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

June 26, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 806363**
Sprint PCS Site ID: CT03XC156
Located at: 48 Cow Hill Road, Clinton, CT 06413

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 Mr. William W. Fritz, First Selectman, Town of Clinton.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **48 Cow Hill Road, Clinton, CT 06413**. 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: Mr. William W. Fritz, First Selectman
Town of Clinton
54 East Main Street
Clinton, CT 06413

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	CLINTON (CROWN)
SITE CASCADE:	CT03XC156
SITE NUMBER:	806363
SITE ADDRESS:	48 COW HILL ROAD CLINTON, CT 06413
SITE TYPE:	SELF SUPPORT TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 17' 20.2" N
41.288944°

LONGITUDE (NAD83):
72° 32' 18.5" W
-72.538472°

COUNTY:
MIDDLESEX

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
TBD

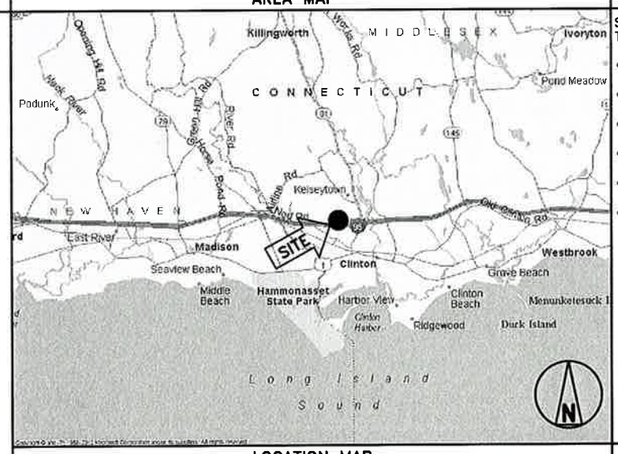
POWER COMPANY:
CL&P
(860) 947-2000

SPRINT PM:
PETER GIARD
(508) 801-0074
peter.giard@sprint.com

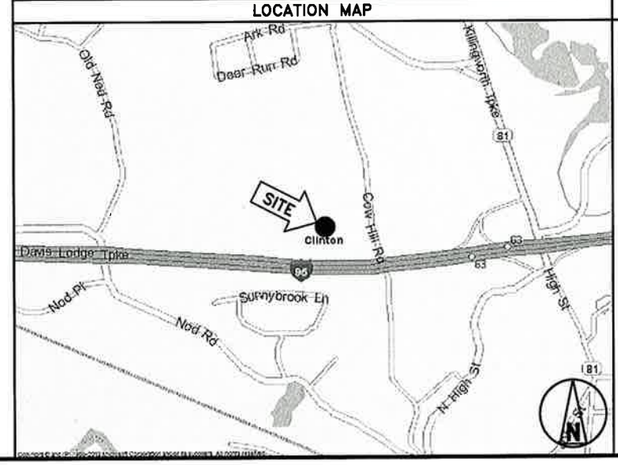
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
PETER.CULBERT@SPRINT.COM

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 CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) HYBRID CABLE
- INSTALL (4) BATTERIES IN EXISTING BBU CABINET

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION & CABLE PLAN	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	COLOR CODING & NOTES	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING PLAN	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

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
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:
CLINTON (CROWN)

SITE CASCADE:
CT03XC156

SITE ADDRESS:
48 COW HILL ROAD
CLINTON, CT 06413

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.

TOWER OWNER NOTIFICATION
ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:
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
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:
CLINTON (CROWN)

SITE CASCADE:
CT03XC156

SITE ADDRESS:
48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

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

1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

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

1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

PLANS PREPARED FOR:

Sprint

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Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.

6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.

2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;

3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.

4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;

6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.

7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.

9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.

2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).

3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).

4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.

9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.

14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.

18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.

19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

23. TOWER GROUND-RING TRENCH WITH GROUND--WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
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
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

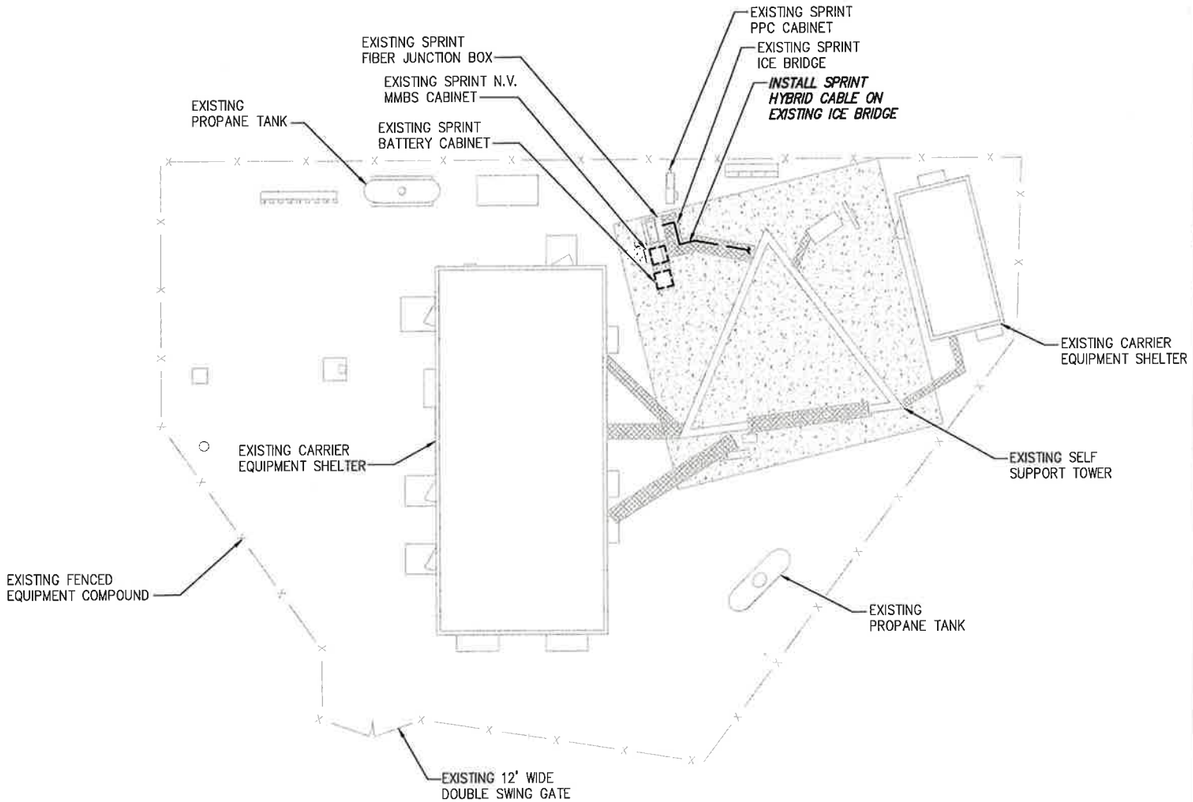
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

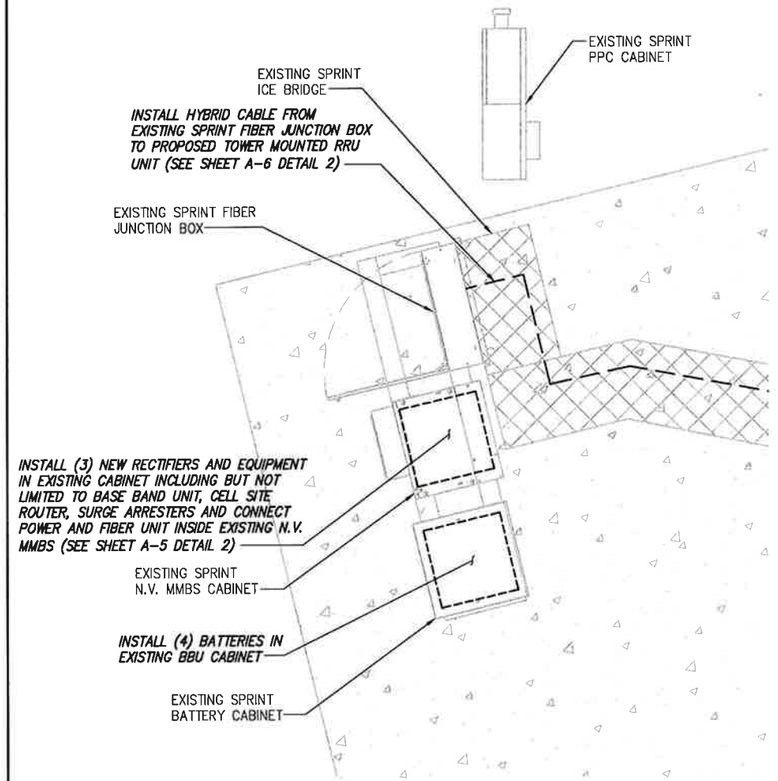
SHEET NUMBER:

SP-3

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



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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DRAWING NOTICE:

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DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

SITE PLAN

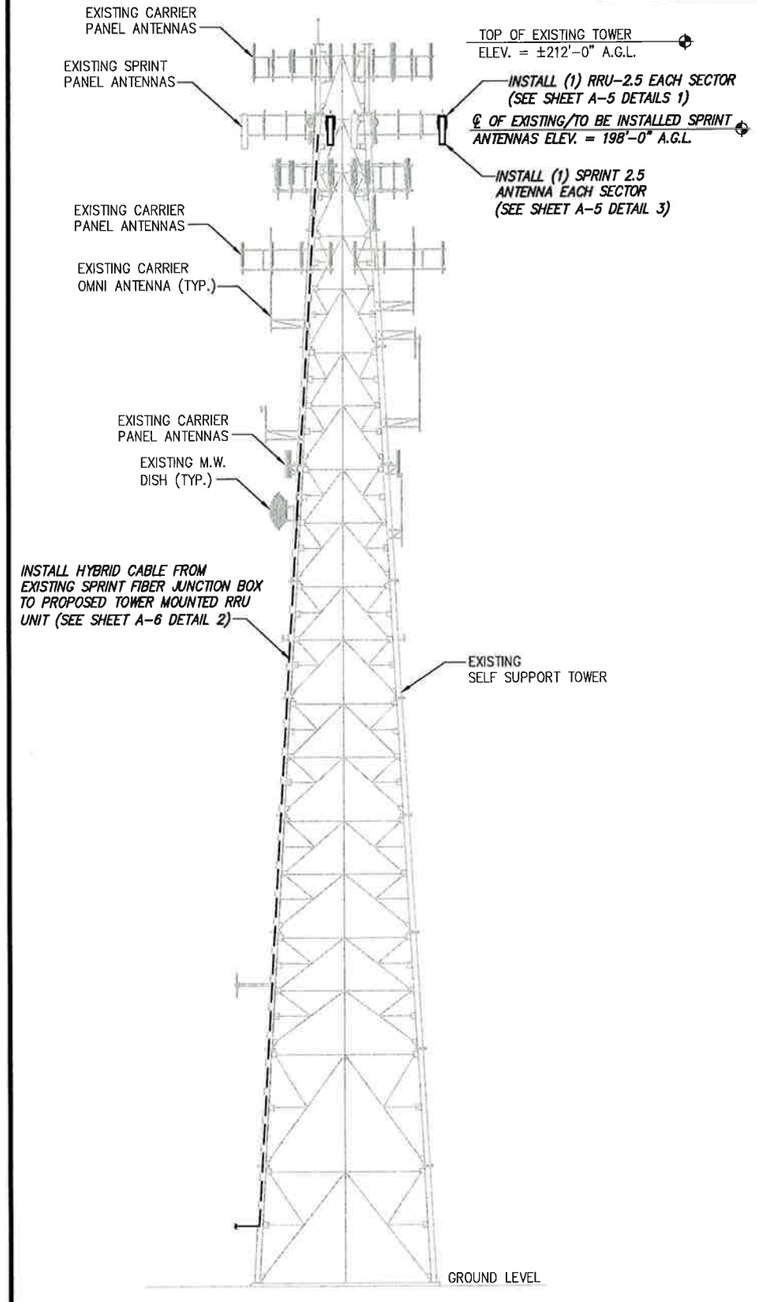
SHEET NUMBER:

A-1

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY CROWN CASTLE DATED: 5/10/14

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

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



TOWER ELEVATION | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

DETAIL NOT USED | NO SCALE | 2

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Sprint

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SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

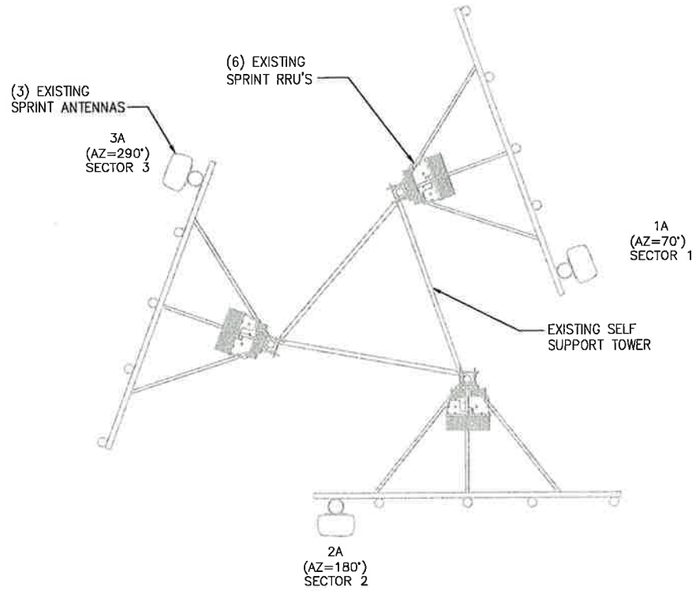
48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:

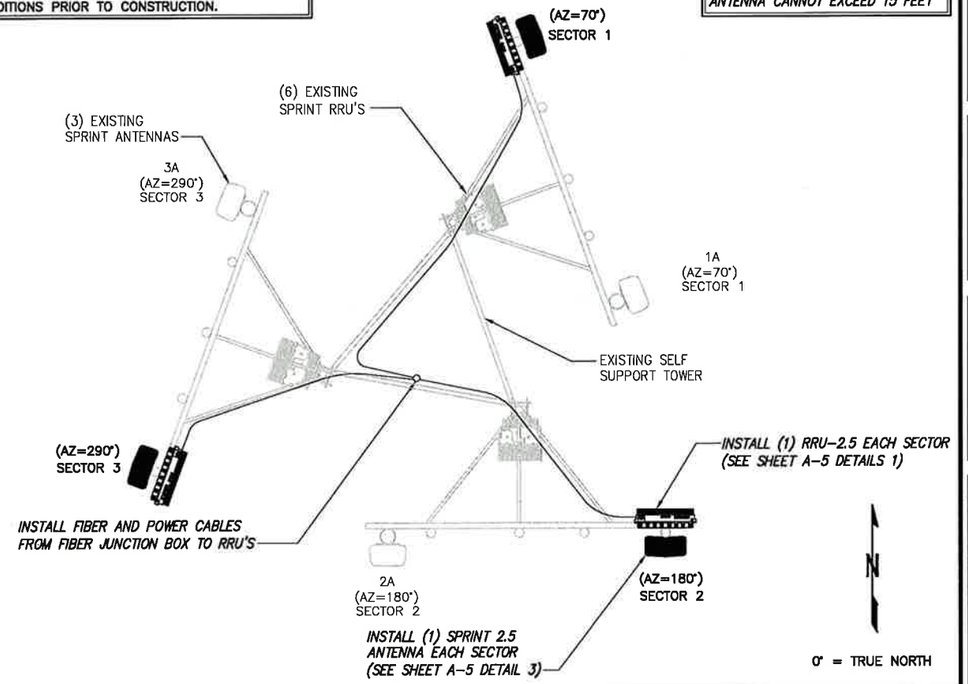
A-2



EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

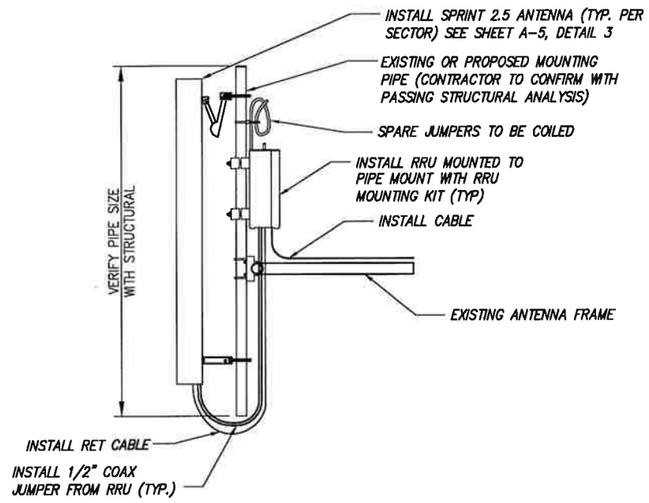
THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

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



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
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

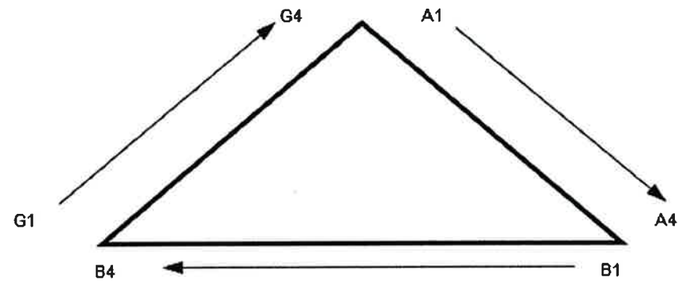
A-3

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	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

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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JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

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

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SITE NAME:
CLINTON (CROWN)

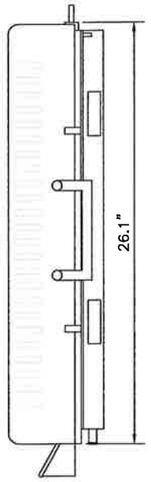
SITE CASCADE:
CT03XC156

SITE ADDRESS:
48 COW HILL ROAD
CLINTON, CT 06413

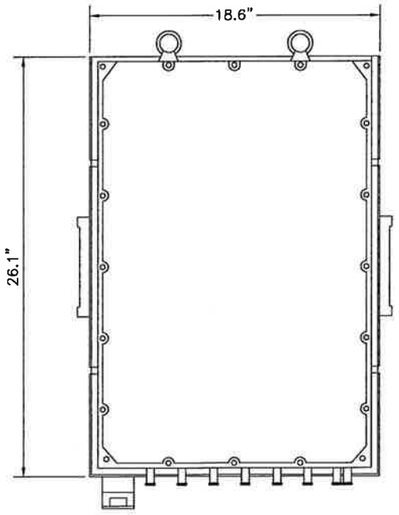
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

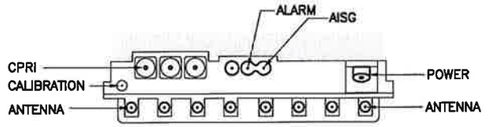
RRU: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

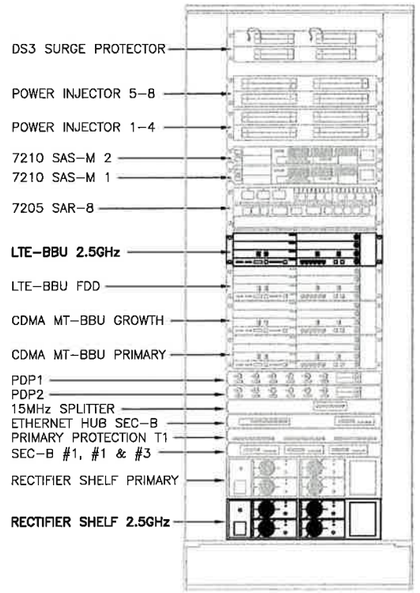


PLAN VIEW

NOTES

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

2.5 RRU | NO SCALE | 1

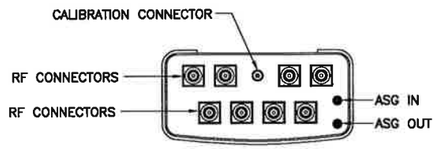


FRONT VIEW

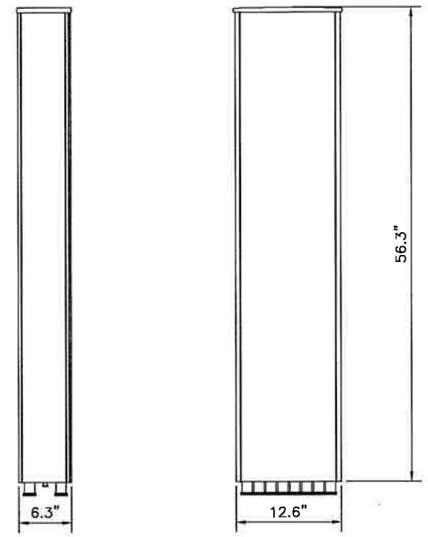
NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

ANTENNA: RFS APXVTM14-C-I20

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



PLAN VIEW



2.5 ANTENNA | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

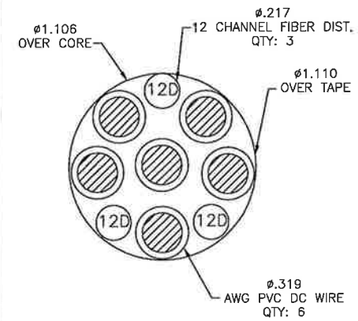
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

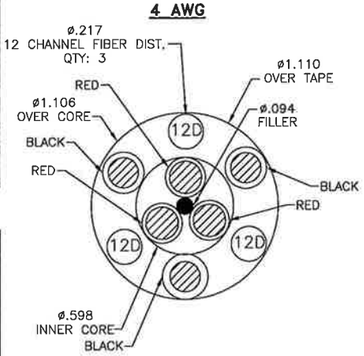
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

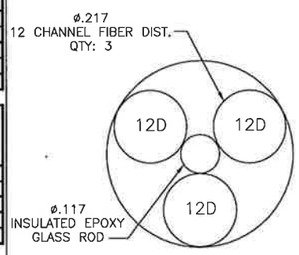
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

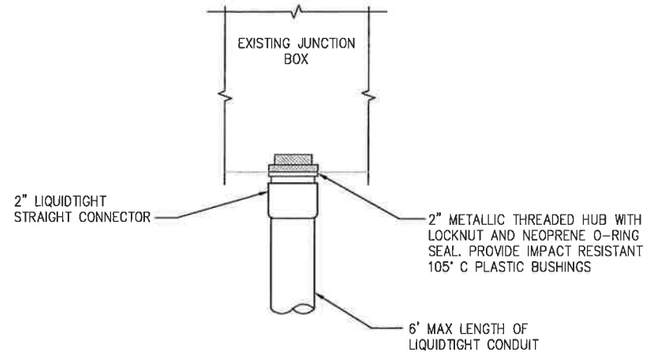


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

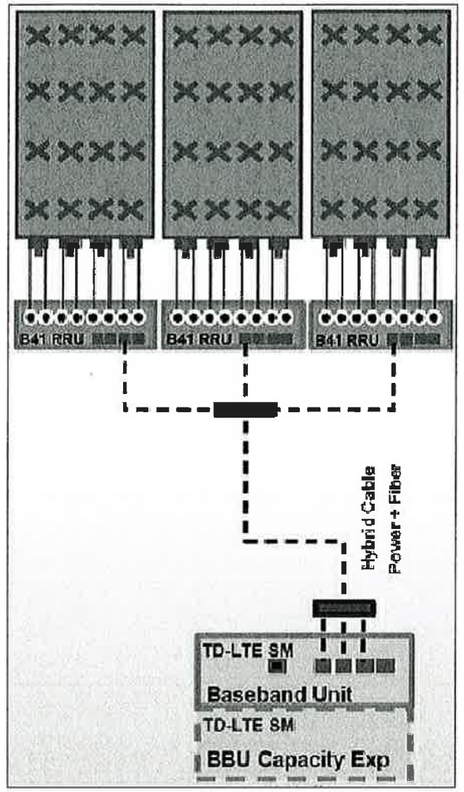
48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

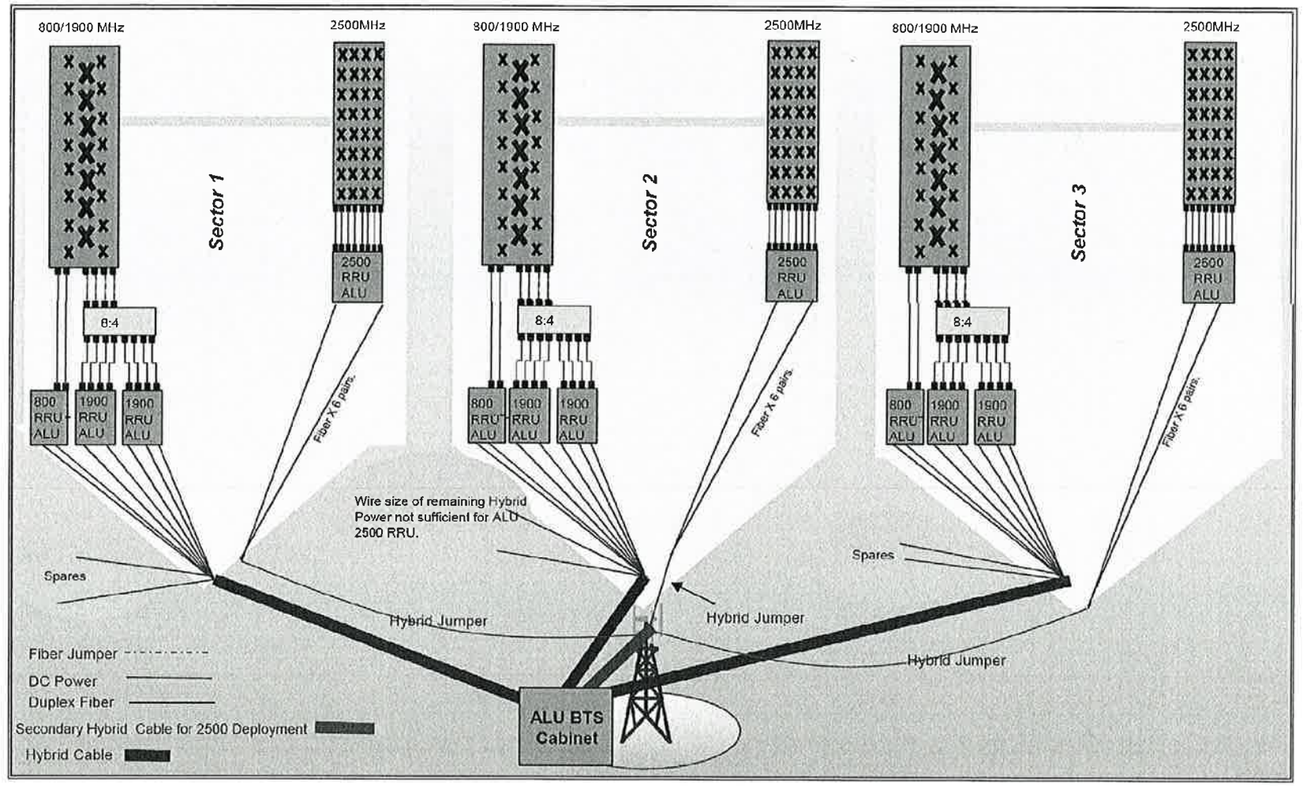
CIVIL DETAILS

SHEET NUMBER:

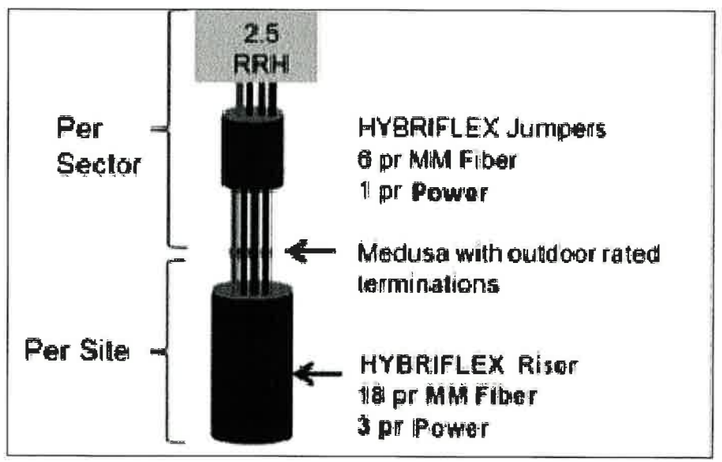
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM | NO SCALE | 1

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
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Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24706
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:
CLINTON (CROWN)

SITE CASCADE:
CT03XC156

SITE ADDRESS:
48 COW HILL ROAD
CLINTON, CT 06413

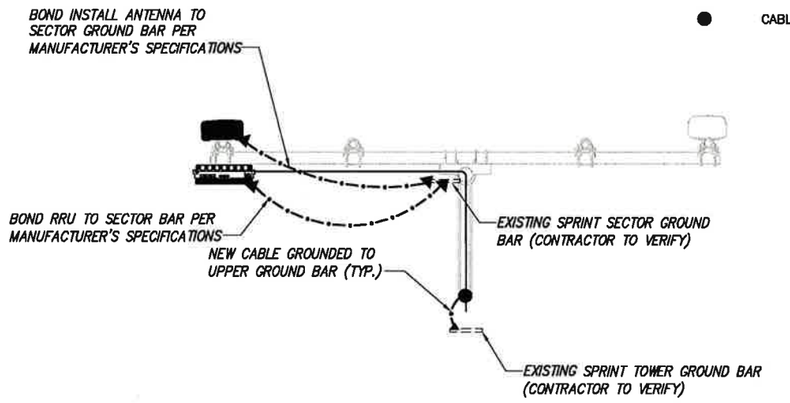
SHEET DESCRIPTION:
PLUMBING DIAGRAM

SHEET NUMBER:
A-7

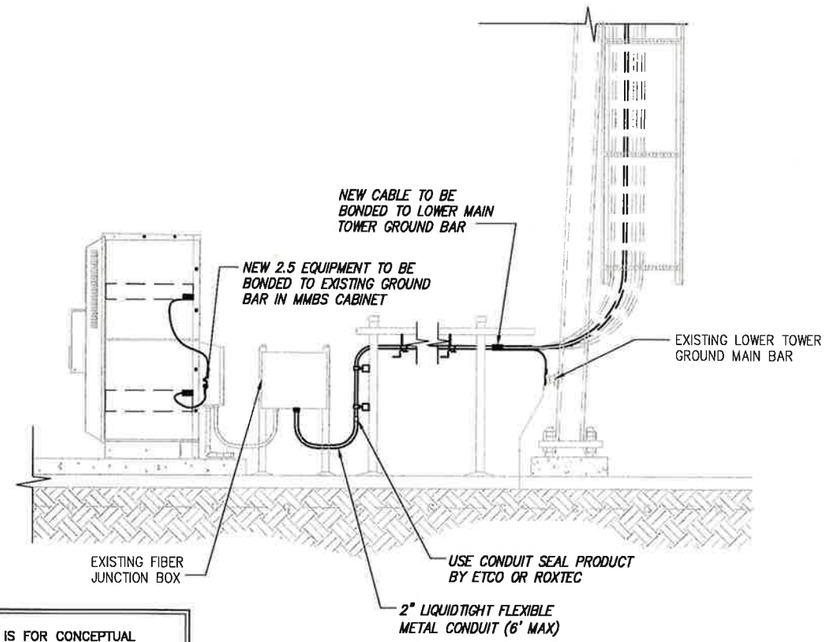
PLAN NOT USED | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

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

PLANS PREPARED FOR:

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CLINTON, CT 06413

SHEET DESCRIPTION:

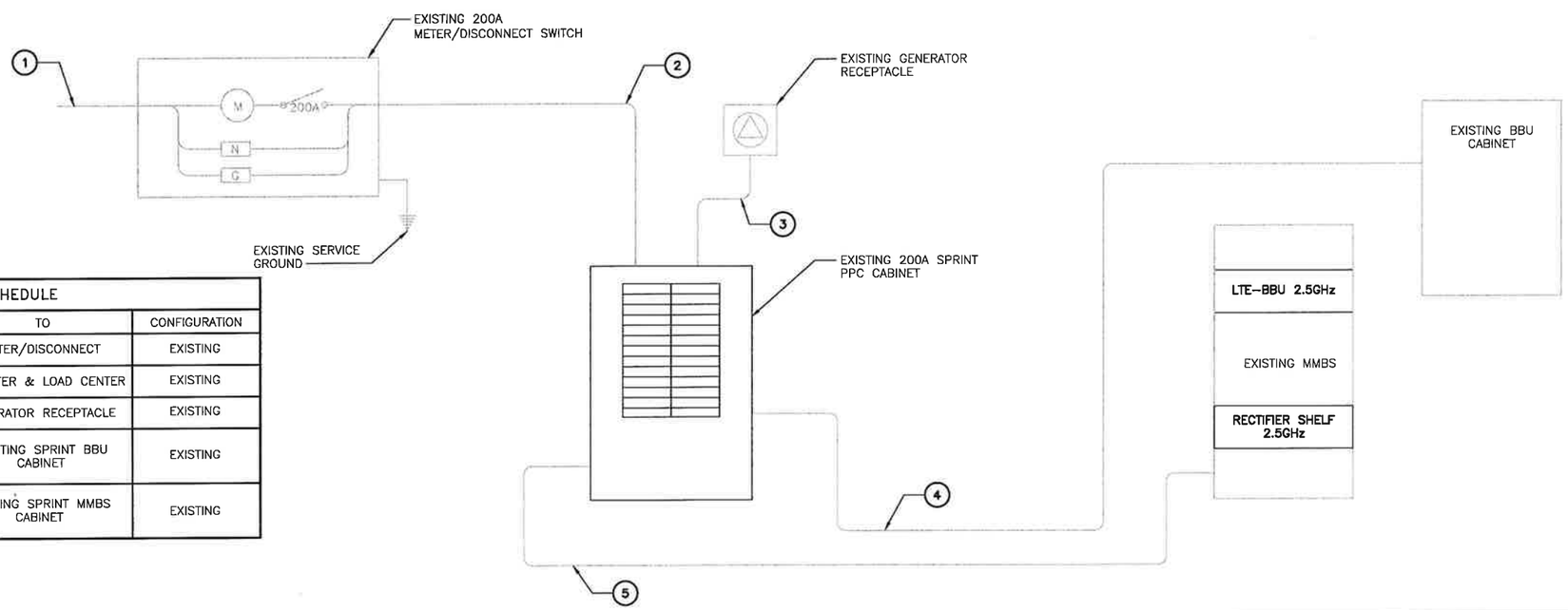
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

NOTES

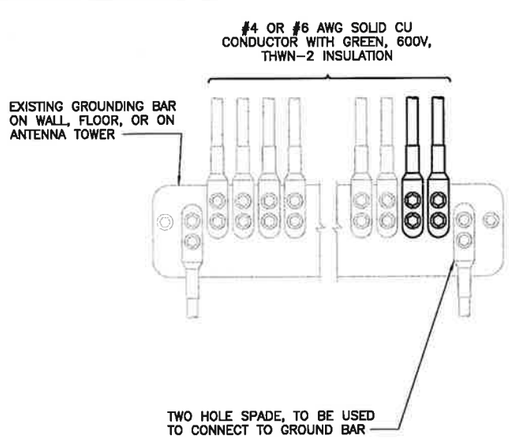
CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



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

ELECTRICAL ONE–LINE DIAGRAM

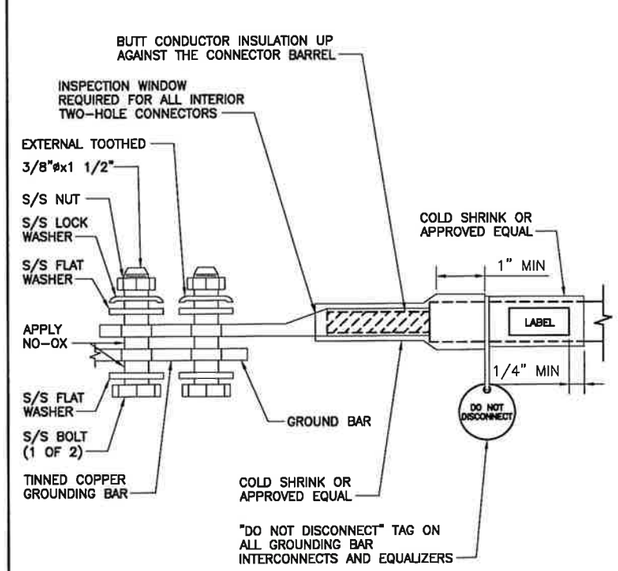
NO SCALE | 1



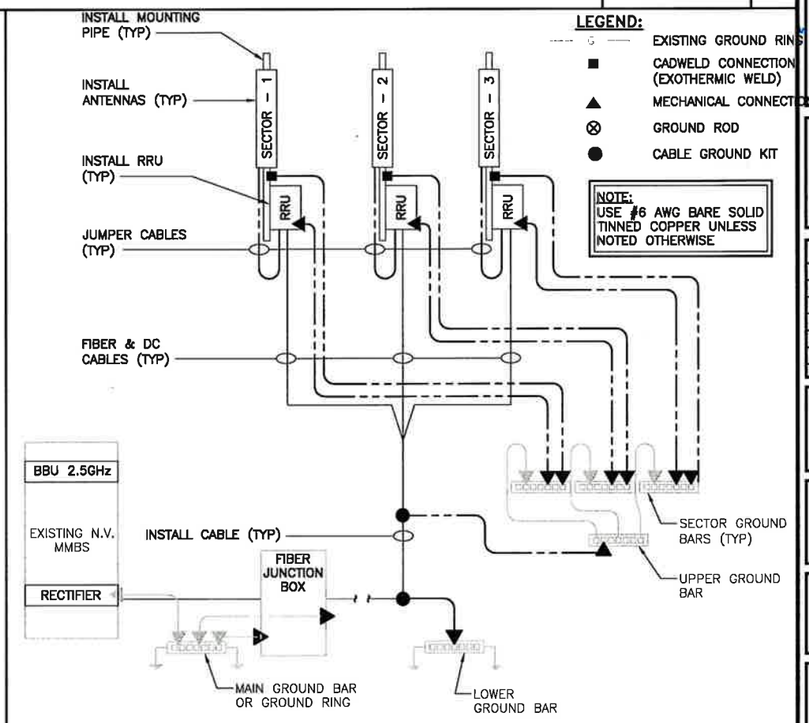
NOTES

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

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



TWO HOLE LUG | NO SCALE | 3



GROUNDING RISER DIAGRAM | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353–000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	SKB	0

SITE NAME:

CLINTON (CROWN)

SITE CASCADE:

CT03XC156

SITE ADDRESS:

48 COW HILL ROAD
CLINTON, CT 06413

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

Date: **May 10, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	Scenario 2.5A
	Carrier Site Number:	CT03XC156
Crown Castle Designation:	**Crown Castle BU Number:**	806363
	Crown Castle Site Name:	HRT 105 943201
	Crown Castle JDE Job Number:	286419
	Crown Castle Work Order Number:	757833
	Crown Castle Application Number:	245642 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	757833
Site Data:	**48 COW HILL ROAD, CLINTON, Middlesex County, CT** **Latitude *41° 17' 20.2"*, Longitude *-72° 32' 18.5"*** **212.625 Foot - Self Support Tower**	

Dear Patrick Byrum,

Crown Castle 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 757833, in accordance with application 245642, revision 0.

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

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

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

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

Structural analysis prepared by: Randall Ashworth, Associate Design Engineer / SLS

Respectfully submitted by:

Jamal A. Huwel, P.E.
Manager Engineering

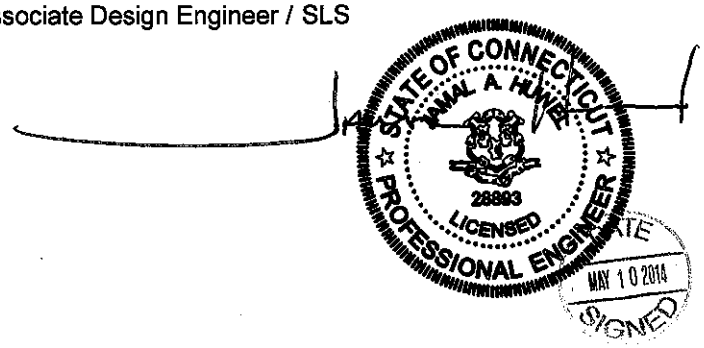


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 212.625 ft Self Support tower designed by ROHN in June of 1992. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E. The tower has been modified per reinforcement drawings prepared by Vertical Structures, in June of 2007. Reinforcement consists of replacing of redundant diagonals from 10 ft to 20 ft and 30 ft to 40 ft.

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 85 mph with no ice, 37.6 mph with 0.75 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
199.0	198.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

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
208.0	209.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	2
		3	antel	BXA-171063-8CF-EDIN-X w/ Mount Pipe			
		3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	antel	BXA-70063/6CF-EDIN w/ Mount Pipe	18	1-5/8	1
		6	antel	LPA-80080/6CF w/ Mount Pipe			
	208.0	1	tower mounts	Sector Mount [SM 510-3]			
199.0	199.0	1	tower mounts	Sector Mount [SM 505-3]	3	1-1/4	1
	198.0	3	alcatel lucent	1900MHz RRH (65MHz)			
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
189.0	190.0	6	ericsson	RRUS-11	1 2 12	1/4 7/8 1-5/8	1
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		1	raycap	DC6-48-60-18-8F			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	189.0	6	adc	ClearGain Dual Band 800/1900 MHz			
		1	tower mounts	Sector Mount [SM 602-3]			
183.0	183.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1-5/8	1
175.0	179.0	2	radiowaves	HPD2-23	12 5	1-1/4 3/8	1
	176.0	12	decibel	DB844H90E-XY w/ Mount Pipe			
	175.0	1	tower mounts	Sector Mount [SM 510-3]			
167.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	167.0	1	tower mounts	Side Arm Mount [SO 308-1]			
164.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	164.0	1	tower mounts	Side Arm Mount [SO 308-1]			
162.0	162.0	1	tower mounts	Side Arm Mount [SO 308-1]	1	1/4	1
	160.0	1	sinclair	SD310-HL			
147.0	153.0	1	rfs celwave	1151-3	1	7/8	1
	147.0	1	tower mounts	Side Arm Mount [SO 308-1]			
145.0	148.0	1	sinclair	SD310-HL	1	7/8	1
	145.0	1	tower mounts	Side Arm Mount [SO 308-1]			
139.0	140.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	3	7/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	139.0	1	tower mounts	Side Arm Mount [SO 201-3]	6 6	1-1/4 1-5/8	1
128.0	132.0	1	rfs celwave	1142-2C	1	7/8	1
	128.0	1	tower mounts	Side Arm Mount [SO 308-1]			
51.0	51.0	1	gps	GPS_A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment

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)
212	212	12	sinclair	SRL410C4	-	-
200	200	2	generic	6' Grid Dish	-	-
190	190	9	swedcom	ALP9212N	-	-
100	100	1	decibel	DB222	-	-
90	90	1	decibel	DB225	-	-
80	80	2	decibel	DB225-2	-	-

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
60	60	1	decibel	DB212-2	-	-
		1	decibel	DB225		
		1	decibel	DB225-2		
50	50	1	decibel	DB212-2	-	-
40	40	1	decibel	DB212	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., Inc.	262276	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	ROHN	262273	CCISITES
4-TOWER MANUFACTURER DRAWINGS	ROHN	262274	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Structures, Inc.	2169576	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the 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
T1	212.625 - 202.458	Leg	ROHN 2.5 STD	1	-2.31	37.41	9.1	Pass
T2	202.458 - 182.292	Leg	ROHN 3 EH	28	-25.81	83.44	30.9	Pass
T3	182.292 - 162.104	Leg	ROHN 4 EH	67	-67.52	138.58	48.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T4	162.104 - 141.896	Leg	ROHN 5 EH	108	-116.09	205.75	56.4	Pass
T5	141.896 - 121.688	Leg	ROHN 6 EHS	146	-145.57	211.35	68.9	Pass
T6	121.688 - 101.479	Leg	ROHN 6 EH	173	-178.74	263.18	67.9	Pass
T7	101.479 - 81.2708	Leg	ROHN 6 EH	200	-208.58	263.18	79.3	Pass
T8	81.2708 - 61	Leg	ROHN 8 EHS	227	-236.67	331.42	71.4	Pass
T9	61 - 40.6667	Leg	ROHN 8 EHS	254	-264.07	331.21	79.7	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 EH	281	-276.15	433.40	63.7	Pass
T11	20.3333 - 0	Leg	ROHN 8 EH	314	-332.54	433.92	76.6	Pass
T1	212.625 - 202.458	Diagonal	ROHN 2 STD	9	-2.97	21.60	13.7	Pass
T2	202.458 - 182.292	Diagonal	ROHN 2 STD	33	-9.81	15.46	63.5	Pass
T3	182.292 - 162.104	Diagonal	ROHN 2 STD	72	-10.32	13.36	77.3	Pass
T4	162.104 - 141.896	Diagonal	ROHN 2 STD	110	-10.09	11.48	87.9	Pass
T5	141.896 - 121.688	Diagonal	ROHN 2.5 STD	149	-13.23	14.35	92.2	Pass
T6	121.688 - 101.479	Diagonal	ROHN 2.5 STD	176	-11.94	12.58	94.9	Pass
T7	101.479 - 81.2708	Diagonal	ROHN 3 STD	203	-11.98	21.76	55.0	Pass
T8	81.2708 - 61	Diagonal	ROHN 3 STD	230	-11.80	19.22	61.4	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 STD	257	-12.78	16.87	75.8	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	284	-18.03	27.45	65.7	Pass
T11	20.3333 - 0	Diagonal	ROHN 3 STD	317	-20.94	26.23	79.8	Pass
T1	212.625 - 202.458	Horizontal	ROHN 1.5 STD	7	-2.15	20.30	10.6 12.5 (b)	Pass
T2	202.458 - 182.292	Horizontal	ROHN 1.5 STD	31	-5.34	20.25	26.4 31.1 (b)	Pass
T3	182.292 - 162.104	Horizontal	ROHN 1.5 STD	70	-6.48	17.38	37.3 37.8 (b)	Pass
T4	162.104 - 141.896	Horizontal	ROHN 2 STD	109	-7.09	24.67	28.8 41.3 (b)	Pass
T5	141.896 - 121.688	Horizontal	ROHN 2 STD	148	-7.95	20.44	38.9 46.3 (b)	Pass
T6	121.688 - 101.479	Horizontal	ROHN 2 STD	175	-7.89	14.86	53.1	Pass
T7	101.479 - 81.2708	Horizontal	ROHN 2.5 STD	202	-8.49	25.42	33.4 49.5 (b)	Pass
T8	81.2708 - 61	Horizontal	ROHN 2.5 STD	229	-8.87	19.85	44.7 51.6 (b)	Pass
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	256	-10.04	15.70	63.9	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 3 STD	283	-9.92	27.89	35.6 40.1 (b)	Pass
T11	20.3333 - 0	Horizontal	ROHN 3 STD	316	-12.21	22.69	53.8	Pass
T1	212.625 - 202.458	Top Girt	ROHN 1.5 STD	4	-0.19	20.34	0.9	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	ROHN 1.5 STD	292	-4.80	11.80	40.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	321	-5.77	9.84	58.6	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	ROHN 2 STD	289	-4.43	7.76	57.1	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	322	-4.97	7.19	69.1	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	ROHN 1.5 STD	308	-0.03	10.76	0.2	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 1.5 STD	341	-0.02	8.85	0.3	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	ROHN 2.5 STD	307	-0.05	6.86	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	340	-0.05	6.20	0.8	Pass
T1	212.625 - 202.458	Inner Bracing	L2x2x1/8	16	-0.00	5.83	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L2x2x1/8	41	-0.01	5.73	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L2x2x1/8	79	-0.01	4.22	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L2x2x1/8	118	-0.01	2.89	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L2x2x1/8	157	-0.01	2.19	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L2 1/2x2 1/2x3/16	184	-0.01	3.45	0.5	Pass
T7	101.479 - 81.2708	Inner Bracing	L3x3x3/16	211	-0.01	4.55	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	7.40	0.4	Pass
T9	61 - 40.6667	Inner Bracing	L3 1/2x3 1/2x1/4	265	-0.01	5.90	0.4	Pass
T10	40.6667 - 20.3333	Inner Bracing	ROHN 3 STD	311	-0.01	19.74	0.4	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 3 STD	345	-0.01	16.16	0.4	Pass
							Summary	
						Leg (T9)	79.7	Pass
						Diagonal (T6)	94.9	Pass
						Horizontal (T9)	63.9	Pass
						Top Girt (T1)	0.9	Pass
						Redund Horz 1 Bracing (T11)	58.6	Pass
						Redund Diag 1 Bracing (T11)	69.1	Pass
						Redund Hip 1 Bracing (T11)	0.3	Pass
						Redund Hip Diagonal Bracing (T11)	0.8	Pass
						Inner Bracing (T7)	0.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Bolt Checks	63.3	Pass
						Rating =	94.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Rods	0	63.2	Pass
1	Base Foundation	0	61.6	Pass

Structure Rating (max from all components) =	94.9%

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

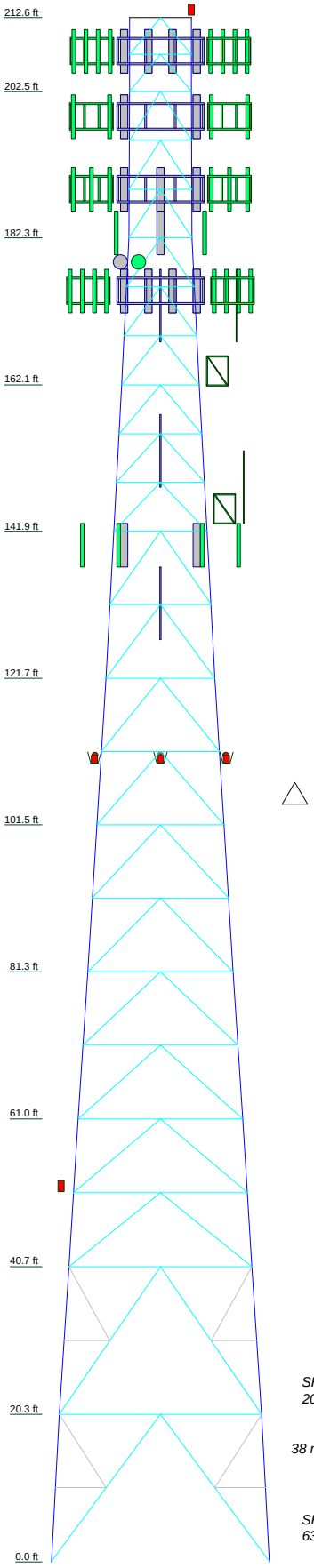
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH	ROHN 8 EHS	ROHN 6 EH	ROHN 6 EHS	ROHN 5 EH	ROHN 4 EH	ROHN 3 EH	A			
Leg Grade	A572-50										
Diagonals	ROHN 3 STD			ROHN 2.5 STD			ROHN 2 STD				
Diagonal Grade	A572-50										
Top Girts	N.A.							B			
Horizontals	ROHN 3 STD		ROHN 2.5 STD			ROHN 2 STD			ROHN 1.5 STD		
Red. Horizontals	ROHN 1.5 STD					N.A.					
Red. Diagonals	ROHN 2 STD					N.A.					
Red. Hips	ROHN 1.5 STD					N.A.					
Inner Bracing	ROHN 3 STD		L3 1/2x3 1/2x1/4		L3x3x3/16	L2 1/2x2 1/2x3/16		L2x2x1/8			
Face Width (ft)	27.8333	25.1771	22.6771	20.0417	17.5417	15.0417	12.7917	10.7083	8.625	8.54167	8.5
# Panels @ (ft)	1 @ 20.25	1 @ 20.3333	2 @ 10.1667	2 @ 10.1354	6 @ 10.1042		3 @ 6.73611	3 @ 6.72917	3 @ 6.72222	2 @ 5.08333	
Weight (K)	37.5	5.7	5.6	4.9	4.7	4.0	3.3	2.7	2.4	1.8	1.5	0.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	212	(2) LGP13519	189
(2) LPA-80080/6CF w/ Mount Pipe	208	(2) LGP13519	189
(2) LPA-80080/6CF w/ Mount Pipe	208	(2) LGP13519	189
(2) LPA-80080/6CF w/ Mount Pipe	208	(2) RRUS-11	189
BXA-70063/6CF-EDIN w/ Mount Pipe	208	(2) RRUS-11	189
BXA-70063/6CF-EDIN w/ Mount Pipe	208	(2) RRUS-11	189
BXA-70063/6CF-EDIN w/ Mount Pipe	208	DC6-48-60-18-8F	189
BXA-171063-8CF-EDIN-X w/ Mount Pipe	208	Sector Mount [SM 602-3]	189
BXA-171063-8CF-EDIN-X w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
BXA-171063-8CF-EDIN-X w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
RRH2X40-AWS	208	(4) DB844H90E-XY w/ Mount Pipe	175
RRH2X40-AWS	208	Sector Mount [SM 510-3]	175
RRH2X40-AWS	208	6' x 2" Mount Pipe	175
DB-T1-6Z-8AB-0Z	208	6' x 2" Mount Pipe	175
Sector Mount [SM 510-3]	208	HPD2-23	175
APXVSPP18-C-A20 w/ Mount Pipe	199	HPD2-23	175
APXVSPP18-C-A20 w/ Mount Pipe	199	1151-3	167
APXVSPP18-C-A20 w/ Mount Pipe	199	Side Arm Mount [SO 308-1]	167
800MHz 2X50W RRH W/FILTER	199	1151-3	164
800MHz 2X50W RRH W/FILTER	199	Side Arm Mount [SO 308-1]	164
800MHz 2X50W RRH W/FILTER	199	SD310-HL	162
1900MHz RRH (65MHz)	199	Side Arm Mount [SO 308-1]	162
1900MHz RRH (65MHz)	199	1151-3	147
1900MHz RRH (65MHz)	199	Side Arm Mount [SO 308-1]	147
APXVTM14-C-120 w/ Mount Pipe	199	SD310-HL	145
APXVTM14-C-120 w/ Mount Pipe	199	Side Arm Mount [SO 308-1]	145
APXVTM14-C-120 w/ Mount Pipe	199	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	139
TD-RRH8x20-25	199	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	139
TD-RRH8x20-25	199	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	139
TD-RRH8x20-25	199	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
Sector Mount [SM 505-3]	199	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
(3) 4' x 2" Pipe Mount	199	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
(3) 4' x 2" Pipe Mount	199	KRY 112 144/1	139
(3) 4' x 2" Pipe Mount	199	KRY 112 144/1	139
(2) 7770.00 w/ Mount Pipe	189	KRY 112 144/1	139
(2) 7770.00 w/ Mount Pipe	189	Side Arm Mount [SO 201-3]	139
(2) 7770.00 w/ Mount Pipe	189	1142-2C	128
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Side Arm Mount [SO 308-1]	128
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Side Lighting	110
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Side Lighting	110
(2) ClearGain Dual Band 800/1900 MHz	189	Side Lighting	110
(2) ClearGain Dual Band 800/1900 MHz	189	GPS_A	51
(2) ClearGain Dual Band 800/1900 MHz	189	Side Arm Mount [SO 701-1]	51

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2.5 STD	B	ROHN 1.5 STD

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 94.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 331 K
SHEAR: 38 K

UPLIFT: -272 K
SHEAR: 33 K

AXIAL
155 K
SHEAR 20 K *MOMENT 2484 kip-ft*
TORQUE 12 kip-ft
38 mph WIND - 0.7500 in ICE

AXIAL
83 K
SHEAR 63 K *MOMENT 7885 kip-ft*
TORQUE 41 kip-ft
REACTIONS - 85 mph WIND

CROWN CASTLE
We Are Solutions
Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2257

Job: **BU# 806363**			
Project:			
Client: Crown Castle	Drawn by: RAshworth		App'd:
Code: TIA/EIA-222-F	Date: 05/07/14		Scale: NTS
Path: C:\Users\RAshworth\Desktop\806363-WO 757833\806363.er			Dwg No. E-1

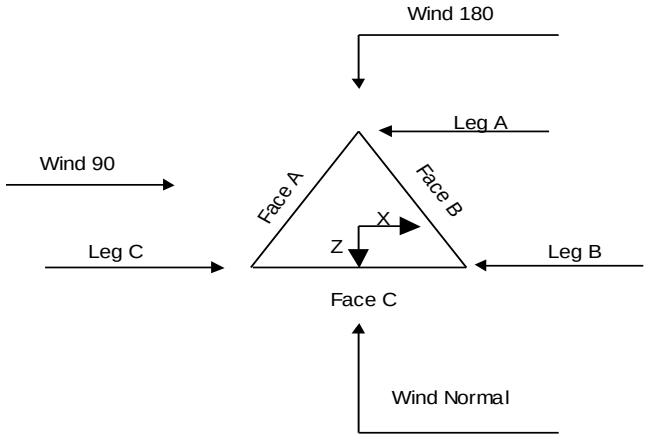
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 212'7-1/2" above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8'6" at the top and 30'1/2" at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in Middlesex County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) Pressures are calculated at each section.
10) Stress ratio used in tower member design is 1.333.
11) 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	212'7-9/16"-202'5-17/32"			8'6"	1	10'2-1/32"
T2	202'5-17/32"-182'3-15/32"			8'6-15/32"	1	20'2-1/32"
T3	182'3-15/32"-162'1-3/16"			8'7-9/16"	1	20'2-9/32"
T4	162'1-3/16"-141'10-13/16"			10'8-17/32"	1	20'2-17/32"
T5	141'10-13/16"-121'8-9/32"			12'9-15/32"	1	20'2-17/32"
T6	121'8-9/32"-101'5-3/4"			15'15/32"	1	20'2-17/32"
T7	101'5-3/4"-81'3-1/4"			17'6-15/32"	1	20'2-17/32"
T8	81'3-1/4"-61'			20'15/32"	1	20'3-1/4"
T9	61'-40'8-1/32"			22'8-5/32"	1	20'3-31/32"
T10	40'8-1/32"-20'3-31/32"			25'2-5/32"	1	20'3-31/32"
T11	20'3-31/32"-0'			27'9-31/32"	1	20'3-31/32"

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	212'7-9/16"-202'5-17/32"	5'31/32"	K Brace Down	No	Yes	0.0000	0.0000
T2	202'5-17/32"-182'3-15/32"	6'8-5/8"	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	182'3-15/32"-162'1-3/16"	6'8-3/4"	K Brace Down	No	Yes	0.0000	0.0000
T4	162'1-3/16"-141'10-13/16"	6'8-7/8"	K Brace Down	No	Yes	0.0000	0.0000
T5	141'10-13/16"-121'8-9/32"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T6	121'8-9/32"-101'5-3/4"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T7	101'5-3/4"-81'3-1/4"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T8	81'3-1/4"-61'	10'1-11/16"	K Brace Down	No	Yes	0.0000	0.0000
T9	61'-40'8-1/32"	10'2-1/32"	K Brace Down	No	Yes	0.0000	0.0000
T10	40'8-1/32"-20'3-31/32"	20'3-31/32"	K1 Down	No	Yes	0.0000	0.0000
T11	20'3-31/32"-0'	20'3"	K1 Down	No	Yes	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 212'7-9/16"-202'5-17/32"	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 202'5-17/32"-182'3-15/32"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 182'3-15/32"-162'1-3/16"	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 162'1-3/16"-141'10-13/16"	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 141'10-13/16"-121'8-9/32"	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T6 121'8-9/32"-101'5-3/4"	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 101'5-3/4"-81'3-1/4"	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T8 81'3-1/4"-61'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 61'-40'8-1/32"	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 212'7-9/16"-202'5-17/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 202'5-17/32"-182'3-15/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 182'3-15/32"-162'1-	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
3/16"							
T4 162'1-3/16"-141'10-13/16"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 141'10-13/16"-121'8-9/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 121'8-9/32"-101'5-3/4"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T7 101'5-3/4"-81'3-1/4"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 81'3-1/4"-61'	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 61'-40'8-1/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 212'7-9/16"-202'5-17/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 202'5-17/32"-182'3-15/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 182'3-15/32"-162'1-3/16"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 162'1-3/16"-141'10-13/16"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 141'10-13/16"-121'8-9/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T6 121'8-9/32"-101'5-3/4"	Single Angle		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 101'5-3/4"-81'3-1/4"	Single Angle		A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 81'3-1/4"-61'	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T9 61'-40'8-1/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 40'8-1/32"-20'3-	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
31/32"		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		ROHN 2.5 STD	1
T11 20'3-31/32"-0'	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		ROHN 2.5 STD	1

Tower Section Geometry *(cont'd)*

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
T1 212'7-9/16"-202'5-17/32"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T2 202'5-17/32"-182'3-15/32"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T3 182'3-15/32"-162'1-3/16"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T4 162'1-3/16"-141'10-13/16"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T5 141'10-13/16"-121'8-9/32"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T6 121'8-9/32"-101'5-3/4"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T7 101'5-3/4"-81'3-1/4"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T8 81'3-1/4"-61'	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T9 61'-40'8-1/32"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T10 40'8-1/32"-20'3-31/32"	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000
T11 20'3-31/32"-0'	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	30.0000	30.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 212'7-9/16"-202'5-17/32"	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 202'5-17/32"-182'3-15/32"	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 182'3-15/32"-162'1-3/16"	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T4 162'1-3/16"-141'10-13/16"	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T5 141'10-13/16"-121'8-9/32"	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T6 121'8-9/32"-101'5-3/4"	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T7 101'5-3/4"-81'3-1/4"	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T8 81'3-1/4"-61'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T9 61'-40'8-1/32"	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T10 40'8-1/32"-20'3-31/32"	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T11 20'3-31/32"-0'	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 212'7-9/16"-202'5-17/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T2 202'5-17/32"-182'3-15/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T3 182'3-15/32"-162'1-3/16"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T4 162'1-3/16"-141'10-13/16"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T5 141'10-13/16"-121'8-9/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T6 121'8-9/32"-101'5-3/4"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T7 101'5-3/4"-81'3-1/4"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T8 81'3-1/4"-61'	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T9 61'-40'8-1/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T10 40'8-1/32"-20'3-31/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T11 20'3-31/32"-0'	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 212'7-9/16"-202'5-17/32"	Flange	0.7500 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T2 202'5-17/32"-182'3-15/32"	Flange	0.8750 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T3 182'3-15/32"-162'1-3/16"	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T4 162'1-3/16"-141'10-13/16"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T5 141'10-13/16"-121'8-9/32"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T6 121'8-9/32"-101'5-3/4"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T7 101'5-3/4"-81'3-1/4"	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T8 81'3-1/4"-61'	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T9 61'-40'8-1/32"	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T10 40'8-1/32"-20'3-31/32"	Flange	1.0000 A325N	8	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	2	0.6250 A325X	0
T11 20'3-31/32"-0'	Flange	1.0000 A354-BC	10	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	2	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4-50A(1/2")	A	Yes	Ar (CfAe)	51' - 0'	0.0000	0.48	1	1	0.6300	0.6300		0.15
HB114-1-08U4-M5J(1 1/4")	A	Yes	Ar (CfAe)	199' - 0'	0.0000	0.45	4	4	1.0000 1.5400	1.5400		1.08
Feedline Ladder (Af)	A	Yes	Af (CfAe)	199' - 0'	0.0000	0.46	1	1	3.0000	3.0000	12.0000	8.40
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	128' - 0'	0.0000	-0.36	5	5	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	145' - 128'	0.0000	-0.36	4	4	1.0900	1.0900		0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	147' - 145'	0.0000	-0.36	3	3	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	164' - 147'	0.0000	-0.36	2	2	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	167' - 164'	0.0000	-0.36	1	1	1.0900	1.0900		0.33
LDF1-50A(1/4")	A	Yes	Ar (CfAe)	162' - 0'	0.0000	-0.38	1	1	0.3450	0.3450		0.06
CR 50 1873(1-5/8")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.44	12	6	1.0000	1.9800		0.83
6-8AWG 3 PAIR(7/8")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	2	2	0.9000	0.0000		0.68
A-DQZNB2Yn1750 N(1/4")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	1	1	0.2756	0.0000		0.03
3" Conduit	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	1	1	3.0000	3.0000		2.80
FSJ2-50(3/8")	A	Yes	Ar (CfAe)	175' - 0'	0.0000	-0.48	5	2	0.4250	0.4250		0.08
Feedline Ladder (Af) ***	A	Yes	Af (CfAe)	189' - 0'	0.0000	-0.4	1	1	3.0000	3.0000	12.0000	8.40
LDF7-50A(1-5/8")	B	Yes	Ar (CfAe)	139' - 0'	0.0000	-0.45	12	6	1.0000	1.9800		0.82
Feedline Ladder (Af)	B	Yes	Af (CfAe)	139' - 0'	0.0000	-0.45	1	1	3.0000	3.0000	12.0000	8.40
LDF6-50A(1-1/4")	B	Yes	Ar (CfAe)	175' - 0'	0.0000	0.45	12	12	1.0000 1.5500	1.5500		0.66
Feedline Ladder (Af) ***	B	Yes	Af (CfAe)	175' - 0'	0.0000	0.45	1	1	3.0000	3.0000	12.0000	8.40
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	208' - 0'	0.0000	0.43	19	12	1.0000	2.0100		0.70
Feedline Ladder (Af)	C	Yes	Af (CfAe)	208' - 0'	0.0000	0.43	1	1	3.0000	3.0000	12.0000	8.40
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	183' - 0'	0.0000	-0.45	6	6	1.0000 2.0100	2.0100		0.70
Feedline Ladder (Af) ***	C	Yes	Af (CfAe)	183' - 0'	0.0000	-0.45	1	1	3.0000	3.0000	12.0000	8.40
Hybrid cable (7/8") ***	B	Yes	Ar (CfAe)	139' - 0'	0.0000	-0.41	3	3	1.0000	1.2600		0.68

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
***							

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
T1	212'7-9/16"-202'5-17/32"	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	11.139	1.385	0.000	0.000	0.12
T2	202'5-17/32"-182'3-15/32"	A	16.895	5.854	0.000	0.000	0.36
		B	0.000	0.000	0.000	0.000	0.00
		C	41.247	5.219	0.000	0.000	0.45

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
T3	182'3-15/32"-162'1-3/16"	A	36.926	10.094	0.000	0.000	0.72
		B	19.989	3.224	0.000	0.000	0.21
		C	60.865	10.094	0.000	0.000	0.69
T4	162'1-3/16"-141'10-13/16"	A	41.858	10.104	0.000	0.000	0.74
		B	31.323	5.052	0.000	0.000	0.33
		C	60.928	10.104	0.000	0.000	0.69
T5	141'10-13/16"-121'8-9/32"	A	45.360	10.104	0.000	0.000	0.75
		B	53.916	9.380	0.000	0.000	0.68
		C	60.928	10.104	0.000	0.000	0.69
T6	121'8-9/32"-101'5-3/4"	A	46.622	10.104	0.000	0.000	0.76
		B	57.695	10.104	0.000	0.000	0.74
		C	60.928	10.104	0.000	0.000	0.69
T7	101'5-3/4"-81'3-1/4"	A	46.622	10.104	0.000	0.000	0.76
		B	57.695	10.104	0.000	0.000	0.74
		C	60.928	10.104	0.000	0.000	0.69
T8	81'3-1/4"-61'	A	46.767	10.135	0.000	0.000	0.76
		B	57.873	10.135	0.000	0.000	0.74
		C	61.117	10.135	0.000	0.000	0.70
T9	61'-40'8-1/32"	A	47.453	10.167	0.000	0.000	0.76
		B	58.052	10.167	0.000	0.000	0.74
		C	61.305	10.167	0.000	0.000	0.70
T10	40'8-1/32"-20'3-31/32"	A	47.978	10.167	0.000	0.000	0.76
		B	58.052	10.167	0.000	0.000	0.74
		C	61.305	10.167	0.000	0.000	0.70
T11	20'3-31/32"-0'	A	47.978	10.167	0.000	0.000	0.76
		B	58.052	10.167	0.000	0.000	0.74
		C	61.305	10.167	0.000	0.000	0.70

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
T1	212'7-9/16"-202'5-17/32"	A	0.935	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		1.792	17.252	0.000	0.000	0.46
T2	202'5-17/32"-182'3-15/32"	A	0.927	11.653	27.708	0.000	0.000	0.95
		B		0.000	0.000	0.000	0.000	0.00
		C		6.721	63.900	0.000	0.000	1.71
T3	182'3-15/32"-162'1-3/16"	A	0.914	29.965	54.853	0.000	0.000	2.04
		B		3.631	34.678	0.000	0.000	0.69
		C		12.916	95.215	0.000	0.000	2.44
T4	162'1-3/16"-141'10-13/16"	A	0.901	38.367	60.183	0.000	0.000	2.19
		B		5.644	54.312	0.000	0.000	1.07
		C		12.838	95.253	0.000	0.000	2.42
T5	141'10-13/16"-121'8-9/32"	A	0.886	37.974	67.113	0.000	0.000	2.26
		B		15.378	88.327	0.000	0.000	2.19
		C		12.735	95.184	0.000	0.000	2.40
T6	121'8-9/32"-101'5-3/4"	A	0.868	37.502	69.558	0.000	0.000	2.27
		B		16.838	93.943	0.000	0.000	2.36
		C		12.617	95.105	0.000	0.000	2.38
T7	101'5-3/4"-81'3-1/4"	A	0.847	36.948	69.466	0.000	0.000	2.24
		B		16.630	93.851	0.000	0.000	2.33
		C		12.479	95.013	0.000	0.000	2.35
T8	81'3-1/4"-61'	A	0.822	36.384	69.568	0.000	0.000	2.21
		B		16.427	94.028	0.000	0.000	2.31
		C		12.348	95.194	0.000	0.000	2.33
T9	61'-40'8-1/32"	A	0.790	37.518	69.636	0.000	0.000	2.19
		B		16.147	94.171	0.000	0.000	2.27
		C		12.165	95.340	0.000	0.000	2.29
T10	40'8-1/32"-20'3-31/32"	A	0.750	38.142	69.455	0.000	0.000	2.14
		B		15.741	93.991	0.000	0.000	2.22
		C		11.895	95.160	0.000	0.000	2.24
T11	20'3-31/32"-0'	A	0.750	38.142	69.455	0.000	0.000	2.14
		B		15.741	93.991	0.000	0.000	2.22
		C		11.895	95.160	0.000	0.000	2.24

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	212'7-9/16"-202'5-17/32"	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	1.149	3.288	0.000	0.000
T2	202'5-17/32"-182'3-15/32"	A	1.779	5.835	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.634	10.312	0.000	0.000
T3	182'3-15/32"-162'1-3/16"	A	3.427	11.602	0.000	0.000
		B	1.692	5.204	0.000	0.000
		C	5.172	14.716	0.000	0.000
T4	162'1-3/16"-141'10-13/16"	A	3.815	12.984	0.000	0.000
		B	2.670	7.871	0.000	0.000
		C	5.214	14.216	0.000	0.000
T5	141'10-13/16"-121'8-9/32"	A	3.346	10.710	0.000	0.000
		B	3.818	10.557	0.000	0.000
		C	4.285	10.993	0.000	0.000
T6	121'8-9/32"-101'5-3/4"	A	3.207	10.157	0.000	0.000
		B	3.834	10.504	0.000	0.000
		C	4.016	10.219	0.000	0.000
T7	101'5-3/4"-81'3-1/4"	A	3.709	10.783	0.000	0.000
		B	4.433	11.188	0.000	0.000
		C	4.645	10.890	0.000	0.000
T8	81'3-1/4"-61'	A	3.571	10.206	0.000	0.000
		B	4.268	10.633	0.000	0.000
		C	4.472	10.357	0.000	0.000
T9	61'-40'8-1/32"	A	3.505	9.868	0.000	0.000
		B	4.149	10.155	0.000	0.000
		C	4.347	9.900	0.000	0.000
T10	40'8-1/32"-20'3-31/32"	A	3.928	11.300	0.000	0.000
		B	4.609	11.521	0.000	0.000
		C	4.828	11.244	0.000	0.000
T11	20'3-31/32"-0'	A	3.744	10.763	0.000	0.000
		B	4.392	10.973	0.000	0.000
		C	4.602	10.709	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	212'7-9/16"-202'5-17/32"	-9.9547	7.2253	-7.2426	5.2565
T2	202'5-17/32"-182'3-15/32"	-16.4950	6.5649	-13.1255	5.5616
T3	182'3-15/32"-162'1-3/16"	-5.9813	12.6831	-5.0626	10.5944
T4	162'1-3/16"-141'10-13/16"	-4.2870	15.0709	-3.6364	12.8283
T5	141'10-13/16"-121'8-9/32"	-4.6523	8.2587	-4.4982	8.3209
T6	121'8-9/32"-101'5-3/4"	-5.4888	8.1191	-5.4218	8.5445
T7	101'5-3/4"-81'3-1/4"	-5.9443	8.7686	-5.9335	9.3913
T8	81'3-1/4"-61'	-6.2451	9.1923	-6.3695	10.0913
T9	61'-40'8-1/32"	-6.8642	9.8494	-6.9985	10.5737
T10	40'8-1/32"-20'3-31/32"	-7.3785	10.3389	-7.3962	10.8052
T11	20'3-31/32"-0'	-7.9542	11.1333	-7.9900	11.6379

Discrete Tower Loads

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
Flash Beacon Lighting	B	From Leg	0.00 0' 1'	0.0000	212'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 3.10 3.50 4.30 5.90	2.70 3.10 3.50 4.30 5.90	0.05 0.07 0.09 0.13 0.21
Side Lighting	A	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
Side Lighting	B	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
Side Lighting	C	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
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(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
BXA-70063/6CF-EDIN w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CF-EDIN w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CF-EDIN w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice	7.97 8.61 9.22	5.40 6.55 7.41	0.04 0.10 0.17

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
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
BXA-171063-8CF-EDIN-X w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48
BXA-171063-8CF-EDIN-X w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48
BXA-171063-8CF-EDIN-X w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
RRH2X40-AWS	A	From Face	4.00 0' 1'	0.0000	208'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2X40-AWS	B	From Face	4.00 0' 1'	0.0000	208'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2X40-AWS	C	From Face	4.00 0' 1'	0.0000	208'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z	C	From Face	4.00 0' 1'	0.0000	208'	No Ice	5.60	2.33	0.04
						1/2" Ice	5.92	2.56	0.08
						1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45
Sector Mount [SM 510-3]	C	None		0.0000	208'	No Ice	40.10	40.10	2.40
						1/2" Ice	57.33	57.33	3.09

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
						Ice	74.56	74.56	3.78
						1" Ice	109.02	109.02	5.17
						2" Ice	177.94	177.94	7.94
						4" Ice			
***									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice	8.50	6.95	0.08
						1/2" Ice	9.15	8.13	0.15
						1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice	8.50	6.95	0.08
						1/2" Ice	9.15	8.13	0.15
						1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice	8.50	6.95	0.08
						1/2" Ice	9.15	8.13	0.15
						1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
1900MHz RRH (65MHz)	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.70	2.77	0.06
						1/2" Ice	2.94	3.01	0.08
						1" Ice	3.18	3.26	0.11
						2" Ice	3.70	3.78	0.18
						4" Ice	4.85	4.93	0.35
1900MHz RRH (65MHz)	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.70	2.77	0.06
						1/2" Ice	2.94	3.01	0.08
						1" Ice	3.18	3.26	0.11
						2" Ice	3.70	3.78	0.18
						4" Ice	4.85	4.93	0.35
1900MHz RRH (65MHz)	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice	2.70	2.77	0.06
						1/2" Ice	2.94	3.01	0.08
						1" Ice	3.18	3.26	0.11
						2" Ice	3.70	3.78	0.18
						4" Ice	4.85	4.93	0.35
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice	7.13	4.96	0.07
						1/2" Ice	7.66	5.75	0.13
						1" Ice	8.18	6.47	0.19
						2" Ice	9.26	8.01	0.34
						4" Ice	11.53	11.41	0.75

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
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.07 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.07 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
Sector Mount [SM 505-3]	C	None		0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1.73 2.32 2.91 4.09 6.46
(3) 4' x 2" Pipe Mount	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
(3) 4' x 2" Pipe Mount	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
(3) 4' x 2" Pipe Mount	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
***									
(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13 8.16	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice 4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	0.03 0.08 0.13 0.25 0.61
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	0.03 0.08 0.13 0.25 0.61
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	0.03 0.08 0.13 0.25 0.61
(2) ClearGain Dual Band 800/1900 MHz	A	From Face	4.00 0' 0'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.54 1.71 1.89 2.27 3.14	0.80 0.94 1.08 1.39 2.11	0.02 0.03 0.05 0.08 0.18
(2) ClearGain Dual Band 800/1900 MHz	B	From Face	4.00 0' 0'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.54 1.71 1.89 2.27 3.14	0.80 0.94 1.08 1.39 2.11	0.02 0.03 0.05 0.08 0.18
(2) ClearGain Dual Band 800/1900 MHz	C	From Face	4.00 0' 0'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.54 1.71 1.89 2.27 3.14	0.80 0.94 1.08 1.39 2.11	0.02 0.03 0.05 0.08 0.18
(2) LGP13519	A	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	B	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	C	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) RRUS-11	A	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09

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
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS-11	B	From Face	4.00 0' 1'	0.0000	189'	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) RRUS-11	C	From Face	4.00 0' 1'	0.0000	189'	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
DC6-48-60-18-8F	C	From Face	4.00 0' 1'	0.0000	189'	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
Sector Mount [SM 602-3]	C	None		0.0000	189'	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
						1" Ice	56.69	56.69	2.78
						2" Ice	80.27	80.27	4.01
						4" Ice	127.43	127.43	6.49
***									
APXV18-206517LS w/ Mount Pipe	A	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
APXV18-206517LS w/ Mount Pipe	B	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
APXV18-206517LS w/ Mount Pipe	C	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
***									
(4) DB844H90E-XY w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56
(4) DB844H90E-XY w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56
(4) DB844H90E-XY w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56

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
Sector Mount [SM 510-3]	C	None		0.0000	175'	No Ice	40.10	40.10	2.40
						1/2" Ice	57.33	57.33	3.09
						1" Ice	74.56	74.56	3.78
						2" Ice	109.02	109.02	5.17
						4" Ice	177.94	177.94	7.94
6' x 2" Mount Pipe	A	From Face	0.50 -3' 4'	0.0000	175'	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
6' x 2" Mount Pipe	C	From Face	0.50 3' 4'	0.0000	175'	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
***									
1151-3	A	From Leg	6.00 0' 6'	0.0000	167'	No Ice	4.18	4.18	0.02
						1/2" Ice	5.73	5.73	0.05
						1" Ice	7.30	7.30	0.09
						2" Ice	10.48	10.48	0.20
						4" Ice	14.75	14.75	0.54
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	0.0000	167'	No Ice	0.98	3.03	0.05
						1/2" Ice	1.70	5.22	0.08
						1" Ice	2.42	7.41	0.10
						2" Ice	3.86	11.79	0.16
						4" Ice	6.74	20.55	0.26
***									
1151-3	B	From Leg	6.00 0' 9'	0.0000	164'	No Ice	4.18	4.18	0.02
						1/2" Ice	5.73	5.73	0.05
						1" Ice	7.30	7.30	0.09
						2" Ice	10.48	10.48	0.20
						4" Ice	14.75	14.75	0.54
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0' 0'	0.0000	164'	No Ice	0.98	3.03	0.05
						1/2" Ice	1.70	5.22	0.08
						1" Ice	2.42	7.41	0.10
						2" Ice	3.86	11.79	0.16
						4" Ice	6.74	20.55	0.26
***									
SD310-HL	A	From Leg	6.00 0' -2'	0.0000	162'	No Ice	1.11	1.11	6.50
						1/2" Ice	1.36	1.36	6.51
						1" Ice	1.62	1.62	6.52
						2" Ice	2.17	2.17	6.56
						4" Ice	3.58	3.58	6.67
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	0.0000	162'	No Ice	0.98	3.03	0.05
						1/2" Ice	1.70	5.22	0.08
						1" Ice	2.42	7.41	0.10
						2" Ice	3.86	11.79	0.16
						4" Ice	6.74	20.55	0.26
***									
1151-3	A	From Leg	6.00 0' 6'	0.0000	147'	No Ice	4.18	4.18	0.02
						1/2" Ice	5.73	5.73	0.05
						1" Ice	7.30	7.30	0.09
						2" Ice	10.48	10.48	0.20
						4" Ice	14.75	14.75	0.54
Side Arm Mount [SO 308-	A	From Leg	3.00	0.0000	147'	No Ice	0.98	3.03	0.05

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
1]			0' 0'			1/2" Ice 1" Ice 2" Ice 4" Ice	1.70 2.42 3.86 6.74	5.22 7.41 11.79 20.55	0.08 0.10 0.16 0.26
***									
SD310-HL	B	From Leg	6.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.11 1.36 1.62 2.17 3.58	1.11 1.36 1.62 2.17 3.58	6.50 6.51 6.52 6.56 6.67
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0' 0'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	0.05 0.08 0.10 0.16 0.26
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice	0.41 0.50 0.59 0.81	0.20 0.27 0.35 0.53	0.01 0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	1.36	1.00	0.08
						4" Ice			
KRY 112 144/1	C	From Leg	2.00	0.0000	139'	No Ice	0.41	0.20	0.01
			0'			1/2" Ice	0.50	0.27	0.01
			1'			1" Ice	0.59	0.35	0.02
						2" Ice	0.81	0.53	0.03
						4" Ice	1.36	1.00	0.08
Side Arm Mount [SO 201-3]	C	None		0.0000	139'	No Ice	5.71	5.71	0.29
						1/2" Ice	7.91	7.91	0.35
						1" Ice	10.11	10.11	0.41
						2" Ice	14.51	14.51	0.54
						4" Ice	23.31	23.31	0.79
***									
1142-2C	A	From Leg	6.00	0.0000	128'	No Ice	2.09	2.09	0.02
			0'			1/2" Ice	3.37	3.37	0.04
			4'			1" Ice	4.67	4.67	0.07
						2" Ice	7.32	7.32	0.14
						4" Ice	10.79	10.79	0.39
Side Arm Mount [SO 308-1]	A	From Leg	3.00	0.0000	128'	No Ice	0.98	3.03	0.05
			0'			1/2" Ice	1.70	5.22	0.08
			0'			1" Ice	2.42	7.41	0.10
						2" Ice	3.86	11.79	0.16
						4" Ice	6.74	20.55	0.26
***									
GPS_A	C	From Leg	2.00	0.0000	51'	No Ice	0.30	0.30	0.00
			0'			1/2" Ice	0.37	0.37	0.00
			0'			1" Ice	0.46	0.46	0.01
						2" Ice	0.65	0.65	0.02
						4" Ice	1.15	1.15	0.08
Side Arm Mount [SO 701-1]	C	From Leg	1.00	0.0000	51'	No Ice	0.85	1.67	0.07
			0'			1/2" Ice	1.14	2.34	0.08
			0'			1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18
***									

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
HPD2-23	A	Paraboloid w/Shroud (HP)	From Face	2.00	14.0000		175'	2.00	No Ice	3.14	0.03
				-3'					1/2" Ice	3.41	0.03
				4'					1" Ice	3.68	0.04
									2" Ice	4.21	0.62
									4" Ice	5.28	0.18
HPD2-23	C	Paraboloid w/Shroud (HP)	From Face	2.00	-36.0000		175'	2.00	No Ice	3.14	0.03
				3'					1/2" Ice	3.41	0.03
				4'					1" Ice	3.68	0.04
									2" Ice	4.21	0.62
									4" Ice	5.28	0.18

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight K
***										

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	212.625 - 202.458	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-2.95	0.09	-0.00
			Max. Mx	8	-0.56	0.45	-0.01
			Max. My	3	-1.14	-0.00	0.46
			Max. Vy	8	1.52	-0.25	-0.01
			Max. Vx	7	1.55	0.00	-0.25
		Diagonal	Max Tension	5	2.91	0.00	0.00
			Max. Compression	5	-2.97	0.00	0.00
			Max. Mx	14	-0.05	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Horizontal	Max Tension	12	2.15	-0.01	0.00
			Max. Compression	6	-2.15	0.00	0.00
			Max. Mx	21	0.05	-0.02	-0.00
			Max. My	8	0.03	-0.01	-0.01
			Max. Vy	21	-0.02	-0.02	-0.00
			Max. Vx	8	-0.00	-0.01	-0.01
		Top Girt	Max Tension	4	0.19	0.00	0.00
			Max. Compression	10	-0.19	-0.01	-0.00
			Max. Mx	21	-0.03	-0.01	-0.00
			Max. My	2	0.09	-0.00	0.00
			Max. Vy	21	0.02	-0.01	-0.00
			Max. Vx	2	-0.00	-0.00	0.00
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	10	-0.00	0.00	0.00
			Max. Mx	14	-0.00	-0.01	0.00
			Max. Vy	14	0.01	0.00	0.00
T2	202.458 - 182.292	Leg	Max Tension	8	18.77	0.15	-0.05
			Max. Compression	10	-25.81	0.28	0.02
			Max. Mx	4	1.54	1.56	0.01
			Max. My	13	-2.55	-0.00	-1.60
			Max. Vy	4	-1.14	0.15	0.02
			Max. Vx	7	-1.19	0.00	0.11
		Diagonal	Max Tension	5	9.75	0.00	0.00
			Max. Compression	5	-9.81	0.00	0.00
			Max. Mx	14	-0.05	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	11	5.34	-0.01	-0.00
			Max. Compression	5	-5.34	0.00	0.00
			Max. Mx	21	0.21	-0.02	-0.00
			Max. My	2	1.13	0.00	0.01
			Max. Vy	21	0.02	-0.02	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Inner Bracing	Max Tension	2	0.01	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.01	0.00
			Max. Vy	14	-0.01	0.00	0.00
T3	182.292 - 162.104	Leg	Max Tension	8	55.70	-0.20	0.04
			Max. Compression	10	-67.52	0.22	0.09
			Max. Mx	8	42.48	-0.35	0.01
			Max. My	13	-4.46	-0.02	0.40
			Max. Vy	4	-1.01	-0.33	-0.05
			Max. Vx	13	1.05	-0.02	0.40
		Diagonal	Max Tension	5	10.33	0.00	0.00
			Max. Compression	5	-10.40	0.00	0.00
			Max. Mx	14	-0.06	0.04	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	11	6.48	-0.01	0.00
			Max. Compression	5	-6.48	0.00	0.00
			Max. Mx	25	-0.49	-0.03	-0.00
			Max. My	2	0.22	0.00	0.01
			Max. Vy	25	0.02	-0.03	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Inner Bracing	Max Tension	2	0.00	0.00	0.00
			Max. Compression	12	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.02	0.00
			Max. Vy	14	0.01	0.00	0.00
T4	162.104 - 141.896	Leg	Max Tension	4	94.00	-1.13	-0.06
			Max. Compression	2	-116.09	0.28	0.00
			Max. Mx	12	83.14	-1.44	0.03
			Max. My	7	-4.73	0.00	-1.12
			Max. Vy	8	-0.67	-0.20	0.04
			Max. Vx	3	0.24	-0.33	-1.11
		Diagonal	Max Tension	5	10.18	0.00	0.00
			Max. Compression	5	-10.28	0.00	0.00
			Max. Mx	14	-0.20	0.06	0.00
			Max. Vy	14	-0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Horizontal	Max Tension	5	7.10	0.00	0.00
			Max. Compression	11	-7.09	-0.02	-0.00
			Max. Mx	17	-0.64	-0.05	-0.00
			Max. My	6	0.09	0.00	0.02
			Max. Vy	17	0.03	-0.05	-0.00
			Max. Vx	6	-0.00	0.00	0.02
		Inner Bracing	Max Tension	6	0.01	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
T5	141.896 - 121.688	Leg	Max Tension	4	120.41	-0.94	0.01
			Max. Compression	6	-145.57	0.62	-0.04
			Max. Mx	12	94.38	-1.44	0.03
			Max. My	7	-5.30	0.00	-1.12
			Max. Vy	12	-0.48	-1.44	0.03
			Max. Vx	7	-0.46	0.00	-1.12
		Diagonal	Max Tension	11	13.21	0.00	0.00
			Max. Compression	11	-13.36	0.00	0.00
			Max. Mx	14	-0.04	0.12	0.00
			Max. Vy	14	0.04	0.00	0.00
		Horizontal	Max Tension	5	7.95	0.00	0.00
			Max. Compression	11	-7.95	-0.03	-0.00
			Max. Mx	17	0.77	-0.06	-0.00
			Max. My	10	0.18	0.00	0.02
			Max. Vy	17	-0.03	-0.06	-0.00
			Max. Vx	10	-0.00	0.00	0.00
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
T6	121.688 - 101.479	Leg	Max Tension	4	149.17	-0.65	-0.03
			Max. Compression	6	-178.74	0.92	-0.09
			Max. Mx	4	148.79	-0.94	-0.04
			Max. My	7	-10.18	-0.03	-0.98
			Max. Vy	4	0.12	-0.94	-0.04
			Max. Vx	13	-0.14	-0.03	0.98
		Diagonal	Max Tension	11	11.94	0.00	0.00
			Max. Compression	11	-12.12	0.00	0.00
			Max. Mx	14	-0.08	0.15	0.00
			Max. Vy	14	-0.04	0.00	0.00
		Horizontal	Max Tension	5	7.89	0.00	0.00
			Max. Compression	11	-7.89	-0.04	-0.00
			Max. Mx	17	0.90	-0.07	-0.00
			Max. My	10	1.26	-0.01	0.01
			Max. Vy	17	-0.04	-0.07	-0.00
			Max. Vx	10	0.00	0.00	0.00
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	12	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.06	0.00
			Max. Vy	14	0.03	0.00	0.00
T7	101.479 - 81.2708	Leg	Max Tension	4	174.23	-0.62	-0.02
			Max. Compression	6	-208.58	0.79	-0.06
			Max. Mx	4	161.89	-0.94	-0.04
			Max. My	7	-11.15	-0.03	-0.98
			Max. Vy	4	-0.12	-0.94	-0.04
			Max. Vx	13	0.14	-0.03	0.98
		Diagonal	Max Tension	11	11.74	0.00	0.00
			Max. Compression	11	-12.03	0.00	0.00
			Max. Mx	14	-0.17	0.22	0.00
			Max. Vy	14	-0.06	0.00	0.00
		Horizontal	Max Tension	5	8.50	0.00	0.00
			Max. Compression	11	-8.49	-0.07	-0.00
			Max. Mx	17	1.03	-0.13	-0.00
			Max. My	10	1.06	-0.02	0.02
			Max. Vy	17	0.06	-0.13	-0.00
			Max. Vx	10	-0.00	-0.02	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.10	0.00
			Max. Vy	14	0.04	0.00	0.00
T8	81.2708 - 61	Leg	Max Tension	4	197.09	-1.28	-0.02
			Max. Compression	6	-236.67	0.75	-0.05
			Max. Mx	4	185.76	-1.28	-0.02
			Max. My	7	-14.37	-0.04	-1.19
			Max. Vy	4	0.15	-1.28	-0.02
			Max. Vx	7	0.16	-0.04	-1.19
		Diagonal	Max Tension	11	11.40	0.00	0.00
			Max. Compression	11	-11.80	0.00	0.00
			Max. Mx	14	-0.24	0.27	0.00
			Max. Vy	14	0.07	0.00	0.00
		Horizontal	Max Tension	5	8.87	0.00	0.00
			Max. Compression	11	-8.87	-0.09	-0.00
			Max. Mx	21	1.15	-0.16	-0.00
			Max. My	10	0.03	-0.05	0.02
			Max. Vy	21	-0.07	-0.16	-0.00
			Max. Vx	10	0.00	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.16	0.00
			Max. Vy	14	0.06	0.00	0.00
T9	61 - 40.6667	Leg	Max Tension	4	219.02	-1.79	-0.00
			Max. Compression	6	-264.07	-2.53	-0.20
			Max. Mx	2	-263.83	-2.54	0.12
			Max. My	13	-18.81	-0.50	3.29
			Max. Vy	6	0.52	2.01	-0.01
			Max. Vx	13	-0.37	-0.50	3.29
		Diagonal	Max Tension	11	12.32	0.00	0.00
			Max. Compression	11	-12.78	0.00	0.00
			Max. Mx	14	-0.29	0.31	0.00
			Max. Vy	14	-0.08	0.00	0.00
		Horizontal	Max Tension	5	10.04	0.00	0.00
			Max. Compression	11	-10.04	-0.11	-0.00
			Max. Mx	21	1.31	-0.19	-0.00
			Max. My	10	0.96	-0.07	0.02
			Max. Vy	21	-0.07	-0.19	-0.00
			Max. Vx	10	-0.00	-0.07	0.02
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.20	0.00
			Max. Vy	14	-0.07	0.00	0.00
T10	40.6667 - 20.3333	Leg	Max Tension	4	228.04	1.46	-0.08
			Max. Compression	6	-276.15	-7.56	-0.42
			Max. Mx	6	-275.74	8.70	0.31
			Max. My	13	-20.93	-1.05	5.24
			Max. Vy	6	1.66	8.70	0.31
			Max. Vx	13	-0.89	-1.05	5.24
		Diagonal	Max Tension	11	17.09	-0.15	-0.03
			Max. Compression	11	-18.03	0.00	0.00
			Max. Mx	12	11.93	-0.18	0.06
			Max. My	11	-17.20	0.01	-0.10
			Max. Vy	25	-0.05	-0.13	0.01
			Max. Vx	11	0.01	0.00	0.00
		Horizontal	Max Tension	5	9.92	0.00	0.00
			Max. Compression	11	-9.92	-0.17	-0.00
			Max. Mx	21	-1.39	-0.28	-0.01
			Max. My	10	1.71	-0.10	0.02
			Max. Vy	21	0.10	-0.28	-0.01
			Max. Vx	10	0.00	-0.10	0.02
		Redund Horz 1 Bracing	Max Tension	6	4.80	0.00	0.00
			Max. Compression	6	-4.80	0.00	0.00
			Max. Mx	14	0.74	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Diag 1	Max Tension	6	4.43	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Bracing					
			Max. Compression	6	-4.43	0.00	0.00
			Max. Mx	14	0.75	0.05	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	11	0.01	0.00	0.00
			Max. Compression	5	-0.03	0.00	0.00
			Max. Mx	14	-0.01	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Hip Diagonal Bracing	Max Tension	6	0.06	0.00	0.00
			Max. Compression	12	-0.06	0.00	0.00
			Max. Mx	14	0.04	0.20	0.00
			Max. Vy	14	0.05	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-0.01	0.00	0.00
			Max. Mx	14	-0.01	0.23	0.00
			Max. Vy	14	-0.07	0.00	0.00
T11	20.3333 - 0	Leg	Max Tension	4	273.23	1.36	0.03
			Max. Compression	6	-332.54	0.00	0.00
			Max. Mx	6	-301.34	8.17	0.28
			Max. My	13	-22.95	-1.05	5.24
			Max. Vy	10	-17.45	0.00	0.00
			Max. Vx	13	-6.77	0.00	0.00
		Diagonal	Max Tension	11	20.03	-0.14	-0.03
			Max. Compression	11	-20.94	0.00	0.00
			Max. Mx	12	15.45	-0.18	0.06
			Max. My	11	-20.04	-0.02	-0.10
			Max. Vy	24	0.06	-0.14	-0.00
			Max. Vx	11	-0.01	0.00	0.00
		Horizontal	Max Tension	5	12.21	0.00	0.00
			Max. Compression	11	-12.21	-0.21	-0.00
			Max. Mx	21	1.73	-0.30	-0.01
			Max. My	10	1.03	-0.14	0.02
			Max. Vy	21	-0.10	-0.30	-0.01
			Max. Vx	10	0.00	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	6	5.77	0.00	0.00
			Max. Compression	6	-5.77	0.00	0.00
			Max. Mx	14	0.89	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	6	4.97	0.00	0.00
			Max. Compression	6	-4.97	0.00	0.00
			Max. Mx	14	0.82	0.06	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	11	0.01	0.00	0.00
			Max. Compression	5	-0.02	0.00	0.00
			Max. Mx	14	-0.01	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Hip Diagonal Bracing	Max Tension	6	0.06	0.00	0.00
			Max. Compression	12	-0.06	0.00	0.00
			Max. Mx	14	0.04	0.23	0.00
			Max. Vy	14	0.06	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-0.01	0.00	0.00
			Max. Mx	14	-0.01	0.29	0.00
			Max. Vy	14	0.08	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	327.56	33.09	-18.73
	Max. H_x	10	327.56	33.09	-18.73
	Max. H_z	3	-232.63	-23.33	17.07
	Min. Vert	4	-271.67	-29.05	16.40
	Min. H_x	4	-271.67	-29.05	16.40
	Min. H_z	9	283.99	26.81	-19.07
Leg B	Max. Vert	6	330.80	-33.36	-18.39
	Max. H_x	12	-268.64	29.24	15.97
	Max. H_z	13	-229.77	23.71	16.34
	Min. Vert	12	-268.64	29.24	15.97
	Min. H_x	6	330.80	-33.36	-18.39
	Min. H_z	7	287.38	-27.25	-18.45
Leg A	Max. Vert	2	330.69	-0.43	38.06
	Max. H_x	11	29.21	5.47	2.10
	Max. H_z	2	330.69	-0.43	38.06
	Min. Vert	8	-268.59	0.48	-33.29
	Min. H_x	5	28.35	-5.41	2.02
	Min. H_z	8	-268.59	0.48	-33.29

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	83.22	0.00	-0.00	-26.35	-47.04	0.00
Dead+Wind 0 deg - No Ice	83.22	-0.05	-63.26	-7881.86	-38.07	-24.24
Dead+Wind 30 deg - No Ice	83.22	31.16	-54.03	-6755.16	-3921.77	-4.41
Dead+Wind 60 deg - No Ice	83.22	53.81	-30.99	-3887.29	-6750.35	16.47
Dead+Wind 90 deg - No Ice	83.22	62.42	0.06	-15.82	-7815.82	32.81
Dead+Wind 120 deg - No Ice	83.22	54.83	31.64	3903.64	-6850.68	40.92
Dead+Wind 150 deg - No Ice	83.22	31.22	54.00	6698.44	-3932.74	36.67
Dead+Wind 180 deg - No Ice	83.22	0.05	62.06	7709.60	-57.06	23.50
Dead+Wind 210 deg - No Ice	83.22	-31.17	54.01	6700.20	3829.94	4.26
Dead+Wind 240 deg - No Ice	83.22	-54.83	31.61	3896.92	6757.17	-16.88
Dead+Wind 270 deg - No Ice	83.22	-62.41	-0.06	-38.17	7720.40	-32.79
Dead+Wind 300 deg - No Ice	83.22	-53.79	-31.05	-3897.31	6653.70	-39.72
Dead+Wind 330 deg - No Ice	83.22	-31.21	-54.00	-6751.27	3838.05	-36.71
Dead+Ice+Temp	155.48	0.00	0.00	31.98	41.52	0.00
Dead+Wind 0 deg+Ice+Temp	155.48	0.00	-19.92	-2393.15	41.65	-7.17
Dead+Wind 30 deg+Ice+Temp	155.48	9.25	-15.98	-1939.32	-1098.87	-1.06
Dead+Wind 60 deg+Ice+Temp	155.48	15.60	-8.97	-1080.07	-1892.31	4.44
Dead+Wind 90 deg+Ice+Temp	155.48	18.50	0.00	32.47	-2240.34	9.04
Dead+Wind 120 deg+Ice+Temp	155.48	17.30	9.95	1243.41	-2063.87	12.40
Dead+Wind 150 deg+Ice+Temp	155.48	9.24	15.96	2000.48	-1098.06	9.97
Dead+Wind 180 deg+Ice+Temp	155.48	0.00	17.94	2255.98	41.15	6.09
Dead+Wind 210 deg+Ice+Temp	155.48	-9.25	15.98	2002.78	1182.42	1.03
Dead+Wind 240 deg+Ice+Temp	155.48	-17.31	9.97	1245.18	2148.95	-5.28
Dead+Wind 270 deg+Ice+Temp	155.48	-18.50	-0.00	31.21	2323.08	-9.03
Dead+Wind 300 deg+Ice+Temp	155.48	-15.58	-8.97	-1079.05	1972.87	-10.47
Dead+Wind 330 deg+Ice+Temp	155.48	-9.24	-15.96	-1936.54	1180.97	-9.98
Dead+Wind 0 deg - Service	83.22	-0.02	-21.89	-2744.52	-43.93	-8.39
Dead+Wind 30 deg - Service	83.22	10.78	-18.69	-2354.66	-1387.77	-1.52
Dead+Wind 60 deg - Service	83.22	18.62	-10.72	-1362.31	-2366.52	5.70

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 90 deg - Service	83.22	21.60	0.02	-22.70	-2735.20	11.35
Dead+Wind 120 deg - Service	83.22	18.97	10.95	1333.51	-2401.24	14.16
Dead+Wind 150 deg - Service	83.22	10.80	18.69	2300.57	-1391.57	12.69
Dead+Wind 180 deg - Service	83.22	0.02	21.47	2650.45	-50.51	8.13
Dead+Wind 210 deg - Service	83.22	-10.79	18.69	2301.18	1294.48	1.47
Dead+Wind 240 deg - Service	83.22	-18.97	10.94	1331.18	2307.36	-5.84
Dead+Wind 270 deg - Service	83.22	-21.60	-0.02	-30.44	2640.66	-11.35
Dead+Wind 300 deg - Service	83.22	-18.61	-10.74	-1365.78	2271.56	-13.74
Dead+Wind 330 deg - Service	83.22	-10.80	-18.69	-2353.31	1297.28	-12.70

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	0.00	-83.22	0.00	-0.00	83.22	0.00	0.000%
2	-0.05	-83.22	-63.26	0.05	83.22	63.26	0.000%
3	31.16	-83.22	-54.03	-31.16	83.22	54.03	0.000%
4	53.81	-83.22	-30.99	-53.81	83.22	30.99	0.000%
5	62.42	-83.22	0.06	-62.42	83.22	-0.06	0.000%
6	54.83	-83.22	31.64	-54.83	83.22	-31.64	0.000%
7	31.22	-83.22	54.00	-31.22	83.22	-54.00	0.000%
8	0.05	-83.22	62.06	-0.05	83.22	-62.06	0.000%
9	-31.17	-83.22	54.01	31.17	83.22	-54.01	0.000%
10	-54.83	-83.22	31.61	54.83	83.22	-31.61	0.000%
11	-62.41	-83.22	-0.06	62.41	83.22	0.06	0.000%
12	-53.79	-83.22	-31.05	53.79	83.22	31.05	0.000%
13	-31.21	-83.22	-54.00	31.21	83.22	54.00	0.000%
14	0.00	-155.48	0.00	0.00	155.48	0.00	0.000%
15	0.00	-155.48	-19.92	-0.00	155.48	19.92	0.000%
16	9.25	-155.48	-15.98	-9.25	155.48	15.98	0.000%
17	15.60	-155.48	-8.97	-15.60	155.48	8.97	0.000%
18	18.50	-155.48	0.00	-18.50	155.48	-0.00	0.000%
19	17.30	-155.48	9.95	-17.30	155.48	-9.95	0.000%
20	9.24	-155.48	15.96	-9.24	155.48	-15.96	0.000%
21	0.00	-155.48	17.94	-0.00	155.48	-17.94	0.000%
22	-9.25	-155.48	15.98	9.25	155.48	-15.98	0.000%
23	-17.31	-155.48	9.97	17.31	155.48	-9.97	0.000%
24	-18.50	-155.48	-0.00	18.50	155.48	0.00	0.000%
25	-15.58	-155.48	-8.97	15.58	155.48	8.97	0.000%
26	-9.24	-155.48	-15.96	9.24	155.48	15.96	0.000%
27	-0.02	-83.22	-21.89	0.02	83.22	21.89	0.000%
28	10.78	-83.22	-18.69	-10.78	83.22	18.69	0.000%
29	18.62	-83.22	-10.72	-18.62	83.22	10.72	0.000%
30	21.60	-83.22	0.02	-21.60	83.22	-0.02	0.000%
31	18.97	-83.22	10.95	-18.97	83.22	-10.95	0.000%
32	10.80	-83.22	18.69	-10.80	83.22	-18.69	0.000%
33	0.02	-83.22	21.47	-0.02	83.22	-21.47	0.000%
34	-10.79	-83.22	18.69	10.79	83.22	-18.69	0.000%
35	-18.97	-83.22	10.94	18.97	83.22	-10.94	0.000%
36	-21.60	-83.22	-0.02	21.60	83.22	0.02	0.000%
37	-18.61	-83.22	-10.74	18.61	83.22	10.74	0.000%
38	-10.80	-83.22	-18.69	10.80	83.22	18.69	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	5.836	29	0.2440	0.0512
T2	202.458 - 182.292	5.313	29	0.2438	0.0506
T3	182.292 - 162.104	4.261	29	0.2330	0.0445
T4	162.104 - 141.896	3.276	29	0.2096	0.0330
T5	141.896 - 121.688	2.415	30	0.1778	0.0246
T6	121.688 - 101.479	1.725	31	0.1430	0.0188
T7	101.479 - 81.2708	1.165	31	0.1143	0.0141
T8	81.2708 - 61	0.738	31	0.0852	0.0110
T9	61 - 40.6667	0.416	31	0.0603	0.0082
T10	40.6667 - 20.3333	0.191	35	0.0358	0.0054
T11	20.3333 - 0	0.064	35	0.0178	0.0026

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212'	Flash Beacon Lighting	29	5.804	0.2441	0.0512	155986
208'	(2) LPA-80080/6CF w/ Mount Pipe	29	5.599	0.2442	0.0511	155986
199'	APXVSPP18-C-A20 w/ Mount Pipe	29	5.133	0.2430	0.0501	138635
189'	(2) 7770.00 w/ Mount Pipe	29	4.609	0.2382	0.0473	90874
183'	APXV18-206517LS w/ Mount Pipe	29	4.298	0.2337	0.0448	48837
179'	HPD2-23	29	4.094	0.2300	0.0428	46752
175'	(4) DB844H90E-XY w/ Mount Pipe	29	3.894	0.2259	0.0405	45326
167'	1151-3	29	3.505	0.2163	0.0358	36813
164'	1151-3	29	3.364	0.2123	0.0341	34392
162'	SD310-HL	29	3.271	0.2094	0.0330	33220
147'	1151-3	30	2.617	0.1863	0.0264	28077
145'	SD310-HL	30	2.537	0.1830	0.0257	26995
139'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	30	2.306	0.1728	0.0237	26813
128'	1142-2C	30	1.924	0.1535	0.0205	35826
110'	Side Lighting	31	1.386	0.1261	0.0159	36994
51'	GPS_A	31	0.292	0.0478	0.0068	49643

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	16.337	2	0.6755	0.1482
T2	202.458 - 182.292	14.883	2	0.6747	0.1464
T3	182.292 - 162.104	11.957	2	0.6421	0.1287

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T4	162.104 - 141.896	9.247	6	0.5719	0.0956
T5	141.896 - 121.688	6.875	6	0.4880	0.0713
T6	121.688 - 101.479	4.933	6	0.3982	0.0545
T7	101.479 - 81.2708	3.340	6	0.3214	0.0410
T8	81.2708 - 61	2.120	6	0.2411	0.0321
T9	61 - 40.6667	1.198	6	0.1715	0.0237
T10	40.6667 - 20.3333	0.552	10	0.1022	0.0158
T11	20.3333 - 0	0.183	10	0.0509	0.0076

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212'	Flash Beacon Lighting	2	16.248	0.6756	0.1482	55541
208'	(2) LPA-80080/6CF w/ Mount Pipe	2	15.678	0.6759	0.1477	55541
199'	APXVSPP18-C-A20 w/ Mount Pipe	2	14.382	0.6724	0.1449	49385
189'	(2) 7770.00 w/ Mount Pipe	2	12.922	0.6579	0.1370	35314
183'	APXV18-206517LS w/ Mount Pipe	2	12.058	0.6440	0.1297	18343
179'	HPD2-23	2	11.493	0.6327	0.1238	16821
175'	(4) DB844H90E-XY w/ Mount Pipe	2	10.939	0.6199	0.1172	16490
167'	1151-3	6	9.872	0.5911	0.1035	14904
164'	1151-3	6	9.487	0.5794	0.0986	14363
162'	SD310-HL	6	9.234	0.5715	0.0954	13964
147'	1151-3	6	7.436	0.5096	0.0764	10778
145'	SD310-HL	6	7.213	0.5012	0.0743	10375
139'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	6	6.571	0.4754	0.0686	10338
128'	1142-2C	6	5.499	0.4258	0.0593	13528
110'	Side Lighting	6	3.968	0.3532	0.0461	13424
51'	GPS_A	6	0.844	0.1362	0.0198	17518

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	212.625	Leg	A325N	0.7500	4	0.00	19.44	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	0.99	6.44	0.154 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	1.08	6.44	0.167 ✔	1.333	Bolt Shear
T2	202.458	Leg	A325N	0.8750	4	4.69	26.45	0.177 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.27	6.44	0.508 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	2.67	6.44	0.415 ✔	1.333	Bolt Shear
T3	182.292	Leg	A325N	1.0000	4	13.93	34.56	0.403 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.47	6.44	0.538 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.24	6.44	0.503 ✔	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T4	162.104	Leg	A325N	1.0000	6	15.67	34.56	0.453 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.43	6.44	0.532 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.55	6.44	0.551 ✔	1.333	Bolt Shear
T5	141.896	Leg	A325N	1.0000	6	20.07	34.56	0.581 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.45	6.44	0.691 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.97	6.44	0.617 ✔	1.333	Bolt Shear
T6	121.688	Leg	A325N	1.0000	6	24.86	34.56	0.719 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.04	6.44	0.627 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.94	6.44	0.612 ✔	1.333	Bolt Shear
T7	101.479	Leg	A325N	1.0000	8	21.78	34.56	0.630 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.01	6.44	0.623 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	4.25	6.44	0.659 ✔	1.333	Bolt Shear
T8	81.2708	Leg	A325N	1.0000	8	24.64	34.56	0.713 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.93	6.44	0.611 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	4.43	6.44	0.688 ✔	1.333	Bolt Shear
T9	61	Leg	A325N	1.0000	8	27.38	34.56	0.792 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.26	6.44	0.661 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	5.02	6.44	0.779 ✔	1.333	Bolt Shear
T10	40.6667	Leg	A325N	1.0000	8	28.42	34.56	0.822 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	6.01	9.28	0.648 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	4.96	9.28	0.535 ✔	1.333	Bolt Shear
T11	20.3333	Leg	A354-BC	1.0000	10	27.32	32.40	0.843 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	6.98	9.28	0.752 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	6.10	9.28	0.658 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

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 P / P_a
T1	212.625 - 202.458	ROHN 2.5 STD	10'2-1/32"	5'31/32"	64.4 K=1.00	21.955	1.7040	-2.76	37.41	0.074* ✔
T2	202.458 - 182.292	ROHN 3 EH	20'2-1/32"	6'8-5/8"	71.0 K=1.00	20.754	3.0159	-25.81	62.59	0.412 ✔
T3	182.292 - 162.104	ROHN 4 EH	20'2-5/8"	6'8-7/8"	54.8 K=1.00	23.588	4.4074	-67.52	103.96	0.649 ✔
T4	162.104 - 141.896	ROHN 5 EH	20'2-7/8"	6'9"	44.0 K=1.00	25.253	6.1120	-116.09	154.35	0.752 ✔
T5	141.896 - 121.688	ROHN 6 EHS	20'3"	10'1-9/16"	54.6 K=1.00	23.618	6.7133	-145.57	158.55	0.918 ✔
T6	121.688 - 101.479	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4 K=1.00	23.490	8.4049	-178.74	197.43	0.905 ✔
T7	101.479 - 81.2708	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4 K=1.00	23.490	8.4049	-208.58	197.43	1.056 ✔

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 $\frac{P}{P_a}$
T8	81.2708 - 61	ROHN 8 EHS	20'3-31/32"	10'1-29/32"	41.8 K=1.00	25.581	9.7193	-236.67	248.63	0.952 ✔
T9	61 - 40.6667	ROHN 8 EHS	20'4-9/16"	10'2-9/32"	41.9 K=1.00	25.564	9.7193	-264.07	248.47	1.063 ✔
T10	40.6667 - 20.3333	ROHN 8 EH	20'4-11/16"	10'2-13/32"	42.5 K=1.00	25.475	12.7627	-276.15	325.13	0.849 ✔
T11	20.3333 - 0	ROHN 8 EH	20'4-7/16"	10'1-11/16"	42.3 K=1.00	25.505	12.7627	-332.54	325.52	1.022 ✔

* DL controls

Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 2 STD	6'7-11/16"	6'5-13/32"	98.4 K=1.00	15.079	1.0745	-2.97	16.20	0.183 ✔
T2	202.458 - 182.292	ROHN 2 STD	7'11-7/8"	7'8-5/8"	117.6 K=1.00	10.790	1.0745	-9.81	11.59	0.846 ✔
T3	182.292 - 162.104	ROHN 2 STD	8'7-3/16"	8'3-19/32"	126.5 K=1.00	9.325	1.0745	-10.32	10.02	1.030 ✔
T4	162.104 - 141.896	ROHN 2 STD	9'3-15/32"	8'11-13/32"	136.5 K=1.00	8.013	1.0745	-10.09	8.61	1.172 ✔
T5	141.896 - 121.688	ROHN 2.5 STD	12'7-3/16"	12'1-11/16"	153.7 K=1.00	6.318	1.7040	-13.23	10.77	1.228 ✔
T6	121.688 - 101.479	ROHN 2.5 STD	13'4-9/16"	12'11-17/32"	164.2 K=1.00	5.539	1.7040	-11.94	9.44	1.265 ✔
T7	101.479 - 81.2708	ROHN 3 STD	14'2-7/8"	13'10-3/32"	142.8 K=1.00	7.327	2.2285	-11.98	16.33	0.734 ✔
T8	81.2708 - 61	ROHN 3 STD	15'2-17/32"	14'8-3/4"	151.9 K=1.00	6.470	2.2285	-11.80	14.42	0.819 ✔
T9	61 - 40.6667	ROHN 3 STD	16'2-9/32"	15'8-5/8"	162.2 K=1.00	5.679	2.2285	-12.78	12.66	1.010 ✔
T10	40.6667 - 20.3333	ROHN 3 STD	24'7-13/16"	12'3-31/32"	127.1 K=1.00	9.242	2.2285	-18.03	20.59	0.875 ✔
T11	20.3333 - 0	ROHN 3 STD	25'2-5/8"	12'7-5/16"	130.0 K=1.00	8.831	2.2285	-20.94	19.68	1.064 ✔

Horizontal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6-1/4"	4'1-11/16"	79.8 K=1.00	19.051	0.7995	-2.15	15.23	0.141 ✔
T2	202.458 - 182.292	ROHN 1.5 STD	8'7-3/16"	4'1-13/16"	80.0 K=1.00	19.004	0.7995	-5.34	15.19	0.352 ✔
T3	182.292 - 162.104	ROHN 1.5 STD	10'1/8"	4'9-27/32"	92.9 K=1.00	16.310	0.7995	-6.48	13.04	0.497 ✔
T4	162.104 - 141.896	ROHN 2 STD	12'1-3/16"	5'9-27/32"	88.7 K=1.00	17.221	1.0745	-7.09	18.50	0.383 ✔
T5	141.896 - 121.688	ROHN 2 STD	13'11-1/32"	6'8-5/32"	101.9 K=1.00	14.269	1.0745	-7.95	15.33	0.518 ✔

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 $\frac{P}{P_a}$
T6	121.688 - 101.479	ROHN 2 STD	16'3-15/32"	7'10-7/16"	120.0 K=1.00	10.374	1.0745	-7.89	11.15	0.708 ✔
T7	101.479 - 81.2708	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5 K=1.00	11.192	1.7040	-8.49	19.07	0.445 ✔
T8	81.2708 - 61	ROHN 2.5 STD	21'4-5/16"	10'3-27/32"	130.7 K=1.00	8.739	1.7040	-8.87	14.89	0.595 ✔
T9	61 - 40.6667	ROHN 2.5 STD	23'11-5/32"	11'7-3/16"	147.0 K=1.00	6.913	1.7040	-10.04	11.78	0.852 ✔
T10	40.6667 - 20.3333	ROHN 3 STD	25'2-5/32"	12'2-3/4"	126.1 K=1.00	9.388	2.2285	-9.92	20.92	0.474 ✔
T11	20.3333 - 0	ROHN 3 STD	27'9-31/32"	13'6-23/32"	139.8 K=1.00	7.639	2.2285	-12.21	17.02	0.717 ✔

Top Girt Design Data (Compression)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6 K=1.00	19.091	0.7995	-0.19	15.26	0.013 ✔

Redundant Horizontal (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	5'11-5/32"	114.4 K=1.00	11.073	0.7995	-4.80	8.85	0.542 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'7-3/16"	127.2 K=1.00	9.231	0.7995	-5.77	7.38	0.782 ✔

Redundant Diagonal (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2 STD	11'7-9/16"	10'10-11/16"	166.0 K=1.00	5.420	1.0745	-4.43	5.82	0.761 ✔
T11	20.3333 - 0	ROHN 2 STD	11'11-7/8"	11'3-27/32"	172.5 K=1.00	5.018	1.0745	-4.97	5.39	0.921 ✔

Redundant Hip (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	6'3-15/32"	121.3 K=1.00	10.093	0.7995	-0.03	8.07	0.003 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-	6'11-	134.1	8.302	0.7995	-0.02	6.64	0.004

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 $\frac{P}{P_a}$
			17/32"	17/32"	K=1.00					✔

Redundant Hip Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2.5 STD	15'2-13/32"	15'2-13/32"	192.6 K=1.00	4.027	1.7040	-0.05	6.86	0.008* ✔
T11	20.3333 - 0	ROHN 2.5 STD	15'11-7/8"	15'11-7/8"	202.6 K=1.00	3.639	1.7040	-0.05	6.20	0.008* ✔

* DL controls

Inner Bracing Design Data (Compression)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	L2x2x1/8	4'3"	4'3"	128.3 K=1.00	9.074	0.4844	-0.00	4.39	0.001 ✔
T2	202.458 - 182.292	L2x2x1/8	4'3-19/32"	4'3-19/32"	129.8 K=1.00	8.870	0.4844	-0.01	4.30	0.001 ✔
T3	182.292 - 162.104	L2x2x1/8	4'7-29/32"	4'7-29/32"	140.7 K=1.00	7.548	0.4844	-0.01	3.66	0.002 ✔
T4	162.104 - 141.896	L2x2x1/8	6'19/32"	6'19/32"	182.6 K=1.00	4.480	0.4844	-0.01	2.17	0.003 ✔
T5	141.896 - 121.688	L2x2x1/8	6'11-17/32"	6'11-17/32"	210.0 K=1.00	3.385	0.4844	-0.01	1.64	0.004 ✔
T6	121.688 - 101.479	L2 1/2x2 1/2x3/16	8'1-13/16"	8'1-13/16"	197.5 K=1.00	3.829	0.9020	-0.01	3.45	0.002* ✔
T7	101.479 - 81.2708	L3x3x3/16	9'4-13/16"	9'4-13/16"	189.2 K=1.00	4.173	1.0900	-0.01	4.55	0.002* ✔
T8	81.2708 - 61	L3 1/2x3 1/2x1/4	10'8-5/32"	10'8-5/32"	184.7 K=1.00	4.379	1.6900	-0.01	7.40	0.001* ✔
T9	61 - 40.6667	L3 1/2x3 1/2x1/4	11'11-17/32"	11'11-17/32"	206.9 K=1.00	3.490	1.6900	-0.01	5.90	0.002* ✔
T10	40.6667 - 20.3333	ROHN 3 STD	12'7-3/32"	12'7-3/32"	129.8 K=1.00	8.860	2.2285	-0.01	19.74	0.001* ✔
T11	20.3333 - 0	ROHN 3 STD	13'11-1/32"	13'11-1/32"	143.5 K=1.00	7.250	2.2285	-0.01	16.16	0.001* ✔

* DL controls

Tension Checks

Leg Design Data (Tension)

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 $\frac{P}{P_a}$
T2	202.458 - 182.292	ROHN 3 EH	20'2-1/32"	6'8-5/8"	71.0	30.000	3.0159	18.77	90.48	0.207 ✔
T3	182.292 - 162.104	ROHN 4 EH	20'2-5/8"	6'8-7/8"	54.8	30.000	4.4074	55.70	132.22	0.421 ✔
T4	162.104 - 141.896	ROHN 5 EH	20'2-7/8"	6'9"	44.0	30.000	6.1120	94.00	183.36	0.513 ✔
T5	141.896 - 121.688	ROHN 6 EHS	20'3"	10'1-9/16"	54.6	30.000	6.7133	120.42	201.40	0.598 ✔
T6	121.688 - 101.479	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4	30.000	8.4049	149.17	252.15	0.592 ✔
T7	101.479 - 81.2708	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4	30.000	8.4049	174.23	252.15	0.691 ✔
T8	81.2708 - 61	ROHN 8 EHS	20'3-31/32"	10'1-29/32"	41.8	30.000	9.7193	197.09	291.58	0.676 ✔
T9	61 - 40.6667	ROHN 8 EHS	20'4-9/16"	10'2-9/32"	41.9	30.000	9.7193	219.02	291.58	0.751 ✔
T10	40.6667 - 20.3333	ROHN 8 EH	20'4-11/16"	10'2-13/32"	42.5	30.000	12.7627	228.04	382.88	0.596 ✔
T11	20.3333 - 0	ROHN 8 EH	20'4-7/16"	10'1-11/16"	42.3	30.000	12.7627	273.23	382.88	0.714 ✔

Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 2 STD	6'7-11/16"	6'5-13/32"	98.4	30.000	1.0745	2.91	32.24	0.090 ✔
T2	202.458 - 182.292	ROHN 2 STD	7'11-7/8"	7'8-5/8"	117.6	30.000	1.0745	9.75	32.24	0.302 ✔
T3	182.292 - 162.104	ROHN 2 STD	8'4-11/16"	8'1-3/32"	123.3	30.000	1.0745	10.33	32.24	0.321 ✔
T4	162.104 - 141.896	ROHN 2 STD	9'23/32"	8'8-5/8"	132.9	30.000	1.0745	10.18	32.24	0.316 ✔
T5	141.896 - 121.688	ROHN 2.5 STD	12'3-1/4"	11'9-23/32"	149.6	30.000	1.7040	13.21	51.12	0.258 ✔
T6	121.688 - 101.479	ROHN 2.5 STD	12'11-3/4"	12'6-23/32"	159.1	30.000	1.7040	11.94	51.12	0.234 ✔
T7	101.479 - 81.2708	ROHN 3 STD	13'9-19/32"	13'4-29/32"	138.3	30.000	2.2285	11.74	66.85	0.176 ✔
T8	81.2708 - 61	ROHN 3 STD	15'2-17/32"	14'8-3/4"	151.9	30.000	2.2285	11.40	66.85	0.171 ✔
T9	61 - 40.6667	ROHN 3 STD	16'2-9/32"	15'8-5/8"	162.2	30.000	2.2285	12.32	66.85	0.184 ✔
T10	40.6667 - 20.3333	ROHN 3 STD	24'7-13/16"	12'3-31/32"	127.1	30.000	2.2285	17.09	66.85	0.256 ✔
T11	20.3333 - 0	ROHN 3 STD	25'2-5/8"	12'7-5/16"	130.0	30.000	2.2285	20.03	66.85	0.300 ✔

Horizontal Design Data (Tension)

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 $\frac{P}{P_a}$

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6-1/4"	4'1-11/16"	79.8	30.000	0.7995	2.15	23.98	0.090 ✔
T2	202.458 - 182.292	ROHN 1.5 STD	8'7-3/16"	4'1-13/16"	80.0	30.000	0.7995	5.34	23.98	0.223 ✔
T3	182.292 - 162.104	ROHN 1.5 STD	10'1/8"	4'9-27/32"	92.9	30.000	0.7995	6.48	23.98	0.270 ✔
T4	162.104 - 141.896	ROHN 2 STD	12'1-3/16"	5'9-27/32"	88.7	30.000	1.0745	7.10	32.24	0.220 ✔
T5	141.896 - 121.688	ROHN 2 STD	13'11-1/32"	6'8-5/32"	101.9	30.000	1.0745	7.95	32.24	0.247 ✔
T6	121.688 - 101.479	ROHN 2 STD	16'3-15/32"	7'10-7/16"	120.0	30.000	1.0745	7.89	32.24	0.245 ✔
T7	101.479 - 81.2708	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5	30.000	1.7040	8.50	51.12	0.166 ✔
T8	81.2708 - 61	ROHN 2.5 STD	21'4-5/16"	10'3-27/32"	130.7	30.000	1.7040	8.87	51.12	0.173 ✔
T9	61 - 40.6667	ROHN 2.5 STD	23'11-5/32"	11'7-3/16"	147.0	30.000	1.7040	10.04	51.12	0.196 ✔
T10	40.6667 - 20.3333	ROHN 3 STD	25'2-5/32"	12'2-3/4"	126.1	30.000	2.2285	9.92	66.85	0.148 ✔
T11	20.3333 - 0	ROHN 3 STD	27'9-31/32"	13'6-23/32"	139.8	30.000	2.2285	12.21	66.85	0.183 ✔

Top Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6	30.000	0.7995	0.19	23.98	0.008 ✔

Redundant Horizontal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	5'11-5/32"	114.4	21.600	0.7995	4.80	17.27	0.278 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'7-3/16"	127.2	21.600	0.7995	5.77	17.27	0.334 ✔

Redundant Diagonal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2 STD	11'7-9/16"	10'10-11/16"	166.0	21.600	1.0745	4.43	23.21	0.191 ✔
T11	20.3333 - 0	ROHN 2 STD	11'11-7/8"	11'3-27/32"	172.5	21.600	1.0745	4.97	23.21	0.214 ✔

Redundant Hip (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	6'3-15/32"	121.3	21.600	0.7995	0.01	17.27	0.001 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'11-17/32"	134.1	21.600	0.7995	0.01	17.27	0.001 ✔

Redundant Hip Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2.5 STD	15'2-13/32"	15'2-13/32"	192.6	21.600	1.7040	0.04	36.81	0.001* ✔
T11	20.3333 - 0	ROHN 2.5 STD	15'11-7/8"	15'11-7/8"	202.6	21.600	1.7040	0.04	36.81	0.001* ✔

* DL controls

Inner Bracing Design Data (Tension)

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 $\frac{P}{P_a}$
T1	212.625 - 202.458	L2x2x1/8	4'3"	4'3"	81.4	21.600	0.4844	0.00	10.46	0.000 ✔
T2	202.458 - 182.292	L2x2x1/8	4'3-19/32"	4'3-19/32"	82.4	21.600	0.4844	0.01	10.46	0.001 ✔
T3	182.292 - 162.104	L2x2x1/8	4'7-29/32"	4'7-29/32"	89.3	21.600	0.4844	0.00	10.46	0.000 ✔
T4	162.104 - 141.896	L2x2x1/8	5'4-3/16"	5'4-3/16"	102.6	21.600	0.4844	0.01	10.46	0.001 ✔
T5	141.896 - 121.688	L2x2x1/8	6'4-13/16"	6'4-13/16"	122.6	21.600	0.4844	0.00	10.46	0.000 ✔
T6	121.688 - 101.479	L2 1/2x2 1/2x3/16	7'6-1/4"	7'6-1/4"	116.0	21.600	0.9020	0.00	19.48	0.000 ✔

Section Capacity Table

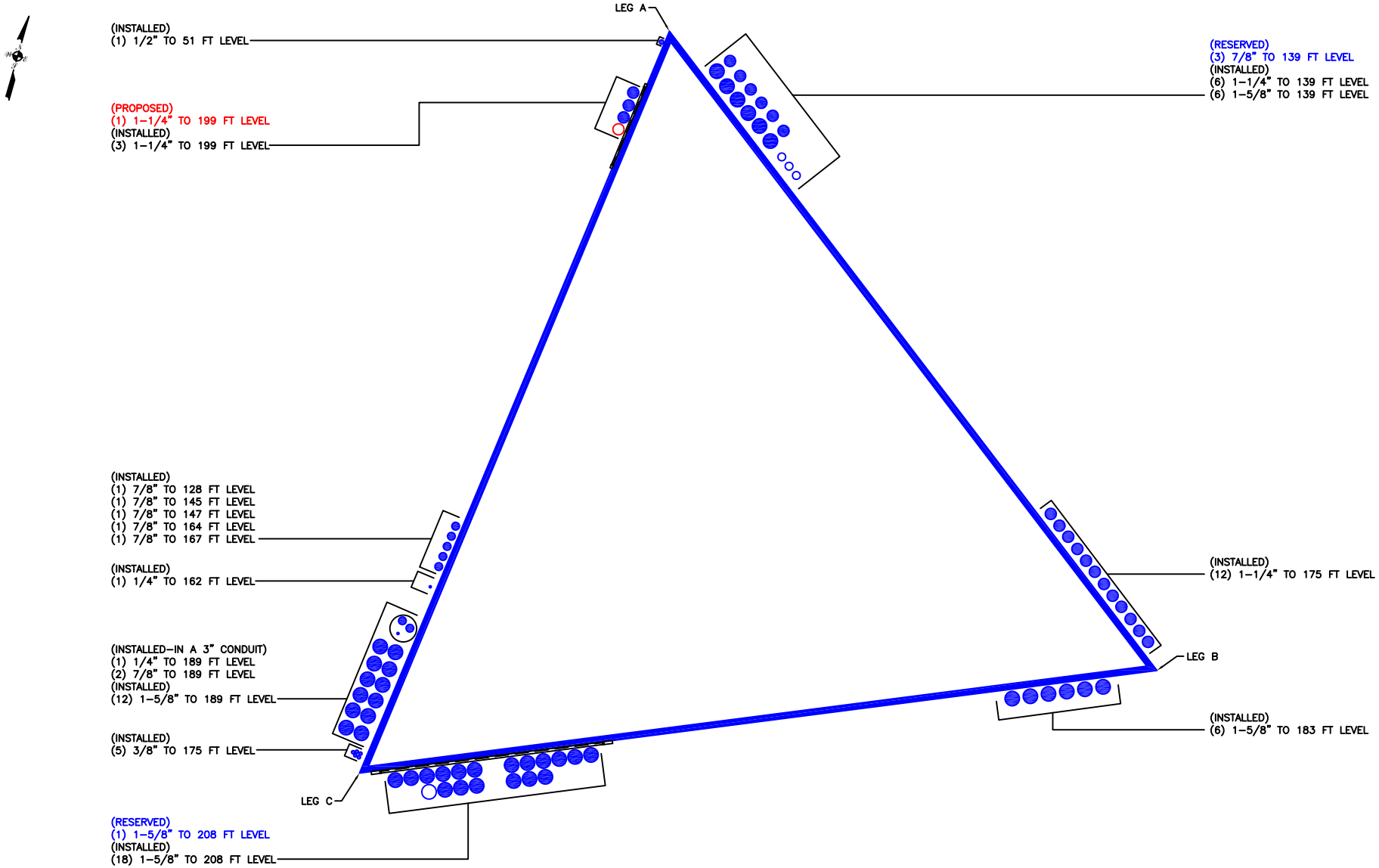
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	212.625 - 202.458	Leg	ROHN 2.5 STD	1	-2.31	37.41	9.1	Pass
T2	202.458 - 182.292	Leg	ROHN 3 EH	28	-25.81	83.44	30.9	Pass
T3	182.292 - 162.104	Leg	ROHN 4 EH	67	-67.52	138.58	48.7	Pass
T4	162.104 - 141.896	Leg	ROHN 5 EH	108	-116.09	205.75	56.4	Pass
T5	141.896 -	Leg	ROHN 6 EHS	146	-145.57	211.35	68.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
	121.688							
T6	121.688 - 101.479	Leg	ROHN 6 EH	173	-178.74	263.18	67.9	Pass
T7	101.479 - 81.2708	Leg	ROHN 6 EH	200	-208.58	263.18	79.3	Pass
T8	81.2708 - 61	Leg	ROHN 8 EHS	227	-236.67	331.42	71.4	Pass
T9	61 - 40.6667	Leg	ROHN 8 EHS	254	-264.07	331.21	79.7	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 EH	281	-276.15	433.40	63.7	Pass
T11	20.3333 - 0	Leg	ROHN 8 EH	314	-332.54	433.92	76.6	Pass
T1	212.625 - 202.458	Diagonal	ROHN 2 STD	9	-2.97	21.60	13.7	Pass
T2	202.458 - 182.292	Diagonal	ROHN 2 STD	33	-9.81	15.46	63.5	Pass
T3	182.292 - 162.104	Diagonal	ROHN 2 STD	72	-10.32	13.36	77.3	Pass
T4	162.104 - 141.896	Diagonal	ROHN 2 STD	110	-10.09	11.48	87.9	Pass
T5	141.896 - 121.688	Diagonal	ROHN 2.5 STD	149	-13.23	14.35	92.2	Pass
T6	121.688 - 101.479	Diagonal	ROHN 2.5 STD	176	-11.94	12.58	94.9	Pass
T7	101.479 - 81.2708	Diagonal	ROHN 3 STD	203	-11.98	21.76	55.0	Pass
T8	81.2708 - 61	Diagonal	ROHN 3 STD	230	-11.80	19.22	61.4	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 STD	257	-12.78	16.87	75.8	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	284	-18.03	27.45	65.7	Pass
T11	20.3333 - 0	Diagonal	ROHN 3 STD	317	-20.94	26.23	79.8	Pass
T1	212.625 - 202.458	Horizontal	ROHN 1.5 STD	7	-2.15	20.30	10.6 12.5 (b)	Pass
T2	202.458 - 182.292	Horizontal	ROHN 1.5 STD	31	-5.34	20.25	26.4 31.1 (b)	Pass
T3	182.292 - 162.104	Horizontal	ROHN 1.5 STD	70	-6.48	17.38	37.3 37.8 (b)	Pass
T4	162.104 - 141.896	Horizontal	ROHN 2 STD	109	-7.09	24.67	28.8 41.3 (b)	Pass
T5	141.896 - 121.688	Horizontal	ROHN 2 STD	148	-7.95	20.44	38.9 46.3 (b)	Pass
T6	121.688 - 101.479	Horizontal	ROHN 2 STD	175	-7.89	14.86	53.1	Pass
T7	101.479 - 81.2708	Horizontal	ROHN 2.5 STD	202	-8.49	25.42	33.4 49.5 (b)	Pass
T8	81.2708 - 61	Horizontal	ROHN 2.5 STD	229	-8.87	19.85	44.7 51.6 (b)	Pass
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	256	-10.04	15.70	63.9	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 3 STD	283	-9.92	27.89	35.6 40.1 (b)	Pass
T11	20.3333 - 0	Horizontal	ROHN 3 STD	316	-12.21	22.69	53.8	Pass
T1	212.625 - 202.458	Top Girt	ROHN 1.5 STD	4	-0.19	20.34	0.9	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	ROHN 1.5 STD	292	-4.80	11.80	40.6	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	321	-5.77	9.84	58.6	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	ROHN 2 STD	289	-4.43	7.76	57.1	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	322	-4.97	7.19	69.1	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	ROHN 1.5 STD	308	-0.03	10.76	0.2	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 1.5 STD	341	-0.02	8.85	0.3	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	ROHN 2.5 STD	307	-0.05	6.86	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	340	-0.05	6.20	0.8	Pass
T1	212.625 - 202.458	Inner Bracing	L2x2x1/8	16	-0.00	5.83	0.3	Pass
T2	202.458 -	Inner Bracing	L2x2x1/8	41	-0.01	5.73	0.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
	182.292							
T3	182.292 - 162.104	Inner Bracing	L2x2x1/8	79	-0.01	4.22	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L2x2x1/8	118	-0.01	2.89	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L2x2x1/8	157	-0.01	2.19	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L2 1/2x2 1/2x3/16	184	-0.01	3.45	0.5	Pass
T7	101.479 - 81.2708	Inner Bracing	L3x3x3/16	211	-0.01	4.55	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	7.40	0.4	Pass
T9	61 - 40.6667	Inner Bracing	L3 1/2x3 1/2x1/4	265	-0.01	5.90	0.4	Pass
T10	40.6667 - 20.3333	Inner Bracing	ROHN 3 STD	311	-0.01	19.74	0.4	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 3 STD	345	-0.01	16.16	0.4	Pass
							Summary	
						Leg (T9)	79.7	Pass
						Diagonal (T6)	94.9	Pass
						Horizontal (T9)	63.9	Pass
						Top Girt (T1)	0.9	Pass
						Redund Horz 1 Bracing (T11)	58.6	Pass
						Redund Diag 1 Bracing (T11)	69.1	Pass
						Redund Hip 1 Bracing (T11)	0.3	Pass
						Redund Hip Diagonal Bracing (T11)	0.8	Pass
						Inner Bracing (T7)	0.5	Pass
						Bolt Checks	63.3	Pass
						RATING =	**94.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



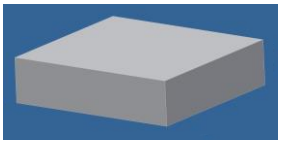
BUSINESS UNIT: 806363 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Unit Base Foundation

Checks capacity of square mat foundation with raised piers for a self-supporting tower



BU#: 806363
Site Name: HRT 105 943201
App Number: 245642 Rev. 0
TIA-222 Revision: F

Design Reactions		
Shear, **S**:	63.00	kips
Moment, **M**:	7885.00	ft-kips
Compression/leg, **Ca**:	331.00	kips
Uplift/leg, **Ua**:	272.00	kips
Tower Weight, **Wt**:	83.00	kips
Tower Height, **H**:	213	ft
Base Face Width, **w'**:	30	ft

Block Properties		
Depth, **D**:	4.0	ft
Pad Width, **W**:	40.25	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	4.0	ft
Pad Rebar Size, **Sp**:	7	
Pad Rebar Quantity, **mp**:	55	40

Base Plate Dimensions		
Base Plate Width, di:	12.0	in

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, δ**c**:	136	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, γ:	105	pcf
Ultimate Bearing: **Bc**:	8.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, φ:	35	degrees
Base Sliding, **μ**:	0.2	

Design Checks	***Capacity/ Availability***	***Demand/ Limits***	***Check***
Base Sliding (kips):	225.59	63.00	**27.9%**
Overturning (k-ft):	12803.20	7885.00	**61.6%**
Bearing (ksf):	6.00	1.61	**26.8%**
1-way Shear (kips):	1971.72	72.96	**3.7%**
2-way Shear (kips):	1582.25	430.30	**27.2%**
Pad moment capacity(k-ft):	7259.23	2306.32	**31.8%**

☐ Tower centroid is offset from foundation centroid

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT03XC156

Clinton (Crown)

48 Cow Hill Road
Clinton, CT 06413

June 15, 2014

EBI Project Number: 62143379

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

EBI Consulting
environmental | engineering | due diligence

June 15, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC156 - Clinton (Crown)

Site Total: 33.12% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 48 Cow Hill Road, Clinton, 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 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 48 Cow Hill Road, Clinton, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all 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 minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. 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 APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **198 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	CT03XC156 - Clinton (Crown)
Site Addresss	48 Cow Hill Road, Clinton, CT, 06413
Site Type	Self Support Tower

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 (10 db reduction)	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	5.9	198	192	1/2 "	0.5	0	208.04	0.20%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	198	192	1/2 "	0.5	0	39.00	0.07%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	198	192	1/2 "	0.5	0	138.69	0.24%
														Sector total Power Density Value:		0.51%

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 (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	198	192	1/2 "	0.5	0	208.04	0.20%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	198	192	1/2 "	0.5	0	39.00	0.07%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	198	192	1/2 "	0.5	0	138.69	0.24%
														Sector total Power Density Value:		0.51%

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 (10 db reduction)	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	5.9	198	192	1/2 "	0.5	0	208.04	0.20%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	198	192	1/2 "	0.5	0	39.00	0.07%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	198	192	1/2 "	0.5	0	138.69	0.24%
														Sector total Power Density Value:		0.51%

Site Composite MPE %	
Carrier	MPE %
Sprint	1.53%
AT&T	6.15%
T-Mobile	0.18%
MetroPCS	2.05%
Nextel	1.86%
Verizon Wireless	7.82%
Town	6.90%
MediaFLO	6.63%
Total Site MPE %	**33.12%**

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 **1.53% (0.51% from sector 1, 0.51% from sector 2 and 0.51% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **33.12%** 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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