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: 806373**
Sprint PCS Site ID: CT03XC092
Located at: 4 Oliver Road, Enfield, CT 06082

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 Scott R. Kaupin, Mayor for Town of Enfield.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **4 Oliver Road, Enfield, CT 06082**. 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: Honorable Scott R. Kaupin, Mayor
Town of Enfield
820 Enfield Street
Enfield, CT 06082-2997

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	HRT 101 943232
SITE CASCADE:	CT03XC092
SITE NUMBER:	806373
SITE ADDRESS:	4 OLIVER ROAD ENFIELD, CT 06082
SITE TYPE:	MONOPOLE
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
CROWN ATLANTIC COMPANY LLC
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
(704) 405-6555

LATITUDE (NAD83):
41° 57' 36.2" N
41.9594°

LONGITUDE (NAD83):
72° 35' 32.3" W
-72.5936°

COUNTY:
HARTFORD

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
TBD

POWER COMPANY:
CONNECTICUT LIGHT & POWER
(860) 947-2000

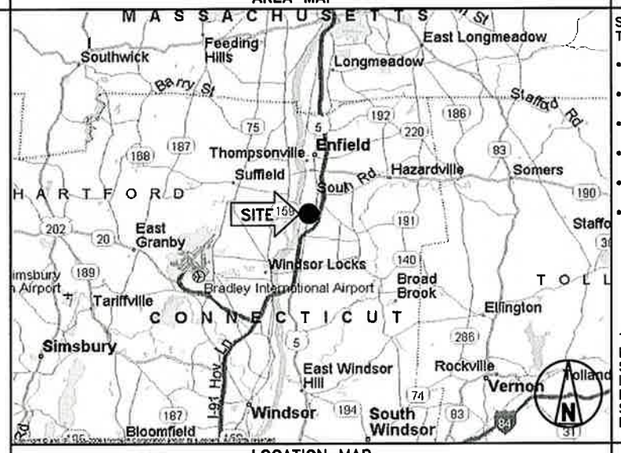
POWER COMPANY:
CONNECTICUT LIGHT & POWER
(860) 947-2000

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

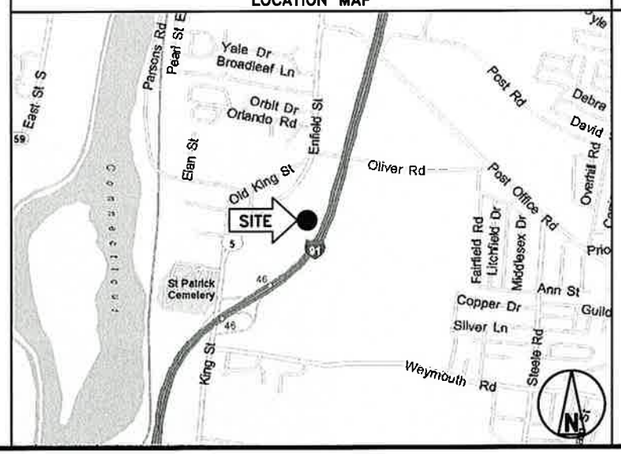
SPRINT CM:
PETER CULBERT
PHONE: 603-203-6446
603-969-0686
PETER.CULBERT@SPRINT.COM

CROWN 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 (8) BATTERIES IN EXISTING BBU CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (1) FIBER CABLE
- INSTALL (27) JUMPER CABLES

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

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/12/14	JLM	B
ISSUED FOR REVIEW	01/03/14	JLM	A

SITE NAME:
HRT 101 943232

SITE CASCADE:
CT03XC092

SITE ADDRESS:
4 OLIVER ROAD
ENFIELD, CT 06082

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/12/14	JLM	B
ISSUED FOR REVIEW	01/03/14	JLM	A

SITE NAME:

HRT 101 943232

SITE CASCADE:

CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
ENFIELD, CT 06082

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)

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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:

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HRT 101 943232

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CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
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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:
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1033 Watervliet Shaker Rd
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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
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ISSUED FOR REVIEW	01/03/14	JLM	A

SITE NAME:
HRT 101 943232

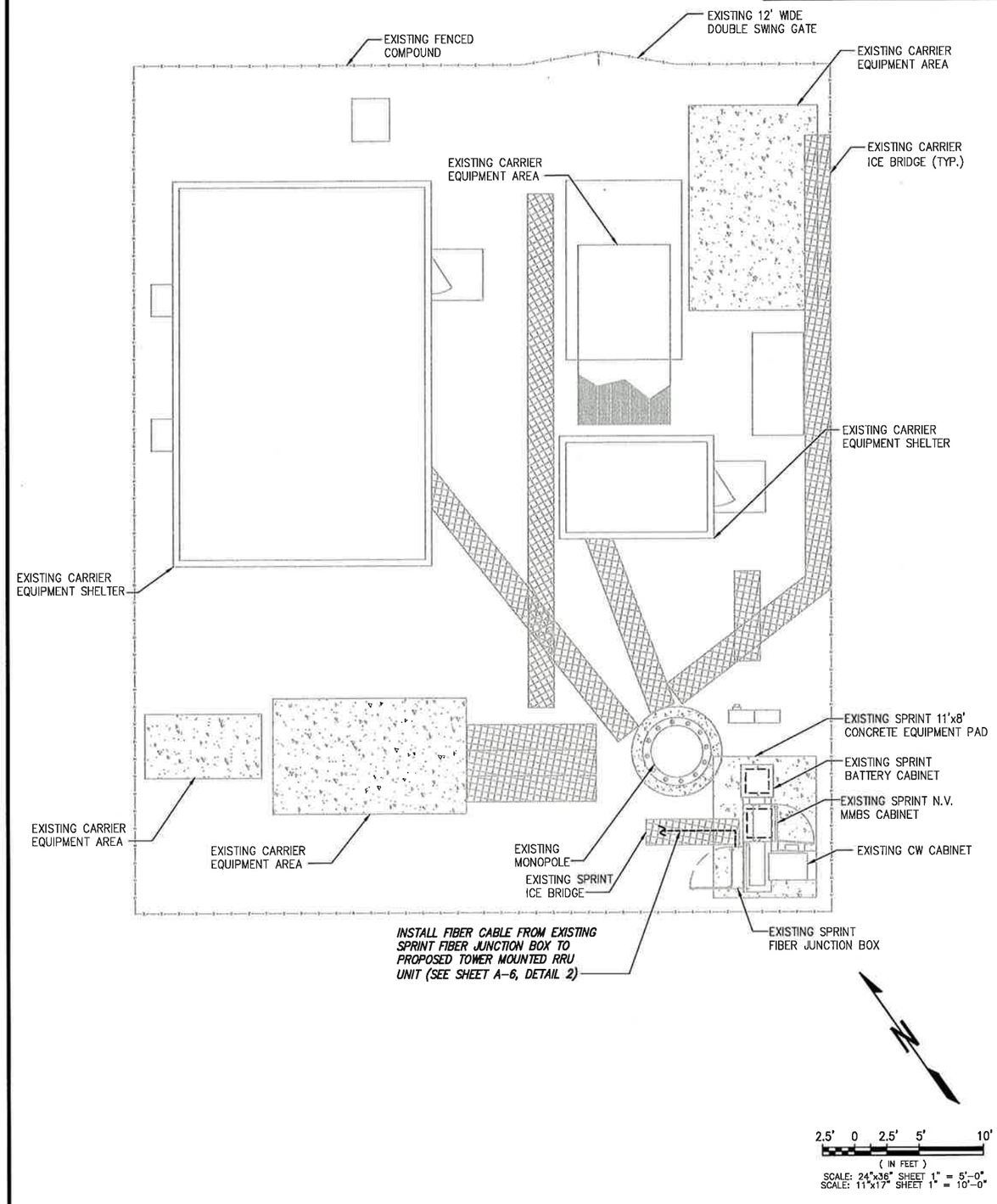
SITE CASCADE:
CT03XC092

SITE ADDRESS:
4 OLIVER ROAD
ENFIELD, CT 06082

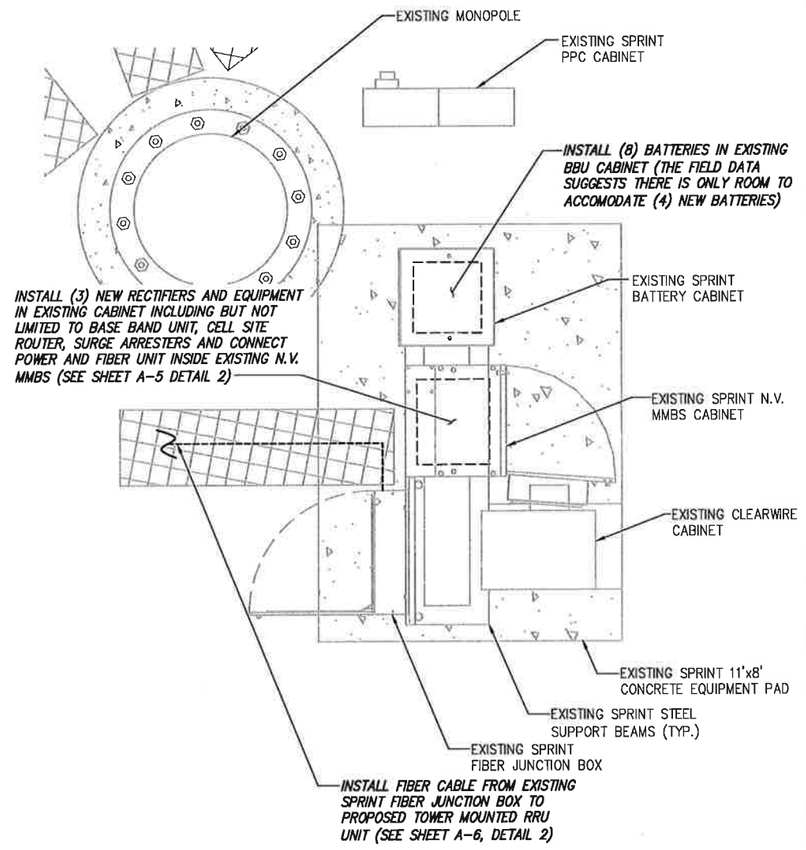
SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

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

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Overland Park, Kansas 66251

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SITE CASCADE:

CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
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SHEET DESCRIPTION:

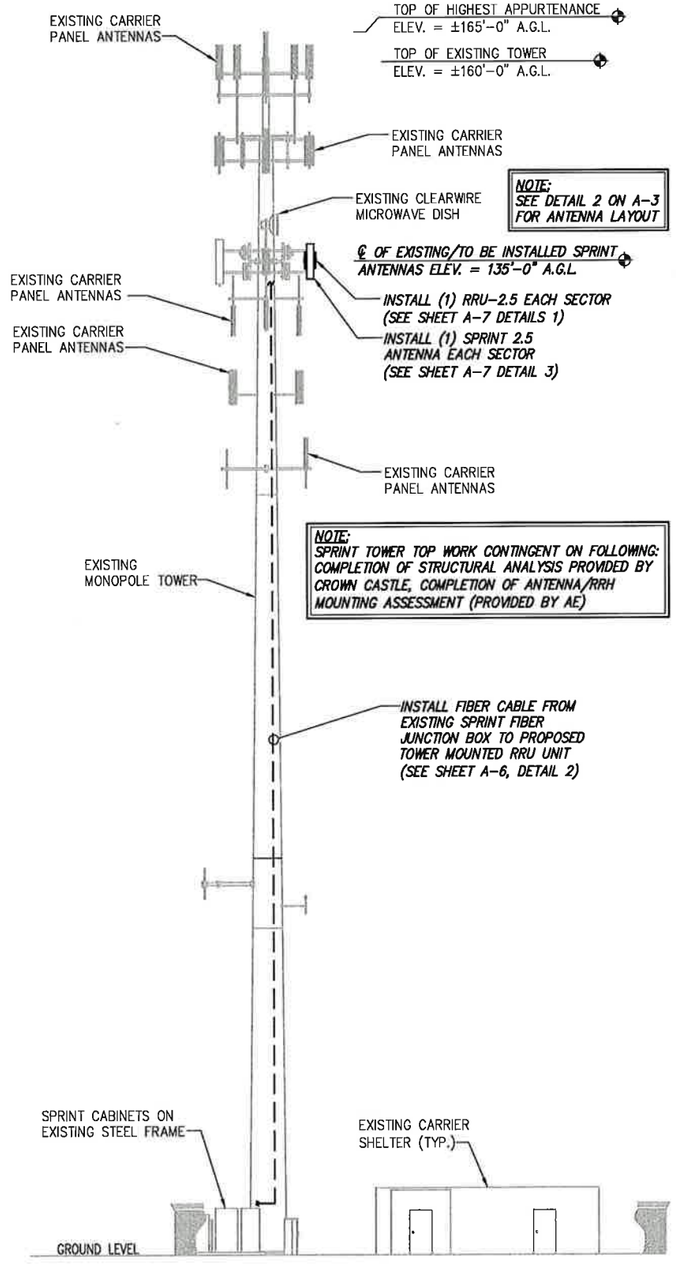
SITE PLAN

SHEET NUMBER:

A-1

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 PAUL J. FORD, DATED 1/22/14. 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. THE EXISTING ANTENNAS AT 127' AGL NEED TO BE REMOVED PRIOR TO THE INSTALLATION OF THE 2.5 EQUIPMENT ON THE TOWER.



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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4 OLIVER ROAD
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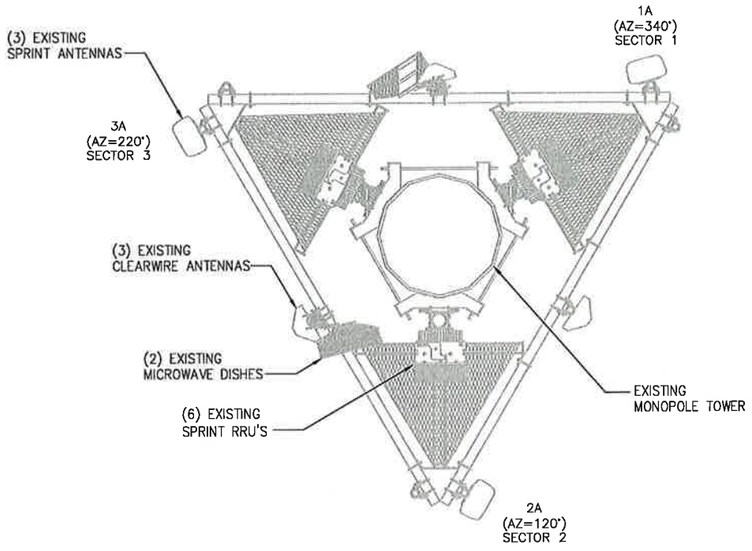
SHEET DESCRIPTION:

TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:

A-2

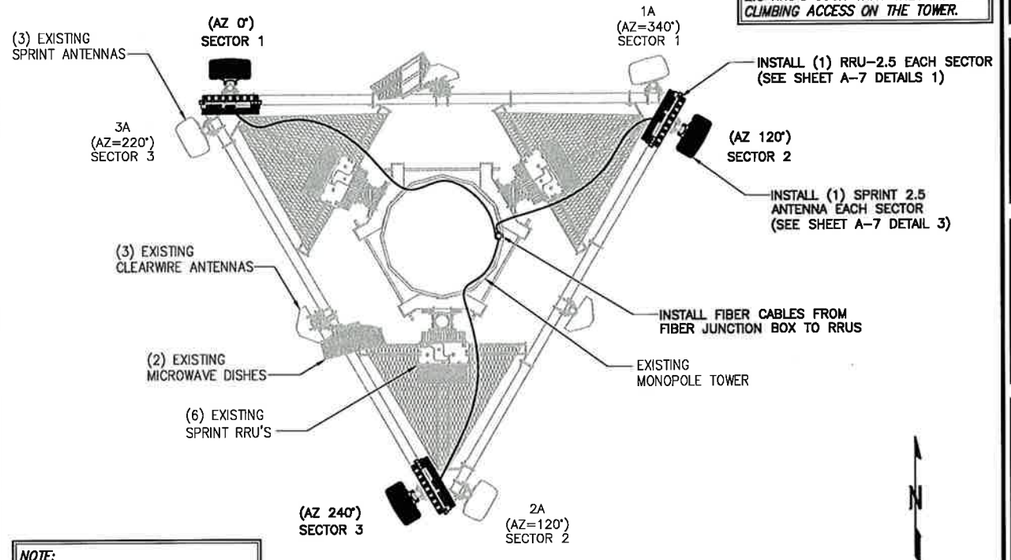


0° = TRUE NORTH

EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

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

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

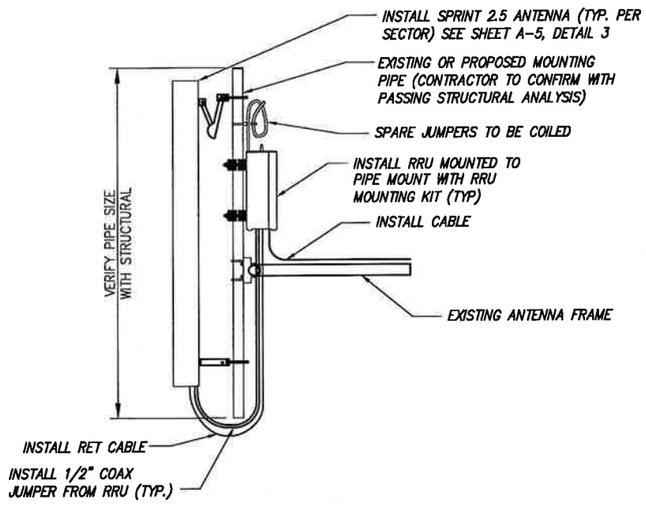


NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

0° = TRUE NORTH

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:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/12/14	JLM	B
ISSUED FOR REVIEW	01/03/14	JLM	A

SITE NAME:

HRT 101 943232

SITE CASCADE:

CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
ENFIELD, CT 06082

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

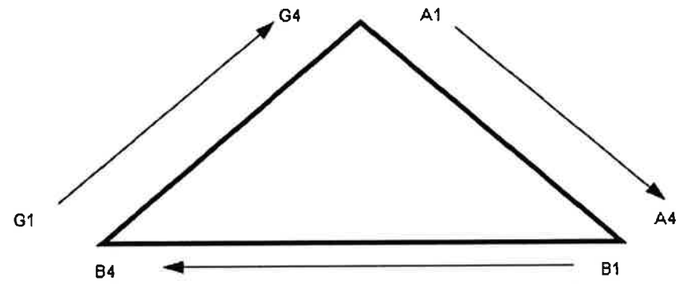
A-3

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

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

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

Figure 1: Antenna Orientation



NOTES:

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		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			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			
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

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

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

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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SITE NAME: HRT 101 943232

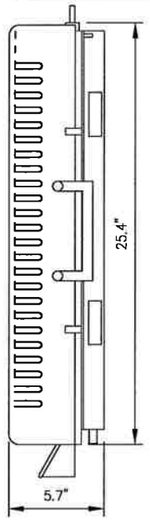
SITE CASCADE: CT03XC092

SITE ADDRESS: 4 OLIVER ROAD ENFIELD, CT 06082

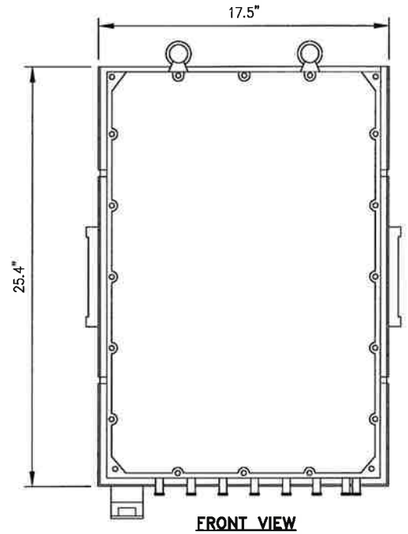
SHEET DESCRIPTION: COLOR CODING AND NOTES

SHEET NUMBER: A-4

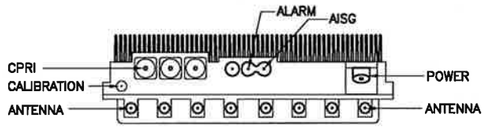
RRU: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GRAY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

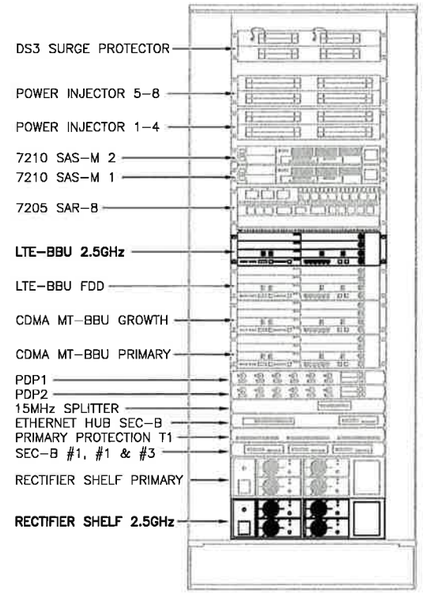


PLAN VIEW

NOTES

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

2.5 RRU'S | NO SCALE | 1

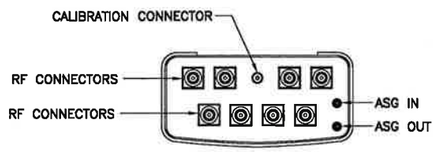


FRONT VIEW

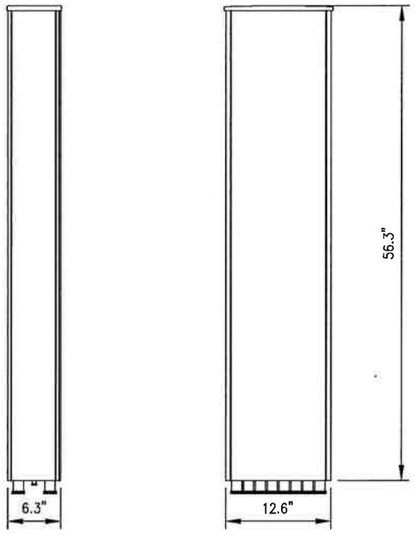
2.5 EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

ANTENNA RFS APXVTM14-C-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
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



SIDE VIEW FRONT 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:

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HRT 101 943232

SITE CASCADE:
CT03XC092

SITE ADDRESS:
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

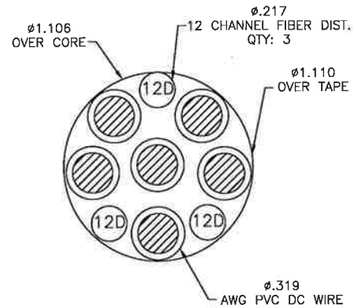
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

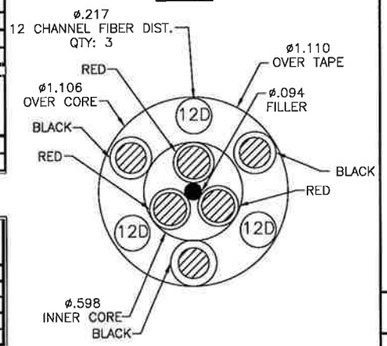
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

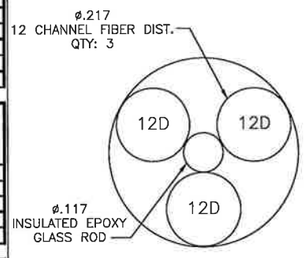
NOTE:
SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG

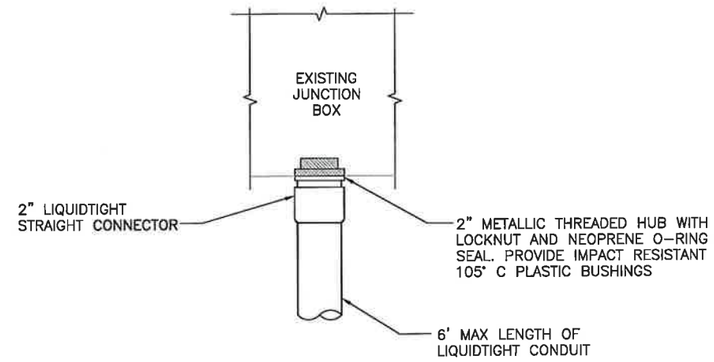


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
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CROWN CASTLE

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CT03XC092

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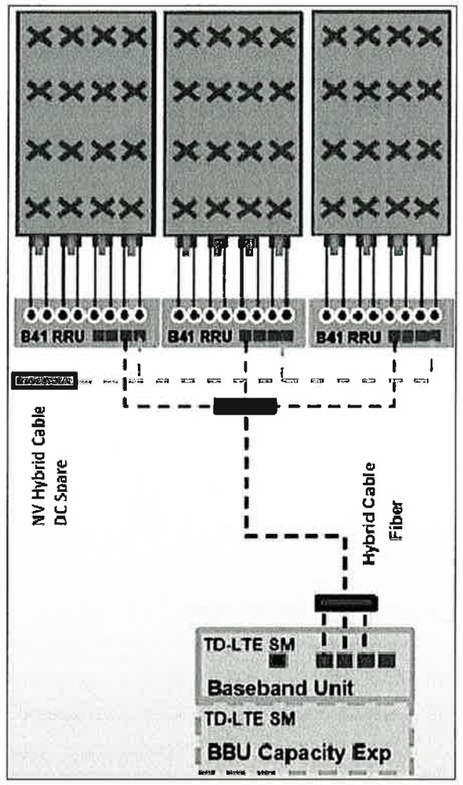
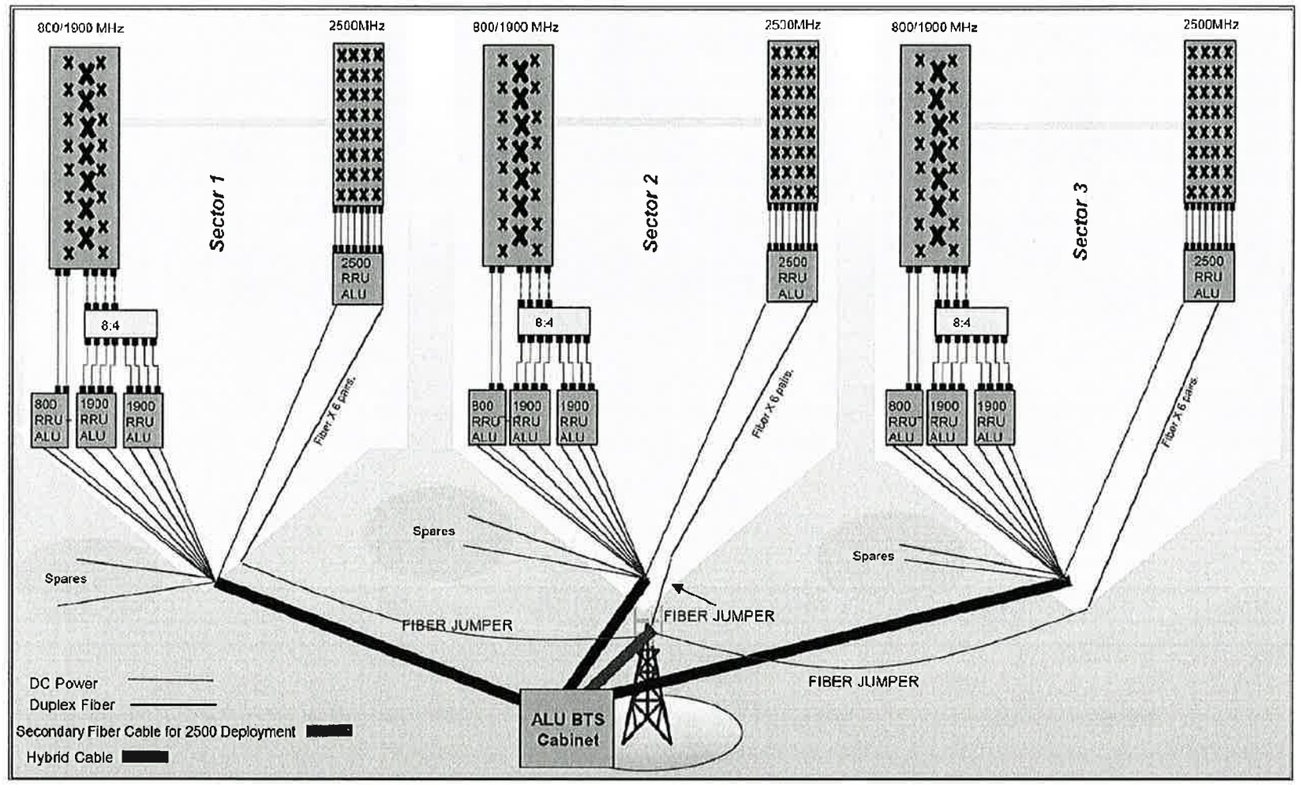
ENFIELD, CT 06082

SHEET DESCRIPTION:
CIVIL DETAILS

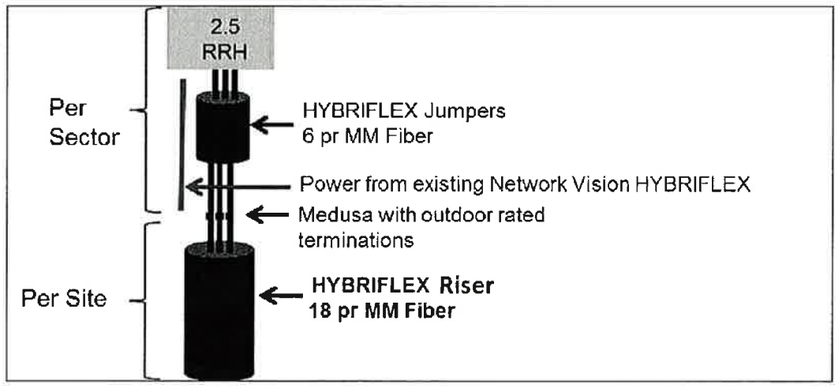
SHEET NUMBER:
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM | NO SCALE | 1

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Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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SITE CASCADE:

CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
ENFIELD, CT 06082

SHEET DESCRIPTION:

PLUMBING DIAGRAM

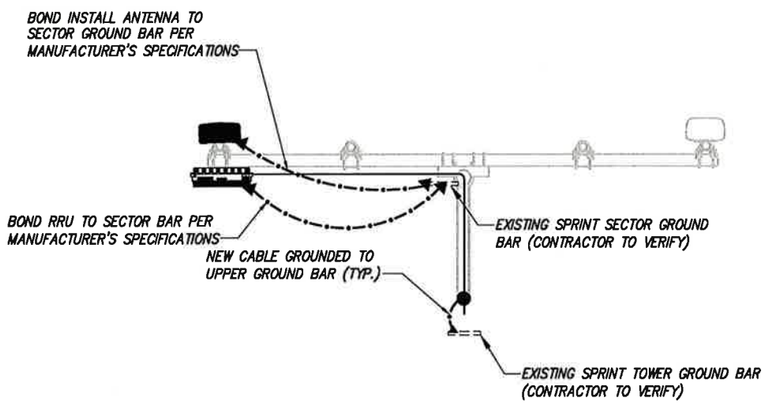
SHEET NUMBER:

A-7

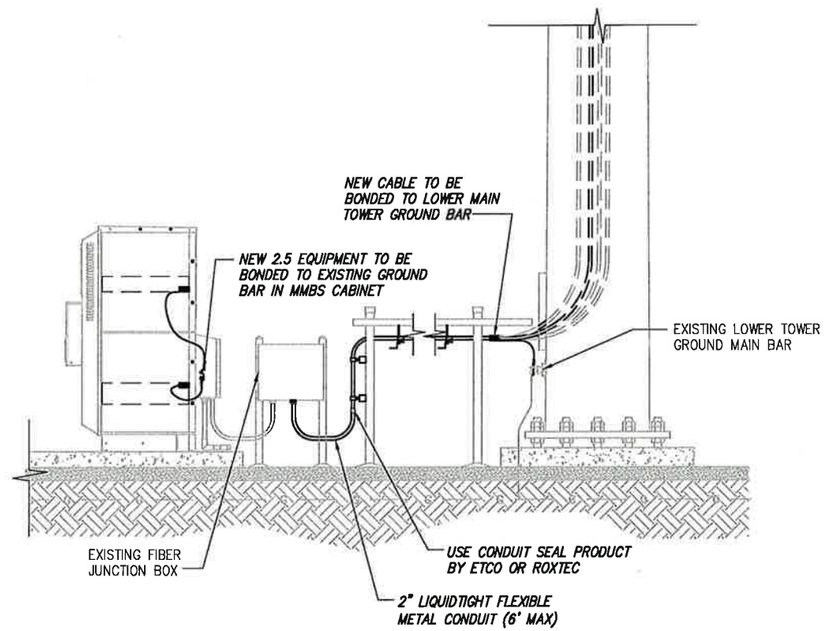
PLAN NOT USED | NO SCALE | 1

LEGEND:

---- G ----	EXISTING GROUND RING
■	CADWELD CONNECTION (EXOTHERMIC WELD)
▲	MECHANICAL CONNECTION
⊗	GROUND ROD
●	CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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ENFIELD, CT 06082

SHEET DESCRIPTION:

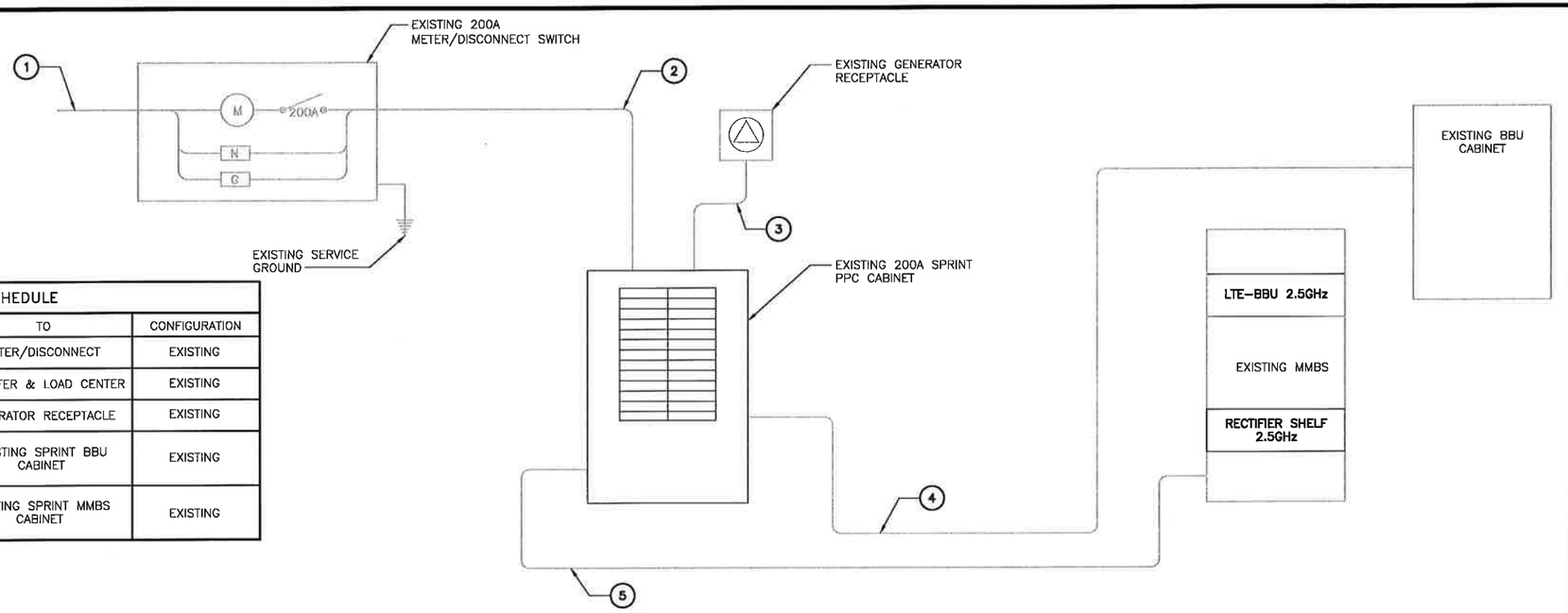
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

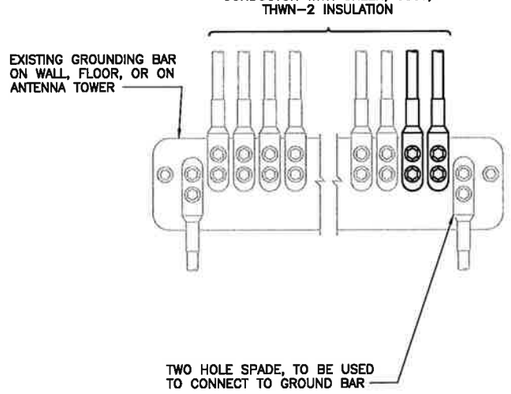
NOTES

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

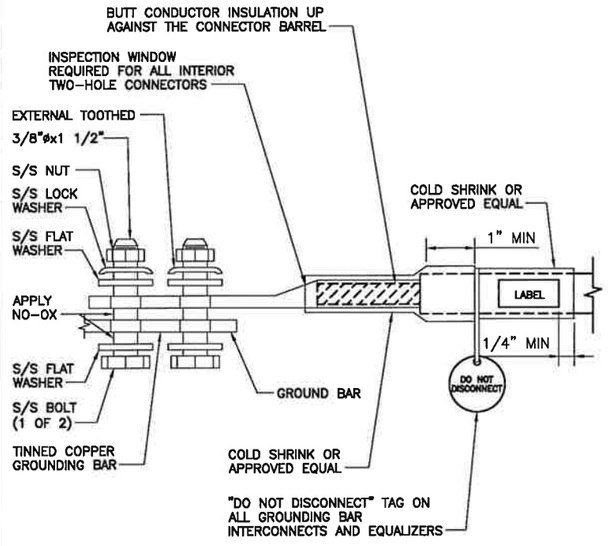
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



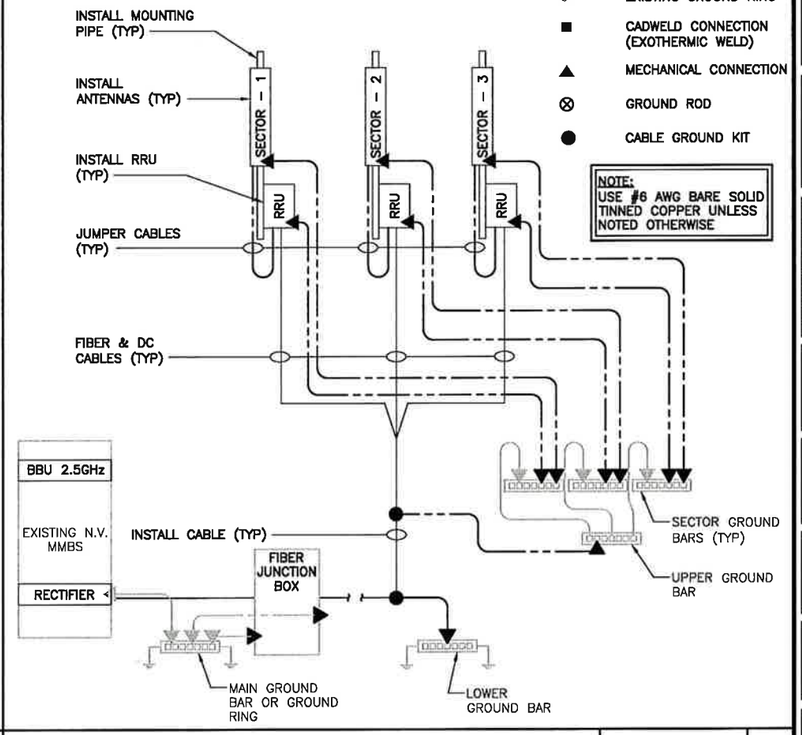
NOTES

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.

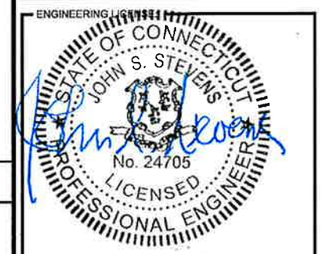
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:



DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS	02/12/14	JLM	B
ISSUED FOR REVIEW	01/03/14	JLM	A

SITE NAME:

HRT 101 943232

SITE CASCADE:

CT03XC092

SITE ADDRESS:

4 OLIVER ROAD
ENFIELD, CT 06082

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

January 12, 2014

Timothy Liebrock
Crown Castle
11 Grandview Circle Suite 220
Canonsburg, PA 15317
(724) 416-2961

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 - A
	Carrier Site Number:	CT03XC092
	Carrier Site Name:	ENFIELD (CROWN)
Crown Castle Designation:	**Crown Castle BU Number:**	806373
	Crown Castle Site Name:	HRT 101 943232
	Crown Castle JDE Job Number:	252878
	Crown Castle Work Order Number:	694156
	Crown Castle Application Number:	208129 Rev. 3
Engineering Firm Designation:	**B+T Group Project Number:**	89211.001.01
Site Data:	**4 Oliver Road, Enfield, Hartford County, CT** **Latitude *41° 57' 36.2"*, Longitude *-72° 35' 32.3"*** **160 Foot - Monopole Tower**	

Dear Timothy Liebrock,

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 606348, in accordance with application 208129, revision 3.

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:

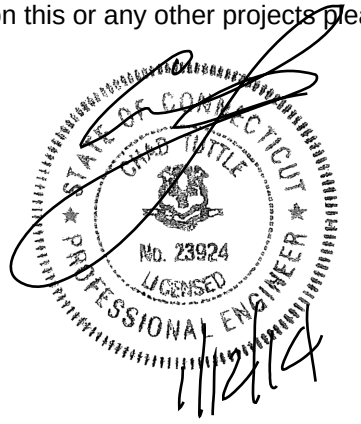
LC11: Existing + Reserved + Proposed Equipment **Insufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

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

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

Respectfully submitted by:
B+T Engineering, Inc.



Shardul Kadam, E.I.
Project Engineer

Chad E. Tuttle, P.E.
President

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by Valmont in November of 1991. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.This tower has been modified by PJF, in July of 2012 and those modifications are incorporated in this analysis.

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
135.0	135.0	3	Alcatel Lucent	TD-RRH8x20-25	1	5/8	--
		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
158.0	163.0	3	Andrew	SBNH-1D6565C	12 2 1	1 5/8 3/4 3/8	1
		3	Ericsson	RRUS-11			
		6	Powerwave Technologies	7770.00			
		6	Powerwave Technologies	LGP13519			
		6	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
	158.0	1	--	Platform Mount [LP 303-1]			
149.0	149.0	1	Antel	BXA-70063/6CF	--	--	2
		1	Antel	BXA-185063/8CF	12	1 5/8	1
		2	Antel	BXA-185090/8CFx2			
		1	Antel	BXA-70063/6CFx4			
		1	Antel	BXA-70063/6CFx6			
		2	Antel	LPA-80063/4CF			
		4	Antel	LPA-80080/4CF			
		6	Rfs Celwave	FD9R6004/2C-3L			
		1	--	Platform Mount [LP 602-1]			
137.0	138.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz	--	--	1
	137.0	1	--	Side Arm Mount [SO 102-3)			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	135.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER			
135.0	139.0	1	Andrew	VHLP2.5-11	3 6 1	1 1/4 1/4 1/2	1
	135.0	3	Argus Technologies	LLPX310R-V1			
		1	Dragonwave	HORIZON COMPACT			
		1	Motorola	TIMING 2000			
		1	Rfs Celwave	APXV9ERR18-C-A20			
		2	Rfs Celwave	APXVSPP18-C-A20			
		3	Samsung Telecommunications	WIMAX DAP HEAD			
		1	--	Platform Mount [LP 602-1]			
126.0	127.0	**9**	**Decibel**	**DB844H90E-XY**	**9**	**7/8**	**3**
	126.0	**1**	**--**	**T-Arm Mount [TA 901-3]**			
116.0	117.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1 5/8	2
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
		3	Ericsson	KRY 112 144/1			
	116.0	1	--	Side Arm Mount [SO 102-3)	6 6	1 1/4 1 5/8	1
		1	--	Side Arm Mount [SO 702-3]			
106.0	108.0	3	Andrew	ATM200-A20	6 1	7/8 5/16	1
		3	Andrew	HBX-6516DS-VTM			
	106.0	1	--	T-Arm Mount [TA 602-3]			
50.0	50.0	1	Symmetricom	58532A	1	1/2	2
		1	--	Platform Mount [LP 301-1]			
47.0	48.0	1	Lucent	KS24019-L112A	1	1/2	1
	47.0	1	--	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) iDEN 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)
147	147	1	Generic	Cellular Platform	--	--
		4	Generic	PD10017' 8		
134	134	1	Generic	Cellular Platform	--	--
		12	Generic	PD1132' 8		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint Co-locate, Rev#3	208129	CCI Sites
Tower Manufacturing Drawings	Valmont, Order#10614-91	822743	CCI Sites
Tower Modification Drawings	PJF, Project No:37512-1571	3277409	CCI Sites
Post Modification Inspection	TEP, Project No:128355	3747614	CCI Sites
Foundation Drawings	SAC Engineering Inc., Project No:1991-16	821581	CCI Sites
Geotech Reports	FDH, Project No:07-07210G	821582	CCI Sites
Antenna Configuration	Crown CAD Package	Date:12/26/2013	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.3.1), 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	160 - 150	Pole	TP20x20x0.25	1	-2.184	434.217	30.0	Pass
L2	150 - 149.5	Pole	TP20.403x20x0.25	2	-2.215	443.068	30.1	Pass
L3	149.5 - 120	Pole	TP26.45x20.403x0.25	3	-8.238	1096.440	81.9	Pass
L4	120 - 110.5	Pole	TP28.397x26.45x0.387	4	-10.377	1247.175	91.5	Pass
L5	110.5 - 97.1667	Pole	TP31.13x28.397x0.397	5	-12.661	1357.727	102.1	Pass Note:2
L6	97.1667 - 73.5	Pole	TP35.483x29.639x0.5	6	-19.612	2017.775	108.9	Fail ✘
L7	73.5 - 49.0833	Pole	TP40.49x35.483x0.486	7	-24.292	2182.094	121.3	Fail ✘
L8	49.0833 - 36.75	Pole	TP42.267x38.527x0.541	8	-32.443	2614.773	120.1	Fail ✘
L9	36.75 - 0	Pole	TP49.8x42.267x0.559	9	-44.972	3579.958	110.2	Fail ✘
							Summary	

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Pole (L7)	121.3	Fail ✘
						RATING =	**121.3**	**Fail** ✘

Table 6 - Tower Component Stresses vs. Capacity – LC 11

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Connection	150	57.3	Pass
1	Anchor Rods	Base	89.5	Pass
1	Base Plate	Base	61.3	Pass
1	Base Foundation (Soil Interaction)	Base	80.2	Pass

Structure Rating (max from all components) =	**121.3%**

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Capacities up to 100% are considered acceptable based on analysis methods used.

4.1) Recommendations

The tower does not have sufficient capacity to carry the existing, reserved, and proposed loads. Modifications will be required to bring the tower into compliance with the TIA-222-F standard for the proposed, reserved and existing loading. The following components require modifications:

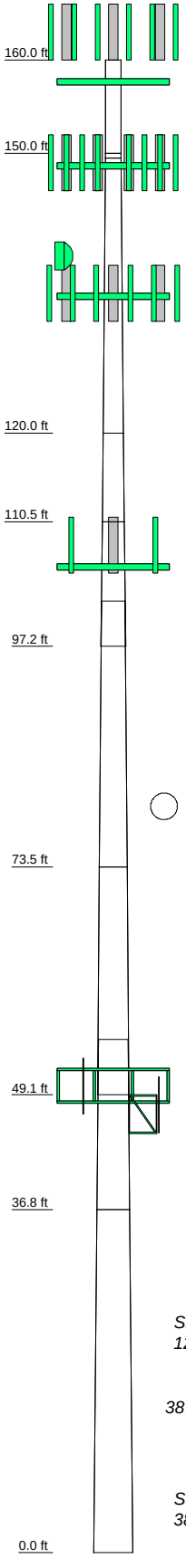
a) Tower shaft from 0' to 21.5', 36.5' to 49.5', 54.5' to 78.5'

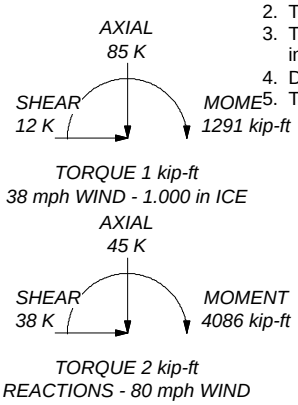
Further engineering and detailing is required to design the necessary modifications. Anchor rods, base plate and foundation are sufficient.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9
Length (ft)	10.000	0.500	29.500	9.500	13.333	28.500	24.417	18.250	36.750
Number of Sides	1	1	12	12	12	12	12	12	12
Thickness (in)	0.250	0.250	0.250	0.387	0.397	0.500	0.486	0.541	0.559
Socket Length (ft)					4.833		5.917		
Top Dia (in)	20.000	20.000	20.403	26.450	28.397	29.639	35.483	38.527	42.267
Bot Dia (in)	20.000	20.403	26.450	28.397	31.130	35.483	40.490	42.267	49.800
Grade	A53-B-35		A572-65	44.701048ksi		44.598678ksi	44.81543ksi	44.934386ksi	45.013463ksi / 50.469061ksi
Weight (K)	0.5	0.0	1.9	1.1	1.6	4.9	4.8	4.2	10.1





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) 7770.00 w/ Mount Pipe (E)	158	TD-RRH8x20-25 (P)	135
(2) 7770.00 w/ Mount Pipe (E)	158	TD-RRH8x20-25 (P)	135
(2) 7770.00 w/ Mount Pipe (E)	158	TD-RRH8x20-25 (P)	135
SBNH-1D6565C w/ Mount Pipe (E)	158	LLPX310R-V1 w/ Mount Pipe (E)	135
SBNH-1D6565C w/ Mount Pipe (E)	158	LLPX310R-V1 w/ Mount Pipe (E)	135
SBNH-1D6565C w/ Mount Pipe (E)	158	LLPX310R-V1 w/ Mount Pipe (E)	135
RRUS-11 (E)	158	WIMAX DAP HEAD (E)	135
RRUS-11 (E)	158	WIMAX DAP HEAD (E)	135
RRUS-11 (E)	158	WIMAX DAP HEAD (E)	135
(2) LGP13519 (E)	158	TIMING 2000 (E)	135
(2) LGP13519 (E)	158	HORIZON COMPACT (E)	135
(2) LGP13519 (E)	158	Platform Mount [LP 602-1] (E)	135
(2) LGP21401 (E)	158	VHLP2.5-11 (E)	135
(2) LGP21401 (E)	158	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	116
(2) LGP21401 (E)	158		
DC6-48-60-18-8F (E)	158	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	116
Platform Mount [LP 303-1] (E)	158		
(2) LPA-80063/4CF w/ Mount Pipe (E)	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	116
(2) LPA-80080/4CF w/ Mount Pipe (E)	149		
(2) LPA-80080/4CF w/ Mount Pipe (E)	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	116
BXA-70063/6CFx4 w/ Mount Pipe (E)	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	116
BXA-185063/8CF w/ Mount Pipe (E)	149		
BXA-185090/8CFx2 w/ Mount Pipe (E)	149	(2) KRY 112 144/1 (R)	116
BXA-185090/8CFx2 w/ Mount Pipe (E)	149	KRY 112 144/1 (R)	116
BXA-70063/6CFx6 w/ Mount Pipe (E)	149	Side Arm Mount [SO 702-3] (E)	116
(2) FD9R6004/2C-3L (E)	149	Side Arm Mount [SO 102-3) (E)	116
(2) FD9R6004/2C-3L (E)	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	116
(2) FD9R6004/2C-3L (E)	149		
BXA-70063/6CF w/ Mount Pipe (R)	149	HBX-6516DS-VTM w/ Mount Pipe (E)	106
Platform Mount [LP 602-1] (E)	149	HBX-6516DS-VTM w/ Mount Pipe (E)	106
800MHz 2X50W RRH W/FILTER (E)	137	ATM200-A20 (E)	106
800MHz 2X50W RRH W/FILTER (E)	137	ATM200-A20 (E)	106
800MHz 2X50W RRH W/FILTER (E)	137	ATM200-A20 (E)	106
PCS 1900MHz 4x45W-65MHz (E)	137	6' x 2" Mount Pipe (E)	106
PCS 1900MHz 4x45W-65MHz (E)	137	6' x 2" Mount Pipe (E)	106
PCS 1900MHz 4x45W-65MHz (E)	137	6' x 2" Mount Pipe (E)	106
Side Arm Mount [SO 102-3) (E)	137	T-Arm Mount [TA 602-3] (E)	106
APXVSPP18-C-A20 w/ Mount Pipe (E)	135	HBX-6516DS-VTM w/ Mount Pipe (E)	106
APXV9ERR18-C-A20 w/ Mount Pipe (E)	135	Platform Mount [LP 301-1] (R)	50
		58532A (R)	50
APXVSPP18-C-A20 w/ Mount Pipe (E)	135	Side Arm Mount [SO 701-1] (E)	47
APXVTM14-C-120 w/ Mount Pipe (P)	135	KS24019-L112A (E)	47
APXVTM14-C-120 w/ Mount Pipe (P)	135		
APXVTM14-C-120 w/ Mount Pipe (P)	135		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	44.81543ksi	45 ksi	60 ksi
A572-65	65 ksi	80 ksi	44.934386ksi	45 ksi	60 ksi
44.701048ksi	45 ksi	60 ksi	45.013463ksi	45 ksi	60 ksi
44.598678ksi	45 ksi	60 ksi	50.469061ksi	50 ksi	65 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: 121.3%

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

Job: 89211.001.01- HRT 101 943232,CT (BU#806373			
Project:			
Client: Crown Castle	Drawn by: skadam	App'd:	
Code: TIA/EIA-222-F	Date: 01/12/14	Scale: NTS	
Path: S:\Projects\Crown Castle\89211_806373_HRT 101 943232\Engineering\Aero Calculations\Working RISA\806373 HRT 101 943232.eri		Dwg No. E-1	

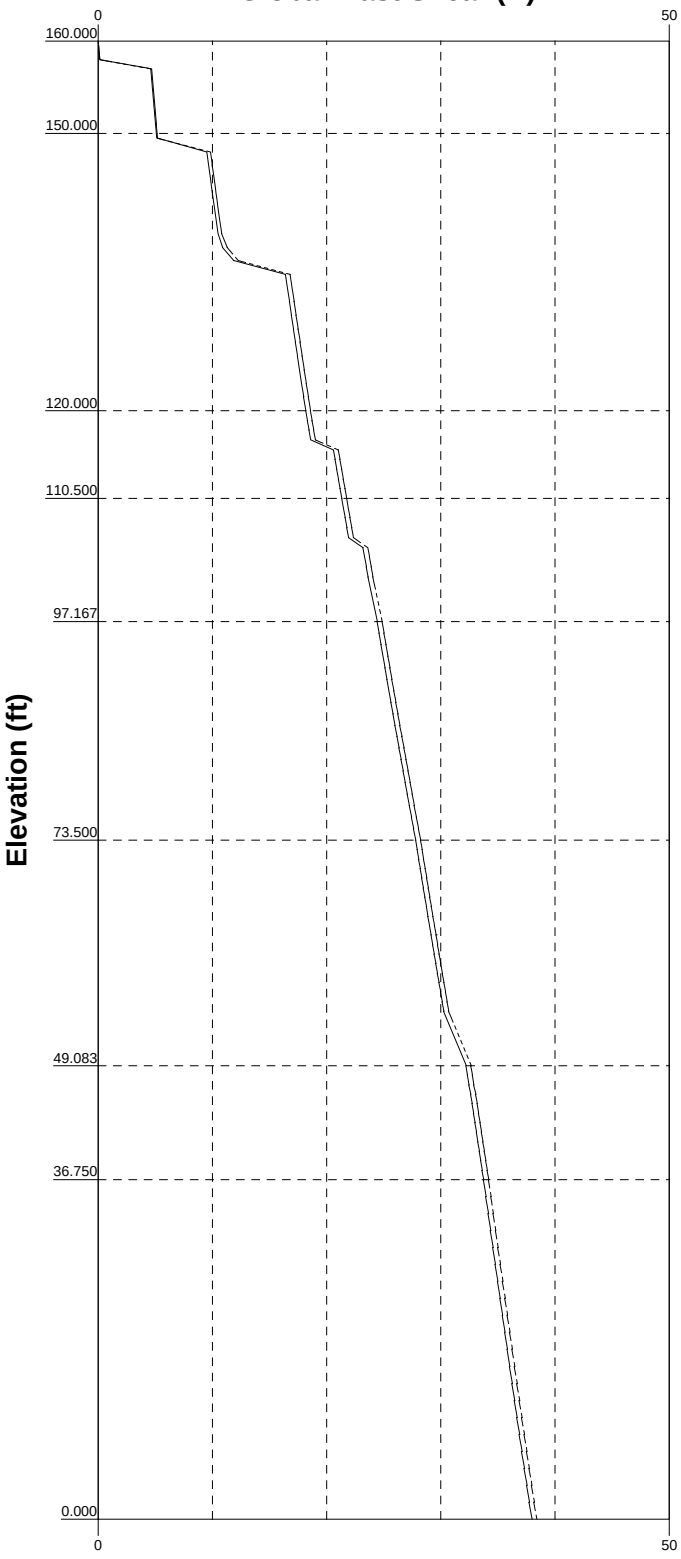
TIA/EIA-222-F - 80 mph/38 mph 1.000 in Ice

Vx Vz

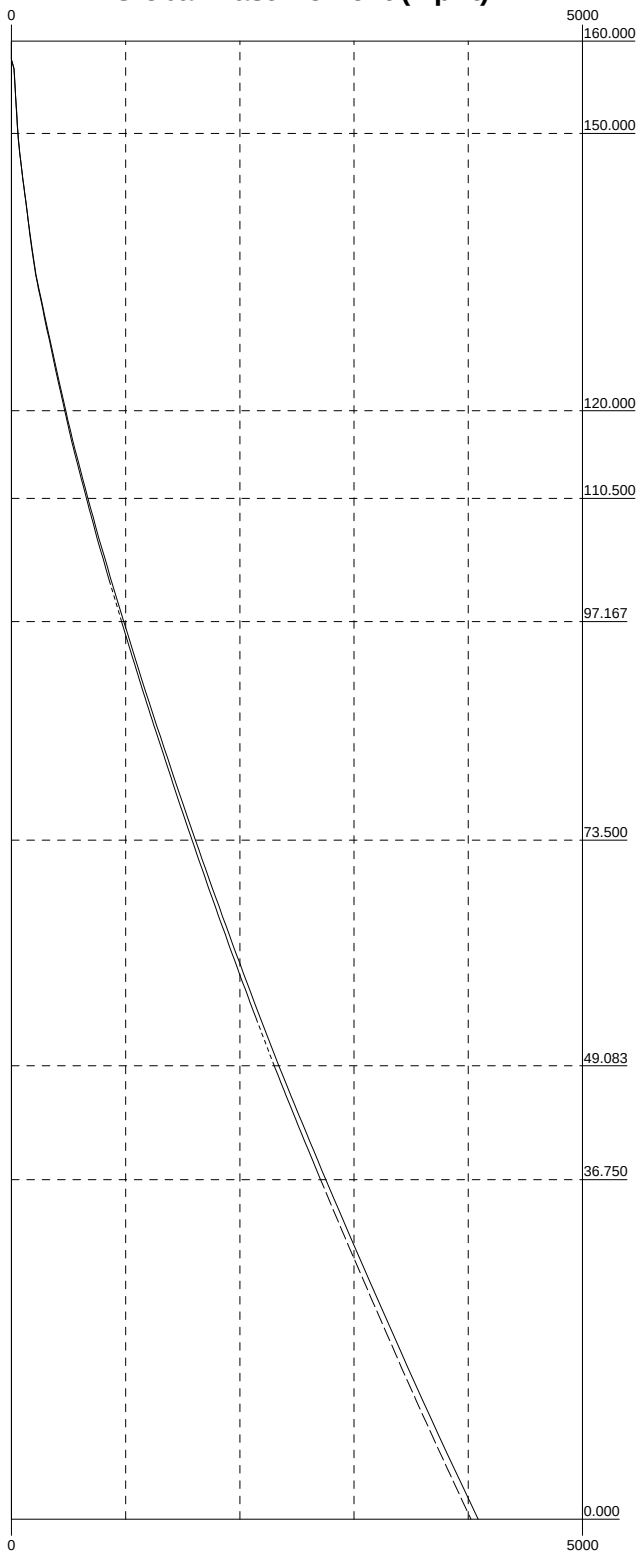
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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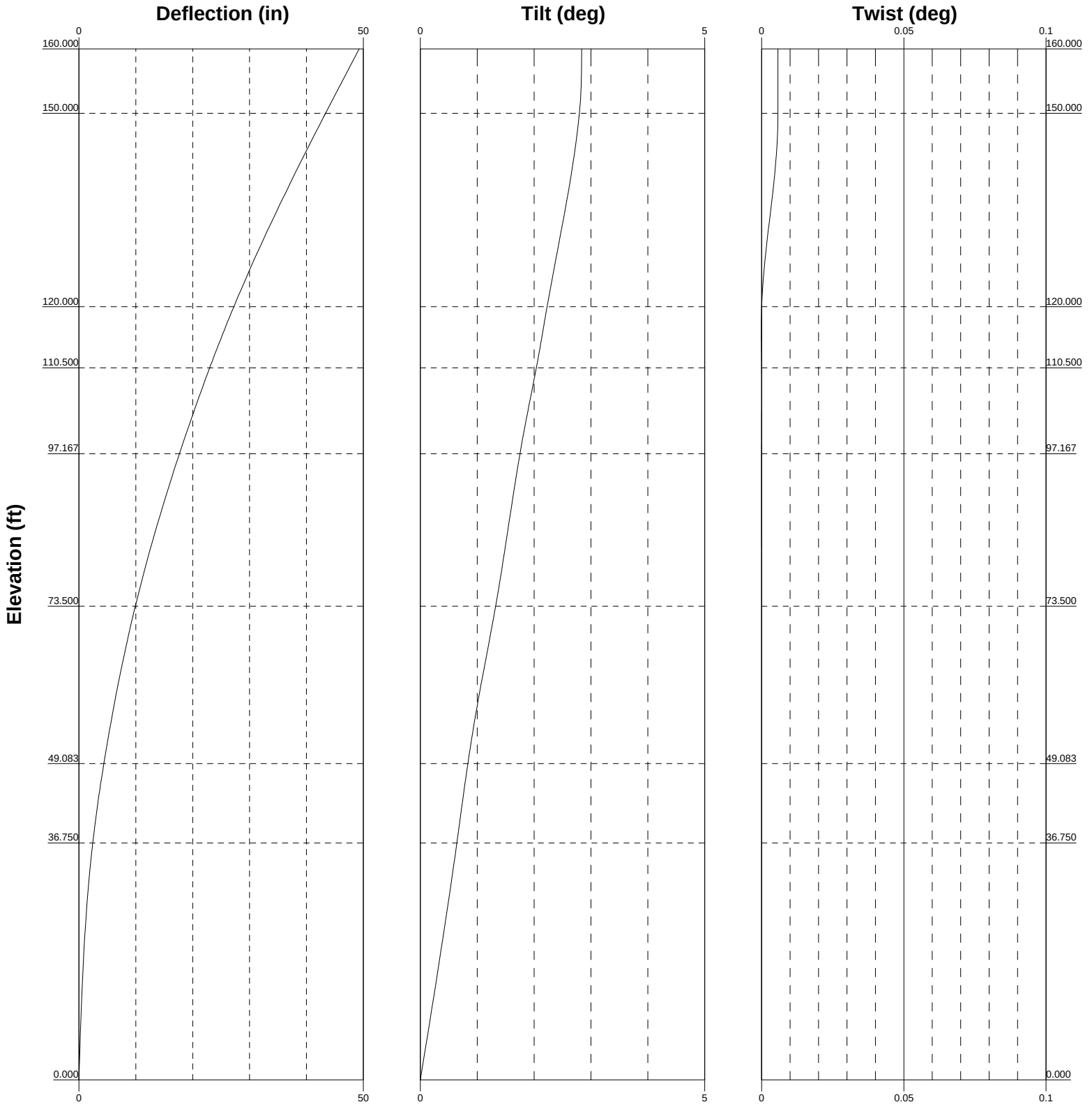
Job: 89211.001.01- HRT 101 943232,CT (BU#806373			
Project:			
Client: Crown Castle	Drawn by: skadam	App'd:	
Code: TIA/EIA-222-F	Date: 01/12/14	Scale: NTS	
Path: S:\Projects\Crown Castle\89211_806373_HRT 101 943232\Engineering\Aero Calculations\Working RISA\806373 HRT 101 943232.eri		Dwg No. E-4	

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

Maximum Values



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Job: 89211.001.01- HRT 101 943232,CT (BU#806373			
Project:			
Client: Crown Castle	Drawn by: skadam	App'd:	
Code: TIA/EIA-222-F	Date: 01/12/14	Scale: NTS	
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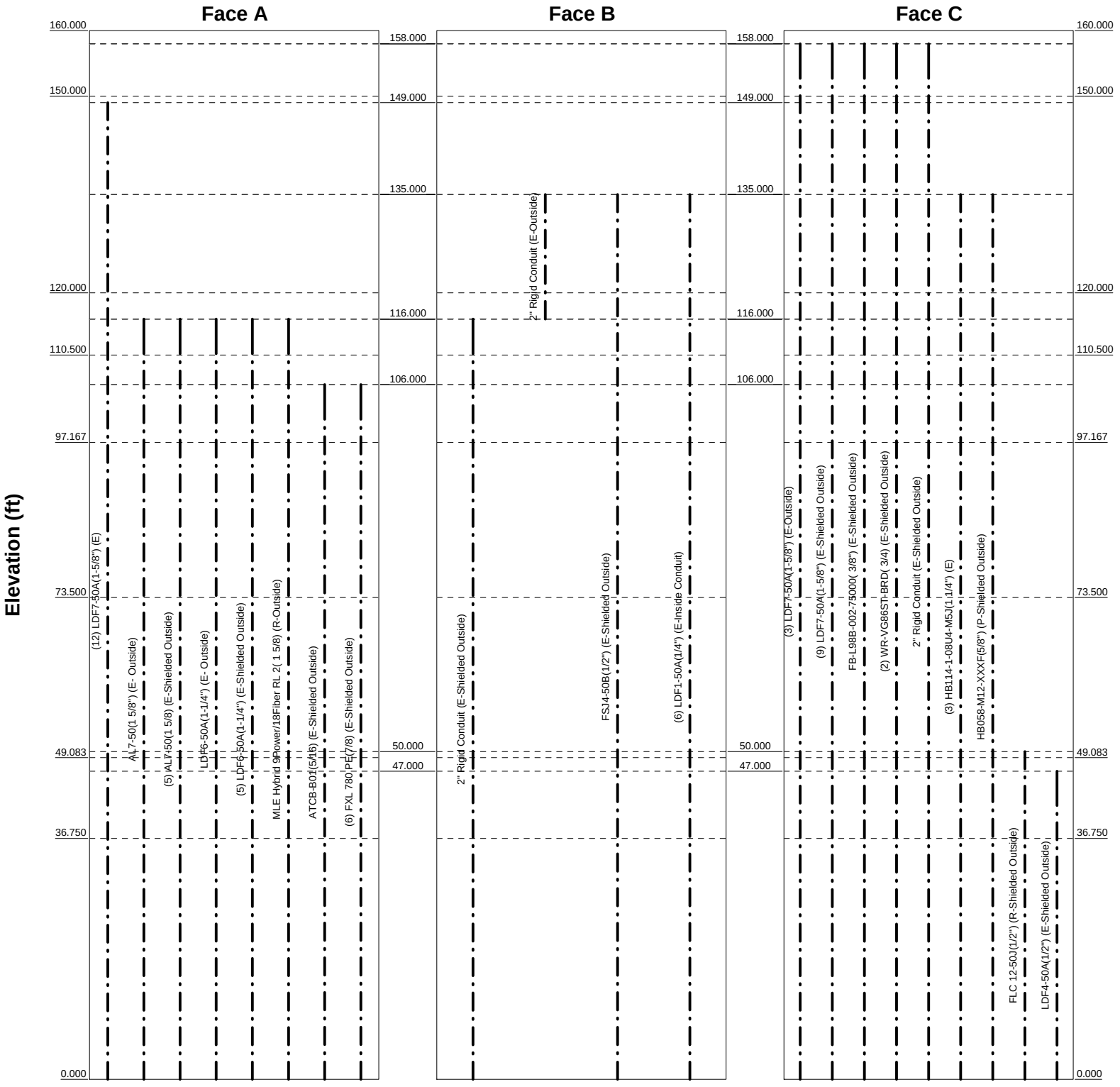
Feed Line Distribution Chart
0' - 160'

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



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Job:	***89211.001.01- HRT 101 943232,CT (BU#806373***		
Project:			
Client: Crown Castle		Drawn by: skadam	App'd:
Code: TIA/EIA-222-F		Date: 01/12/14	Scale: NTS
Path: S:\Projects\Crown Castle\89211_806373_HRT 101 943232\Engineering\Aero Calculations\Working RISA\806373 HRT 101 943232.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.
TOWER RATING: 121.3%.
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	160.000-150.000	10.000	0.000	Round	20.000	20.000	0.250		A53-B-35 (35 ksi)
L2	150.000-149.500	0.500	0.000	Round	20.000	20.403	0.250		A53-B-35 (35 ksi)
L3	149.500-120.000	29.500	0.000	12	20.403	26.450	0.250	1.000	A572-65 (65 ksi)
L4	120.000-110.500	9.500	0.000	12	26.450	28.397	0.387	1.547	44.701048ksi (45 ksi)
L5	110.500-97.167	13.333	4.833	12	28.397	31.130	0.397	1.590	44.598678ksi

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
L6	97.167-73.500	28.500	0.000	12	29.639	35.483	0.500	1.999	(45 ksi) 44.81543ksi
L7	73.500-49.083	24.417	5.917	12	35.483	40.490	0.486	1.944	(45 ksi) 44.934386ksi
L8	49.083-36.750	18.250	0.000	12	38.527	42.267	0.541	2.162	(45 ksi) 45.013463ksi
L9	36.750-0.000	36.750		12	42.267	49.800	0.559	2.237	(45 ksi) 50.469061ksi (50 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	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
L2	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
	20.403	15.828	803.637	7.126	10.201	78.778	1607.274	7.909	0.000	0
L3	21.122	16.223	840.960	7.215	10.569	79.572	1704.012	7.984	4.798	19.192
	27.383	21.091	1847.842	9.379	13.701	134.870	3744.228	10.380	6.418	25.674
L4	27.383	32.459	2814.249	9.330	13.701	205.406	5702.431	15.975	6.052	15.647
	29.399	34.884	3493.371	10.028	14.710	237.489	7078.517	17.169	6.574	16.997
L5	29.399	35.834	3585.729	10.024	14.710	243.768	7265.659	17.636	6.545	16.468
	32.228	39.332	4741.593	11.002	16.125	294.046	9607.754	19.358	7.278	18.311
L6	31.711	46.890	5081.991	10.432	15.353	331.007	10297.492	23.078	6.604	13.215
	36.735	56.294	8793.826	12.524	18.380	478.437	17818.676	27.706	8.170	16.349
L7	36.735	54.780	8563.900	12.529	18.380	465.927	17352.783	26.961	8.207	16.883
	41.918	62.617	12790.267	14.321	20.974	609.821	25916.548	30.818	9.549	19.643
L8	41.141	66.118	12177.473	13.599	19.957	610.190	24674.861	32.541	8.876	16.421
	43.758	72.629	16140.868	14.938	21.895	737.210	32705.774	35.746	9.879	18.276
L9	43.758	75.122	16679.899	14.931	21.895	761.830	33797.997	36.973	9.829	17.571
	51.557	88.689	27447.595	17.628	25.796	1064.009	55616.269	43.650	11.847	21.18

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 160.000-150.000				1	1	1		
L2 150.000-149.500				1	1	1		
L3 149.500-120.000				1	1	1		
L4 120.000-110.500				1	1	0.967217		
L5 110.500-97.167				1	1	0.965093		
L6 97.167-73.500				1	1	0.976816		

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
L7 73.500-49.083				1	1	0.980989		
L8 49.083-36.750				1	1	0.983994		
L9 36.750-0.000				1	1	0.98448		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
*REINFORCEMET TO BE SHIELDED										

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") (E-Outside)	C	No	CaAa (Out Of Face)	158.000 - 0.000	0.000	0	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.198 0.298 0.398 0.598 0.998	0.001 0.002 0.004 0.011 0.030
LDF7-50A(1-5/8") (E-Shielded Outside)	C	No	CaAa (Out Of Face)	158.000 - 0.000	0.000	0	9	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.002 0.004 0.011 0.030
FB-L98B-002-75000(3/8") (E-Shielded Outside)	C	No	CaAa (Out Of Face)	158.000 - 0.000	0.000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.001 0.002 0.006 0.022
WR-VG86ST-BRD(3/4) (E-Shielded Outside)	C	No	CaAa (Out Of Face)	158.000 - 0.000	0.000	0	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.003 0.007 0.024
2" Rigid Conduit (E-Shielded Outside)	C	No	CaAa (Out Of Face)	158.000 - 0.000	0.000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.003 0.004 0.006 0.013 0.032
$										
LDF7-50A(1-5/8") (E)	A	No	Inside Pole	149.000 - 0.000	0.000	0	12	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
$										

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
2" Rigid Conduit (E-Shielded Outside)	B	No	CaAa (Out Of Face)	116.000 - 0.000	0.000	0	1	No Ice	0.000	0.003
								1/2" Ice	0.000	0.004
								1" Ice	0.000	0.006
								2" Ice	0.000	0.013
								4" Ice	0.000	0.032
2" Rigid Conduit (E-Outside)	B	No	CaAa (Out Of Face)	135.000 - 116.000	0.000	0	1	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
FSJ4-50B(1/2") (E-Shielded Outside)	B	No	CaAa (Out Of Face)	135.000 - 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") (E-Inside Conduit)	B	No	CaAa (Out Of Face)	135.000 - 0.000	0.000	0	6	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
**										
HB114-1-08U4-M5J(1 1/4") (E)	C	No	Inside Pole	135.000 - 0.000	0.000	0	3	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
HB058-M12-XXXF(5/8") (P-Shielded Outside)	C	No	CaAa (Out Of Face)	135.000 - 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	0.007
								4" Ice	0.000	0.024
$										
$										
AL7-50(1 5/8") (E- Outside)	A	No	CaAa (Out Of Face)	116.000 - 0.000	1.250	0	1	No Ice	0.196	0.001
								1/2" Ice	0.296	0.002
								1" Ice	0.396	0.004
								2" Ice	0.596	0.010
								4" Ice	0.996	0.030
AL7-50(1 5/8) (E-Shielded Outside)	A	No	CaAa (Out Of Face)	116.000 - 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
LDF6-50A(1-1/4") (E- Outside)	A	No	CaAa (Out Of Face)	116.000 - 0.000	0.000	0	1	No Ice	0.155	0.001
								1/2" Ice	0.255	0.002
								1" Ice	0.355	0.004
								2" Ice	0.555	0.009
								4" Ice	0.955	0.028
LDF6-50A(1-1/4") (E-Shielded Outside)	A	No	CaAa (Out Of Face)	116.000 - 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	0.009
								4" Ice	0.000	0.028
MLE Hybrid 9Power/18Fiber RL 2(1 5/8) (R-Outside)	A	No	CaAa (Out Of Face)	116.000 - 0.000	2.875	0	1	No Ice	0.163	0.001
								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
$										
ATCB-B01(5/16)	A	No	CaAa (Out Of Face)	106.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	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
(E-Shielded Outside)								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
FXL 780 PE(7/8)	A	No	CaAa (Out Of Face)	106.000 - 0.000	0.000	0	6	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
(E-Shielded Outside)								1" Ice	0.000	0.003
								2" Ice	0.000	0.008
								4" Ice	0.000	0.025
$										
FLC 12-50J(1/2")	C	No	CaAa (Out Of Face)	50.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
(R-Shielded Outside)								1" Ice	0.000	0.002
								2" Ice	0.000	0.007
								4" Ice	0.000	0.023
$										
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	47.000 - 0.000	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
(E-Shielded Outside)								1" Ice	0.000	0.002
								2" Ice	0.000	0.007
								4" Ice	0.000	0.023
$										
*REINFORCEMET TO BE SHIELDED										

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	160.000-150.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.752	0.111
L2	150.000-149.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.297	0.007
L3	149.500-120.000	A	0.000	0.000	0.000	0.000	0.285
		B	0.000	0.000	0.000	3.000	0.050
		C	0.000	0.000	0.000	17.523	0.462
L4	120.000-110.500	A	0.000	0.000	0.000	2.824	0.138
		B	0.000	0.000	0.000	0.800	0.031
		C	0.000	0.000	0.000	5.643	0.165
L5	110.500-97.167	A	0.000	0.000	0.000	6.847	0.254
		B	0.000	0.000	0.000	0.000	0.044
		C	0.000	0.000	0.000	7.920	0.231
L6	97.167-73.500	A	0.000	0.000	0.000	12.153	0.463
		B	0.000	0.000	0.000	0.000	0.078
		C	0.000	0.000	0.000	14.058	0.411
L7	73.500-49.083	A	0.000	0.000	0.000	12.538	0.478
		B	0.000	0.000	0.000	0.000	0.081
		C	0.000	0.000	0.000	14.504	0.424
L8	49.083-36.750	A	0.000	0.000	0.000	6.333	0.241
		B	0.000	0.000	0.000	0.000	0.041
		C	0.000	0.000	0.000	7.326	0.218
L9	36.750-0.000	A	0.000	0.000	0.000	18.871	0.719
		B	0.000	0.000	0.000	0.000	0.121
		C	0.000	0.000	0.000	21.829	0.650

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	160.000-150.000	A	1.204	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	10.531	0.689
L2	150.000-149.500	A	1.199	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.657	0.043
L3	149.500-120.000	A	1.183	0.000	0.000	0.000	0.000	0.285
		B		0.000	0.000	0.000	6.550	0.376
		C		0.000	0.000	0.000	38.467	2.583
L4	120.000-110.500	A	1.162	0.000	0.000	0.000	6.658	0.445
		B		0.000	0.000	0.000	1.729	0.231
		C		0.000	0.000	0.000	12.266	0.843
L5	110.500-97.167	A	1.147	0.000	0.000	0.000	16.025	1.177
		B		0.000	0.000	0.000	0.000	0.318
		C		0.000	0.000	0.000	17.099	1.164
L6	97.167-73.500	A	1.120	0.000	0.000	0.000	28.445	2.277
		B		0.000	0.000	0.000	0.000	0.564
		C		0.000	0.000	0.000	30.350	2.067
L7	73.500-49.083	A	1.077	0.000	0.000	0.000	28.310	2.160
		B		0.000	0.000	0.000	0.000	0.521
		C		0.000	0.000	0.000	30.275	1.966
L8	49.083-36.750	A	1.032	0.000	0.000	0.000	14.300	1.091
		B		0.000	0.000	0.000	0.000	0.263
		C		0.000	0.000	0.000	15.293	1.049
L9	36.750-0.000	A	1.000	0.000	0.000	0.000	40.921	2.943
		B		0.000	0.000	0.000	0.000	0.686
		C		0.000	0.000	0.000	43.880	2.841

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.000-150.000	-0.480	0.277	-0.781	0.451
L2	150.000-149.500	-0.570	0.329	-0.899	0.519
L3	149.500-120.000	-0.465	0.388	-0.737	0.614
L4	120.000-110.500	-0.466	0.038	-0.710	0.017
L5	110.500-97.167	-0.533	-0.225	-0.801	-0.405
L6	97.167-73.500	-0.550	-0.232	-0.845	-0.427
L7	73.500-49.083	-0.572	-0.241	-0.888	-0.446
L8	49.083-36.750	-0.583	-0.245	-0.918	-0.461
L9	36.750-0.000	-0.599	-0.252	-0.943	-0.471

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

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) 7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	158.000	No Ice	6.119	4.254	0.055
(E)			0.000			1/2" Ice	6.626	5.014	0.103
			5.000			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	B	From Leg	4.000	0.000	158.000	No Ice	6.119	4.254	0.055
(E)			0.000			1/2" Ice	6.626	5.014	0.103
			5.000			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	C	From Leg	4.000	0.000	158.000	No Ice	6.119	4.254	0.055
(E)			0.000			1/2" Ice	6.626	5.014	0.103
			5.000			1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.000	0.000	158.000	No Ice	11.644	9.842	0.094
			0.000			1/2" Ice	12.365	11.366	0.183
(E)			5.000			1" Ice	13.095	12.914	0.283
						2" Ice	14.553	15.267	0.516
						4" Ice	17.825	20.139	1.160
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.000	0.000	158.000	No Ice	11.644	9.842	0.094
			0.000			1/2" Ice	12.365	11.366	0.183
(E)			5.000			1" Ice	13.095	12.914	0.283
						2" Ice	14.553	15.267	0.516
						4" Ice	17.825	20.139	1.160
SBNH-1D6565C w/ Mount Pipe	C	From Leg	4.000	0.000	158.000	No Ice	11.644	9.842	0.094
			0.000			1/2" Ice	12.365	11.366	0.183
(E)			5.000			1" Ice	13.095	12.914	0.283
						2" Ice	14.553	15.267	0.516
						4" Ice	17.825	20.139	1.160
RRUS-11	A	From Leg	4.000	0.000	158.000	No Ice	4.424	1.186	0.055
(E)			0.000			1/2" Ice	4.708	1.351	0.081
			5.000			1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
RRUS-11	B	From Leg	4.000	0.000	158.000	No Ice	4.424	1.186	0.055
(E)			0.000			1/2" Ice	4.708	1.351	0.081
			5.000			1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
RRUS-11	C	From Leg	4.000	0.000	158.000	No Ice	4.424	1.186	0.055
(E)			0.000			1/2" Ice	4.708	1.351	0.081
			5.000			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) LGP13519	A	From Leg	4.000	0.000	158.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008
			5.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
(2) LGP13519	B	From Leg	4.000	0.000	158.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008
			5.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
(2) LGP13519	C	From Leg	4.000	0.000	158.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			5.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
(2) LGP21401	A	From Leg	4.000	0.000	158.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			5.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	B	From Leg	4.000	0.000	158.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			5.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	C	From Leg	4.000	0.000	158.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			5.000			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	158.000	No Ice	2.567	4.317	0.019
(E)			0.000			1/2" Ice	2.798	4.596	0.050
			5.000			1" Ice	3.038	4.885	0.085
						2" Ice	3.543	5.488	0.167
						4" Ice	4.658	6.797	0.383
Platform Mount [LP 303-1]	C	None		0.000	158.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
						2" Ice	31.500	31.500	2.175
						4" Ice	48.340	48.340	3.101
$									
(2) LPA-80063/4CF w/ Mount Pipe	A	From Leg	4.000	0.000	149.000	No Ice	7.248	7.260	0.038
(E)			0.000			1/2" Ice	7.719	7.957	0.104
			0.000			1" Ice	8.200	8.672	0.176
						2" Ice	9.195	10.156	0.344
						4" Ice	11.320	13.391	0.796
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.000	0.000	149.000	No Ice	2.856	7.227	0.030
(E)			0.000			1/2" Ice	3.220	7.922	0.076
			0.000			1" Ice	3.592	8.634	0.128
						2" Ice	4.450	10.112	0.253
						4" Ice	6.318	13.339	0.613
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	149.000	No Ice	2.856	7.227	0.030
(E)			0.000			1/2" Ice	3.220	7.922	0.076
			0.000			1" Ice	3.592	8.634	0.128
						2" Ice	4.450	10.112	0.253
						4" Ice	6.318	13.339	0.613
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.000	0.000	149.000	No Ice	7.969	5.398	0.042
(E)			0.000			1/2" Ice	8.609	6.546	0.101
			0.000			1" Ice	9.216	7.409	0.168
						2" Ice	10.459	9.184	0.327
						4" Ice	13.066	12.933	0.787
BXA-185063/8CF w/ Mount Pipe	A	From Leg	4.000	0.000	149.000	No Ice	3.181	2.997	0.028
(E)			0.000			1/2" Ice	3.559	3.614	0.059
			0.000			1" Ice	3.963	4.236	0.095
						2" Ice	4.855	5.529	0.186
						4" Ice	6.773	8.423	0.473
BXA-185090/8CFx2 w/ Mount Pipe	B	From Leg	4.000	0.000	149.000	No Ice	3.157	3.330	0.029
(E)			0.000			1/2" Ice	3.531	3.942	0.061
			0.000			1" Ice	3.941	4.563	0.099

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.827	5.855	0.193
						4" Ice	6.734	8.841	0.486
BXA-185090/8CFx2 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000	No Ice	3.157	3.330	0.029
(E)			0.000			1/2" Ice	3.531	3.942	0.061
						1" Ice	3.941	4.563	0.099
						2" Ice	4.827	5.855	0.193
						4" Ice	6.734	8.841	0.486
BXA-70063/6CFx6 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	149.000	No Ice	7.969	5.398	0.042
(E)			0.000			1/2" Ice	8.609	6.546	0.101
						1" Ice	9.216	7.409	0.168
						2" Ice	10.459	9.184	0.327
						4" Ice	13.066	12.933	0.787
(2) FD9R6004/2C-3L	A	From Leg	4.000 0.000	0.000	149.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
						1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	B	From Leg	4.000 0.000	0.000	149.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
						1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000 0.000	0.000	149.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
						1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	149.000	No Ice	7.979	5.407	0.042
(R)			0.000			1/2" Ice	8.621	6.558	0.101
						1" Ice	9.228	7.422	0.168
						2" Ice	10.473	9.198	0.328
						4" Ice	13.082	12.952	0.788
Platform Mount [LP 602-1]	C	None		0.000	149.000	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
$									
800MHz 2X50W RRH W/FILTER	A	From Leg	2.000 0.000	0.000	137.000	No Ice	2.401	2.254	0.064
(E)			-2.000			1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER	B	From Leg	2.000 0.000	0.000	137.000	No Ice	2.401	2.254	0.064
(E)			-2.000			1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER	C	From Leg	2.000 0.000	0.000	137.000	No Ice	2.401	2.254	0.064
(E)			-2.000			1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.000 0.000	0.000	137.000	No Ice	2.709	2.611	0.060
(E)			1.000			1/2" Ice	2.948	2.847	0.083
						1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173

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	4.862	4.744	0.347
PCS 1900MHz	B	From Leg	2.000	0.000	137.000	No Ice	2.709	2.611	0.060
4x45W-65MHz			0.000			1/2" Ice	2.948	2.847	0.083
(E)			1.000			1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173
						4" Ice	4.862	4.744	0.347
PCS 1900MHz	C	From Leg	2.000	0.000	137.000	No Ice	2.709	2.611	0.060
4x45W-65MHz			0.000			1/2" Ice	2.948	2.847	0.083
(E)			1.000			1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173
						4" Ice	4.862	4.744	0.347
Side Arm Mount [SO 102-3)	C	None		0.000	137.000	No Ice	3.000	3.000	0.081
(E)						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
						2" Ice	4.920	4.920	0.201
						4" Ice	6.840	6.840	0.321
$									
APXVSPP18-C-A20 w/	A	From Leg	4.000	0.000	135.000	No Ice	8.498	6.946	0.083
Mount Pipe			0.000			1/2" Ice	9.149	8.127	0.151
(E)			0.000			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
APXV9ERR18-C-A20 w/	B	From Leg	4.000	0.000	135.000	No Ice	8.498	7.471	0.088
Mount Pipe			0.000			1/2" Ice	9.149	8.656	0.158
(E)			0.000			1" Ice	9.767	9.556	0.237
						2" Ice	11.031	11.388	0.421
						4" Ice	13.679	15.527	0.935
APXVSPP18-C-A20 w/	C	From Leg	4.000	0.000	135.000	No Ice	8.498	6.946	0.083
Mount Pipe			0.000			1/2" Ice	9.149	8.127	0.151
(E)			0.000			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
APXVTM14-C-120 w/	A	From Leg	4.000	0.000	135.000	No Ice	7.134	4.959	0.077
Mount Pipe			0.000			1/2" Ice	7.662	5.754	0.131
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
APXVTM14-C-120 w/	B	From Leg	4.000	0.000	135.000	No Ice	7.134	4.959	0.077
Mount Pipe			0.000			1/2" Ice	7.662	5.754	0.131
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
APXVTM14-C-120 w/	C	From Leg	4.000	0.000	135.000	No Ice	7.134	4.959	0.077
Mount Pipe			0.000			1/2" Ice	7.662	5.754	0.131
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
TD-RRH8x20-25	A	From Leg	4.000	0.000	135.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	B	From Leg	4.000	0.000	135.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397

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
TD-RRH8x20-25	C	From Leg	4.000	0.000	135.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
****									
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.000	0.000	135.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			0.000			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	135.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			0.000			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	135.000	No Ice	5.065	2.983	0.045
(E)			0.000			1/2" Ice	5.480	3.526	0.083
			0.000			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	135.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			0.000			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	135.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			0.000			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	135.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			0.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
TIMING 2000	A	From Leg	4.000	0.000	135.000	No Ice	0.126	0.126	0.001
(E)			0.000			1/2" Ice	0.177	0.177	0.002
			0.000			1" Ice	0.237	0.237	0.005
						2" Ice	0.383	0.383	0.014
						4" Ice	0.778	0.778	0.052
HORIZON COMPACT	C	From Leg	4.000	0.000	135.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			0.000			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	135.000	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
$									
$									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000	0.000	116.000	No Ice	6.904	5.722	0.113
(R)			0.000			1/2" Ice	7.461	6.628	0.171
			1.000			1" Ice	7.998	7.424	0.236
						2" Ice	9.102	9.069	0.388

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	11.440	12.575	0.819
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	B	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.904 7.461 7.998 9.102 11.440	5.722 6.628 7.424 9.069 12.575	0.113 0.171 0.236 0.388 0.819
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	C	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.904 7.461 7.998 9.102 11.440	5.722 6.628 7.424 9.069 12.575	0.113 0.171 0.236 0.388 0.819
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	A	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.904 7.461 7.998 9.102 11.440	5.722 6.628 7.424 9.069 12.575	0.113 0.171 0.236 0.388 0.819
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	B	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.904 7.461 7.998 9.102 11.440	5.722 6.628 7.424 9.069 12.575	0.113 0.171 0.236 0.388 0.819
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	C	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.904 7.461 7.998 9.102 11.440	5.722 6.628 7.424 9.069 12.575	0.113 0.171 0.236 0.388 0.819
(2) KRY 112 144/1 (R)	A	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.408 0.497 0.594 0.815 1.359	0.204 0.273 0.351 0.533 0.999	0.011 0.014 0.019 0.032 0.082
KRY 112 144/1 (R)	B	From Leg	4.000 0.000 1.000	0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.408 0.497 0.594 0.815 1.359	0.204 0.273 0.351 0.533 0.999	0.011 0.014 0.019 0.032 0.082
Side Arm Mount [SO 702-3] (E)	C	None		0.000	116.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.220 4.150 5.080 6.940 10.660	3.220 4.150 5.080 6.940 10.660	0.081 0.114 0.147 0.213 0.345
Side Arm Mount [SO 102-3) (E)	C	None		0.000	116.000	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
$									
HBX-6516DS-VTM w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.598 3.998 4.435 5.368 7.361	3.241 3.914 4.564 5.914 8.877	0.029 0.062 0.101 0.199 0.504
HBX-6516DS-VTM w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.598 3.998 4.435 5.368 7.361	3.241 3.914 4.564 5.914 8.877	0.029 0.062 0.101 0.199 0.504

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
HBX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.598 3.998 4.435 5.368 7.361	3.241 3.914 4.564 5.914 8.877	0.029 0.062 0.101 0.199 0.504
(E)									
ATM200-A20	A	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.218 0.292 0.375 0.567 1.054	0.163 0.233 0.312 0.494 0.964	0.001 0.002 0.005 0.015 0.056
(E)									
ATM200-A20	B	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.218 0.292 0.375 0.567 1.054	0.163 0.233 0.312 0.494 0.964	0.001 0.002 0.005 0.015 0.056
(E)									
ATM200-A20	C	From Leg	4.000 0.000 2.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.218 0.292 0.375 0.567 1.054	0.163 0.233 0.312 0.494 0.964	0.001 0.002 0.005 0.015 0.056
(E)									
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(E)									
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(E)									
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(E)									
T-Arm Mount [TA 602-3]	C	None		0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.590 15.440 19.290 26.990 42.390	11.590 15.440 19.290 26.990 42.390	0.774 0.990 1.206 1.639 2.503
(E)									
$									
58532A	C	From Leg	2.000 0.000 0.000	0.000	50.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.221 0.290 0.367 0.548 1.014	0.221 0.290 0.367 0.548 1.014	0.000 0.003 0.006 0.017 0.060
(R)									
Platform Mount [LP 301-1]	C	None		0.000	50.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	30.100 40.800 51.500 72.900 115.700	30.100 40.800 51.500 72.900 115.700	1.589 2.029 2.470 3.351 5.114
(R)									
$									
KS24019-L112A	B	From Leg	4.000 0.000 1.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.156 0.225 0.302 0.484 0.951	0.156 0.225 0.302 0.484 0.951	0.005 0.007 0.009 0.018 0.056
(E)									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 701-1] (E)	B	From Leg	2.000 0.000 0.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.850 1.140 1.430 2.010 3.170	1.670 2.340 3.010 4.350 7.030	0.065 0.079 0.093 0.121 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 (E)	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 4.000	-27.000		135.000	2.917	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.681 7.069 7.456 8.230 9.779	0.048 0.084 0.120 0.193 0.338

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

Comb. No.	Description
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	160 - 150	Pole	Max Tension	11	0.000	-0.000	-0.001
			Max. Compression	14	-6.205	0.527	0.206
			Max. Mx	11	-2.184	57.284	-0.067
			Max. My	2	-2.183	0.078	56.295
			Max. Vy	11	-5.165	57.284	-0.067
			Max. Vx	2	-5.093	0.078	56.295
			Max. Torque	11			-0.924
L2	150 - 149.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-6.290	0.560	0.188
			Max. Mx	11	-2.215	59.880	-0.069
			Max. My	2	-2.213	0.082	58.847
			Max. Vy	11	-5.202	59.880	-0.069
			Max. Vx	2	-5.131	0.082	58.847
			Max. Torque	11			-0.914
L3	149.5 - 120	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-22.949	3.283	-1.131
			Max. Mx	11	-8.313	466.257	-2.884
			Max. My	2	-8.238	-2.146	475.709
			Max. Vy	5	18.181	-465.436	3.496
			Max. Vx	2	-18.592	-2.146	475.709
			Max. Torque	3			1.248
L4	120 - 110.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-27.850	3.861	-1.156
			Max. Mx	11	-10.451	656.596	-4.128
			Max. My	2	-10.377	-3.432	670.253
			Max. Vy	5	21.332	-655.886	5.444
			Max. Vx	2	-21.758	-3.432	670.253
			Max. Torque	3			1.266
L5	110.5 - 97.1667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.756	4.500	-0.888
			Max. Mx	11	-12.732	848.102	-5.266
			Max. My	2	-12.661	-4.531	865.488
			Max. Vy	5	23.637	-847.388	7.153
			Max. Vx	2	-24.065	-4.531	865.488
			Max. Torque	3			1.321
L6	97.1667 - 73.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-45.709	6.816	0.359
			Max. Mx	11	-19.666	1581.270	-9.086
			Max. My	2	-19.612	-8.211	1611.224
			Max. Vy	5	27.808	-1580.484	12.922
			Max. Vx	2	-28.238	-8.211	1611.224
			Max. Torque	3			1.517
L7	73.5 - 49.0833	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-53.771	8.399	1.250
			Max. Mx	11	-24.332	2117.941	-11.552
			Max. My	2	-24.292	-10.558	2156.001
			Max. Vy	5	30.273	-2117.031	16.650
			Max. Vx	2	-30.700	-10.558	2156.001
			Max. Torque	3			1.649
L8	49.0833 - 36.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-66.686	9.767	1.912
			Max. Mx	11	-32.472	2707.140	-14.220
			Max. My	2	-32.443	-13.183	2753.376
			Max. Vy	5	33.757	-2706.528	20.294
			Max. Vx	2	-34.195	-13.183	2753.376
			Max. Torque	3			1.721
L9	36.75 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-85.405	13.149	3.594
			Max. Mx	11	-44.973	4023.618	-19.404
			Max. My	2	-44.972	-18.015	4085.922
			Max. Vy	5	37.991	-4022.495	27.917
			Max. Vx	2	-38.414	-18.015	4085.922
			Max. Torque	3			1.846

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	85.405	-0.039	11.528
	Max. H_x	11	44.999	37.938	-0.140
	Max. H_z	2	44.999	-0.147	38.384
	Max. M_x	2	4085.922	-0.147	38.384
	Max. M_z	5	4022.495	-37.961	0.202
	Max. Torsion	3	1.846	-19.070	33.278
	Min. Vert	1	44.999	0.000	0.000
	Min. H_x	5	44.999	-37.961	0.202
	Min. H_z	8	44.999	0.123	-38.318
	Min. M_x	8	-4076.904	0.123	-38.318
	Min. M_z	11	-4023.618	37.938	-0.140
	Min. Torsion	9	-1.773	19.032	-33.219

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	44.999	0.000	0.000	0.205	2.165	0.000
Dead+Wind 0 deg - No Ice	44.999	0.147	-38.384	-4085.922	-18.015	-1.731
Dead+Wind 30 deg - No Ice	44.999	19.070	-33.278	-3543.320	-2022.096	-1.846
Dead+Wind 60 deg - No Ice	44.999	32.923	-19.307	-2058.672	-3489.592	-1.624
Dead+Wind 90 deg - No Ice	44.999	37.961	-0.202	-27.917	-4022.495	-1.079
Dead+Wind 120 deg - No Ice	44.999	32.806	19.104	2031.655	-3473.899	0.356
Dead+Wind 150 deg - No Ice	44.999	18.852	33.179	3530.639	-1992.503	1.186
Dead+Wind 180 deg - No Ice	44.999	-0.123	38.318	4076.904	19.012	1.583

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 210 deg - No Ice	44.999	-19.032	33.219	3535.288	2021.045	1.773
Dead+Wind 240 deg - No Ice	44.999	-32.872	19.254	2051.411	3486.700	1.528
Dead+Wind 270 deg - No Ice	44.999	-37.938	0.140	19.404	4023.618	0.811
Dead+Wind 300 deg - No Ice	44.999	-32.834	-19.064	-2025.460	3482.386	-0.334
Dead+Wind 330 deg - No Ice	44.999	-18.806	-33.217	-3535.649	1990.279	-1.245
Dead+Ice+Temp	85.405	-0.000	-0.000	-3.594	13.149	0.000
Dead+Wind 0 deg+Ice+Temp	85.405	0.039	-11.528	-1291.266	7.858	-0.619
Dead+Wind 30 deg+Ice+Temp	85.405	5.737	-9.994	-1120.060	-626.078	-0.668
Dead+Wind 60 deg+Ice+Temp	85.405	9.908	-5.794	-651.666	-1090.220	-0.574
Dead+Wind 90 deg+Ice+Temp	85.405	11.426	-0.053	-11.128	-1258.942	-0.349
Dead+Wind 120 deg+Ice+Temp	85.405	9.877	5.740	637.036	-1085.988	0.126
Dead+Wind 150 deg+Ice+Temp	85.405	5.679	9.967	1109.257	-618.137	0.431
Dead+Wind 180 deg+Ice+Temp	85.405	-0.033	11.511	1281.503	17.769	0.586
Dead+Wind 210 deg+Ice+Temp	85.405	-5.727	9.979	1110.554	651.157	0.637
Dead+Wind 240 deg+Ice+Temp	85.405	-9.895	5.781	642.367	1114.804	0.533
Dead+Wind 270 deg+Ice+Temp	85.405	-11.420	0.037	1.506	1284.594	0.276
Dead+Wind 300 deg+Ice+Temp	85.405	-9.884	-5.730	-642.762	1113.591	-0.108
Dead+Wind 330 deg+Ice+Temp	85.405	-5.668	-9.977	-1117.948	642.910	-0.428
Dead+Wind 0 deg - Service	44.999	0.058	-14.994	-1598.562	-5.676	-0.681
Dead+Wind 30 deg - Service	44.999	7.449	-12.999	-1386.256	-789.803	-0.738
Dead+Wind 60 deg - Service	44.999	12.861	-7.542	-805.342	-1363.948	-0.653
Dead+Wind 90 deg - Service	44.999	14.828	-0.079	-10.794	-1572.405	-0.431
Dead+Wind 120 deg - Service	44.999	12.815	7.463	795.015	-1357.777	0.149
Dead+Wind 150 deg - Service	44.999	7.364	12.961	1381.529	-778.206	0.479
Dead+Wind 180 deg - Service	44.999	-0.048	14.968	1595.287	8.814	0.628
Dead+Wind 210 deg - Service	44.999	-7.434	12.976	1383.366	792.134	0.692
Dead+Wind 240 deg - Service	44.999	-12.841	7.521	802.757	1365.554	0.593
Dead+Wind 270 deg - Service	44.999	-14.819	0.055	7.725	1575.590	0.318
Dead+Wind 300 deg - Service	44.999	-12.826	-7.447	-792.325	1363.844	-0.124
Dead+Wind 330 deg - Service	44.999	-7.346	-12.975	-1383.224	780.083	-0.479

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	-44.999	0.000	0.000	44.999	0.000	0.000%
2	0.147	-44.999	-38.384	-0.147	44.999	38.384	0.000%
3	19.070	-44.999	-33.278	-19.070	44.999	33.278	0.000%
4	32.923	-44.999	-19.307	-32.923	44.999	19.307	0.000%
5	37.961	-44.999	-0.202	-37.961	44.999	0.202	0.000%
6	32.806	-44.999	19.104	-32.806	44.999	-19.104	0.000%
7	18.852	-44.999	33.179	-18.852	44.999	-33.179	0.000%
8	-0.123	-44.999	38.318	0.123	44.999	-38.318	0.000%
9	-19.032	-44.999	33.219	19.032	44.999	-33.219	0.000%
10	-32.872	-44.999	19.254	32.872	44.999	-19.254	0.000%
11	-37.938	-44.999	0.140	37.938	44.999	-0.140	0.000%
12	-32.834	-44.999	-19.064	32.834	44.999	19.064	0.000%
13	-18.806	-44.999	-33.217	18.806	44.999	33.217	0.000%
14	0.000	-85.405	0.000	0.000	85.405	0.000	0.000%
15	0.039	-85.405	-11.528	-0.039	85.405	11.528	0.000%
16	5.737	-85.405	-9.994	-5.737	85.405	9.994	0.000%
17	9.908	-85.405	-5.794	-9.908	85.405	5.794	0.000%
18	11.426	-85.405	-0.053	-11.426	85.405	0.053	0.000%
19	9.877	-85.405	5.740	-9.877	85.405	-5.740	0.000%
20	5.679	-85.405	9.967	-5.679	85.405	-9.967	0.000%
21	-0.033	-85.405	11.511	0.033	85.405	-11.511	0.000%
22	-5.727	-85.405	9.979	5.727	85.405	-9.979	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
23	-9.895	-85.405	5.781	9.895	85.405	-5.781	0.000%
24	-11.420	-85.405	0.037	11.420	85.405	-0.037	0.000%
25	-9.884	-85.405	-5.730	9.884	85.405	5.730	0.000%
26	-5.668	-85.405	-9.977	5.668	85.405	9.977	0.000%
27	0.058	-44.999	-14.994	-0.058	44.999	14.994	0.000%
28	7.449	-44.999	-12.999	-7.449	44.999	12.999	0.000%
29	12.861	-44.999	-7.542	-12.861	44.999	7.542	0.000%
30	14.828	-44.999	-0.079	-14.828	44.999	0.079	0.000%
31	12.815	-44.999	7.463	-12.815	44.999	-7.463	0.000%
32	7.364	-44.999	12.961	-7.364	44.999	-12.961	0.000%
33	-0.048	-44.999	14.968	0.048	44.999	-14.968	0.000%
34	-7.434	-44.999	12.976	7.434	44.999	-12.976	0.000%
35	-12.841	-44.999	7.521	12.841	44.999	-7.521	0.000%
36	-14.819	-44.999	0.055	14.819	44.999	-0.055	0.000%
37	-12.826	-44.999	-7.447	12.826	44.999	7.447	0.000%
38	-7.346	-44.999	-12.975	7.346	44.999	12.975	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	5	0.00000001	0.00005782
3	Yes	6	0.00000001	0.00009725
4	Yes	6	0.00000001	0.00010226
5	Yes	5	0.00000001	0.00012624
6	Yes	6	0.00000001	0.00009907
7	Yes	6	0.00000001	0.00009738
8	Yes	5	0.00000001	0.00011586
9	Yes	6	0.00000001	0.00010232
10	Yes	6	0.00000001	0.00009740
11	Yes	4	0.00000001	0.00079634
12	Yes	6	0.00000001	0.00009864
13	Yes	6	0.00000001	0.00010056
14	Yes	4	0.00000001	0.00018420
15	Yes	6	0.00000001	0.00014550
16	Yes	6	0.00000001	0.00021537
17	Yes	6	0.00000001	0.00021971
18	Yes	6	0.00000001	0.00014153
19	Yes	6	0.00000001	0.00021455
20	Yes	6	0.00000001	0.00021295
21	Yes	6	0.00000001	0.00014513
22	Yes	6	0.00000001	0.00022641
23	Yes	6	0.00000001	0.00022108
24	Yes	6	0.00000001	0.00014485
25	Yes	6	0.00000001	0.00022118
26	Yes	6	0.00000001	0.00022387
27	Yes	4	0.00000001	0.00054059
28	Yes	5	0.00000001	0.00031489
29	Yes	5	0.00000001	0.00034094
30	Yes	4	0.00000001	0.00062093
31	Yes	5	0.00000001	0.00032115
32	Yes	5	0.00000001	0.00031288
33	Yes	4	0.00000001	0.00063735
34	Yes	5	0.00000001	0.00034328
35	Yes	5	0.00000001	0.00031629

36	Yes	4	0.00000001	0.00036648
37	Yes	5	0.00000001	0.00032014
38	Yes	5	0.00000001	0.00033124

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 150	49.269	27	2.838	0.007
L2	150 - 149.5	43.357	27	2.795	0.005
L3	149.5 - 120	43.064	27	2.791	0.005
L4	120 - 110.5	27.238	27	2.229	0.003
L5	110.5 - 97.1667	22.990	27	2.038	0.002
L6	102 - 73.5	19.525	27	1.853	0.002
L7	73.5 - 49.0833	9.914	27	1.325	0.001
L8	55 - 36.75	5.528	27	0.940	0.001
L9	36.75 - 0	2.432	27	0.643	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.000	(2) 7770.00 w/ Mount Pipe	27	48.081	2.833	0.007	13097
149.000	(2) LPA-80063/4CF w/ Mount Pipe	27	42.772	2.787	0.006	5881
139.000	VHLP2.5-11	27	37.067	2.642	0.005	3630
137.000	800MHz 2X50W RRH W/FILTER	27	35.962	2.603	0.004	3389
135.000	APXVSPP18-C-A20 w/ Mount Pipe	27	34.871	2.562	0.004	3177
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	27	25.394	2.148	0.003	2386
106.000	HBX-6516DS-VTM w/ Mount Pipe	27	21.121	1.940	0.002	3144
50.000	58532A	27	4.550	0.851	0.001	3326
47.000	KS24019-L112A	27	4.005	0.802	0.001	3035

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 150	125.618	2	7.242	0.017
L2	150 - 149.5	110.567	2	7.131	0.014
L3	149.5 - 120	109.823	2	7.121	0.014
L4	120 - 110.5	69.511	2	5.690	0.007
L5	110.5 - 97.1667	58.681	2	5.202	0.006
L6	102 - 73.5	49.845	2	4.732	0.005
L7	73.5 - 49.0833	25.322	2	3.385	0.003
L8	55 - 36.75	14.122	2	2.401	0.002
L9	36.75 - 0	6.216	2	1.643	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.000	(2) 7770.00 w/ Mount Pipe	2	122.593	7.228	0.018	5279
149.000	(2) LPA-80063/4CF w/ Mount Pipe	2	109.080	7.110	0.015	2373
139.000	VHLP2.5-11	2	94.552	6.742	0.012	1459
137.000	800MHz 2X50W RRH W/FILTER	2	91.738	6.643	0.011	1361
135.000	APXVSPP18-C-A20 w/ Mount Pipe	2	88.959	6.538	0.011	1275
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	64.812	5.484	0.006	951
106.000	HBX-6516DS-VTM w/ Mount Pipe	2	53.915	4.953	0.005	1249
50.000	58532A	2	11.624	2.174	0.001	1306
47.000	KS24019-L112A	2	10.233	2.049	0.001	1191

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	160 - 150 (1)	TP20x20x0.25	10.000	0.000	0.0	21.000	15.512	-2.184	325.744	0.007
L2	150 - 149.5 (2)	TP20.403x20x0.25	0.500	0.000	0.0	21.000	15.828	-2.215	332.384	0.007
L3	149.5 - 120 (3)	TP26.45x20.403x0.25	29.500	0.000	0.0	39.000	21.091	-8.238	822.536	0.010
L4	120 - 110.5 (4)	TP28.397x26.45x0.387	9.500	0.000	0.0	26.821	34.884	-10.377	935.615	0.011
L5	110.5 - 97.1667 (5)	TP31.13x28.397x0.397 H1-3+VT (1.42 CR) - 5	13.333	0.000	0.0	26.759	38.064	-12.661	1018.550	0.012
L6	97.1667 - 73.5 (6)	TP35.483x29.639x0.5 H1-3+VT (1.52 CR) - 6	28.500	0.000	0.0	26.889	56.294	-19.612	1513.710	0.013
L7	73.5 - 49.0833 (7)	TP40.49x35.483x0.486 H1-3+VT (1.69 CR) - 7	24.417	0.000	0.0	26.961	60.717	-24.292	1636.980	0.015
L8	49.0833 - 36.75 (8)	TP42.267x38.527x0.541 H1-3+VT (1.68 CR) - 8	18.250	0.000	0.0	27.008	72.629	-32.443	1961.570	0.017
L9	36.75 - 0 (9)	TP49.8x42.267x0.559 H1-3+VT (1.54 CR) - 9	36.750	0.000	0.0	30.281	88.689	-44.972	2685.640	0.017

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	160 - 150 (1)	TP20x20x0.25	57.284	9.087	23.100	0.393	0.000	0.000	23.100	0.000
L2	150 - 149.5 (2)	TP20.403x20x0.25	59.880	9.121	23.100	0.395	0.000	0.000	23.100	0.000
L3	149.5 - 120 (3)	TP26.45x20.403x0.25	475.714	42.326	39.000	1.085	0.000	0.000	39.000	0.000
L4	120 - 110.5 (4)	TP28.397x26.45x0.387	670.263	33.867	26.821	1.263	0.000	0.000	26.821	0.000
L5	110.5 - 97.1667 (5)	TP31.13x28.397x0.397	865.500	37.729	26.759	1.410	0.000	0.000	26.759	0.000
L6	97.1667 - 73.5 (6)	TP35.483x29.639x0.5	1611.242	40.413	26.889	1.503	0.000	0.000	26.889	0.000
L7	73.5 - 49.0833	TP40.49x35.483x0.486	2156.02	45.138	26.961	1.674	0.000	0.000	26.961	0.000

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 $\frac{f_{by}}{F_{by}}$
L8	49.0833 - 36.75 (8)	TP42.267x38.527x0.541	2753.405 (7) 2753.408 (8)	44.819	27.008	1.659	0.000	0.000	27.008	0.000
L9	36.75 - 0 (9)	TP49.8x42.267x0.559	4085.958	46.082	30.281	1.522	0.000	0.000	30.281	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	160 - 150 (1)	TP20x20x0.25	5.165	0.333	14.000	0.048	0.915	0.072	14.000	0.005
L2	150 - 149.5 (2)	TP20.403x20x0.25	5.202	0.329	14.000	0.047	0.914	0.069	14.000	0.005
L3	149.5 - 120 (3)	TP26.45x20.403x0.25	18.593	0.882	26.000	0.069	1.157	0.049	26.000	0.002
L4	120 - 110.5 (4)	TP28.397x26.45x0.387	21.758	0.624	17.880	0.071	1.168	0.028	17.880	0.002
L5	110.5 - 97.1667 (5)	TP31.13x28.397x0.397	24.065	0.632	17.840	0.072	1.219	0.025	17.840	0.001
L6	97.1667 - 73.5 (6)	TP35.483x29.639x0.5	28.238	0.502	17.926	0.057	1.401	0.017	17.926	0.001
L7	73.5 - 49.0833 (7)	TP40.49x35.483x0.486	30.700	0.506	17.974	0.057	1.523	0.015	17.974	0.001
L8	49.0833 - 36.75 (8)	TP42.267x38.527x0.541	34.195	0.471	18.005	0.053	1.475	0.011	18.005	0.001
L9	36.75 - 0 (9)	TP49.8x42.267x0.559	38.415	0.433	20.188	0.044	1.731	0.009	20.188	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	160 - 150 (1)	0.007	0.393	0.000	0.048	0.005	0.401 ✔	1.333	H1-3+VT ✔
L2	150 - 149.5 (2)	0.007	0.395	0.000	0.047	0.005	0.402 ✔	1.333	H1-3+VT ✔
L3	149.5 - 120 (3)	0.010	1.085	0.000	0.069	0.002	1.097 ✔	1.333	H1-3+VT ✔
L4	120 - 110.5 (4)	0.011	1.263	0.000	0.071	0.002	1.275 ✔	1.333	H1-3+VT ✔
L5	110.5 - 97.1667 (5)	0.000 1.4	1.410	0.000	0.072	0.001	**1.424** ✘	1.333	H1-3+VT ✘
L6	97.1667 - 73.5 (6)	0.013	1.503	0.000	0.057	0.001	**1.517** ✘	1.333	H1-3+VT ✘
L7	73.5 - 49.0833 (7)	0.015	1.674	0.000	0.057	0.001	**1.690** ✘	1.333	H1-3+VT ✘
L8	49.0833 - 36.75 (8)	0.017	1.659	0.000	0.053	0.001	**1.677** ✘	1.333	H1-3+VT ✘
L9	36.75 - 0 (9)	0.017	1.522	0.000	0.044	0.000	**1.539** ✘	1.333	H1-3+VT ✘

Section Capacity Table

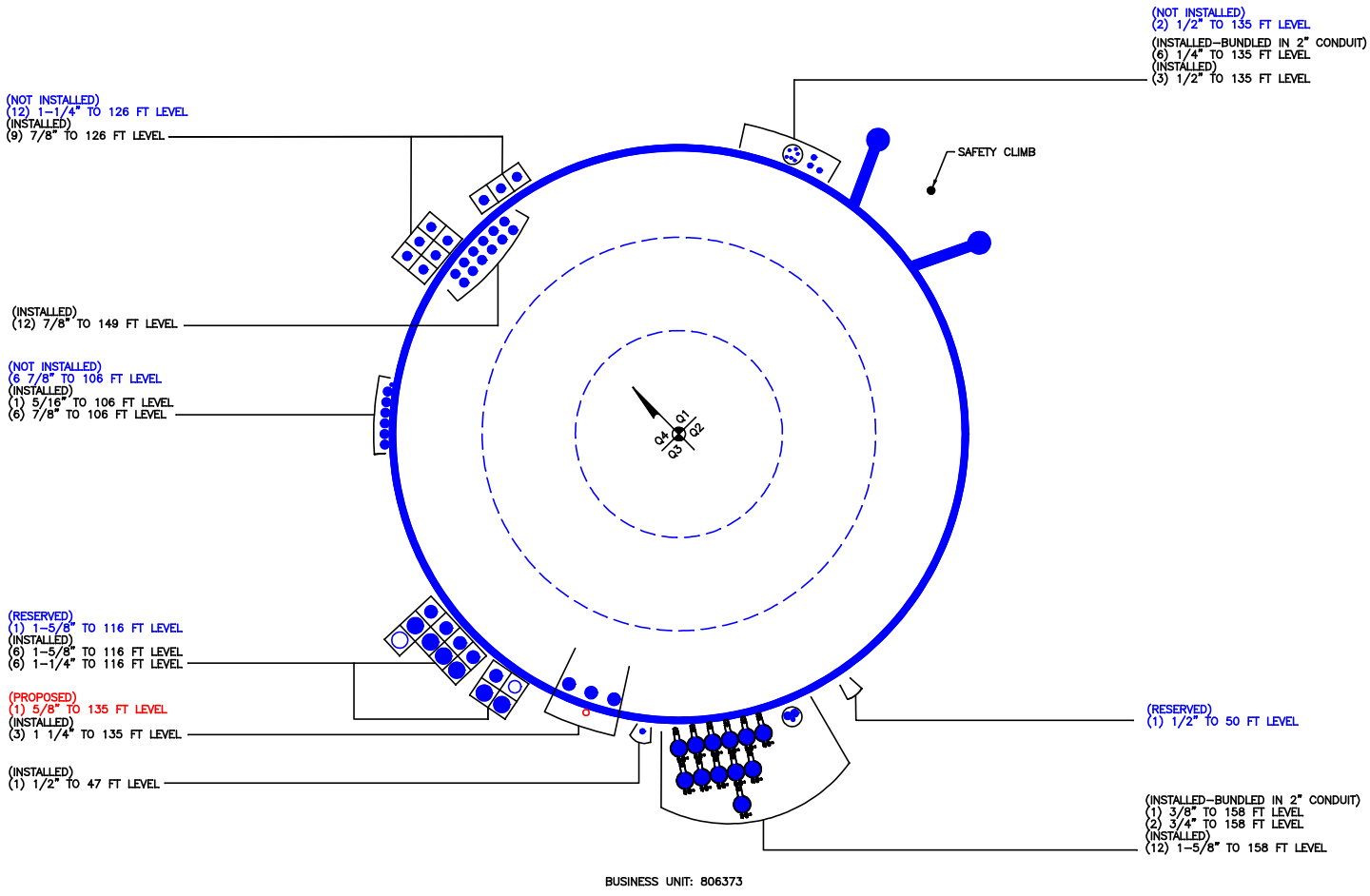
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
L1	160 - 150	Pole	TP20x20x0.25	1	-2.184	434.217	30.0*	Pass
L2	150 - 149.5	Pole	TP20.403x20x0.25	2	-2.215	443.068	30.1*	Pass
L3	149.5 - 120	Pole	TP26.45x20.403x0.25	3	-8.238	1096.440	81.9*	Pass
L4	120 - 110.5	Pole	TP28.397x26.45x0.387	4	-10.377	1247.175	91.5*	Pass
L5	110.5 - 97.1667	Pole	TP31.13x28.397x0.397	5	-12.661	1357.727	102.1*	Fail ✗
L6	97.1667 - 73.5	Pole	TP35.483x29.639x0.5	6	-19.612	2017.775	108.9*	Fail ✗
L7	73.5 - 49.0833	Pole	TP40.49x35.483x0.486	7	-24.292	2182.094	121.3*	Fail ✗
L8	49.0833 - 36.75	Pole	TP42.267x38.527x0.541	8	-32.443	2614.773	120.1*	Fail ✗
L9	36.75 - 0	Pole	TP49.8x42.267x0.559	9	-44.972	3579.958	110.2*	Fail ✗
							Summary	
						Pole (L7)	121.3*	Fail ✗
						RATING =	**121.3***	**Fail** ✗

***Check additional calculations**

Program Version 6.1.4.1 - 12/17/2013

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806373

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	36.75	3	PL1x6-17	F	0	T&C
36.75	73.5	3	PL1x4.25-20	F	0	T&C
73.5	110.5	3	PL1x4.25-20	F	0	T&C
110.5	120	3	.0.875x4.25-:	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.		Bottom Elevation Failure	Top Elevation Failure	Section Failure %
150.0000	160.0000	0.2500	35	50	30.0%										**30.0%**	160.0000	10.0000	0.0000	Round	20.0000	20.0000				1	54.5	78.5	121.3%
149.5000	150.0000	0.2500	35	50	30.1%										**30.1%**	150.0000	0.5000	0.0000	Round	20.0000	20.4026				2	36.5	49.5	120.1%
120.0000	149.5000	0.2500	65	80	81.9%										**81.9%**	149.5000	29.5000	0.0000	12	20.4026	26.4496				3	0	21.5	110.2%
110.5000	120.0000	0.2500	65	80	63.8%	3	.0.875x4.25-:	91.5%							**91.5%**	120.0000	9.5000	0.0000	12	26.4496	28.3969				4			
97.1667	110.5000	0.2500	65	80	71.1%	3	PL1x4.25-20	102.1%							**102.1%**	110.5000	13.3333	4.8333	12	28.3969	31.1300				5			
73.5000	102.0000	0.3750	65	80	75.9%	3	PL1x4.25-20	**108.9%**							**108.9%**	102.0000	28.5000	0.0000	12	29.6393	35.4833				6			
49.0833	73.5000	0.3750	65	80	84.8%	3	PL1x4.25-20	**121.3%**							**121.3%**	73.5000	24.4167	5.9167	12	35.4833	40.4900				7			
36.7500	55.0000	0.4375	65	80	84.2%	3	PL1x4.25-20	**120.1%**							**120.1%**	55.0000	18.2500	0.0000	12	38.5268	42.2674				8			
0.0000	36.7500	0.4375	65	80	86.8%	3	PL1x6-17	**110.2%**							**110.2%**	36.7500	36.7500	0.0000	12	42.2674	49.8000				9			
																									10			
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Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
PL1x6-17	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.25	65	80	0.80	17	1.00	17	185.3	247.1	Compress.	281.3	Rupture
PL1x4.25-20	14.5	4.25	0.35	6.40	0.5	0	1	4.25	0	0	1.25	65	80	0.80	20	1.00	20	117.5	156.7	Rupture	176.3	Rupture
PL0.875x4.25-15	12.7	3.72	0.24	5.60	0.4375	0	0.875	4.25	0	0	1.25	65	80	0.80	15	1.00	15	102.8	137.1	Rupture	154.2	Rupture

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	36.75	3	PL1x6-17	F	T&C
36.75	73.5	3	L1x4.25-20	F	T&C
73.5	110.5	3	L1x4.25-20	F	T&C
110.5	120	3	75x4.25-15	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1				1				1									
	1				1				1								
1				1				1									
	1				1				1								

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

PROJECT	89211.001.01
SUBJECT	Pipe Extension.
DATE	1/12/2014
PAGE	1 OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Elevation 150'

(3) MC 10 x 28.5'

Moment = 57.3 K-ft
Axial = 2.2K
Shear = 5.2 K

Force in MC 10 X 28.5'

$= \frac{57.3 \times 12}{1768.5} \times 16.1 \times 8.42 = 52.7^{K}$

K = 1

L_v = 18"

$\frac{KL}{r} = 15 < 4.71\sqrt{\frac{29000}{50}} = 113.4$

r = 1.2"

$F_e = \frac{\pi^2 \times 29000}{(15)^2} = 1272.1$

$F_{CR} = \left[0.658^{50/1272.1}\right] \times 50 = 49.2^{ksi}$

$\frac{F_{CR}}{\Omega} = \frac{49.2}{1.67} = 29.45$ ksi (ASD) $\Rightarrow$ 39.3 ksi

$= 330.9$

Flexure =

$F_{b\,allow} = 0.6 \times 50 \times 4/3 = 40^{ksi}$

$= \frac{40 \times 1768.5}{16.1} = 366.1$ K-ft

Actual total bending = 57.3 + 5.2 X 18 = 150.9 K-ft

Combined strength =

$\frac{52.7 + 0.7}{330.9} + \frac{150.9}{366.1} = 57.3\%$

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	806373
Name:	HRT 101 943232
App. #:	208129 Revision # 3

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	4086	ft-kip
Axial:	45	kip
Shear:	38	kip
Base Plate Type:	Circular	

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	105%
eta Factor:	0.50

Original Anchor Rod Data

Quantity:	16	
Diameter:	2.25	in
Material:	A615 GR 75	
Bolt Circle:	58.1	in
Bolt Spacing:		in
Bolt Group Area:	63.62	in^2
Bolt Group MOIx:	26816	in^4

Reactions Seen by Original AR Group

Moment:	3430.9	kip-ft
Axial:	45.0	kip
Shear:	38.4	kip

Original AR Capacity Check

Tension Load:	176.7	kip
Allowable load:	194.8	kip
AR Capacity:	90.7%	Pass

First Added Anchor Rod Data

Quantity:	3	
Diameter:	2.25	in
Material:	A193 B7	
Bolt Circle:	63.0	in
Bolt Group Area:	11.93	in^2
Bolt Group MOIx:	5120	in^4

Reactions Seen by First Added AR Group

Moment:	655.1	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check

Tension Load:	106.4	kip
Allowable load:	218.6	kip
AR Capacity:	48.7%	Pass

Second Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

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

TIA Rev F

Site Data

BU#:	*806373*
Site Name:	*HRT 101 943232*
App #:	*208129 Revision # 3*
Pole Manufacturer:	*Other*

Reactions		
Moment:	3430.9017	ft-kips
Axial:	44.9724	kips
Shear:	38.414584	kips

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	58.06	in

Plate Data		
Diam:	64.06	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.01	in

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

Pole Data		
Diam:	49.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	174.5 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	89.5% **Pass**	Fty*ASIF

Base Plate Results

Base Plate Stress:	36.8 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	61.3% **Pass**	0.75*Fy*ASIF
Flexural Check		Y.L. Length: 29.85

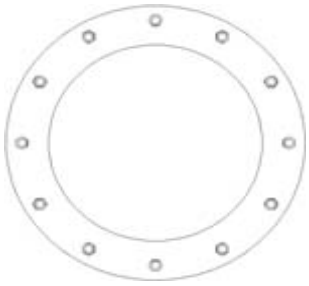
n/a

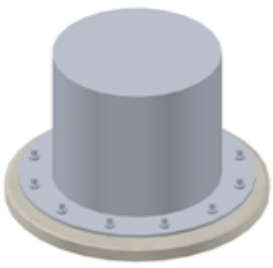
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

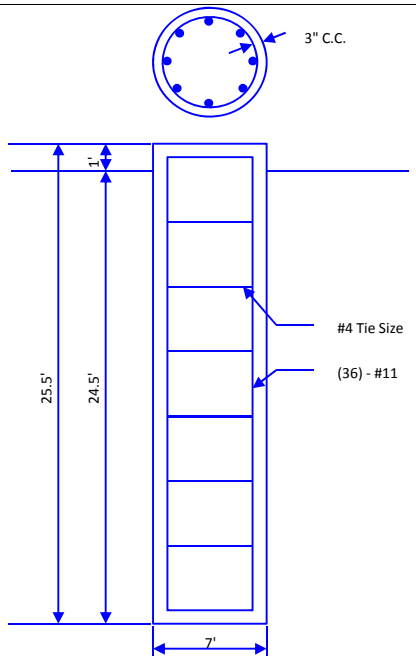
CCI Foundation Tool Suite - Monopole Pier - Beta Release

CCI Foundation Tool Suite - v1.0 Date: 1/12/2014

BU:	806373
Site Name:	HRT 101 943232,CT
App Number:	208129 Rev:3
Work Order:	694156

Monopole Drilled Pier

Input



Criteria

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

Forces

Compression	58.5	kips
Shear	49.4	kips
Moment	5311.8	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	7	ft
Ext. above grade:	1	ft
Depth below grade:	24.5	ft

Material Properties

Number of Rebar:	36	
Rebar Size:	11	
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	3.5	0	3.5	100	0	0	0	0	0	
2	0.5	3.5	4	100		28			0	
3	1	4	5	125		42			0	
4	19.5	5	24.5	65		42	0.55	0.55	26	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	5.43	ft
Max Moment, Mu:	4265.90	k-ft
Soil Safety Factor:	2.50	
Safety Factor Req'd:	2	
RATING:	80.2%	

Soil Axial Capacity

Skin Friction (k):	121.90	kips
End Bearing (k):	500.30	kips
Comp. Capacity (k), ϕCn:	622.20	kips
Comp. (k), Cu:	58.50	kips
RATING:	9.4%	

Concrete/Steel Check

Mu (from soil analysis)	5545.67	k-ft
ϕMn	8447.78	k-ft
RATING:	65.6%	

rho provided	1.01	
rho required	0.33	OK

Rebar Spacing	5.19	
Spacing required	22.56	OK

Dev. Length required	18.82	
Dev. Length provided	61.78	OK

Overall Foundation Rating: 80.2%

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

Sprint Existing Facility

Site ID: CT03XC092

HRT 101 943232 (Enfield Crown)

4 Oliver Road
Enfield, CT 06082

March 20, 2014

EBI Project Number: 62141240

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

EBI Consulting
environmental | engineering | due diligence

March 20, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC092 - HRT 101 943232 (Enfield Crown)

Site Total: 54.789% - MPE% in full compliance

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

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 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 RFS APXV9ERR18-C-A20 has a 14.9 dBd gain value at its main lobe at 1900 MHz and 11.9 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**135 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	CT03XC092 - HRT 101 943232 (Enfield Crown)
Site Addresss	4 Oliver Road, Enfield, CT 06082
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	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	135	129	1/2 "	0.5	3	1042.6805	2.25257%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	135	129	1/2 "	0.5	3	195.44744	0.74469%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		4.487%

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	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	14.9	135	129	1/2 "	0.5	3	828.23056	1.78928%
2a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	11.9	135	129	1/2 "	0.5	3	138.36619	0.52720%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		3.806%

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	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	135	129	1/2 "	0.5	3	1042.6805	2.25257%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	135	129	1/2 "	0.5	3	195.44744	0.74469%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		4.487%

Site Composite MPE %	
Carrier	MPE %
Sprint	12.779%
AT&T	12.740%
Verizon Wireless	11.570%
T-Mobile	0.250%
Clearwire	0.980%
MetroPCS	10.820%
Nextel	2.030%
XM Satellite Radio	1.170%
PageNet	2.450%
Total Site MPE %	**54.789%**

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Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **12.779% (4.487% from Sectors 1 & 3 and 3.806% from sector 2)** 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 **54.789%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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