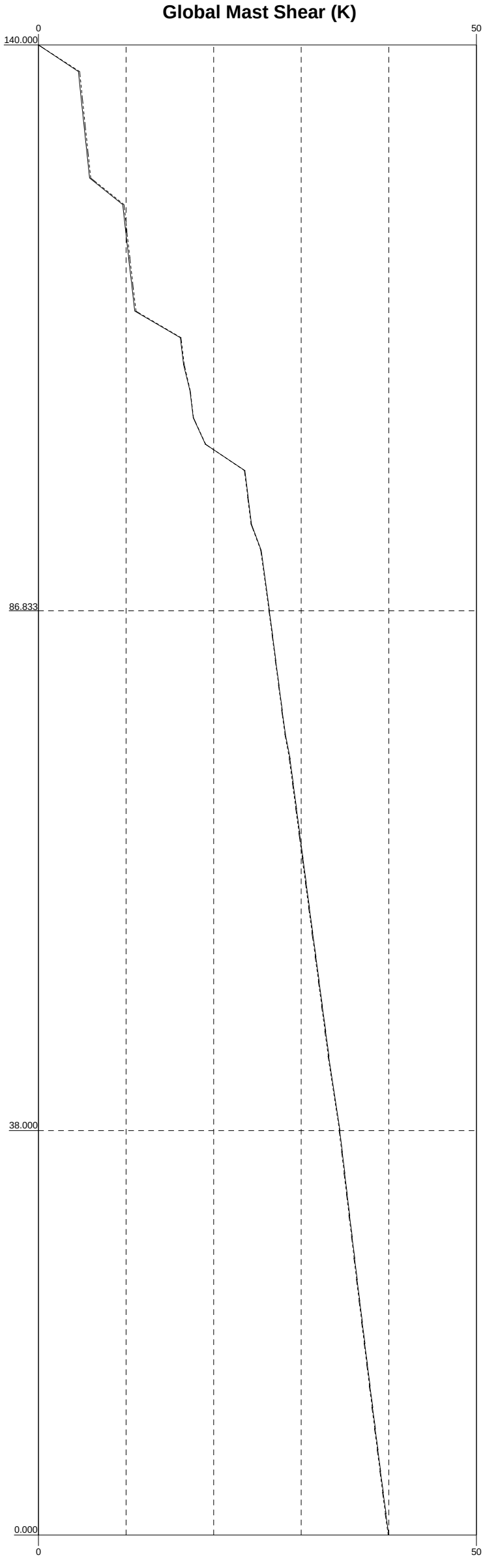
TIA/EIA-222-F - 80 mph/38 mph 1.000 in Ice

Vx ---------- Vz

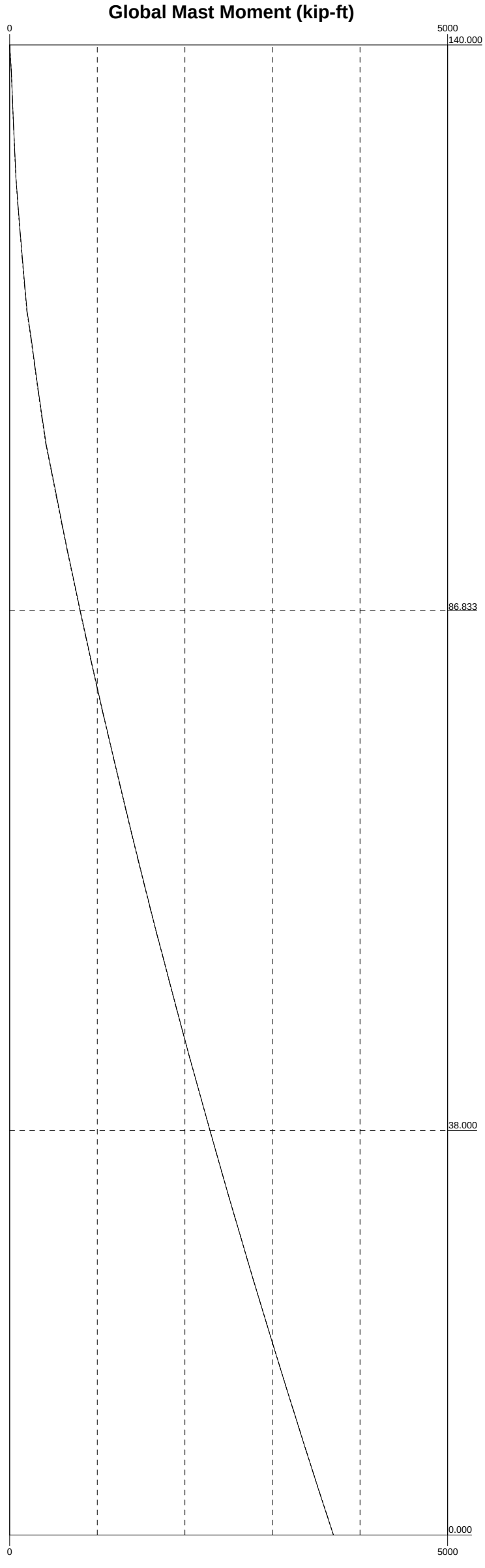
Maximum Values

Mx ---------- Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



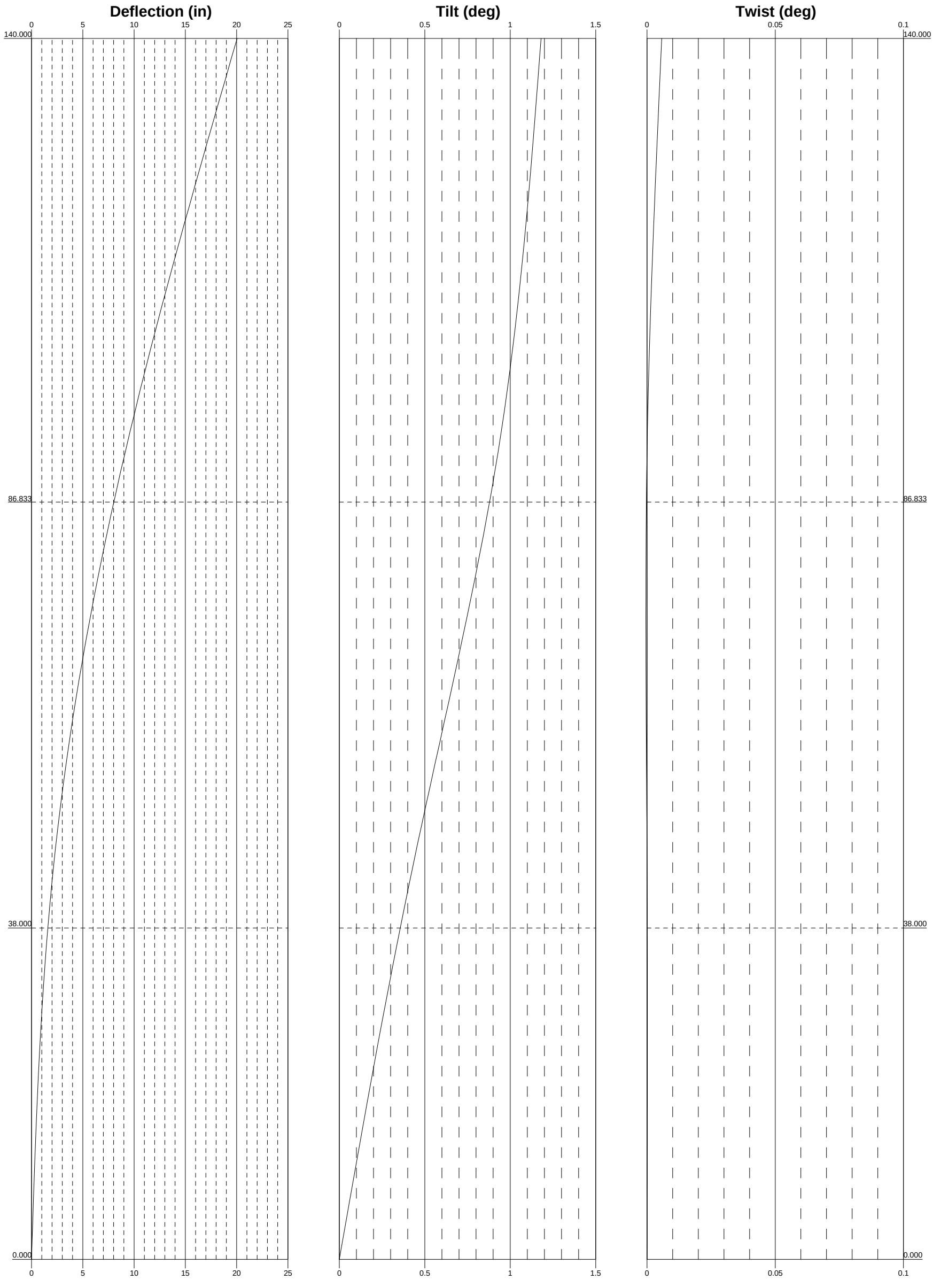
Elevation (ft)

B+T Group
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587 - 4630 x140
FAX: (918) 295-0265

Job: 89233.001.01 - HRT 094 943225, CT (BU# 80636			
Project:			
Client: Crown Castle	Drawn by: Jojha	App'd:	
Code: TIA/EIA-222-F	Date: 01/08/14	Scale: NTS	
Path: C:\Users\jojha\Desktop\89233.001\Tnx\89233_001_01_HRT 094 943225_CT.er		Dwg No. E-4	

TIA/EIA-222-F - Service - 50 mph

Maximum Values

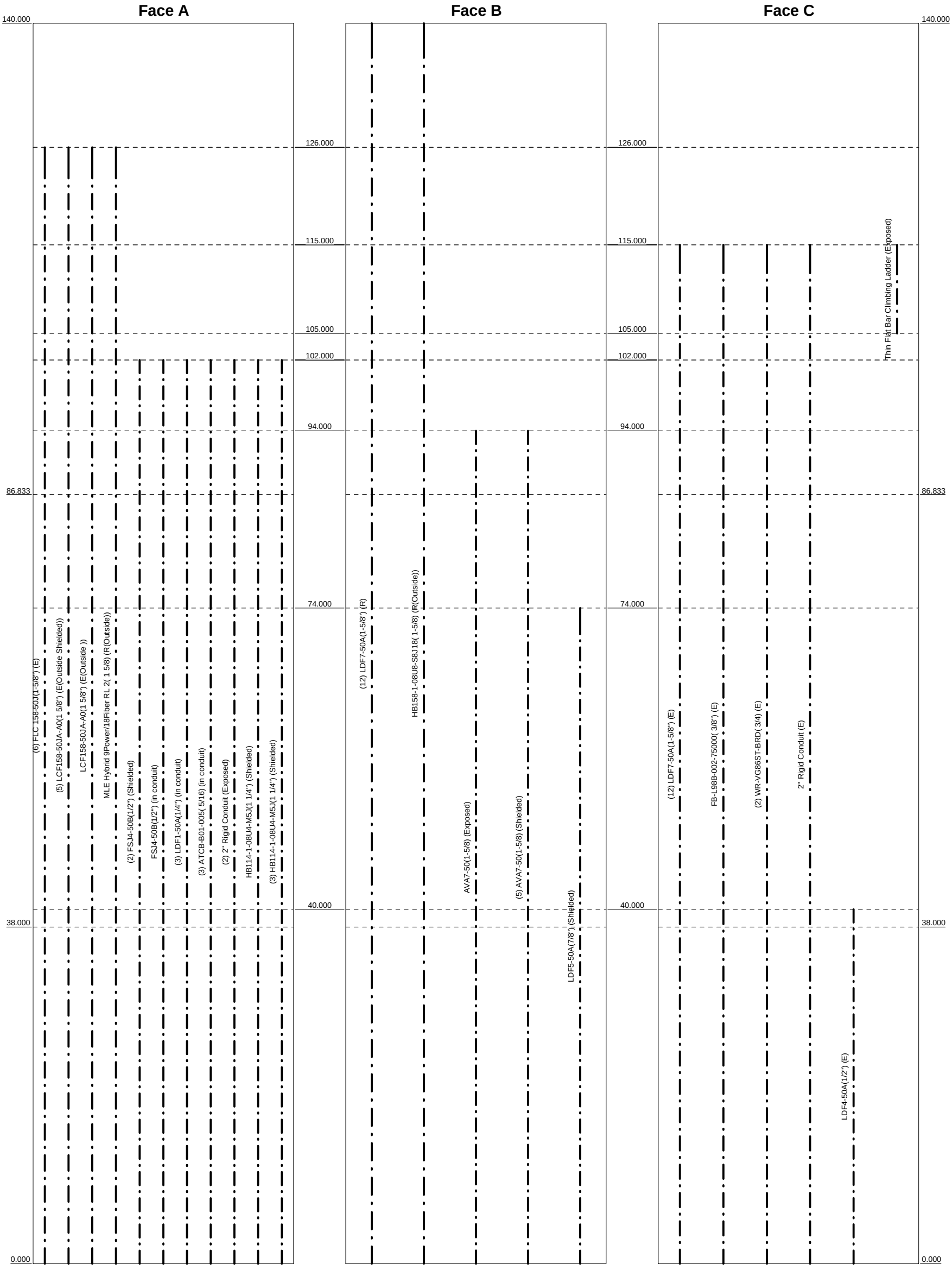


B+T Group
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587 - 4630 x140
FAX: (918) 295-0265

Job: 89233.001.01 - HRT 094 943225, CT (BU# 80636		
Project:		
Client: Crown Castle	Drawn by: Jojha	App'd:
Code: TIA/EIA-222-F	Date: 01/08/14	Scale: NTS
Path: C:\Users\jojha\Desktop\89233.001\Tnx\89233_001_01_HRT 094 943225_CT.eri		Dwg No. E-5

Feed Line Distribution Chart
0' - 140'

Round — Flat — App In Face — App Out Face — Truss Leg



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1717 S Boulder Ave, Suite 300
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Phone: (918) 587 - 4630 x140
FAX: (918) 295-0265

Job: 89233.001.01 - HRT 094 943225, CT (BU# 80636			
Project:			
Client: Crown Castle	Drawn by: Jojha	App'd:	
Code: TIA/EIA-222-F	Date: 01/08/14	Scale: NTS	
Path: C:\Users\jojha\Desktop\89233.001\Tnx\89233_001_01_HRT 094 943225_CT.eri		Dwg No. E-7	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	140.000-86.833	53.167	5.667	12	26.216	39.223	0.313	1.250	A572-65 (65 ksi)
L2	86.833-38.000	54.500	7.000	12	37.212	50.560	0.406	1.625	A572-65 (65 ksi)
L3	38.000-0.000	45.000		12	48.033	59.050	0.500	2.000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	27.141	26.065	2232.375	9.273	13.580	164.388	4523.397	12.829	6.188	19.803
	40.607	39.154	7566.452	13.930	20.318	372.410	15331.683	19.270	9.674	30.958
L2	39.961	48.146	8324.740	13.176	19.276	431.879	16868.180	23.696	8.884	21.868
	52.344	65.607	21064.222	17.955	26.190	804.282	42681.825	32.290	12.461	30.674
L3	51.502	76.528	22069.805	17.017	24.881	887.010	44719.408	37.665	11.533	23.066
	61.133	94.266	41247.015	20.961	30.588	1348.475	83577.635	46.395	14.485	28.971

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 140.000-86.833				1	1	1		
L2 86.833-38.000				1	1	1		
L3 38.000-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
LDF7-50A(1-5/8") (R)	B	No	Inside Pole	140.000 - 0.000	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8) (R(Outside)) *^*	B	No	CaAa (Out Of Face)	140.000 - 0.000	0.000	0	1	No Ice	0.198	0.001
								1/2" Ice	0.298	0.003
								1" Ice	0.398	0.005
								2" Ice	0.598	0.011
								4" Ice	0.998	0.031
FLC 158-50J(1-5/8")) (E)	A	No	Inside Pole	126.000 - 0.000	0.000	0	6	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
LCF158-50JA-A0(1 5/8") (E(Outside Shielded))	A	No	CaAa (Out Of Face)	126.000 - 0.000	0.000	0	5	No Ice	0.000	0.000
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.029
LCF158-50JA-A0(1 5/8") (E(Outside))	A	No	CaAa (Out Of Face)	126.000 - 0.000	0.000	0	1	No Ice	0.198	0.000
								1/2" Ice	0.298	0.002
								1" Ice	0.398	0.004
								2" Ice	0.598	0.010
								4" Ice	0.998	0.029
MLE Hybrid	A	No	CaAa (Out Of Face)	126.000 - 0.000	0.000	0	1	No Ice	0.163	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
9Power/18Fiber RL 2(1 5/8) (R(Outside))								1/2" Ice	0.263	0.002
								1" Ice	0.362	0.004
								2" Ice	0.562	0.010
								4" Ice	0.962	0.029
^										
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	115.000 - 0.000	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
FB-L98B-002-75000(3/8") (E)	C	No	Inside Pole	115.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (E)	C	No	Inside Pole	115.000 - 0.000	0.000	0	2	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
2" Rigid Conduit (E)	C	No	Inside Pole	115.000 - 0.000	0.000	0	1	No Ice	0.000	0.003
								1/2" Ice	0.000	0.003
								1" Ice	0.000	0.003
								2" Ice	0.000	0.003
								4" Ice	0.000	0.003
***										
FSJ4-50B(1/2") (Shielded)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	2	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
FSJ4-50B(1/2") (in conduit)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
LDF1-50A(1/4") (in conduit)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	3	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
ATCB-B01-005(5/16) (in conduit)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	3	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
2" Rigid Conduit (Exposed)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	2	No Ice	0.200	0.003
								1/2" Ice	0.300	0.004
								1" Ice	0.400	0.006
								2" Ice	0.600	0.013
								4" Ice	1.000	0.032
HB114-1-08U4-M5J(1 1/4") (Shielded)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	1	No Ice	0.000	0.001
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.028
HB114-1-08U4-M5J(1 1/4") (Shielded)	A	No	CaAa (Out Of Face)	102.000 - 0.000	0.000	0	3	No Ice	0.000	0.001
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.028

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
^										
AVA7-50(1-5/8) (Exposed)	B	No	CaAa (Out Of Face)	94.000 - 0.000	0.000	0	1	No Ice	0.201	0.001
								1/2" Ice	0.301	0.002
								1" Ice	0.401	0.004
								2" Ice	0.601	0.010
								4" Ice	1.001	0.030
AVA7-50(1-5/8) (Shielded)	B	No	CaAa (Out Of Face)	94.000 - 0.000	0.000	0	5	No Ice	0.000	0.001
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.030
***										
LDF5-50A(7/8") (Shielded)	B	No	CaAa (Out Of Face)	74.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.003
								2" Ice	0.000	0.008
								4" Ice	0.000	0.025
***										
LDF4-50A(1/2") (E)	C	No	Inside Pole	40.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
***										
Thin Flat Bar Climbing Ladder (Exposed)	C	No	CaAa (Out Of Face)	115.000 - 105.000	30.000	0	1	No Ice	0.333	0.004
								1/2" Ice	0.444	0.005
								1" Ice	0.556	0.007
								2" Ice	0.778	0.011
								4" Ice	1.222	0.023

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-86.833	A	0.000	0.000	0.000	20.186	0.440
		B	0.000	0.000	0.000	11.968	0.622
		C	0.000	0.000	0.000	3.333	0.431
L2	86.833-38.000	A	0.000	0.000	0.000	37.138	0.870
		B	0.000	0.000	0.000	19.484	0.761
		C	0.000	0.000	0.000	0.000	0.678
L3	38.000-0.000	A	0.000	0.000	0.000	28.899	0.677
		B	0.000	0.000	0.000	15.162	0.595
		C	0.000	0.000	0.000	0.000	0.533

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-86.833	A	1.158	0.000	0.000	0.000	45.355	2.386
		B		0.000	0.000	0.000	25.941	1.067
		C		0.000	0.000	0.000	5.907	0.465
L2	86.833-38.000	A	1.079	0.000	0.000	0.000	82.379	4.685
		B		0.000	0.000	0.000	42.105	2.467

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.678
L3	38.000-0.000	A	1.000	0.000	0.000	0.000	61.690	3.302
		B		0.000	0.000	0.000	31.557	1.812
		C		0.000	0.000	0.000	0.000	0.533

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140.000-86.833	0.173	-0.317	0.311	-0.574
L2	86.833-38.000	0.395	-0.641	0.644	-1.084
L3	38.000-0.000	0.413	-0.670	0.682	-1.146

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-70063/6CF w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.979 8.621 9.228 10.473 13.082	5.407 6.558 7.422 9.198 12.952	0.042 0.101 0.168 0.328 0.788
BXA-70063/6CF w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.979 8.621 9.228 10.473 13.082	5.407 6.558 7.422 9.198 12.952	0.042 0.101 0.168 0.328 0.788
BXA-70063/6CF w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.979 8.621 9.228 10.473 13.082	5.407 6.558 7.422 9.198 12.952	0.042 0.101 0.168 0.328 0.788
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	A	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.089 5.515 5.953 6.859 8.816	3.472 4.045 4.640 5.957 8.886	0.030 0.070 0.116 0.227 0.554
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	B	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.089 5.515 5.953 6.859 8.816	3.472 4.045 4.640 5.957 8.886	0.030 0.070 0.116 0.227 0.554
BXA-80063-4BF-EDIN-X w/ Mount Pipe (R)	C	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.089 5.515 5.953 6.859	3.472 4.045 4.640 5.957	0.030 0.070 0.116 0.227

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	8.816	8.886	0.554
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	A	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	B	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488
BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	C	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	A	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	B	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
BXA-171063/8CF-EDIN-2 w/ Mount Pipe (R)	C	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
(2) FD9R6004/1C-3L (E)	A	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.008 0.019 0.062
(2) FD9R6004/1C-3L (E)	B	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.008 0.019 0.062
(2) FD9R6004/1C-3L (E)	C	From Leg	4.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.008 0.019 0.062
RRH2x40-AWS (R)	A	From Leg	4.000 0.000 -2.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2x40-AWS (R)	B	From Leg	4.000 0.000 -2.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2x40-AWS	C	From Leg	4.000	0.000	142.000	No Ice	2.522	1.589	0.044

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(R)			0.000 -2.000			1/2" Ice 1" Ice 2" Ice 4" Ice	2.753 2.993 3.499 4.615	1.795 2.010 2.465 3.479	0.061 0.082 0.132 0.275
DB-T1-6Z-8AB-0Z (R)	A	From Leg	4.000 0.000 -2.000	0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
Platform Mount (LP 101-1) (E) *^*	C	None		0.000	142.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	36.210 42.820 49.430 62.650 89.090	36.210 42.820 49.430 62.650 89.090	1.503 2.301 3.099 4.695 7.887
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	A	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	B	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	C	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	A	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	B	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	C	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ATMAA1412D-1A20 (R)	A	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.314 1.469 1.806 2.584	0.467 0.575 0.691 0.951 1.573	0.013 0.021 0.030 0.056 0.137
ATMAA1412D-1A20 (R)	B	From Leg	4.000 0.000 2.000	0.000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.314 1.469 1.806 2.584	0.467 0.575 0.691 0.951 1.573	0.013 0.021 0.030 0.056 0.137
ATMAA1412D-1A20 (R)	C	From Leg	4.000 0.000	0.000	126.000	No Ice 1/2" Ice	1.167 1.314	0.467 0.575	0.013 0.021

Description	Face or Leg	Offset Type	Offsets: Horz Lateral (ft)	Offsets: Vert (ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (K)
			2.000				1" Ice	1.469	0.691	0.030
							2" Ice	1.806	0.951	0.056
							4" Ice	2.584	1.573	0.137
(2) 5' x 2" Pipe Mount (R)	A	From Leg	4.000 0.000	0.000	0.000	126.000	No Ice 1/2" Ice	1.000 1.393	1.000 1.393	0.029 0.037
			0.000				1" Ice	1.703	1.703	0.048
							2" Ice	2.351	2.351	0.082
							4" Ice	3.778	3.778	0.196
(2) 5' x 2" Pipe Mount (R)	B	From Leg	4.000 0.000	0.000	0.000	126.000	No Ice 1/2" Ice	1.000 1.393	1.000 1.393	0.029 0.037
			0.000				1" Ice	1.703	1.703	0.048
							2" Ice	2.351	2.351	0.082
							4" Ice	3.778	3.778	0.196
(2) 5' x 2" Pipe Mount (R)	C	From Leg	4.000 0.000	0.000	0.000	126.000	No Ice 1/2" Ice	1.000 1.393	1.000 1.393	0.029 0.037
			0.000				1" Ice	1.703	1.703	0.048
							2" Ice	2.351	2.351	0.082
							4" Ice	3.778	3.778	0.196
Platform Mount (LP 101-1) (E)	C	None			0.000	126.000	No Ice 1/2" Ice	36.210 42.820	36.210 42.820	1.503 2.301
							1" Ice	49.430	49.430	3.099
							2" Ice	62.650	62.650	4.695
							4" Ice	89.090	89.090	7.887
^										
(2) 7770.00 w/ Mount Pipe (E)	A	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	6.119 6.626	4.254 5.014	0.055 0.103
			1.000				1" Ice	7.128	5.711	0.157
							2" Ice	8.164	7.155	0.287
							4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe (E)	B	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	6.119 6.626	4.254 5.014	0.055 0.103
			1.000				1" Ice	7.128	5.711	0.157
							2" Ice	8.164	7.155	0.287
							4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe (E)	C	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	6.119 6.626	4.254 5.014	0.055 0.103
			1.000				1" Ice	7.128	5.711	0.157
							2" Ice	8.164	7.155	0.287
							4" Ice	10.360	10.412	0.665
P65-17-XLH-RR w/ Mount Pipe (E)	A	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	11.704 12.424	8.938 10.450	0.092 0.178
			2.000				1" Ice	13.153	11.986	0.273
							2" Ice	14.639	14.313	0.498
							4" Ice	17.906	19.144	1.126
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	B	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	8.498 9.149	6.304 7.479	0.074 0.139
			2.000				1" Ice	9.767	8.368	0.212
							2" Ice	11.031	10.179	0.385
							4" Ice	13.679	14.024	0.874
P65-17-XLH-RR w/ Mount Pipe (E)	C	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	11.704 12.424	8.938 10.450	0.092 0.178
			2.000				1" Ice	13.153	11.986	0.273
							2" Ice	14.639	14.313	0.498
							4" Ice	17.906	19.144	1.126
(2) RRUS-11 (E)	A	From Leg	4.000 0.000	0.000	0.000	115.000	No Ice 1/2" Ice	4.424 4.708	1.186 1.351	0.055 0.081
			2.000				1" Ice	5.001	1.526	0.110

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(2) RRUS-11	B	From Leg	4.000	0.000	115.000	No Ice	4.424	1.186	0.055
(E)			0.000			1/2" Ice	4.708	1.351	0.081
			2.000			1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(2) RRUS-11	C	From Leg	4.000	0.000	115.000	No Ice	4.424	1.186	0.055
(E)			0.000			1/2" Ice	4.708	1.351	0.081
			2.000			1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(4) LGP21401	A	From Leg	4.000	0.000	115.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			1.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(4) LGP21401	B	From Leg	4.000	0.000	115.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			1.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(4) LGP21401	C	From Leg	4.000	0.000	115.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			1.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
DC6-48-60-18-8F	A	From Leg	4.000	0.000	115.000	No Ice	2.567	4.317	0.019
(E)			0.000			1/2" Ice	2.798	4.596	0.050
			1.000			1" Ice	3.038	4.885	0.085
						2" Ice	3.543	5.488	0.167
						4" Ice	4.658	6.797	0.383
8'x2" Antenna Mount Pipe	A	From Leg	4.000	0.000	115.000	No Ice	1.900	1.900	0.030
(E)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.064
						2" Ice	4.396	4.396	0.120
						4" Ice	6.498	6.498	0.301
8'x2" Antenna Mount Pipe	B	From Leg	4.000	0.000	115.000	No Ice	1.900	1.900	0.030
(E)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.064
						2" Ice	4.396	4.396	0.120
						4" Ice	6.498	6.498	0.301
8'x2" Antenna Mount Pipe	C	From Leg	4.000	0.000	115.000	No Ice	1.900	1.900	0.030
(E)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.064
						2" Ice	4.396	4.396	0.120
						4" Ice	6.498	6.498	0.301
Platform Mount [LP 712-1]	C	None		0.000	115.000	No Ice	24.530	24.530	1.335
(E)						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956
						2" Ice	46.170	46.170	2.577
						4" Ice	67.810	67.810	3.820
^									
800MHz 2X50W RRH	A	From Leg	2.000	0.000	103.000	No Ice	2.401	2.254	0.064
W/FILTER			0.000			1/2" Ice	2.613	2.460	0.086
(E)			-1.000			1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER (E)	B	From Leg	2.000 0.000 -1.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.401 2.613 2.833 3.300 4.337	2.254 2.460 2.675 3.132 4.148	0.064 0.086 0.111 0.172 0.338
800MHz 2X50W RRH W/FILTER (E)	C	From Leg	2.000 0.000 -1.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.401 2.613 2.833 3.300 4.337	2.254 2.460 2.675 3.132 4.148	0.064 0.086 0.111 0.172 0.338
PCS 1900MHz 4x45W-65MHz (E)	A	From Leg	2.000 0.000 1.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz (E)	B	From Leg	2.000 0.000 1.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz (E)	C	From Leg	2.000 0.000 1.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz (E)	A	From Leg	2.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz (E)	B	From Leg	2.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz (E)	C	From Leg	2.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
Collar Mount [SO 102-3] (E)	C	None		0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.000 3.480 3.960 4.920 6.840	3.000 3.480 3.960 4.920 6.840	0.081 0.111 0.141 0.201 0.321
^									
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
P40-16-XLPP-RR-A w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.373 9.912 10.450 11.556 13.892	4.825 5.571 6.265 7.803 11.107	0.073 0.136 0.205 0.368 0.816

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
IBC1900BB-1 (E)	A	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
IBC1900BB-1 (E)	B	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
IBC1900BB-1 (E)	C	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
IBC1900HG-2A (E)	A	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
IBC1900HG-2A (E)	B	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
IBC1900HG-2A (E)	C	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.127 1.273 1.427 1.761 2.534	0.533 0.647 0.770 1.041 1.688	0.022 0.030 0.039 0.065 0.147
TD-RRH8x20-25 (P)	A	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.720 5.014 5.316 5.948 7.314	1.703 1.920 2.145 2.622 3.680	0.070 0.097 0.128 0.201 0.397
APXVTM14-C-120 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.134 7.662 8.183 9.256 11.526	4.959 5.754 6.472 8.010 11.412	0.074 0.128 0.190 0.335 0.749
TD-RRH8x20-25 (P)	B	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.720 5.014 5.316 5.948 7.314	1.703 1.920 2.145 2.622 3.680	0.070 0.097 0.128 0.201 0.397
APXVTM14-C-120 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 2.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.134 7.662 8.183 9.256 11.526	4.959 5.754 6.472 8.010 11.412	0.074 0.128 0.190 0.335 0.749
TD-RRH8x20-25 (P)	C	From Leg	4.000 0.000	0.000	102.000	No Ice 1/2" Ice	4.720 5.014	1.703 1.920	0.070 0.097

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	102.000	No Ice	7.134	4.959	0.074
(P)			0.000			1/2" Ice	7.662	5.754	0.128
			2.000			1" Ice	8.183	6.472	0.190
						2" Ice	9.256	8.010	0.335
						4" Ice	11.526	11.412	0.749
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.000	0.000	102.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			2.000			1" Ice	5.905	4.086	0.126
						2" Ice	6.788	5.313	0.232
						4" Ice	8.704	8.131	0.544
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.000	0.000	102.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			2.000			1" Ice	5.905	4.086	0.126
						2" Ice	6.788	5.313	0.232
						4" Ice	8.704	8.131	0.544
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.000	0.000	102.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			2.000			1" Ice	5.905	4.086	0.126
						2" Ice	6.788	5.313	0.232
						4" Ice	8.704	8.131	0.544
WIMAX DAP HEAD	A	From Leg	4.000	0.000	102.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
WIMAX DAP HEAD	B	From Leg	4.000	0.000	102.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
WIMAX DAP HEAD	C	From Leg	4.000	0.000	102.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
HORIZON COMPACT	B	From Leg	4.000	0.000	102.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			6.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
HORIZON COMPACT	C	From Leg	4.000	0.000	102.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			6.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
Platform Mount [LP 602-1]	C	None		0.000	102.000	No Ice	32.030	32.030	1.343
(E)						1/2" Ice	38.710	38.710	1.800
						1" Ice	45.390	45.390	2.257
						2" Ice	58.750	58.750	3.170
						4" Ice	85.470	85.470	4.998
^									
742 213	A	From Leg	0.500	0.000	94.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078

Description	Face or Leg	Offset Type	Offsets: Horz Lateral (ft) Vert (ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (K)
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
742 213	B	From Leg	0.500	0.000	94.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
742 213	C	From Leg	0.500	0.000	94.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
Pipe Mount [PM 602-3]	C	None		0.000	94.000	No Ice	7.680	7.680	0.279
(E)						1/2" Ice	9.500	9.500	0.353
						1" Ice	11.320	11.320	0.427
						2" Ice	14.960	14.960	0.576
						4" Ice	22.240	22.240	0.873
^									
BCD-87010	A	From Leg	2.000	0.000	74.000	No Ice	2.903	2.903	0.027
(E)			0.000			1/2" Ice	4.050	4.050	0.048
			6.000			1" Ice	5.213	5.213	0.077
						2" Ice	7.015	7.015	0.157
						4" Ice	9.848	9.848	0.410
Side Arm Mount [SO 701-1]	A	From Leg	1.000	0.000	74.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
^									
KS24019-L112A	C	From Leg	2.000	0.000	40.000	No Ice	0.156	0.156	0.005
(E)			0.000			1/2" Ice	0.225	0.225	0.007
			1.000			1" Ice	0.302	0.302	0.009
						2" Ice	0.484	0.484	0.018
						4" Ice	0.951	0.951	0.056
Side Arm Mount [SO 701-1]	C	From Leg	1.000	0.000	40.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
^									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral (ft) Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (K)
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.000	3.000		102.000	2.917	No Ice	6.681	0.048
(E)				0.000					1/2" Ice	7.069	0.084
				6.000					1" Ice	7.456	0.120

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-180 (E) *^*	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 6.000	86.000		102.000	2.000	2" Ice 4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.230 9.779 3.140 3.410 3.670 4.210 5.280	0.193 0.338 0.030 0.040 0.060 0.090 0.160

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 86.8333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-34.613	-0.469	3.480
			Max. Mx	11	-15.906	656.307	3.353
			Max. My	2	-15.907	3.678	659.974
			Max. Vy	11	-25.444	656.307	3.353
			Max. Vx	8	25.394	-3.015	-659.375
			Max. Torque	5			1.814
L2	86.8333 - 38	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-54.881	-3.375	10.094
			Max. Mx	11	-28.292	2049.138	14.422
			Max. My	2	-28.293	15.437	2050.722
			Max. Vy	11	-33.174	2049.138	14.422
			Max. Vx	8	33.094	-13.259	-2048.331
			Max. Torque	11			-2.244
L3	38 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-79.919	-6.374	16.219
			Max. Mx	11	-45.741	3696.482	25.049
			Max. My	2	-45.741	26.929	3695.823
			Max. Vy	11	-39.996	3696.482	25.049
			Max. Vx	8	39.929	-23.237	-3692.074
			Max. Torque	11			-2.565

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	79.919	0.072	11.578
	Max. H_x	11	45.759	39.976	0.217
	Max. H_z	2	45.759	0.261	39.902
	Max. M_x	2	3695.823	0.261	39.902
	Max. M_z	5	3692.455	-39.926	-0.221
	Max. Torsion	4	2.373	-34.533	19.790
	Min. Vert	1	45.759	0.000	0.000
	Min. H_x	5	45.759	-39.926	-0.221
	Min. H_z	8	45.759	-0.214	-39.909
	Min. M_x	8	-3692.074	-0.214	-39.909
	Min. M_z	11	-3696.482	39.976	0.217
	Min. Torsion	11	-2.565	39.976	0.217

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	45.759	0.000	0.000	-2.197	-0.724	0.000
Dead+Wind 0 deg - No Ice	45.759	-0.261	-39.902	-3695.823	26.929	-0.538
Dead+Wind 30 deg - No Ice	45.759	19.840	-34.481	-3193.236	-1834.007	-1.551
Dead+Wind 60 deg - No Ice	45.759	34.533	-19.790	-1832.226	-3193.632	-2.373
Dead+Wind 90 deg - No Ice	45.759	39.926	0.221	21.034	-3692.455	-2.359
Dead+Wind 120 deg - No Ice	45.759	34.639	20.078	1857.670	-3204.201	-1.819
Dead+Wind 150 deg - No Ice	45.759	20.106	34.603	3201.112	-1861.432	-0.765

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 180 deg - No Ice	45.759	0.214	39.909	3692.074	-23.237	0.533
Dead+Wind 210 deg - No Ice	45.759	-19.783	34.522	3193.287	1826.284	1.625
Dead+Wind 240 deg - No Ice	45.759	-34.580	19.731	1821.295	3197.305	2.461
Dead+Wind 270 deg - No Ice	45.759	-39.976	-0.217	-25.049	3696.482	2.565
Dead+Wind 300 deg - No Ice	45.759	-34.671	-20.090	-1863.479	3206.276	2.040
Dead+Wind 330 deg - No Ice	45.759	-20.138	-34.625	-3207.999	1863.539	0.933
Dead+Ice+Temp	79.919	0.000	-0.000	-16.219	-6.374	-0.000
Dead+Wind 0 deg+Ice+Temp	79.919	-0.072	-11.578	-1117.158	1.232	-0.086
Dead+Wind 30 deg+Ice+Temp	79.919	5.760	-10.005	-967.441	-553.348	-0.522
Dead+Wind 60 deg+Ice+Temp	79.919	10.026	-5.744	-561.985	-958.823	-0.873
Dead+Wind 90 deg+Ice+Temp	79.919	11.593	0.062	-9.776	-1107.756	-0.936
Dead+Wind 120 deg+Ice+Temp	79.919	10.058	5.827	537.923	-962.117	-0.780
Dead+Wind 150 deg+Ice+Temp	79.919	5.837	10.042	938.449	-561.387	-0.408
Dead+Wind 180 deg+Ice+Temp	79.919	0.060	11.580	1084.659	-12.786	0.085
Dead+Wind 210 deg+Ice+Temp	79.919	-5.746	10.016	935.892	538.866	0.541
Dead+Wind 240 deg+Ice+Temp	79.919	-10.038	5.729	527.584	947.300	0.893
Dead+Wind 270 deg+Ice+Temp	79.919	-11.605	-0.061	-22.796	1096.289	0.991
Dead+Wind 300 deg+Ice+Temp	79.919	-10.066	-5.829	-570.957	950.132	0.839
Dead+Wind 330 deg+Ice+Temp	79.919	-5.845	-10.047	-971.754	549.418	0.452
Dead+Wind 0 deg - Service	45.759	-0.102	-15.587	-1445.555	10.075	-0.212
Dead+Wind 30 deg - Service	45.759	7.750	-13.469	-1249.160	-717.106	-0.608
Dead+Wind 60 deg - Service	45.759	13.490	-7.731	-717.329	-1248.394	-0.929
Dead+Wind 90 deg - Service	45.759	15.596	0.086	6.852	-1443.318	-0.923
Dead+Wind 120 deg - Service	45.759	13.531	7.843	724.542	-1252.530	-0.711
Dead+Wind 150 deg - Service	45.759	7.854	13.517	1249.511	-727.826	-0.299
Dead+Wind 180 deg - Service	45.759	0.084	15.589	1441.358	-9.528	0.208
Dead+Wind 210 deg - Service	45.759	-7.728	13.485	1246.447	713.193	0.636
Dead+Wind 240 deg - Service	45.759	-13.508	7.708	710.325	1248.934	0.963
Dead+Wind 270 deg - Service	45.759	-15.615	-0.085	-11.155	1443.996	1.005
Dead+Wind 300 deg - Service	45.759	-13.543	-7.848	-729.545	1252.445	0.799
Dead+Wind 330 deg - Service	45.759	-7.867	-13.525	-1254.935	727.754	0.365

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-45.759	0.000	0.000	45.759	0.000	0.000%
2	-0.261	-45.759	-39.902	0.261	45.759	39.902	0.000%
3	19.840	-45.759	-34.481	-19.840	45.759	34.481	0.000%
4	34.533	-45.759	-19.790	-34.533	45.759	19.790	0.000%
5	39.926	-45.759	0.221	-39.926	45.759	-0.221	0.000%
6	34.639	-45.759	20.078	-34.639	45.759	-20.078	0.000%
7	20.106	-45.759	34.603	-20.106	45.759	-34.603	0.000%
8	0.214	-45.759	39.909	-0.214	45.759	-39.909	0.000%
9	-19.783	-45.759	34.522	19.783	45.759	-34.522	0.000%
10	-34.580	-45.759	19.731	34.580	45.759	-19.731	0.000%
11	-39.976	-45.759	-0.217	39.976	45.759	0.217	0.000%
12	-34.671	-45.759	-20.090	34.671	45.759	20.090	0.000%
13	-20.138	-45.759	-34.625	20.138	45.759	34.625	0.000%
14	0.000	-79.919	0.000	-0.000	79.919	0.000	0.000%
15	-0.072	-79.919	-11.578	0.072	79.919	11.578	0.000%
16	5.760	-79.919	-10.005	-5.760	79.919	10.005	0.000%
17	10.026	-79.919	-5.744	-10.026	79.919	5.744	0.000%
18	11.593	-79.919	0.062	-11.593	79.919	-0.062	0.000%
19	10.058	-79.919	5.826	-10.058	79.919	-5.827	0.000%
20	5.837	-79.919	10.042	-5.837	79.919	-10.042	0.000%
21	0.060	-79.919	11.580	-0.060	79.919	-11.580	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
22	-5.746	-79.919	10.016	5.746	79.919	-10.016	0.000%
23	-10.037	-79.919	5.729	10.038	79.919	-5.729	0.000%
24	-11.605	-79.919	-0.061	11.605	79.919	0.061	0.000%
25	-10.066	-79.919	-5.829	10.066	79.919	5.829	0.000%
26	-5.845	-79.919	-10.047	5.845	79.919	10.047	0.000%
27	-0.102	-45.759	-15.587	0.102	45.759	15.587	0.000%
28	7.750	-45.759	-13.469	-7.750	45.759	13.469	0.000%
29	13.490	-45.759	-7.731	-13.490	45.759	7.731	0.000%
30	15.596	-45.759	0.086	-15.596	45.759	-0.086	0.000%
31	13.531	-45.759	7.843	-13.531	45.759	-7.843	0.000%
32	7.854	-45.759	13.517	-7.854	45.759	-13.517	0.000%
33	0.084	-45.759	15.589	-0.084	45.759	-15.589	0.000%
34	-7.728	-45.759	13.485	7.728	45.759	-13.485	0.000%
35	-13.508	-45.759	7.708	13.508	45.759	-7.708	0.000%
36	-15.615	-45.759	-0.085	15.615	45.759	0.085	0.000%
37	-13.543	-45.759	-7.848	13.543	45.759	7.848	0.000%
38	-7.867	-45.759	-13.525	7.867	45.759	13.525	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00004945
3	Yes	4	0.00000001	0.00084065
4	Yes	4	0.00000001	0.00091123
5	Yes	4	0.00000001	0.00006581
6	Yes	4	0.00000001	0.00085674
7	Yes	4	0.00000001	0.00089046
8	Yes	4	0.00000001	0.00002640
9	Yes	4	0.00000001	0.00089850
10	Yes	4	0.00000001	0.00082193
11	Yes	4	0.00000001	0.00009844
12	Yes	4	0.00000001	0.00091698
13	Yes	4	0.00000001	0.00087781
14	Yes	4	0.00000001	0.00001217
15	Yes	4	0.00000001	0.00062401
16	Yes	4	0.00000001	0.00067653
17	Yes	4	0.00000001	0.00067786
18	Yes	4	0.00000001	0.00061707
19	Yes	4	0.00000001	0.00066399
20	Yes	4	0.00000001	0.00066288
21	Yes	4	0.00000001	0.00060399
22	Yes	4	0.00000001	0.00065351
23	Yes	4	0.00000001	0.00065250
24	Yes	4	0.00000001	0.00061213
25	Yes	4	0.00000001	0.00067721
26	Yes	4	0.00000001	0.00067799
27	Yes	4	0.00000001	0.00001362
28	Yes	4	0.00000001	0.00007571
29	Yes	4	0.00000001	0.00009010
30	Yes	4	0.00000001	0.00001888
31	Yes	4	0.00000001	0.00007738
32	Yes	4	0.00000001	0.00008342
33	Yes	4	0.00000001	0.00001237
34	Yes	4	0.00000001	0.00008701

35	Yes	4	0.00000001	0.00007298
36	Yes	4	0.00000001	0.00002218
37	Yes	4	0.00000001	0.00008920
38	Yes	4	0.00000001	0.00008080

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	20.051	38	1.183	0.003
L2	92.5 - 38	9.124	38	0.929	0.001
L3	45 - 0	2.143	38	0.429	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142.000	BXA-70063/6CF w/ Mount Pipe	38	20.051	1.183	0.003	58709
126.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	38	16.634	1.127	0.002	20967
115.000	(2) 7770.00 w/ Mount Pipe	38	14.022	1.076	0.002	11741
108.000	VHLP2.5-11	38	12.421	1.038	0.002	9172
103.000	800MHz 2X50W RRH W/FILTER	38	11.316	1.007	0.002	7933
102.000	APXVSPP18-C-A20 w/ Mount Pipe	38	11.099	1.000	0.002	7724
94.000	742 213	38	9.425	0.942	0.001	6404
74.000	BCD-87010	38	5.787	0.751	0.001	5343
40.000	KS24019-L112A	38	1.733	0.376	0.000	4956

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	51.237	13	3.023	0.008
L2	92.5 - 38	23.324	13	2.376	0.004
L3	45 - 0	5.479	13	1.097	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142.000	BXA-70063/6CF w/ Mount Pipe	13	51.237	3.023	0.008	23089
126.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	42.509	2.880	0.006	8245

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.000	(2) 7770.00 w/ Mount Pipe	13	35.837	2.750	0.005	4616
108.000	VHLP2.5-11	13	31.747	2.652	0.005	3605
103.000	800MHz 2X50W RRH W/FILTER	13	28.924	2.574	0.004	3117
102.000	APXVSPP18-C-A20 w/ Mount Pipe	13	28.370	2.557	0.004	3035
94.000	742 213	13	24.093	2.407	0.004	2516
74.000	BCD-87010	13	14.795	1.921	0.002	2096
40.000	KS24019-L112A	13	4.432	0.962	0.001	1939

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	53.167	0.000	0.0	39.000	37.759	-15.898	1472.590	0.011
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	54.500	0.000	0.0	39.000	63.365	-28.288	2471.220	0.011
L3	38 - 0 (3)	TP59.05x48.033x0.5	45.000	0.000	0.0	39.000	94.266	-45.741	3676.350	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	660.851	22.904	39.000	0.587	0.000	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	2058.233	32.931	39.000	0.844	0.000	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	3709.992	33.015	39.000	0.847	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	25.532	0.676	26.000	0.053	0.013	0.000	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	33.238	0.525	26.000	0.041	0.682	0.005	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	40.076	0.425	26.000	0.033	0.933	0.004	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 86.8333 (1)	0.011	0.587	0.000	0.053	0.000	0.599 ✔	1.333	H1-3+VT ✔
L2	86.8333 - 38 (2)	0.011	0.844	0.000	0.041	0.000	0.856 ✔	1.333	H1-3+VT ✔
L3	38 - 0 (3)	0.012	0.847	0.000	0.033	0.000	0.859 ✔	1.333	H1-3+VT ✔

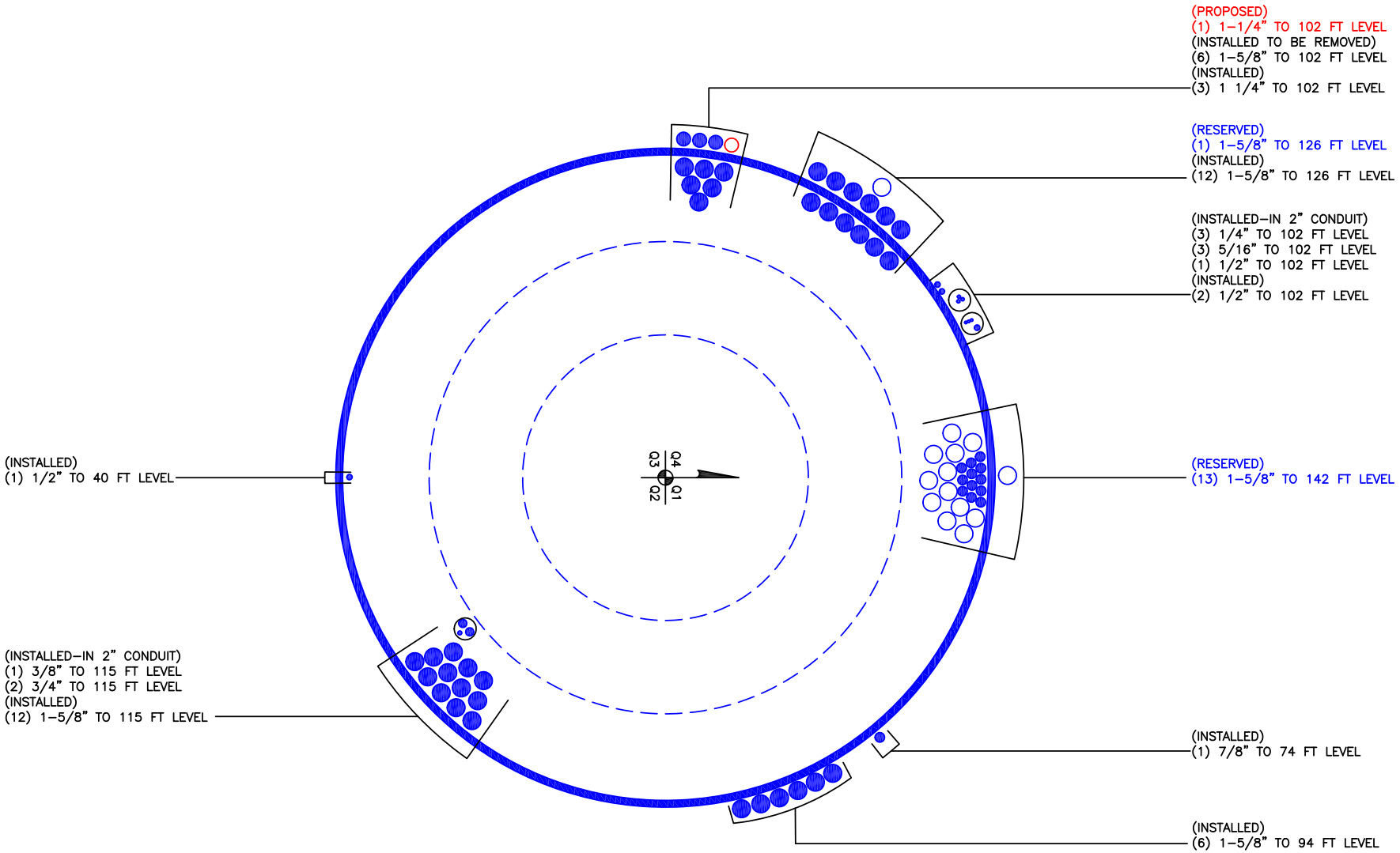
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.313	1	-15.898	1962.962	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.212x0.406	2	-28.288	3294.136	64.2	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-45.741	4900.574	64.5	Pass
							Summary	
						Pole (L3)	64.5	Pass
						RATING =	**64.5**	**Pass**

Program Version 6.1.4.1

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED)
(1) 1–1/4" TO 102 FT LEVEL
(INSTALLED TO BE REMOVED)
(6) 1–5/8" TO 102 FT LEVEL
(INSTALLED)
(3) 1 1/4" TO 102 FT LEVEL
(RESERVED)
(1) 1–5/8" TO 126 FT LEVEL
(INSTALLED)
(12) 1–5/8" TO 126 FT LEVEL
(INSTALLED–IN 2" CONDUIT)
(3) 1/4" TO 102 FT LEVEL
(3) 5/16" TO 102 FT LEVEL
(1) 1/2" TO 102 FT LEVEL
(INSTALLED)
(2) 1/2" TO 102 FT LEVEL
(INSTALLED)
(1) 1/2" TO 40 FT LEVEL
Q4
Q3
Q1
Q2
(RESERVED)
(13) 1–5/8" TO 142 FT LEVEL
(INSTALLED–IN 2" CONDUIT)
(1) 3/8" TO 115 FT LEVEL
(2) 3/4" TO 115 FT LEVEL
(INSTALLED)
(12) 1–5/8" TO 115 FT LEVEL
(INSTALLED)
(1) 7/8" TO 74 FT LEVEL
(INSTALLED)
(6) 1–5/8" TO 94 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#:	*806369*
Site Name:	*HRT 094 943225, CT*
App #:	*205578, Rev: 2*
Pole Manufacturer:	*Other*

Reactions

Moment:	3710	ft-kips
Axial:	46	kips
Shear:	40	kips

Anchor Rod Data

Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65.05	in

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

Anchor Rod Results

Maximum Rod Tension:	134.6 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	69.0% **Pass**	Fty*ASIF

Plate Data

Diam:	71.05	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	9.49	in

Base Plate Results

Base Plate Results	Flexural Check	Rigid
Base Plate Stress:	19.3 ksi	Service ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	32.2% **Pass**	Y.L. Length: 27.29

Stiffener Data (Welding at both sides)

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

n/a

Stiffener Results

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

Pole Data

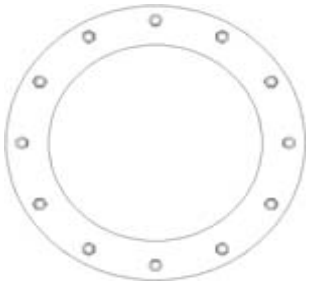
Diam:	59.05	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

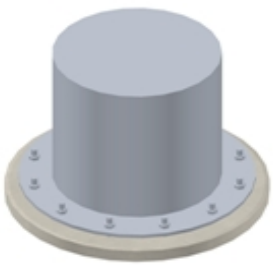
Pole Results

Pole Punching Shear Check:	n/a

Stress Increase Factor

ASIF:	1.333	





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

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

CCI Foundation Tool Suite - Monopole Pier - Beta Release

CCI Foundation Tool Suite - v1.0 Date: 1/8/2014

BU:	806369
Site Name:	HRT 094 943225,CT
App Number:	205578, Rev#2
Work Order:	695222

Monopole Drilled Pier

Input

Criteria

TIA Revision:	F
ACI 318 Revision:	2002
Seismic Category:	B

Forces

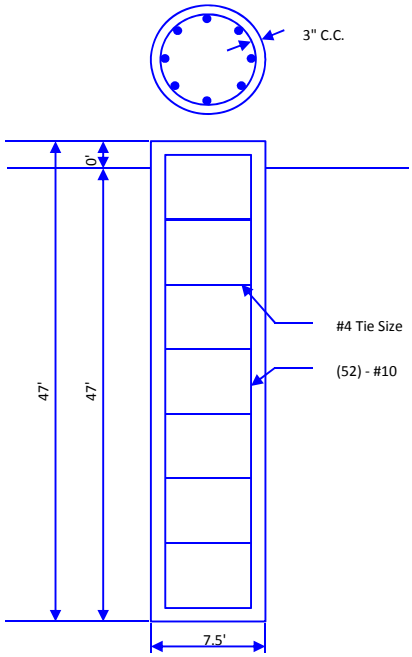
Compression	46	kips
Shear	40	kips
Moment	3710	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	7.5	ft
Ext. above grade:	0	ft
Depth below grade:	47	ft

Material Properties

Number of Rebar:	52	
Rebar Size:	10	
Tie Size	4	
Rebar tensile strength:	60	ksi
Concrete Strength:	3000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	3	in



Soil Profile: Soil

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	2	0	2	105	0	0	0	0	0	
2	3	2	5	100	0	0	0	0	0	
3	5	5	10	100	500	30	0.6	0.6	0	
4	15	10	25	36	100	27	0.4	0.4	0	
5	10	25	35	36	100	27	0.6	0.6	0	
6	10	35	45	41	200		0.6	0.6	0	
7	2	45	47	41		32	1	1	9	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	8.40	ft
Max Moment, Mu:	3976.81	k-ft
Soil Safety Factor:	6.45	
Safety Factor Req'd:	2	
RATING:	31.0%	

Soil Axial Capacity

Skin Friction (k):	270.96	kips
End Bearing (k):	198.80	kips
Comp. Capacity (k), ϕCn:	469.77	kips
Comp. (k), Cu:	59.80	kips
RATING:	12.7%	

Concrete/Steel Check

Mu (from soil analysis)	5169.85	k-ft
ϕMn	10648.45	k-ft
RATING:	48.6%	

rho provided	1.04	
rho required	0.33	OK

Rebar Spacing	3.67	
Spacing required	20.32	OK

Dev. Length required	38.35	
Dev. Length provided	55.65	OK

Overall Foundation Rating: 48.6%

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

Sprint Existing Facility

Site ID: CT43XC805

Hartford Crown Atlantic

439-455 Homestead Avenue
Hartford, CT, 06105

March 19, 2014

EBI Project Number: 62141235

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

March 19, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT43XC805 - Hartford Crown Atlantic

Site Total: 96.592% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 439-455 Homestead Avenue, Hartford, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band (850 MHz Band) is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 439-455 Homestead Avenue, Hartford, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

1) 6 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications was used in this direction.

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20, the Powerwave P40-16-XLPP-RR-A and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The Powerwave P40-16-XLPP-RR-A has a 15.9 dBd gain value at its main lobe at 1900 MHz and 14.2 dBd at its main lobe for 850 MHz. The RFS APXVTMM-C-120 has a 15.9 dBd gain value at its main lobe at 2500 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.
7) The antenna mounting height centerline for the proposed antennas is **104 feet** above ground level (AGL).
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT43XC805 - Hartford Crown Atlantic
Site Addresss	439-455 Homestead Avenue, Hartford, CT, 06105
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	6	120	15.9	104	98	29.87076	1/2 "	0.5	3	17.378008	2085.361	78.06117	7.80612%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	104	98	29.87076	1/2 "	0.5	3	9.7723722	195.44744	7.316171	1.29033%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	104	98	29.87076	1/2 "	0.5	3	9.7723722	390.89489	14.63234	2.58066%
																Sector total Power Density Value:		11.677%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
2a	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	6	120	15.9	104	98	29.87076	1/2 "	0.5	3	17.378008	2085.361	78.06117	7.80612%
2a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	14.2	104	98	29.87076	1/2 "	0.5	3	11.748976	234.97951	8.795972	1.55132%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	104	98	29.87076	1/2 "	0.5	3	9.7723722	390.89489	14.63234	2.58066%
																Sector total Power Density Value:		11.938%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	6	120	15.9	104	98	29.87076	1/2 "	0.5	3	17.378008	2085.361	78.06117	7.80612%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	104	98	29.87076	1/2 "	0.5	3	9.7723722	195.44744	7.316171	1.29033%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	104	98	29.87076	1/2 "	0.5	3	9.7723722	390.89489	14.63234	2.58066%
																Sector total Power Density Value:		11.677%	

Site Composite MPE %	
Carrier	MPE %
Sprint	35.292%
Clearwire	1.670%
Sensus	2.100%
MetroPCS	13.760%
T-Mobile	0.210%
Verizon Wireless	19.690%
AT&T	23.870%
Total Site MPE %	**96.592%**

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Summary

All calculations performed for this analysis yielded results that were within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **35.292% (11.677% from sectors 1 & 3 and 11.938% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **96.592%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
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Burlington, MA 01803