Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

March 24, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 806378**
Sprint PCS Site ID: CT33XC556
Located at: 126 Pioneer Heights Road, Somers, CT 06071

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 Ms.Lisa Pellegrini, First Selectman for the Town of Somers.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **126 Pioneer Heights Road, Somers, CT 06071**. 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: Ms. Lisa Pellegrini, First Selectman
Town of Somers
600 Main Street
Somers, CT 06071

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	ELLINGTON (CROWN)
SITE CASCADE:	CT33XC556
SITE NUMBER:	806378
SITE ADDRESS:	126 PIONEER HEIGHTS RD. SOMERS, CT 06071
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° 56' 57.984" N
41.94944°

LONGITUDE (NAD83):
72° 29' 30.9834" W
72.49194°

COUNTY:
TOLLAND

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
TBD

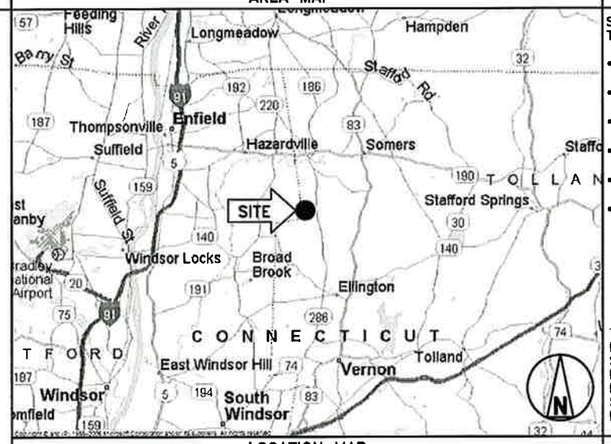
POWER COMPANY:
CONNECTICUT LIGHT & POWER
(860) 947-2000

AAV PROVIDER:
AT&T
(800) 246-8464

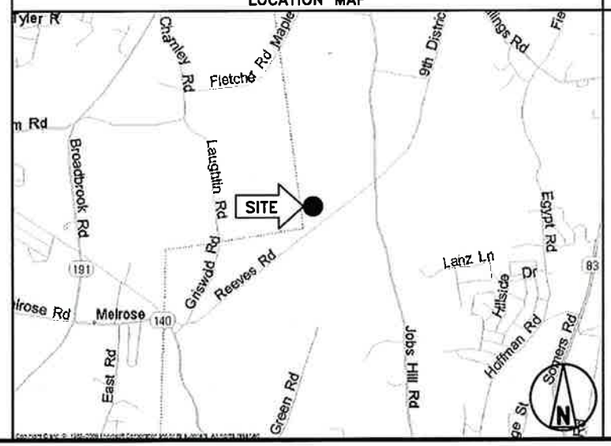
SPRINT CM:
PETER CULBERT
PHONE: 603-203-6446
603-969-0686
PETER.CULBERT@SPRINT.COM

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS
- INSTALL (4) BATTERIES IN EXISTING BBU CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (1) FIBER CABLE
- INSTALL (27) JUMPER CABLES

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:
ELLINGTON (CROWN)

SITE CASCADE:
CT33XC556

SITE ADDRESS:
126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

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

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

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

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

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

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

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

1.4 TESTS AND INSPECTIONS:

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

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

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

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

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 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

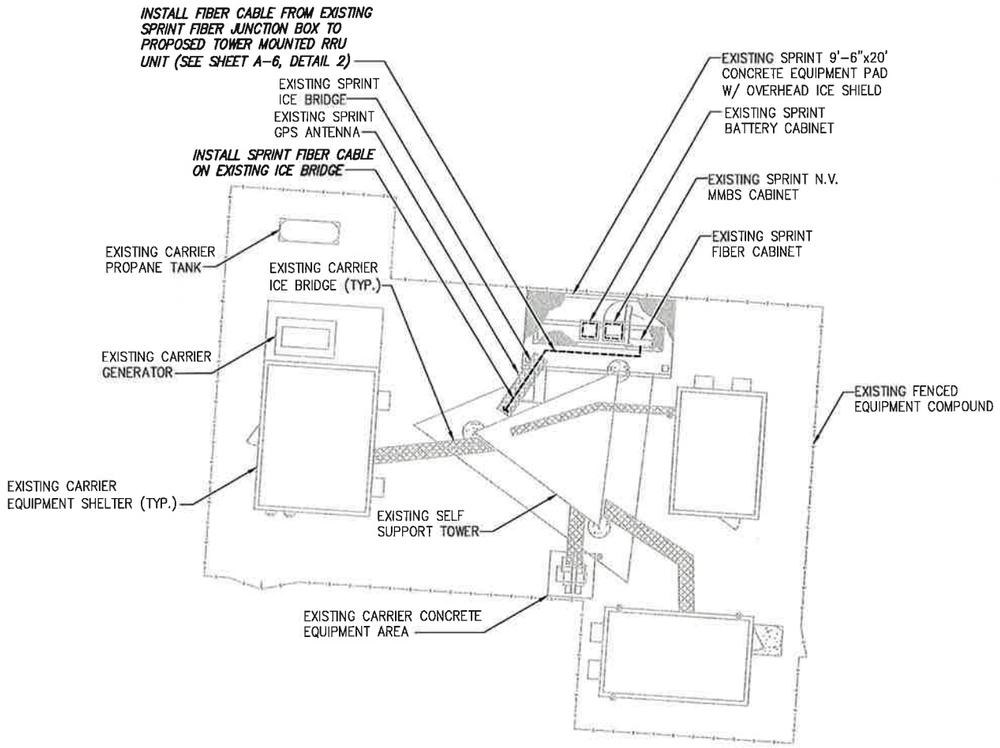
SHEET DESCRIPTION:

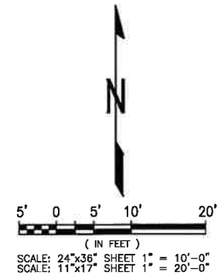
SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3

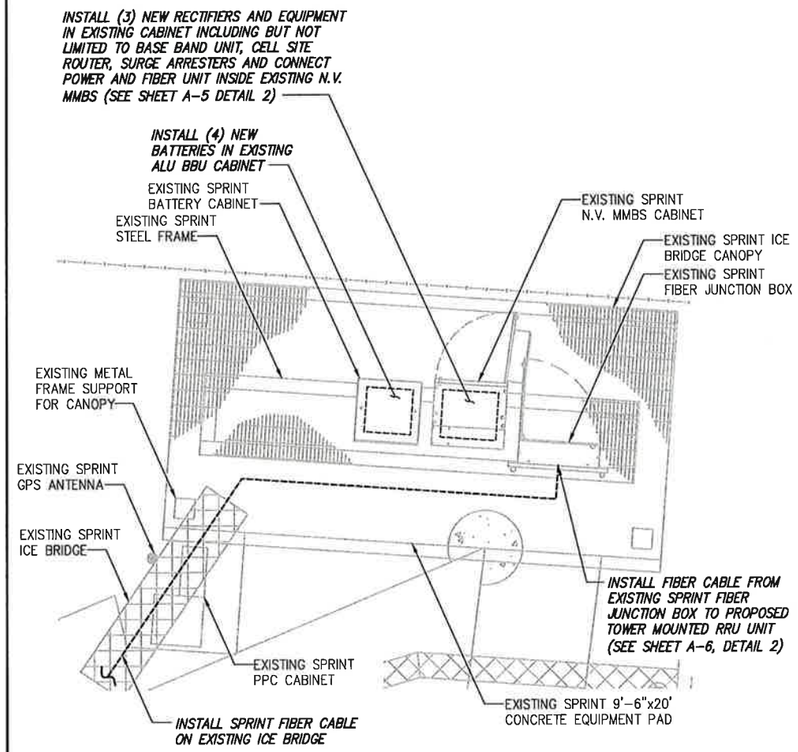
INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

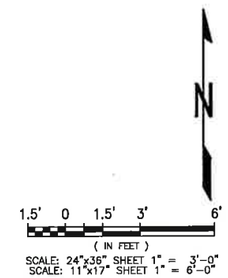




SCALE: 24"x36" SHEET 1" = 10'-0"
SCALE: 11"x17" SHEET 1" = 20'-0"

OVERALL SITE PLAN | SCALE: AS NOTED | 1





SCALE: 24"x36" SHEET 1" = 3'-0"
SCALE: 11"x17" SHEET 1" = 6'-0"

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON (CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

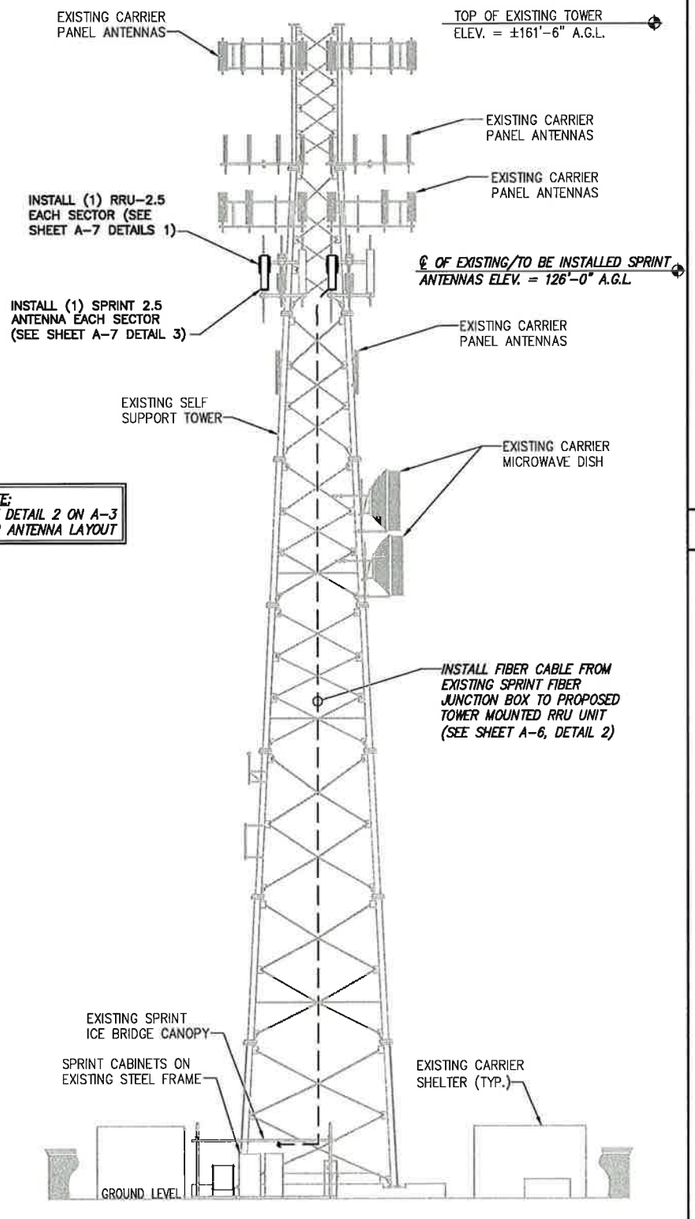
SITE PLAN

SHEET NUMBER:

A-1

STRUCTURAL ANALYSIS COMPLETED BY VERTICAL STRUCTURES, INC. FOR ADDITIONAL INFORMATION, SEE REPORT: TITLED: STRUCTURAL ANALYSIS REPORT, SITE NUMBER: 806378 DATED: 1/09/14.

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



NOTE:
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

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 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

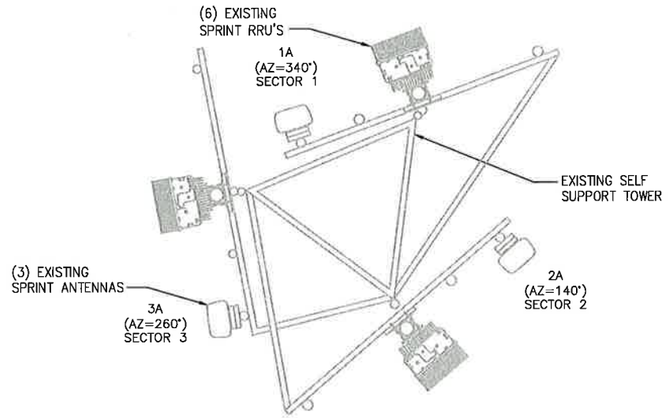
126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-2

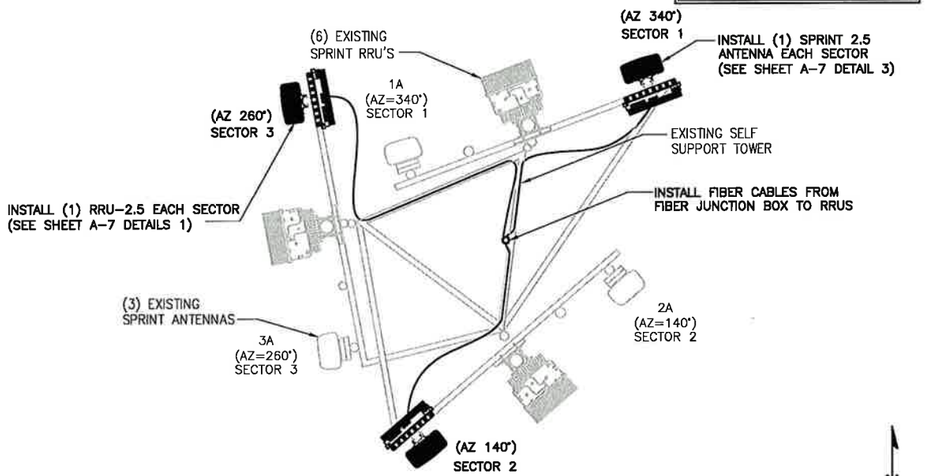


0° = TRUE NORTH

EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

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

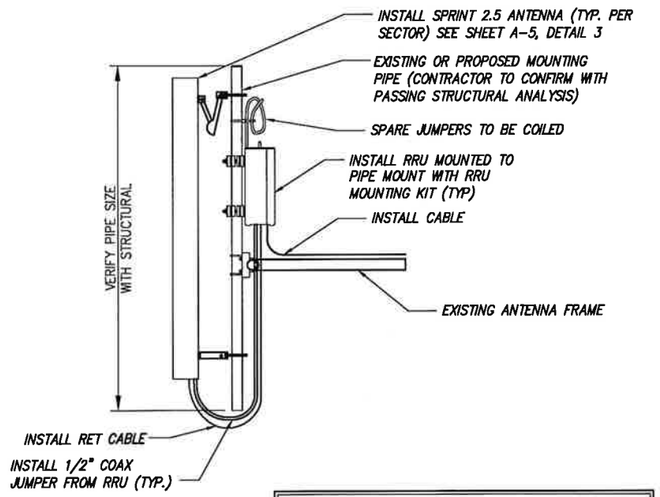
NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET



0° = TRUE NORTH

FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

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

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

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

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

TYPICAL ANTENNA, & RRU MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JJM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

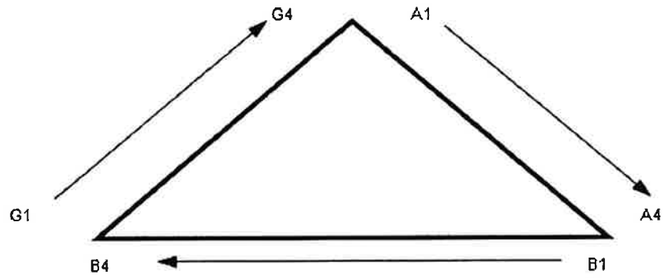
A-3

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

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 340-000

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:
ELLINGTON (CROWN)

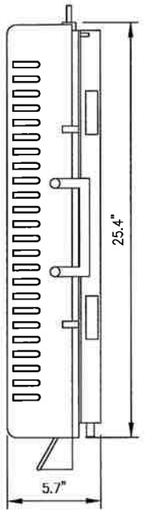
SITE CASCADE:
CT33XC556

SITE ADDRESS:
126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

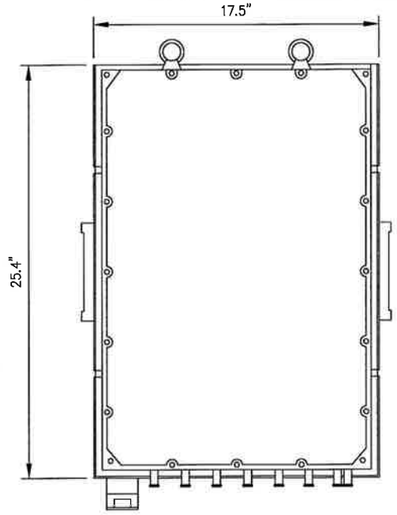
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

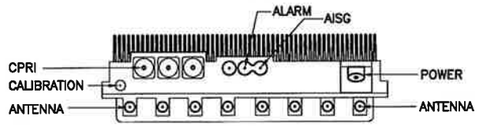
RRU: ALCATEL LUCENT TD-RRH8X20



SIDE VIEW



FRONT VIEW

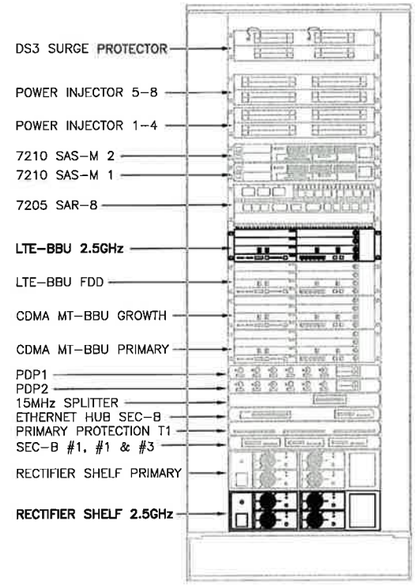


PLAN VIEW

NOTES

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

2.5 RRU'S | NO SCALE | 1

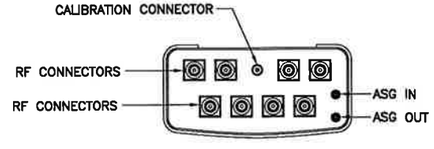


FRONT VIEW

2.5 EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

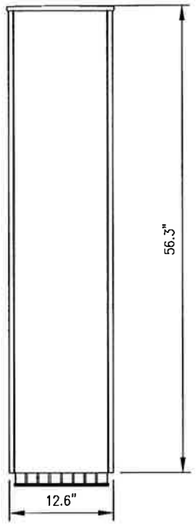
ANTENNA RFS APXVTM14-C-I20

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



PLAN VIEW

SIDE VIEW



FRONT VIEW

2.5 ANTENNA | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON
(CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-5

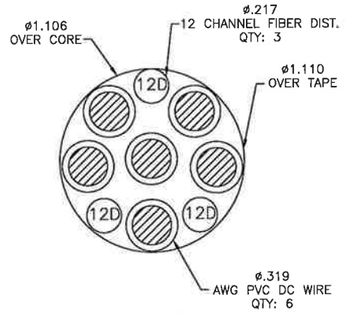
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

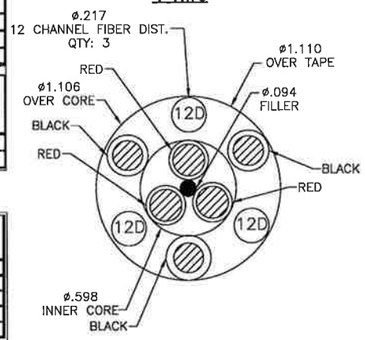
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

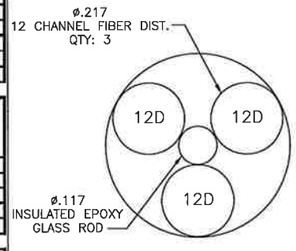
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

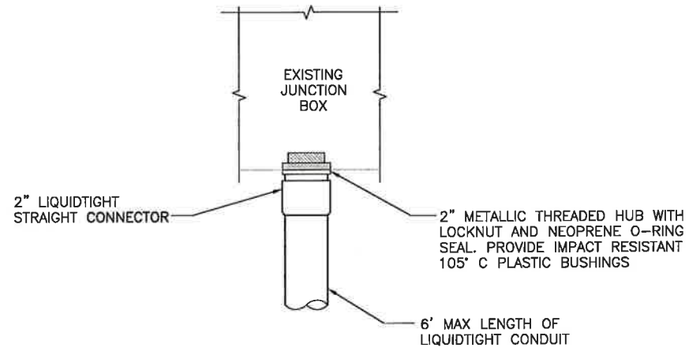


8 & 6 AWG



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 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

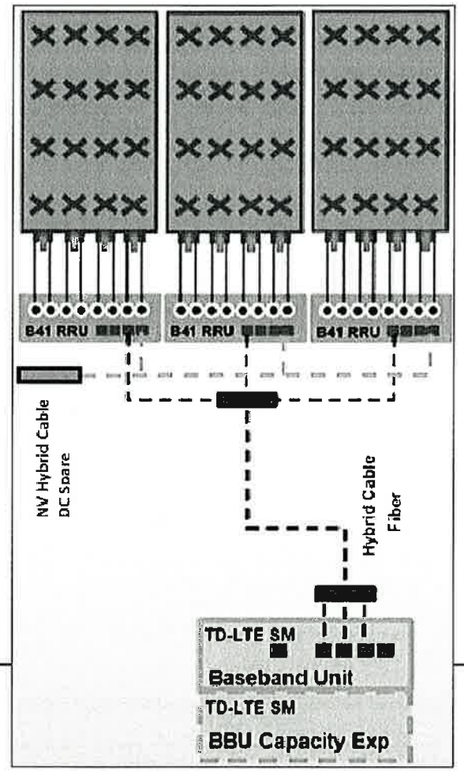
SITE NAME:
ELLINGTON
(CROWN)

SITE CASCADE:
CT33XC556

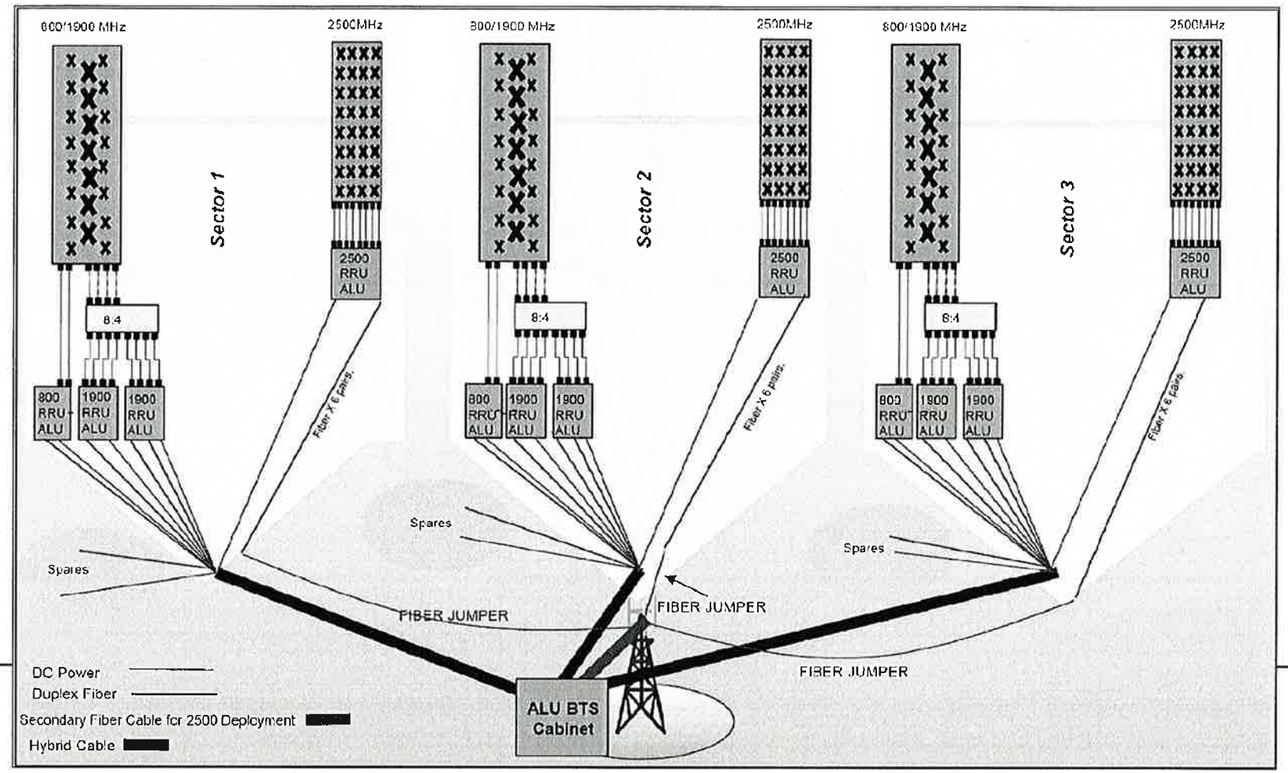
SITE ADDRESS:
126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:
CIVIL DETAILS

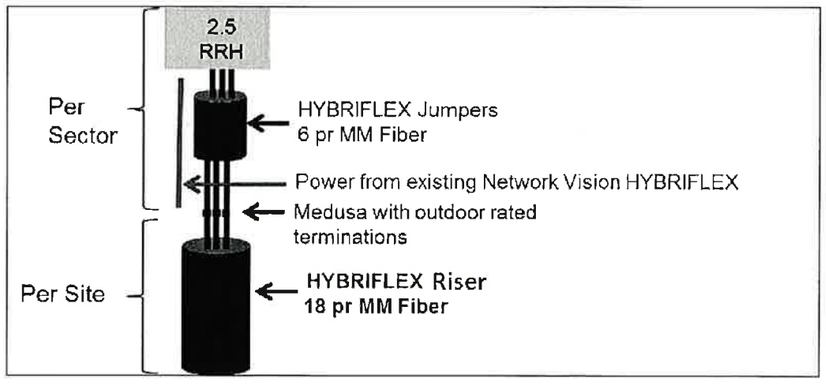
SHEET NUMBER:
A-6



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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON (CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

PLUMBING DIAGRAM

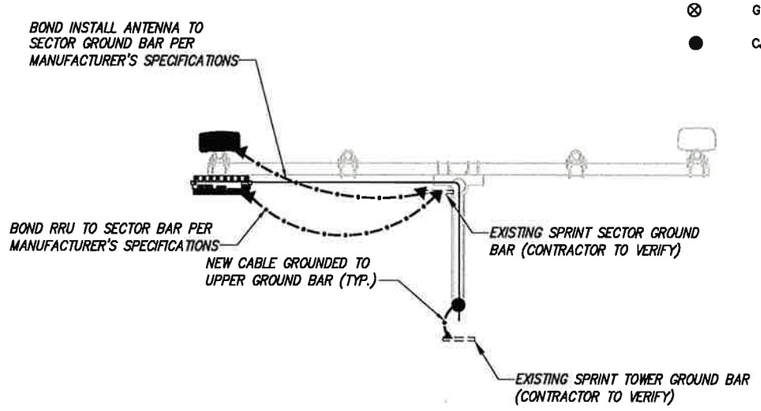
SHEET NUMBER:

A-7

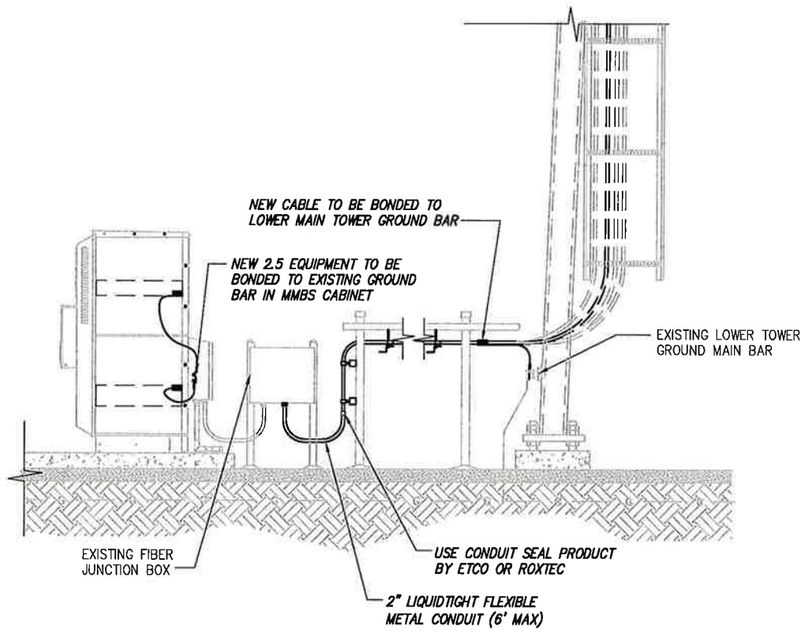
PLAN NOT USED | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 340-000

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 REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JLM	A

SITE NAME:

ELLINGTON (CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

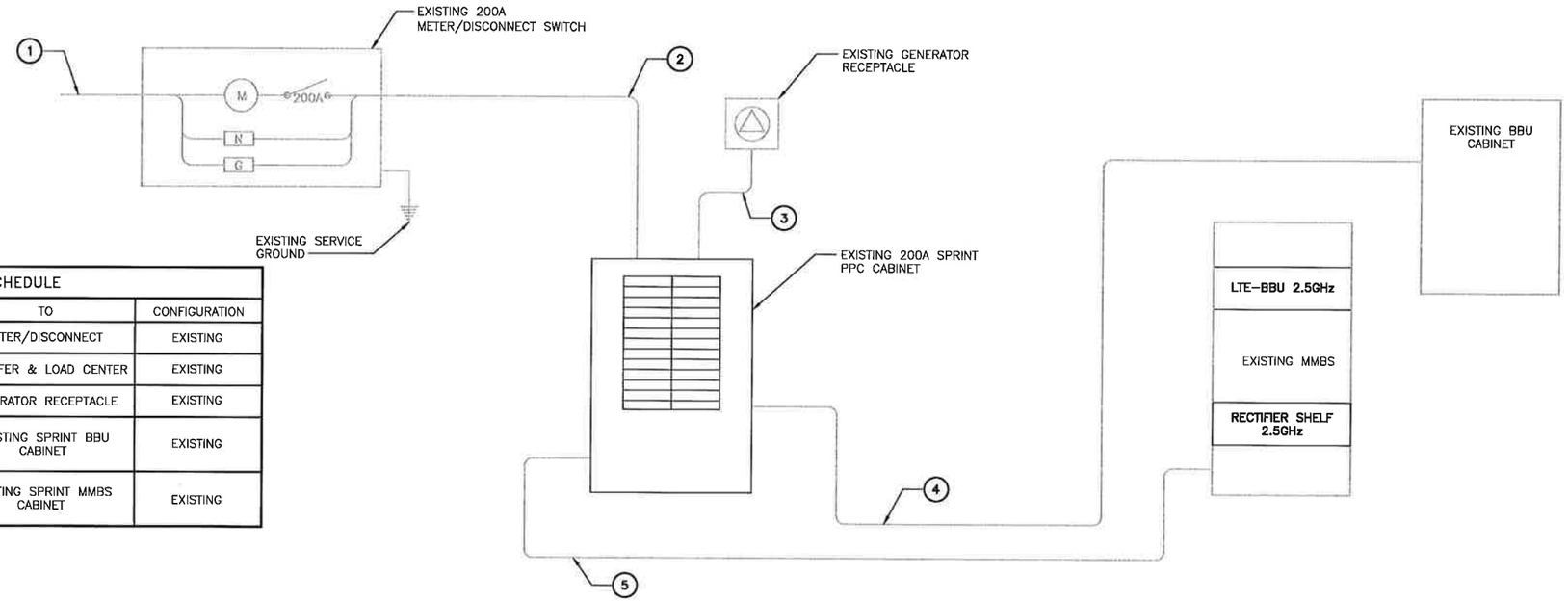
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

NOTES

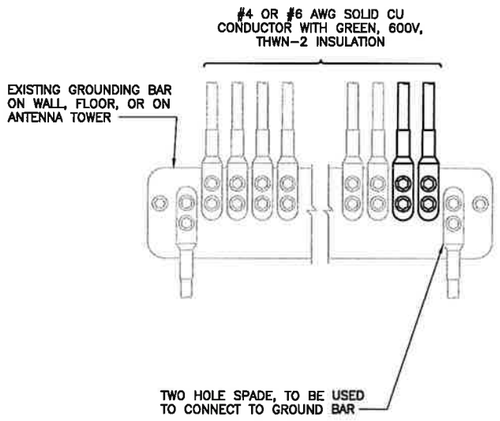
CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



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

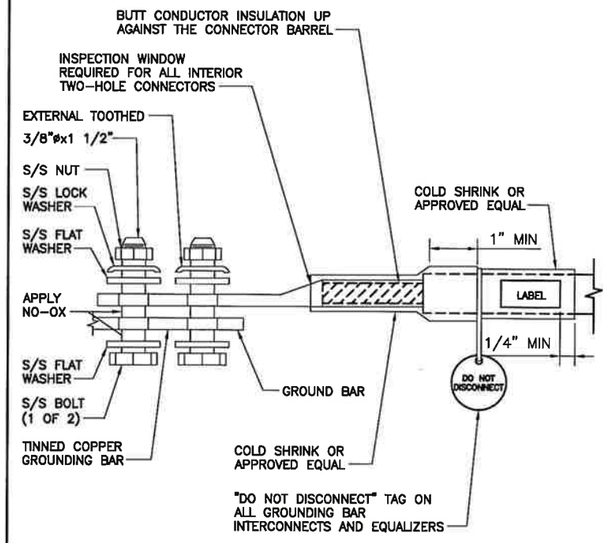


NOTES

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.

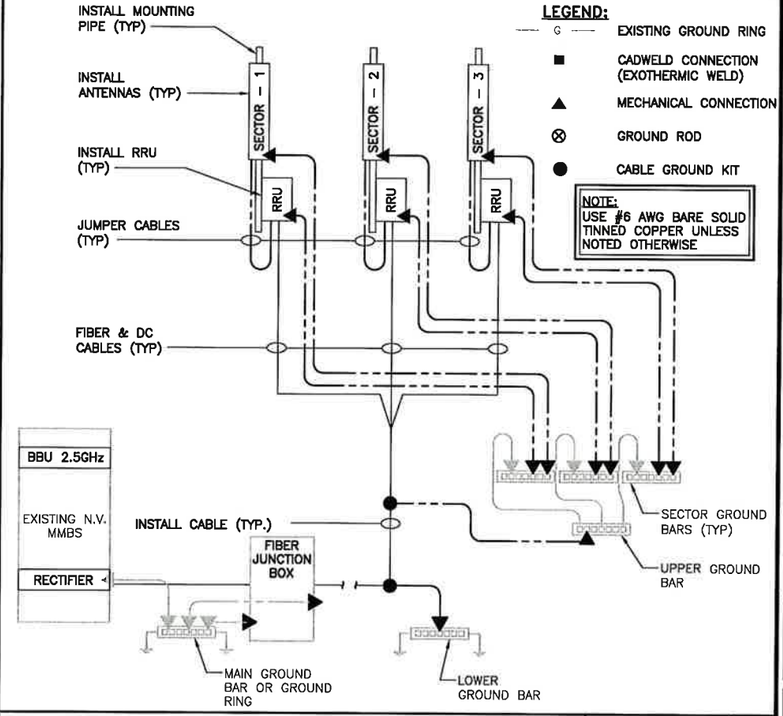
INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

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 340-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	2/11/14	MAP	B
ISSUED FOR REVIEW	01/02/14	JJM	A

SITE NAME:

ELLINGTON (CROWN)

SITE CASCADE:

CT33XC556

SITE ADDRESS:

126 PIONEER HEIGHTS RD.
SOMERS, CT 06071

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

Date: **January 09, 2014**

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

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
amathis@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Change-Out**	Scenario 2.5A
	Carrier Site Number:	CT33XC556
	Carrier Site Name:	ELLINGTON (CROWN)
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086
	Crown Castle JDE Job Number:	252876
	Crown Castle Work Order Number:	692801
	Crown Castle Application Number:	208180 Rev. 4
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2014-004-002
Site Data:	**126 Pioneer Heights Road, Somers, CT, Tolland County** **Latitude *41° 56' 55.98"*, Longitude *-72° 29' 31.55"*** **161.375 Foot - Self Support Tower**	

Dear Patrick Bynum,

Vertical Structures, Inc. 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 605966.

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

LC11: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

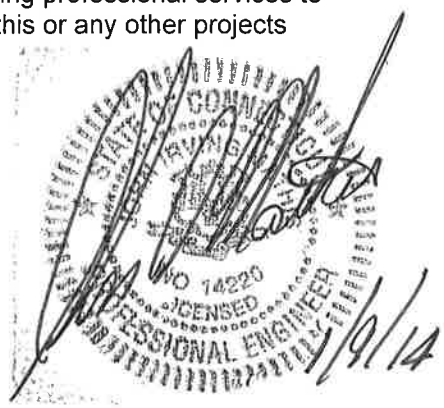
The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code based upon a wind speed of 85 mph fastest mile.

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

Respectfully submitted by:

Andrew Mathis
Project Engineer



Date: **January 09, 2014**

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

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
amathis@verticalstructures.com

Subject: Structural Analysis Report

Carrier Designation:	***Sprint PCS* Change-Out**	Scenario 2.5A
	Carrier Site Number:	CT33XC556
	Carrier Site Name:	ELLINGTON (CROWN)
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086
	Crown Castle JDE Job Number:	252876
	Crown Castle Work Order Number:	692801
	Crown Castle Application Number:	208180 Rev. 4
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2014-004-002
Site Data:	**126 Pioneer Heights Road, Somers, CT, Tolland County** **Latitude *41° 56' 55.98"*, Longitude *-72° 29' 31.55"*** **161.375 Foot - Self Support Tower**	

Dear Patrick Bynum,

Vertical Structures, Inc. 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 605966.

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

LC11: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code 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 *Vertical Structures, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Andrew Mathis
Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 161.375 ft Self Support tower designed by Rohn in 1986. The tower was originally designed for a 30 psf wind pressure in accordance with a previous revision of the EIA Standard. The tower has been reworked multiple times to accommodate additional loading.

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 and 50 mph under service loads. Also, per Crown Castle's direction and in accordance with ASCE-7-05 we have considered a fastest mile wind speed of 38 mph with an escalating 1.0 inch ice thickness.

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
125.0	126.0	3	alcatel lucent	TD-RRH8x20-25 BTS	1	5/8	
		3	celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing 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
157.0	157.0	1		Sector Mount [SM 504-3]	18	1 5/8	1
		3	antel	BXA-70063-4CF-EDIN-X w/ Mount Pipe			
		6	antel	LPA-185063/8CFx2 w/ Mount Pipe			
		2	antel	LPA-80063/4CF w/ Mount Pipe			
		2	antel	LPA-80063/4CFx5 w/Mount Pipe			
		2	celwave	APL866513-42T6 w/ 8' Pipe Mount			
145.0	147.0	12	decibel	DB844H90-XY w/Mount Pipe	12	1 5/8	2
	145.0	1	rohn	6' Side-Arm Pipe (1) w/ 12' Horizontal mounting pipe (3)			
135.0	137.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	1 2 13	3/8 3/4 1 1/4	1
		6	ericsson	RRUS-11 BTS			
		3	communications components	DTMABP7819VG12A TMA			
		4	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ mount pipe			
		3	powerwave technologies	LGP13519 Diplexer			
		1	raycap	DC6-48-60-18-8F			
	135.0	1		Sector Mount [SM 504-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
125.0	126.0	1		Pipe Mount [PM 601-3]	3	1 1/4	1
		3	alcatel lucent	1900MHz RRH (65MHz) TMA			
		3	alcatel lucent	800MHz 2x50W RRH w/ Filter			
		1	celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	125.0	1		Sector Mount [SM 402-3]			
113.0	113.0	3	rfs	APXV18-206517-A w/ Mount Pipe	6	1 5/8	1
95.0	95.0	1		Pipe Mount	1	EW52	1
		1	andrew	UHX8-59H			
86.0	86.0	1		Pipe Mount	2	EW52	1
		1	andrew	UHX8-59H			
57.0	60.0	1		GPS	1	1/2	1
	57.0	1		Side Arm Mount [SO 202-1]			
48.0	50.0	1	lucent	KS24019-L112A	1	1/2	1
	48.0	1		Side Arm Mount [SO 202-1]			

Notes:
1) Existing Equipment
2) Equipment to be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180	180	4	celwave	PD10017		
		4	rohn	3' Sidearm		
171	171	6	celwave	PD1132		
		3	rohn	6' Sidearm		
161	161	2		6' Std. Dish		
100	100	1	celwave	PD1109		
		1	rohn	6' Sidearm		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint PCS Change-Out Revision #4	208180	CCIsites
Tower Drawing	Rohn Drawing No. A861587-1	1285424	CCIsites
Foundation Drawing	Rohn Drawing No. C820155	1918334	CCIsites
Tower Leg Information	HEB September 3, 1999 Letter	821786	CCIsites
Geotechnical Report	FDH Project No. 06-10109G	1275233	CCIsites
Rework Design	All-Points Technology Job #CT105160	262063	CCIsites
Rework Drawings	Vertical Structures Job No. 2006-004-066	1278690	CCIsites
Rework Drawings	Vertical Structures Job No. 2011-004-006	2961397	CCIsites
Rework Drawings	Vertical Structures Job No. 2012-004-047	3265393	CCIsites
Post-Modification Inspection	TEP Project No. 127290	3684249	CCIsites

3.1) Analysis Method

tnxTower (version 6.1.3.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Vertical Structures, Inc. 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 (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	161.375 - 141.25	Leg	ROHN 2 STD	3	-15269.20	32298.46	47.3	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	39	-16850.60	65601.99	25.7	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	51	-24439.40	65600.53	37.3	Pass
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	60	-31043.20	65600.53	47.3	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	69	-43761.50	65601.99	66.7	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	78	-48801.90	83786.24	58.2	Pass
T7	114.396 - 107.729	Leg	ROHN 3 EH	87	-59154.10	83784.51	70.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T8	107.729 - 100.979	Leg	ROHN 3 EH	96	-74449.80	83786.78	88.9	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	105	-79588.70	110272.15	72.2	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	114	-89225.70	110269.22	80.9	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	123	-105980.00	132220.66	80.2	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	135	-110742.00	139069.22	79.6	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	144	-120727.00	139067.89	86.8	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	153	-135922.00	161110.37	84.4	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	165	-142768.00	177462.28	80.4	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	174	-165211.00	177462.28	93.1	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	183	-171456.00	217442.95	78.9	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	195	-192655.00	217500.27	88.6	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	207	-219537.00	251897.00	87.2	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	12	-2259.16	8233.69	27.4 42.2 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	48	-2186.49	6292.83	34.7 39.8 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	57	-3341.32	5692.96	58.7 60.8 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	63	-3645.04	5163.16	70.6	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	72	-4514.56	7121.45	63.4 82.6 (b)	Pass
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	81	-5223.81	13636.32	38.3 80.8 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	90	-5085.99	12364.21	41.1 79.5 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	99	-5284.56	11251.04	47.0 81.7 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	111	-5528.26	7928.39	69.7	Pass
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x3/16	120	-6716.75	7231.13	92.9	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	129	-7524.79	28255.60	26.6 68.6 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	141	-7559.06	10664.01	70.9	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	150	-7363.05	9783.97	75.3	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	159	-7667.96	9013.80	85.1	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	171	-8685.26	29304.00	29.6 73.7 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	180	-8791.60	27080.03	32.5 75.3 (b)	Pass
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	189	-8777.14	32519.33	27.0 74.4 (b)	Pass
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	201	-9363.46	29757.36	31.5 75.8 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	213	-9767.65	40256.47	24.3 80.2 (b)	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	131	-1837.95	4040.92	45.5	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	162	-2357.36	2956.31	79.7	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	192	-2973.64	9343.57	31.8 34.6 (b)	Pass
T18	30.3125 - 20.2083	Secondary Horizontal	L3x3x3/16	203	-3341.32	6383.47	52.3	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-449.50	2488.54	18.1	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	40	-391.32	2452.43	16.0	Pass
							Summary	
						Leg (T16)	93.1	Pass
						Diagonal (T10)	92.9	Pass
						Secondary Horizontal (T14)	79.7	Pass
						Top Girt (T1)	18.1	Pass
						Bolt Checks	82.6	Pass
						Rating =	93.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC11

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.1	Pass
1	Base Foundation Soil Interaction	0	80.5	Pass

Structure Rating (max from all components) =	93.1%

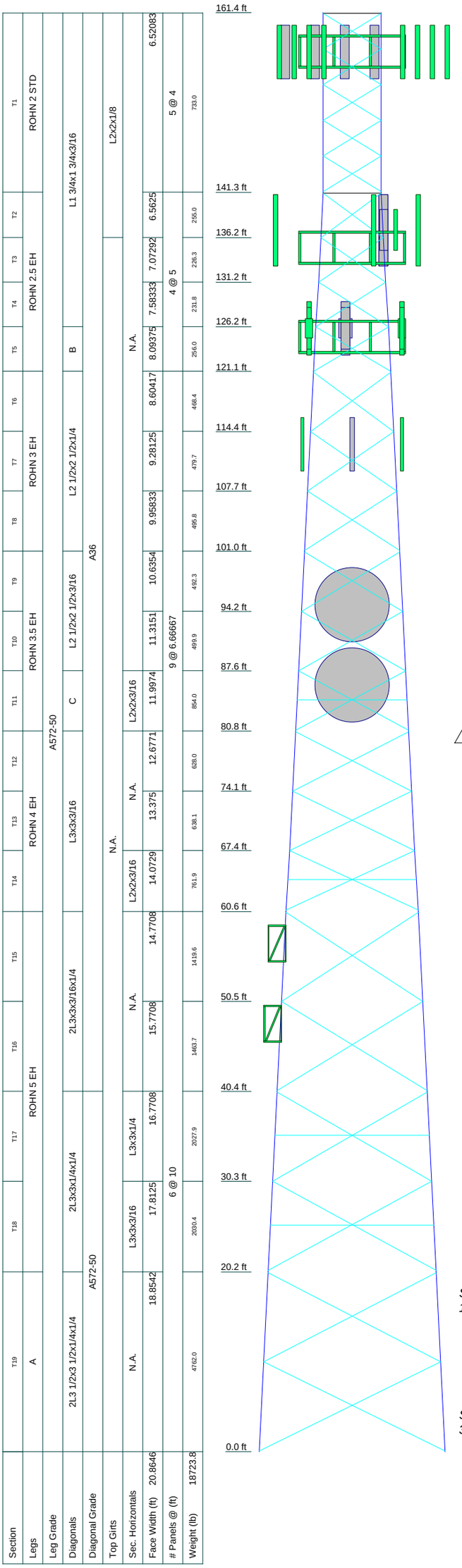
Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity.

4.1) Recommendations

N/A

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 504-3]	157	APXV9ERR18-C-A20 w/ Mount Pipe (Sprint PCS)	125
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	157	APXVSPP18-C-A20 w/ Mount Pipe (Sprint PCS)	125
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	157	APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	125
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	157	APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	125
(2) APL866513-42T6 w/ 8' Pipe Mount (VSI)	157	APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	125
(2) LPA-80063/4CF w/ Mount Pipe (VSI)	157	Pipe Mount [PM 601-3] (Sprint PCS)	125
(2) LPA-80063/4CFx5 w/Mount Pipe	157	1900MHz RRH (65MHz) TMA (Sprint PCS)	125
BXA-70063-4CF-EDIN-X w/ Mount Pipe	157	1900MHz RRH (65MHz) TMA (Sprint PCS)	125
BXA-70063-4CF-EDIN-X w/ Mount Pipe	157	1900MHz RRH (65MHz) TMA (Sprint PCS)	125
BXA-70063-4CF-EDIN-X w/ Mount Pipe	157	800MHz 2x50W RRH w/ Filter (Sprint PCS)	125
Sector Mount [SM 504-3]	135	800MHz 2x50W RRH w/ Filter (Sprint PCS)	125
7770.00 w/ mount pipe	135	800MHz 2x50W RRH w/ Filter (Sprint PCS)	125
7770.00 w/ mount pipe	135	TD-RRH8x20-25 BTS (Sprint PCS)	125
7770.00 w/ mount pipe	135	TD-RRH8x20-25 BTS (Sprint PCS)	125
LGP13519 Diplexer	135	TD-RRH8x20-25 BTS (Sprint PCS)	125
LGP13519 Diplexer	135	APXV18-206517-A w/ Mount Pipe	113
LGP13519 Diplexer	135	APXV18-206517-A w/ Mount Pipe	113
SBNH-1D6565C w/ Mount Pipe	135	APXV18-206517-A w/ Mount Pipe	113
P65-17-XLH-RR w/ Mount Pipe	135	4'x4" Pipe Mount	95
(2) P65-17-XLH-RR w/ Mount Pipe	135	4" Tube Face Mount	95
P65-17-XLH-RR w/ Mount Pipe	135	4" Tube Face Mount	95
SBNH-1D6565C w/ Mount Pipe	135	UHX8-59H	95
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	135	4" Tube Face Mount	86
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	135	4'x4" Pipe Mount	86
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	135	UHX8-59H	86
DTMABP7819VG12A TMA	135	Side Arm Mount [SO 202-1]	57
DTMABP7819VG12A TMA	135	Generic GPS (VSI)	57
DTMABP7819VG12A TMA	135	KS24019-L112A (Sprint PCS)	48
DC6-48-60-18-8F	135	Side Arm Mount [SO 202-1] (Sprint PCS)	48
Sector Mount [SM 402-3] (Sprint PCS)	125		
APXVSPP18-C-A20 w/ Mount Pipe (Sprint PCS)	125		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	C	2L2 1/2x2 1/2x3/16x1/4
B	L2x2x3/16		

MATERIAL STRENGTH

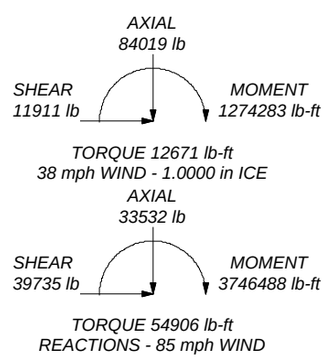
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Tolland 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.1%

MAX. CORNER REACTIONS AT BASE:
DOWN: 218512 lb
SHEAR: 24405 lb

UPLIFT: -186697 lb
SHEAR: 21597 lb



Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job:	***HRT 086, CT BU#806378***		
Project:	***Vertical Structures Job No. 2014-004-002***		
Client:	Crown Castle	Drawn by: Bryce Collins	App'd:
Code:	TIA/EIA-222-F	Date: 01/09/14	Scale: NTS
Path:	\\nas1\BCollins\2014-004-002 HRT 086, CT\TNX\806378.eri		Dwg No. E-1

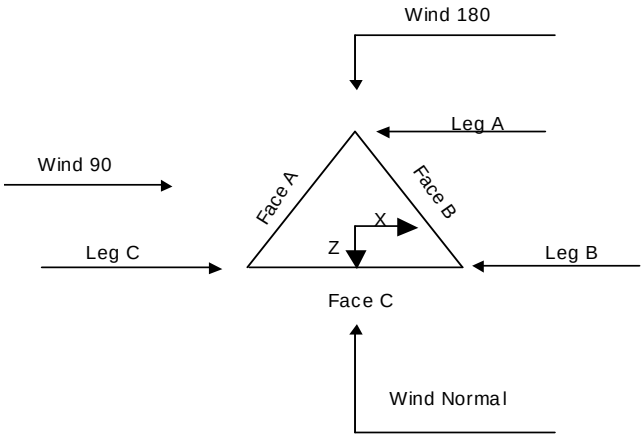
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 161.38 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.52 ft at the top and 20.86 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	161.38-141.25			6.52	1	20.13
T2	141.25-136.19			6.56	1	5.06
T3	136.19-131.19			7.07	1	5.00
T4	131.19-126.19			7.58	1	5.00
T5	126.19-121.13			8.09	1	5.06
T6	121.13-114.40			8.60	1	6.73
T7	114.40-107.73			9.28	1	6.67
T8	107.73-100.98			9.96	1	6.75
T9	100.98-94.23			10.64	1	6.75
T10	94.23-87.56			11.32	1	6.67
T11	87.56-80.81			12.00	1	6.75
T12	80.81-74.06			12.68	1	6.75
T13	74.06-67.40			13.38	1	6.67
T14	67.40-60.62			14.07	1	6.77
T15	60.62-50.52			14.77	1	10.10
T16	50.52-40.42			15.77	1	10.10
T17	40.42-30.31			16.77	1	10.10
T18	30.31-20.21			17.81	1	10.10
T19	20.21-0.00			18.85	1	20.21

Tower Section Geometry *(cont'd)*

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
T1	161.38-141.25	4.00	X Brace	No	No	0.7500	0.7500
T2	141.25-136.19	5.00	X Brace	No	No	0.7500	0.0000
T3	136.19-131.19	5.00	X Brace	No	No	0.0000	0.0000
T4	131.19-126.19	5.00	X Brace	No	No	0.0000	0.0000
T5	126.19-121.13	5.00	X Brace	No	No	0.0000	0.7500
T6	121.13-114.40	6.67	X Brace	No	No	0.7500	0.0000
T7	114.40-107.73	6.67	X Brace	No	No	0.0000	0.0000
T8	107.73-100.98	6.67	X Brace	No	No	0.0000	1.0000
T9	100.98-94.23	6.67	X Brace	No	No	1.0000	0.0000
T10	94.23-87.56	6.67	X Brace	No	No	0.0000	0.0000
T11	87.56-80.81	6.67	X Brace	No	Yes	0.0000	1.0000
T12	80.81-74.06	6.67	X Brace	No	No	1.0000	0.0000
T13	74.06-67.40	6.67	X Brace	No	No	0.0000	0.0000
T14	67.40-60.62	6.67	X Brace	No	Yes	0.0000	1.2500
T15	60.62-50.52	10.00	X Brace	No	No	1.2500	0.0000
T16	50.52-40.42	10.00	X Brace	No	No	0.0000	1.2500
T17	40.42-30.31	10.00	X Brace	No	Yes	1.2500	0.0000
T18	30.31-20.21	10.00	X Brace	No	Yes	0.0000	1.2500
T19	20.21-0.00	10.00	X Brace	No	No	1.2500	1.2500

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 161.38-141.25	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 141.25-136.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 136.19-131.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 131.19-126.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 126.19-121.13	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T6 121.13-114.40	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 114.40-107.73	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 107.73-100.98	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 100.98-94.23	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 94.23-87.56	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T11 87.56-80.81	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Double Angle	2L2 1/2x2 1/2x3/16x1/4	A36 (36 ksi)
T12 80.81-74.06	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T13 74.06-67.40	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T14 67.40-60.62	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T15 60.62-50.52	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T16 50.52-40.42	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 40.42-30.31	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T18 30.31-20.21	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T19 20.21-0.00	Arbitrary Shape	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 161.38-141.25	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 141.25-136.19	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 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
T11 87.56-80.81	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T14 67.40-60.62	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 40.42-30.31	Equal Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 30.31-20.21	Equal Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

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 161.38-141.25	1.62	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T2 141.25-136.19	0.34	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T3 136.19-131.19	0.34	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T4 131.19-126.19	0.34	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
T5 126.19-121.13	0.34	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T6 121.13-114.40	0.36	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T7 114.40-107.73	0.36	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T8 107.73-100.98	0.36	0.1875	A36 (36 ksi)	1	1	1	30.0000	30.0000
T9 100.98-94.23	0.36	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T10 94.23-87.56	0.36	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T11 87.56-80.81	0.50	0.3750	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T12 80.81-74.06	0.36	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T13 74.06-67.40	0.36	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T14 67.40-60.62	0.36	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T15 60.62-50.52	0.52	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T16 50.52-40.42	0.75	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T17 40.42-30.31	0.75	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T18 30.31-20.21	0.75	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	60.0000
T19 20.21-0.00	1.04	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	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 161.38-141.25	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 141.25-136.19	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 136.19-131.19	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 131.19-126.19	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 126.19-121.13	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 121.13-114.40	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 114.40-107.73	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 107.73-100.98	No	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 Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T9	No	No	1	1	1	1	1	1	1	1
100.98-94.23				1	1	1	1	1	1	1
T10	No	No	1	1	1	1	1	1	1	1
94.23-87.56				1	1	1	1	1	1	1
T11	No	No	1	1	1	1	1	1	0.5	1
87.56-80.81				1	1	1	1	1	0.5	1
T12	No	No	1	1	1	1	1	1	1	1
80.81-74.06				1	1	1	1	1	1	1
T13	No	No	1	1	1	1	1	1	1	1
74.06-67.40				1	1	1	1	1	1	1
T14	No	No	1	1	1	1	1	1	0.5	1
67.40-60.62				1	1	1	1	1	0.5	1
T15	No	No	1	1	1	1	1	1	1	1
60.62-50.52				1	1	1	1	1	1	1
T16	No	No	1	1	1	1	1	1	1	1
50.52-40.42				1	1	1	1	1	1	1
T17	No	No	1	1	1	1	1	1	0.5	1
40.42-30.31				1	1	1	1	1	0.5	1
T18	No	No	1	1	1	1	1	1	0.5	1
30.31-20.21				1	1	1	1	1	0.5	1
T19	No	No	1	1	1	1	1	1	1	1
20.21-0.00				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	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
161.38-141.25														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
141.25-136.19														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
136.19-131.19														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
131.19-126.19														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
126.19-121.13														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
121.13-114.40														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
114.40-107.73														
T8	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
107.73-100.98														
T9	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.98-94.23														
T10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
94.23-87.56														

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 87.56-80.81	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.81-74.06	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 74.06-67.40	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 67.40-60.62	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.62-50.52	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.52-40.42	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.42-30.31	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 30.31-20.21	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 20.21-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 161.38-141.25	2.5000	3.2813	2.5000	3.2813	0.0000	0.0000	0.0000	0.0000
T2 141.25-136.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T3 136.19-131.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T4 131.19-126.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T5 126.19-121.13	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T6 121.13-114.40	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T7 114.40-107.73	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T8 107.73-100.98	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T9 100.98-94.23	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T10 94.23-87.56	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T11 87.56-80.81	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T12 80.81-74.06	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T13 74.06-67.40	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T14 67.40-60.62	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T15 60.62-50.52	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T16 50.52-40.42	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T17 40.42-30.31	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T18 30.31-20.21	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T19 20.21-0.00	2.5000	5.4063	2.5000	5.4063	0.0000	0.0000	0.0000	0.0000

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 161.38-141.25	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 141.25-136.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 136.19-131.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 131.19-126.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 126.19-121.13	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 121.13-114.40	Flange	0.8750 A325N	0	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 114.40-107.73	Flange	0.8750 A325N	0	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 107.73-100.98	Flange	0.8750 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 100.98-94.23	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 94.23-87.56	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 87.56-80.81	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 80.81-74.06	Flange	1.0000 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 74.06-67.40	Flange	1.0000 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 67.40-60.62	Flange	1.0000 A325N	4	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T15 60.62-50.52	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

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.
T16	Flange	1.0000	4	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
50.52-40.42		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	1.0000	0	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	1
40.42-30.31		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18	Flange	1.0000	6	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	1
30.31-20.21		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T19 20.21-0.00	Flange	1.0000	0	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A449		A325N		A325N		A325N		A325N		A325N		A325N	

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
EW52	A	Yes	Ar (CfAe)	86.00 - 8.00	1.0000	0.45	1	1	1.7426	1.7426		0.59
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	60.00 - 8.00	1.0000	0.45	1	1	0.6300	0.6300		0.15
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	157.00 - 8.00	1.0000	0.4	18	6	0.2700 1.0000	1.9800		0.82
Feedline Ladder (1-1/2" Rails) (Af) **	A	Yes	Af (CfAe)	161.38 - 8.00	0.5000	0.4	1	1	3.0000	1.5000	12.0000	3.66
Feedline Ladder (1-1/2" Rails) (Af)	B	Yes	Af (CfAe)	137.00 - 10.00	0.5000	-0.4	1	1	3.0000	1.5000	12.0000	3.66
Feedline Ladder (1-1/2" Rails) (Af)	B	Yes	Af (CfAe)	161.38 - 137.00	0.5000	-0.4	1	1	3.0000	3.0000	12.0000	3.66
HB114-1-08U4-M5J (1-1/4") (Sprint PCS)	B	Yes	Ar (CfAe)	126.00 - 10.00	1.0000	-0.3	3	3	1.0000	1.5400		0.66
HB058-M12-XXXF (5/8") (Sprint PCS)	B	Yes	Ar (CfAe)	126.00 - 10.00	1.0000	-0.3	1	1	0.8400	0.8400		0.25
EW52	B	Yes	Ar (CfAe)	86.00 - 10.00	1.0000	-0.33	2	2	1.0000	1.7426		0.59
EW52	B	Yes	Ar (CfAe)	95.00 - 86.00	1.0000	-0.33	1	1	1.0000	1.7426		0.59
LDF4-50A (1/2 FOAM) (Sprint PCS) **	B	Yes	Ar (CfAe)	50.00 - 8.00	2.0000	-0.32	1	1	0.6300	0.6300		0.15
LDF6-50A (1-1/4 FOAM)	B	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	13	6	1.4500	1.5500		0.66
FB-L98-002-XXX (3/8")	B	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	1	1	0.3937	0.3937		0.10
WR-VG86ST-BRD (Power Cable) ** ***	B	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	2	2	1.0000	0.7760		0.15
2" Solid Rod Reinf (Ar) (VSI)	A	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00
2" Solid Rod	B	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00

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
Reinf (Ar) (VSI) 2" Solid Rod Reinf (Ar) (VSI) ***	C	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00
Feedline Ladder (1-1/2" Rails) (Af)	A	Yes	Af (CfAe)	113.00 - 8.00	0.5000	-0.4	1	1	3.0000	3.0000	12.0000	3.66
CR 50 1873 (1-5/8 FOAM)	A	Yes	Ar (CfAe)	113.00 - 8.00	1.0000	-0.4	6	6	1.0000	1.9800		0.83

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 lb
T1	161.38-141.25	A	15.592	2.516	0.000	0.000	306.13
		B	0.000	5.031	0.000	0.000	73.66
		C	0.000	0.000	0.000	0.000	0.00
T2	141.25-136.19	A	5.012	0.633	0.000	0.000	93.25
		B	0.761	1.164	0.000	0.000	25.82
		C	0.000	0.000	0.000	0.000	0.00
T3	136.19-131.19	A	4.950	0.625	0.000	0.000	92.10
		B	4.686	0.625	0.000	0.000	63.20
		C	0.000	0.000	0.000	0.000	0.00
T4	131.19-126.19	A	4.950	0.625	0.000	0.000	92.10
		B	4.686	0.625	0.000	0.000	63.20
		C	0.000	0.000	0.000	0.000	0.00
T5	126.19-121.13	A	5.012	0.633	0.000	0.000	93.25
		B	6.962	0.633	0.000	0.000	74.86
		C	0.000	0.000	0.000	0.000	0.00
T6	121.13-114.40	A	6.662	0.841	0.000	0.000	123.95
		B	9.368	0.841	0.000	0.000	100.06
		C	0.000	0.000	0.000	0.000	0.00
T7	114.40-107.73	A	11.818	2.151	0.000	0.000	168.34
		B	9.281	0.833	0.000	0.000	99.13
		C	0.000	0.000	0.000	0.000	0.00
T8	107.73-100.98	A	13.365	2.531	0.000	0.000	182.66
		B	9.397	0.844	0.000	0.000	100.37
		C	0.000	0.000	0.000	0.000	0.00
T9	100.98-94.23	A	13.365	2.531	0.000	0.000	182.66
		B	9.509	0.844	0.000	0.000	100.83
		C	0.000	0.000	0.000	0.000	0.00
T10	94.23-87.56	A	13.200	2.500	0.000	0.000	180.40
		B	10.249	0.833	0.000	0.000	103.07
		C	0.000	0.000	0.000	0.000	0.00
T11	87.56-80.81	A	14.118	2.531	0.000	0.000	185.72
		B	11.130	0.844	0.000	0.000	107.42
		C	0.000	0.000	0.000	0.000	0.00
T12	80.81-74.06	A	14.345	2.531	0.000	0.000	186.64
		B	11.357	0.844	0.000	0.000	108.34
		C	0.000	0.000	0.000	0.000	0.00
T13	74.06-67.40	A	14.168	2.500	0.000	0.000	184.33
		B	11.217	0.833	0.000	0.000	107.00
		C	0.000	0.000	0.000	0.000	0.00
T14	67.40-60.62	A	14.389	2.539	0.000	0.000	187.21

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 lb
		B	11.392	0.846	0.000	0.000	108.67
		C	0.000	0.000	0.000	0.000	0.00
T15	60.62-50.52	A	21.971	3.789	0.000	0.000	280.80
		B	17.001	1.263	0.000	0.000	162.17
		C	0.000	0.000	0.000	0.000	0.00
T16	50.52-40.42	A	22.004	3.789	0.000	0.000	280.90
		B	17.504	1.263	0.000	0.000	163.61
		C	0.000	0.000	0.000	0.000	0.00
T17	40.42-30.31	A	22.004	3.789	0.000	0.000	280.90
		B	17.531	1.263	0.000	0.000	163.69
		C	0.000	0.000	0.000	0.000	0.00
T18	30.31-20.21	A	23.867	3.789	0.000	0.000	280.90
		B	19.395	1.263	0.000	0.000	163.69
		C	1.863	0.000	0.000	0.000	0.00
T19	20.21-0.00	A	34.444	4.578	0.000	0.000	339.39
		B	25.675	1.276	0.000	0.000	165.68
		C	7.858	0.000	0.000	0.000	0.00

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 lb
T1	161.38-141.25	A	1.201	5.750	19.966	0.000	0.000	1086.92
		B		0.000	7.716	0.000	0.000	229.10
		C		0.000	0.000	0.000	0.000	0.00
T2	141.25-136.19	A	1.188	1.838	6.047	0.000	0.000	331.66
		B		0.667	2.968	0.000	0.000	106.30
		C		0.000	0.000	0.000	0.000	0.00
T3	136.19-131.19	A	1.183	1.811	5.970	0.000	0.000	326.86
		B		4.090	8.272	0.000	0.000	358.07
		C		0.000	0.000	0.000	0.000	0.00
T4	131.19-126.19	A	1.177	1.806	5.967	0.000	0.000	326.14
		B		4.077	8.269	0.000	0.000	357.06
		C		0.000	0.000	0.000	0.000	0.00
T5	126.19-121.13	A	1.172	1.824	6.038	0.000	0.000	329.45
		B		6.984	10.433	0.000	0.000	434.63
		C		0.000	0.000	0.000	0.000	0.00
T6	121.13-114.40	A	1.165	2.417	8.021	0.000	0.000	436.68
		B		9.392	13.968	0.000	0.000	579.21
		C		0.000	0.000	0.000	0.000	0.00
T7	114.40-107.73	A	1.157	4.271	16.480	0.000	0.000	638.49
		B		9.260	13.832	0.000	0.000	571.12
		C		0.000	0.000	0.000	0.000	0.00
T8	107.73-100.98	A	1.148	4.811	18.963	0.000	0.000	699.06
		B		9.327	13.999	0.000	0.000	575.37
		C		0.000	0.000	0.000	0.000	0.00
T9	100.98-94.23	A	1.139	4.790	18.949	0.000	0.000	695.87
		B		9.534	13.992	0.000	0.000	575.85
		C		0.000	0.000	0.000	0.000	0.00
T10	94.23-87.56	A	1.129	4.710	18.701	0.000	0.000	683.96
		B		11.330	13.812	0.000	0.000	592.39
		C		0.000	0.000	0.000	0.000	0.00
T11	87.56-80.81	A	1.119	6.466	18.919	0.000	0.000	712.29
		B		11.402	15.163	0.000	0.000	616.29
		C		0.000	0.000	0.000	0.000	0.00
T12	80.81-74.06	A	1.108	6.946	18.902	0.000	0.000	715.10
		B		11.326	15.511	0.000	0.000	618.16

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 lb
		C		0.000	0.000	0.000	0.000	0.00
T13	74.06-67.40	A	1.096	6.821	18.651	0.000	0.000	701.81
		B		11.107	15.311	0.000	0.000	606.07
		C		0.000	0.000	0.000	0.000	0.00
T14	67.40-60.62	A	1.083	6.883	18.923	0.000	0.000	707.86
		B		11.192	15.540	0.000	0.000	610.62
		C		0.000	0.000	0.000	0.000	0.00
T15	60.62-50.52	A	1.065	12.359	28.198	0.000	0.000	1068.45
		B		16.518	23.171	0.000	0.000	901.03
		C		0.000	0.000	0.000	0.000	0.00
T16	50.52-40.42	A	1.039	12.332	28.141	0.000	0.000	1054.94
		B		18.425	23.142	0.000	0.000	908.69
		C		0.000	0.000	0.000	0.000	0.00
T17	40.42-30.31	A	1.008	12.124	28.072	0.000	0.000	1036.83
		B		18.178	23.107	0.000	0.000	891.84
		C		0.000	0.000	0.000	0.000	0.00
T18	30.31-20.21	A	1.000	15.529	28.053	0.000	0.000	1051.47
		B		21.540	23.098	0.000	0.000	906.51
		C		3.460	0.000	0.000	0.000	19.51
T19	20.21-0.00	A	1.000	29.175	33.895	0.000	0.000	1329.15
		B		33.298	23.336	0.000	0.000	982.71
		C		14.594	0.000	0.000	0.000	82.29

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	161.38-141.25	A	0.000	3.422	1.688	2.522
		B	0.000	1.146	0.469	0.844
		C	0.000	0.000	0.000	0.000
T2	141.25-136.19	A	0.000	1.119	0.589	0.858
		B	0.000	0.540	0.201	0.414
		C	0.000	0.000	0.000	0.000
T3	136.19-131.19	A	0.000	0.774	0.394	0.573
		B	0.000	1.211	0.375	0.896
		C	0.000	0.000	0.000	0.000
T4	131.19-126.19	A	0.000	0.754	0.386	0.560
		B	0.000	1.180	0.367	0.877
		C	0.000	0.000	0.000	0.000
T5	126.19-121.13	A	0.000	0.737	0.433	0.629
		B	0.000	1.596	0.583	1.362
		C	0.000	0.000	0.000	0.000
T6	121.13-114.40	A	0.000	0.782	0.579	0.840
		B	0.000	1.712	0.788	1.837
		C	0.000	0.000	0.000	0.000
T7	114.40-107.73	A	0.000	1.514	1.062	1.636
		B	0.000	1.655	0.769	1.788
		C	0.000	0.000	0.000	0.000
T8	107.73-100.98	A	0.000	1.664	1.169	1.812
		B	0.000	1.605	0.753	1.747
		C	0.000	0.000	0.000	0.000
T9	100.98-94.23	A	0.000	1.618	1.148	1.776
		B	0.000	1.576	0.748	1.730
		C	0.000	0.000	0.000	0.000
T10	94.23-87.56	A	0.000	1.577	1.130	1.746
		B	0.000	1.663	0.798	1.840

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		C	0.000	0.000	0.000	0.000
T11	87.56-80.81	A	0.000	2.372	1.579	2.488
		B	0.000	2.440	1.136	2.560
		C	0.000	0.000	0.000	0.000
T12	80.81-74.06	A	0.000	1.639	1.404	2.220
		B	0.000	1.675	1.015	2.268
		C	0.000	0.000	0.000	0.000
T13	74.06-67.40	A	0.000	1.601	1.390	2.192
		B	0.000	1.634	1.005	2.237
		C	0.000	0.000	0.000	0.000
T14	67.40-60.62	A	0.000	2.273	1.794	2.821
		B	0.000	2.317	1.297	2.876
		C	0.000	0.000	0.000	0.000
T15	60.62-50.52	A	0.000	1.752	1.523	2.469
		B	0.000	1.691	1.080	2.383
		C	0.000	0.000	0.000	0.000
T16	50.52-40.42	A	0.000	1.676	1.498	2.419
		B	0.000	1.696	1.090	2.448
		C	0.000	0.000	0.000	0.000
T17	40.42-30.31	A	0.000	2.275	2.112	3.385
		B	0.000	2.304	1.539	3.428
		C	0.000	0.000	0.000	0.000
T18	30.31-20.21	A	0.000	2.230	2.092	3.345
		B	0.000	2.257	1.524	3.386
		C	0.000	0.000	0.000	0.000
T19	20.21-0.00	A	0.000	1.841	2.015	3.222
		B	0.000	1.574	1.234	2.755
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	161.38-141.25	-1.2338	-10.0088	-0.4692	-4.9372
T2	141.25-136.19	-1.1787	-11.3353	-0.3789	-5.6338
T3	136.19-131.19	-0.1980	-17.7808	0.3727	-11.0445
T4	131.19-126.19	-0.1982	-18.7065	0.3848	-11.6457
T5	126.19-121.13	0.6124	-20.3299	0.8753	-12.8976
T6	121.13-114.40	0.6430	-20.3522	0.9573	-14.0303
T7	114.40-107.73	-6.0569	-16.0293	-3.5138	-11.4517
T8	107.73-100.98	-7.9561	-15.6955	-4.8184	-11.3697
T9	100.98-94.23	-8.0573	-16.0440	-4.9531	-11.8693
T10	94.23-87.56	-8.0821	-17.3397	-4.8456	-13.2377
T11	87.56-80.81	-7.2159	-17.2260	-4.3183	-11.7856
T12	80.81-74.06	-7.6681	-18.8527	-5.0924	-14.1025
T13	74.06-67.40	-7.9161	-19.4541	-5.2771	-14.5739
T14	67.40-60.62	-7.3270	-17.9994	-4.6281	-12.5341
T15	60.62-50.52	-9.0435	-22.6123	-6.3989	-18.8125
T16	50.52-40.42	-9.2806	-23.8489	-6.4190	-20.5391
T17	40.42-30.31	-8.5034	-21.8738	-5.7883	-18.2947
T18	30.31-20.21	-8.4366	-21.6944	-5.7224	-18.0403
T19	20.21-0.00	-6.4598	-14.0949	-4.7355	-12.6494

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* *lb*
Sector Mount [SM 504-3]	A	None		0.0000	157.00	No Ice	34.25	34.25	1707.90
						1/2" Ice	48.98	48.98	2286.00
						1" Ice	63.71	63.71	2864.10
						2" Ice	93.17	93.17	4020.30
						4" Ice	152.09	152.09	6332.70
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	A	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	3.23	3.94	27.25
						1/2" Ice	3.62	4.55	62.46
						1" Ice	4.05	5.19	103.19
						2" Ice	4.93	6.58	204.15
						4" Ice	6.84	9.63	511.18
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	B	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	3.23	3.94	27.25
						1/2" Ice	3.62	4.55	62.46
						1" Ice	4.05	5.19	103.19
						2" Ice	4.93	6.58	204.15
						4" Ice	6.84	9.63	511.18
(2) LPA-185063/8CFx2 w/ Mount Pipe (VSI)	C	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	3.23	3.94	27.25
						1/2" Ice	3.62	4.55	62.46
						1" Ice	4.05	5.19	103.19
						2" Ice	4.93	6.58	204.15
						4" Ice	6.84	9.63	511.18
(2) APL866513-42T6 w/ 8' Pipe Mount (VSI)	A	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	5.24	5.63	44.90
						1/2" Ice	6.03	6.83	97.28
						1" Ice	6.75	7.88	156.17
						2" Ice	8.04	9.65	297.44
						4" Ice	10.78	13.41	711.44
(2) LPA-80063/4CF w/ Mount Pipe (VSI)	B	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	7.02	6.95	34.60
						1/2" Ice	7.43	7.59	97.91
						1" Ice	7.86	8.25	167.60
						2" Ice	8.73	9.63	328.69
						4" Ice	10.57	12.73	761.38
(2) LPA-80063/4CFx5 w/Mount Pipe	C	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	7.73	7.75	45.55
						1/2" Ice	8.46	8.87	116.68
						1" Ice	9.07	9.71	194.79
						2" Ice	10.32	11.43	375.62
						4" Ice	12.96	15.08	869.71
BXA-70063-4CF-EDIN-X w/ Mount Pipe	A	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	6.12	4.42	39.10
						1/2" Ice	6.93	5.55	86.15
						1" Ice	7.66	6.53	144.20
						2" Ice	8.98	8.23	282.56
						4" Ice	11.77	11.90	686.13
BXA-70063-4CF-EDIN-X w/ Mount Pipe	B	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	6.12	4.42	39.10
						1/2" Ice	6.93	5.55	86.15
						1" Ice	7.66	6.53	144.20
						2" Ice	8.98	8.23	282.56
						4" Ice	11.77	11.90	686.13
BXA-70063-4CF-EDIN-X w/ Mount Pipe	C	From Leg	4.25 -2.50 0.00	-30.0000	157.00	No Ice	6.12	4.42	39.10
						1/2" Ice	6.93	5.55	86.15
						1" Ice	7.66	6.53	144.20
						2" Ice	8.98	8.23	282.56
						4" Ice	11.77	11.90	686.13

**
**

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 lb
Sector Mount [SM 504-3]	A	None		0.0000	135.00	No Ice	34.25	34.25	1707.90
						1/2" Ice	48.98	48.98	2286.00
						1" Ice	63.71	63.71	2864.10
						2" Ice	93.17	93.17	4020.30
						4" Ice	152.09	152.09	6332.70
7770.00 w/ mount pipe	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	6.22	4.35	56.90
						1/2" Ice	6.77	5.20	105.42
						1" Ice	7.30	5.92	160.42
						2" Ice	8.38	7.41	293.10
						4" Ice	10.69	10.76	679.83
7770.00 w/ mount pipe	B	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	6.22	4.35	56.90
						1/2" Ice	6.77	5.20	105.42
						1" Ice	7.30	5.92	160.42
						2" Ice	8.38	7.41	293.10
						4" Ice	10.69	10.76	679.83
7770.00 w/ mount pipe	C	From Leg	4.00 3.00 2.00	36.0000	135.00	No Ice	6.22	4.35	56.90
						1/2" Ice	6.77	5.20	105.42
						1" Ice	7.30	5.92	160.42
						2" Ice	8.38	7.41	293.10
						4" Ice	10.69	10.76	679.83
LGP13519 Diplexer	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	0.00	0.18	5.50
						1/2" Ice	0.00	0.25	7.92
						1" Ice	0.00	0.32	11.41
						2" Ice	0.00	0.49	22.43
						4" Ice	0.00	0.94	66.02
LGP13519 Diplexer	B	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	0.00	0.18	5.50
						1/2" Ice	0.00	0.25	7.92
						1" Ice	0.00	0.32	11.41
						2" Ice	0.00	0.49	22.43
						4" Ice	0.00	0.94	66.02
LGP13519 Diplexer	C	From Leg	4.00 3.00 2.00	36.0000	135.00	No Ice	0.00	0.18	5.50
						1/2" Ice	0.00	0.25	7.92
						1" Ice	0.00	0.32	11.41
						2" Ice	0.00	0.49	22.43
						4" Ice	0.00	0.94	66.02
SBNH-1D6565C w/ Mount Pipe	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	11.45	9.60	95.30
						1/2" Ice	12.06	11.02	182.27
						1" Ice	12.69	12.29	278.99
						2" Ice	14.03	14.51	505.69
						4" Ice	17.05	19.14	1129.60
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	11.47	8.70	88.20
						1/2" Ice	12.08	10.11	171.36
						1" Ice	12.71	11.38	264.18
						2" Ice	14.07	13.58	482.82
						4" Ice	17.08	18.18	1089.49
(2) P65-17-XLH-RR w/ Mount Pipe	B	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice	11.47	8.70	88.20
						1/2" Ice	12.08	10.11	171.36
						1" Ice	12.71	11.38	264.18
						2" Ice	14.07	13.58	482.82
						4" Ice	17.08	18.18	1089.49
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 3.00 2.00	36.0000	135.00	No Ice	11.47	8.70	88.20
						1/2" Ice	12.08	10.11	171.36
						1" Ice	12.71	11.38	264.18
						2" Ice	14.07	13.58	482.82
						4" Ice	17.08	18.18	1089.49
SBNH-1D6565C w/ Mount Pipe	C	From Leg	4.00 3.00	36.0000	135.00	No Ice	11.45	9.60	95.30
						1/2" Ice	12.06	11.02	182.27

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 lb
			2.00			1" Ice	12.69	12.29	278.99
						2" Ice	14.03	14.51	505.69
						4" Ice	17.05	19.14	1129.60
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	47.62 68.42 92.25 149.81 309.89
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	B	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	47.62 68.42 92.25 149.81 309.89
(2) RRUS-11 BTS (19.69 x 16.97 x 7.17)	C	From Leg	4.00 3.00 2.00	36.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	47.62 68.42 92.25 149.81 309.89
DTMABP7819VG12A TMA	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.40 0.51 0.61 0.86 1.45	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A TMA	B	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.40 0.51 0.61 0.86 1.45	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A TMA	C	From Leg	4.00 3.00 2.00	36.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.40 0.51 0.61 0.86 1.45	19.18 26.48 35.63 60.23 140.10
DC6-48-60-18-8F	A	From Leg	3.50 3.50 2.00	46.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.80 3.04 3.54 4.66	4.32 4.60 4.88 5.49 6.80	18.90 50.21 85.17 166.87 382.77
**									
Sector Mount [SM 402-3] (Sprint PCS)	A	None		0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.91 26.78 34.65 50.39 81.87	18.91 26.78 34.65 50.39 81.87	850.68 1233.15 1615.62 2380.56 3910.44
APXVSPP18-C-A20 w/ Mount Pipe (Sprint PCS)	A	From Leg	1.28 -0.75 1.00	6.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
APXV9ERR18-C-A20 w/ Mount Pipe (Sprint PCS)	B	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	87.55 158.03 236.54 421.23 935.37
APXVSPP18-C-A20 w/ Mount Pipe (Sprint PCS)	C	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice 1/2" Ice 1" Ice	8.50 9.15 9.77	6.95 8.13 9.02	82.55 150.56 226.53

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 lb
						2" Ice	11.03	10.84	405.98
						4" Ice	13.68	14.85	908.95
APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	A	From Leg	1.28 -0.75 1.00	6.0000	125.00	No Ice	7.68	5.51	82.20
						1/2" Ice	8.48	6.69	142.82
						1" Ice	9.21	7.73	210.60
						2" Ice	10.57	9.54	371.59
						4" Ice	13.43	13.47	832.80
APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	B	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	7.68	5.51	82.20
						1/2" Ice	8.48	6.69	142.82
						1" Ice	9.21	7.73	210.60
						2" Ice	10.57	9.54	371.59
						4" Ice	13.43	13.47	832.80
APXVTM14-C-120 w/ Mount Pipe (Sprint PCS)	C	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	7.68	5.51	82.20
						1/2" Ice	8.48	6.69	142.82
						1" Ice	9.21	7.73	210.60
						2" Ice	10.57	9.54	371.59
						4" Ice	13.43	13.47	832.80
Pipe Mount [PM 601-3] (Sprint PCS)	C	None		0.0000	125.00	No Ice	4.39	4.39	195.00
						1/2" Ice	5.48	5.48	237.41
						1" Ice	6.57	6.57	279.82
						2" Ice	8.75	8.75	364.65
						4" Ice	13.11	13.11	534.30
1900MHz RRH (65MHz) TMA (Sprint PCS)	A	From Leg	1.28 -0.75 1.00	6.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
1900MHz RRH (65MHz) TMA (Sprint PCS)	B	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
1900MHz RRH (65MHz) TMA (Sprint PCS)	C	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
800MHz 2x50W RRH w/ Filter (Sprint PCS)	A	From Leg	1.28 -0.75 1.00	6.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
800MHz 2x50W RRH w/ Filter (Sprint PCS)	B	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
800MHz 2x50W RRH w/ Filter (Sprint PCS)	C	From Leg	1.28 -0.75 1.00	46.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
TD-RRH8x20-25 BTS (Sprint PCS)	A	From Leg	1.28 -0.75 1.00	6.0000	125.00	No Ice	4.72	1.70	70.00
						1/2" Ice	5.01	1.92	97.15
						1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84

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 lb
TD-RRH8x20-25 BTS	B	From Leg	1.28	46.0000	125.00	No Ice	4.72	1.70	70.00
(Sprint PCS)			-0.75			1/2" Ice	5.01	1.92	97.15
			1.00			1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84
TD-RRH8x20-25 BTS	C	From Leg	1.28	46.0000	125.00	No Ice	4.72	1.70	70.00
(Sprint PCS)			-0.75			1/2" Ice	5.01	1.92	97.15
			1.00			1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84
**									
APXV18-206517-A w/	A	From Leg	1.00	56.0000	113.00	No Ice	5.40	4.70	51.95
Mount Pipe			0.00			1/2" Ice	5.96	5.86	97.04
			0.00			1" Ice	6.48	6.73	149.52
						2" Ice	7.55	8.51	280.26
						4" Ice	9.92	12.28	678.93
APXV18-206517-A w/	B	From Leg	1.00	56.0000	113.00	No Ice	5.40	4.70	51.95
Mount Pipe			0.00			1/2" Ice	5.96	5.86	97.04
			0.00			1" Ice	6.48	6.73	149.52
						2" Ice	7.55	8.51	280.26
						4" Ice	9.92	12.28	678.93
APXV18-206517-A w/	C	From Leg	1.00	56.0000	113.00	No Ice	5.40	4.70	51.95
Mount Pipe			0.00			1/2" Ice	5.96	5.86	97.04
			0.00			1" Ice	6.48	6.73	149.52
						2" Ice	7.55	8.51	280.26
						4" Ice	9.92	12.28	678.93
**									
4'x4" Pipe Mount	A	From Leg	0.50	0.0000	95.00	No Ice	0.00	1.32	44.00
			0.00			1/2" Ice	0.00	1.58	56.99
			0.00			1" Ice	0.00	1.84	73.03
						2" Ice	0.00	2.46	114.89
						4" Ice	0.00	3.89	241.97
4" Tube Face Mount	A	From Face	0.50	0.0000	95.00	No Ice	8.33	0.50	150.00
			0.00			1/2" Ice	10.40	1.00	200.00
			0.00			1" Ice	12.47	1.50	250.00
						2" Ice	16.61	2.50	350.00
						4" Ice	24.89	4.50	550.00
4" Tube Face Mount	B	From Face	0.50	0.0000	95.00	No Ice	8.33	0.50	150.00
			0.00			1/2" Ice	10.40	1.00	200.00
			0.00			1" Ice	12.47	1.50	250.00
						2" Ice	16.61	2.50	350.00
						4" Ice	24.89	4.50	550.00
4'x4" Pipe Mount	A	From Leg	0.50	0.0000	86.00	No Ice	0.00	1.32	44.00
			0.00			1/2" Ice	0.00	1.58	56.99
			0.00			1" Ice	0.00	1.84	73.03
						2" Ice	0.00	2.46	114.89
						4" Ice	0.00	3.89	241.97
4" Tube Face Mount	A	From Face	0.50	0.0000	86.00	No Ice	8.33	0.50	150.00
			0.00			1/2" Ice	10.40	1.00	200.00
			0.00			1" Ice	12.47	1.50	250.00
						2" Ice	16.61	2.50	350.00
						4" Ice	24.89	4.50	550.00
Side Arm Mount [SO 202-1]	C	From Leg	1.00	0.0000	57.00	No Ice	2.96	2.53	110.00
			0.00			1/2" Ice	4.10	3.51	133.55
			0.00			1" Ice	5.24	4.49	157.10
						2" Ice	7.52	6.45	204.20
						4" Ice	12.08	10.37	298.40

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 lb
Generic GPS (VSI)	C	From Leg	2.00 0.00 3.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.40 1.70 1.90 2.20 2.50	1.40 1.70 1.90 2.20 2.50	25.00 30.00 35.00 40.00 45.00
KS24019-L112A (Sprint PCS)	C	From Leg	2.00 0.00 2.00	0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.10 0.18 0.26 0.42 0.74	0.10 0.18 0.26 0.42 0.74	5.00 6.50 8.00 11.00 17.00
Side Arm Mount [SO 202-1] (Sprint PCS)	C	From Leg	1.00 0.00 0.00	0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	2.53 3.51 4.49 6.45 10.37	110.00 133.55 157.10 204.20 298.40

Dishes

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 lb
UHX8-59H	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	46.0000		95.00	8.38	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	55.09 56.19 57.29 59.49 63.89	461.00 784.55 1108.10 1755.20 3049.40
UHX8-59H	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	-14.0000		86.00	8.38	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	55.09 56.19 57.29 59.49 63.89	461.00 784.55 1108.10 1755.20 3049.40

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	161.375	Leg	A325N	0.6250	4	3175.18	13420.60	0.237 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2291.59	4078.13	0.562 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	418.70	2718.75	0.154 ✔	1.333	Member Bearing
T2	141.25	Diagonal	A325N	0.5000	1	2186.49	4123.34	0.530 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	508.23	2718.75	0.187 ✔	1.333	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T3	136.188	Diagonal	A325N	0.5000	1	3341.32	4123.34	0.810 ✔	1.333	Bolt Shear
T4	131.188	Diagonal	A325N	0.5000	1	3645.04	4123.34	0.884 ✔	1.333	Bolt Shear
T5	126.188	Leg	A325N	0.7500	4	8993.64	19212.20	0.468 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4492.87	4078.13	1.102 ✔	1.333	Member Bearing
T6	121.125	Diagonal	A325X	0.5000	1	5125.97	4757.81	1.077 ✔	1.333	Gusset Bearing
T7	114.396	Diagonal	A325X	0.5000	1	5040.75	4757.81	1.059 ✔	1.333	Gusset Bearing
T8	107.729	Leg	A325N	0.8750	4	15976.80	26274.70	0.608 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	5178.86	4757.81	1.088 ✔	1.333	Gusset Bearing
T9	100.979	Diagonal	A325N	0.5000	2	2764.13	4123.34	0.670 ✔	1.333	Bolt Shear
T10	94.2292	Diagonal	A325N	0.5000	2	3358.38	4123.34	0.814 ✔	1.333	Bolt Shear
T11	87.5625	Leg	A325N	0.8750	4	22726.90	26132.10	0.870 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	7458.65	8156.25	0.914 ✔	1.333	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	1837.95	5437.50	0.338 ✔	1.333	Member Bearing
T12	80.8125	Diagonal	A325N	0.5000	2	3779.53	4123.34	0.917 ✔	1.333	Bolt Shear
T13	74.0625	Diagonal	A325N	0.5000	2	3646.83	4072.28	0.896 ✔	1.333	Member Bearing
T14	67.3958	Leg	A325N	1.0000	4	29332.50	34293.00	0.855 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	2	3833.98	4123.34	0.930 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2357.36	5437.50	0.434 ✔	1.333	Member Bearing
T15	60.625	Diagonal	A325N	0.6250	1	8457.02	8609.38	0.982 ✔	1.333	Gusset Bearing
T16	50.5208	Leg	A325N	1.0000	4	35619.90	34215.00	1.041 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	8637.18	8609.38	1.003 ✔	1.333	Gusset Bearing
T17	40.4167	Diagonal	A325N	0.6250	1	8540.13	8609.38	0.992 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2973.64	6442.72	0.462 ✔	1.333	Bolt Shear
T18	30.3125	Leg	A325N	1.0000	6	27564.60	34383.10	0.802 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	8702.67	8609.38	1.011 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3341.32	5437.50	0.614 ✔	1.333	Member Bearing
T19	20.2083	Diagonal	A325N	0.6250	1	9203.87	8609.38	1.069 ✔	1.333	Gusset Bearing

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	ROHN 2 STD	20.13	4.00	61.0 K=1.00	22.549	1.0745	-15269.20	24229.90	0.630

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-16850.60	49213.80	0.342
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-24439.40	49212.70	0.497
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-31043.20	49212.70	0.631
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-43761.50	49213.80	0.889
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5 K=1.00	20.841	3.0159	-48801.90	62855.40	0.776
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5 K=1.00	20.841	3.0159	-59154.10	62854.10	0.941
T8	107.729 - 100.979	ROHN 3 EH	6.76	6.68	70.5 K=1.00	20.841	3.0159	-74449.80	62855.80	1.184
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3 K=1.00	22.489	3.6784	-79588.70	82724.80	0.962
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3 K=1.00	22.489	3.6784	-89225.70	82722.60	1.079
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	3.43	31.5 K=1.00	26.965	3.6784	-105980.00	99190.30	1.068
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3 K=1.00	23.671	4.4074	-110742.00	104328.00	1.061
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	6.68	54.3 K=1.00	23.671	4.4074	-120727.00	104327.00	1.157
T14	67.3958 - 60.625	ROHN 4 EH	6.78	3.42	27.8 K=1.00	27.423	4.4074	-135922.00	120863.00	1.125
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4 K=1.00	21.782	6.1120	-142768.00	133130.00	1.072
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	10.02	65.4 K=1.00	21.782	6.1120	-165211.00	133130.00	1.241
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	5.16	33.7 K=1.00	26.689	6.1120	-171456.00	163123.00	1.051
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	5.15	33.6 K=1.00	26.696	6.1120	-192655.00	163166.00	1.181
T19	20.2083 - 0	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	20.24	10.02	66.0 K=1.00	21.666	8.7220	-219537.00	188970.00	1.162

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L1 3/4x1 3/4x3/16	7.00	3.50	122.3 K=1.00	9.945	0.6211	-2259.16	6176.81	0.366
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	140.2 K=1.00	7.601	0.6211	-2186.49	4720.80	0.463
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	147.4 K=1.00	6.876	0.6211	-3341.32	4270.79	0.782
T4	131.188 -	L1 3/4x1 3/4x3/16	8.58	4.43	154.7	6.236	0.6211	-3645.04	3873.34	0.941

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	126.188				K=1.00					✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	141.4 K=1.00	7.472	0.7150	-4514.56	5342.42	0.845 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	131.8 K=1.00	8.596	1.1900	-5223.81	10229.80	0.511 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	138.4 K=1.00	7.795	1.1900	-5085.99	9275.48	0.548 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	145.1 K=1.00	7.093	1.1900	-5284.56	8440.39	0.626 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	150.5 K=1.00	6.594	0.9020	-5528.26	5947.78	0.929 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x3/16	12.63	6.50	157.6 K=1.00	6.014	0.9020	-6716.75	5424.70	1.238 ✔
T11	87.5625 - 80.8125	2L2 1/2x2 1/2x3/16x1/4 2L 'a' > 38.8661 in - 129	13.22	6.79	109.5 K=1.00	11.746	1.8047	-7524.79	21197.00	0.355 ✔
T12	80.8125 - 74.0625	L3x3x3/16	13.80	7.08	142.6 K=1.00	7.339	1.0900	-7559.06	8000.01	0.945 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	148.9 K=1.00	6.734	1.0900	-7363.05	7339.81	1.003 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	155.1 K=1.00	6.204	1.0900	-7667.96	6762.04	1.134 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4 2L 'a' > 51.1759 in - 171	17.35	8.96	121.0 K=1.00	10.086	2.1797	-8685.26	21983.50	0.395 ✔
T16	50.5208 - 40.4167	2L3x3x3/16x1/4 2L 'a' > 53.5306 in - 180	18.19	9.37	126.5 K=1.00	9.320	2.1797	-8791.60	20315.10	0.433 ✔
T17	40.4167 - 30.3125	2L3x3x1/4x1/4 2L 'a' > 56.2683 in - 189	19.07	9.82	132.7 K=1.00	8.485	2.8750	-8777.14	24395.60	0.360 ✔
T18	30.3125 - 20.2083	2L3x3x1/4x1/4 2L 'a' > 58.8218 in - 201	19.97	10.26	138.7 K=1.00	7.765	2.8750	-9363.46	22323.60	0.419 ✔
T19	20.2083 - 0	2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 63.5487 in - 213	21.69	11.11	129.2 K=1.00	8.948	3.3750	-9767.65	30199.90	0.323 ✔

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T11	87.5625 - 80.8125	L2x2x3/16	12.32	12.32	187.7 K=0.50	4.240	0.7150	-1837.95	3031.45	0.606 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	14.41	219.4 K=0.50	3.102	0.7150	-2357.36	2217.79	1.063 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	17.28	175.2 K=0.50	4.868	1.4400	-2973.64	7009.43	0.424 ✔
T18	30.3125 - 20.2083	L3x3x3/16	18.31	18.31	184.4 K=0.50	4.393	1.0900	-3341.32	4788.80	0.698

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
										✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L2x2x1/8	6.52	6.52	196.8 K=1.00	3.854	0.4844	-449.50	1866.87	0.241 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	198.3 K=1.00	3.798	0.4844	-391.32	1839.78	0.213 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	ROHN 2 STD	20.13	4.00	61.0	30.000	1.0745	12700.70	32235.90	0.394 ✔
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0	30.000	2.2535	14033.80	67606.20	0.208 ✔
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	19297.90	67606.20	0.285 ✔
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	25464.80	67606.20	0.377 ✔
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	5.01	65.0	30.000	2.2535	35974.60	67606.20	0.532 ✔
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5	30.000	3.0159	40553.30	90477.90	0.448 ✔
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5	30.000	3.0159	49961.90	90477.90	0.552 ✔
T8	107.729 - 100.979	ROHN 3 EH	6.76	6.68	70.5	30.000	3.0159	63907.00	90477.90	0.706 ✔
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3	30.000	3.6784	67787.50	110352.00	0.614 ✔
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3	30.000	3.6784	76557.50	110352.00	0.694 ✔
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	3.43	31.5	30.000	3.6784	90907.70	110352.00	0.824 ✔
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3	30.000	4.4074	95050.10	132223.00	0.719 ✔
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	6.68	54.3	30.000	4.4074	103955.00	132223.00	0.786 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T14	67.3958 - 60.625	ROHN 4 EH	6.78	3.42	27.8	30.000	4.4074	117330.00	132223.00	0.887 ✔
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4	30.000	6.1120	123190.00	183359.00	0.672 ✔
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	10.02	65.4	30.000	6.1120	142480.00	183359.00	0.777 ✔
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	5.16	33.7	30.000	6.1120	147810.00	183359.00	0.806 ✔
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	5.15	33.6	30.000	6.1120	165388.00	183359.00	0.902 ✔
T19	20.2083 - 0	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	20.24	10.02	66.0	30.000	8.7220	187644.00	261660.00	0.717 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L1 3/4x1 3/4x3/16	7.00	3.50	78.3	29.000	0.3779	2291.59	10960.00	0.209 ✔
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	89.7	29.000	0.3779	2010.30	10960.00	0.183 ✔
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	94.3	29.000	0.3779	3299.03	10960.00	0.301 ✔
T4	131.188 - 126.188	L1 3/4x1 3/4x3/16	8.58	4.43	99.0	29.000	0.3779	3595.93	10960.00	0.328 ✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	90.3	29.000	0.4484	4492.87	13002.40	0.346 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	84.2	29.000	0.7753	5125.97	22484.10	0.228 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	88.4	29.000	0.7753	5040.75	22484.10	0.224 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	92.6	29.000	0.7753	5178.86	22484.10	0.230 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	95.7	29.000	0.5886	5410.80	17069.70	0.317 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x3/16	12.63	6.50	100.3	29.000	0.5886	6516.29	17069.70	0.382 ✔
T11	87.5625 - 80.8125	2L2 1/2x2 1/2x3/16x1/4 2L 'a' > 38.8661 in - 128	13.22	6.79	104.7	29.000	1.1777	7458.65	34154.30	0.218 ✔
T12	80.8125 - 74.0625	L3x3x3/16	13.80	7.08	90.5	29.000	0.7296	7395.24	21158.70	0.350 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	94.5	29.000	0.7296	7293.67	21158.70	0.345 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	98.5	29.000	0.7296	7528.88	21158.70	0.356 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4 2L 'a' > 51.1759 in - 170	17.35	8.96	114.4	29.000	1.4238	8457.02	41291.00	0.205 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T16	50.5208 - 40.4167	2L3x3x3/16x1/4	18.19	9.37	119.7	29.000	1.4238	8637.18	41291.00	0.209 ✔
T17	40.4167 - 30.3125	2L 'a' > 53.5306 in - 179 2L3x3x1/4x1/4	19.07	9.82	126.7	32.500	1.8750	8540.13	60937.50	0.140 ✔
T18	30.3125 - 20.2083	2L 'a' > 56.2683 in - 188 2L3x3x1/4x1/4	19.97	10.26	132.4	32.500	1.8750	8702.67	60937.50	0.143 ✔
T19	20.2083 - 0	2L 'a' > 58.8218 in - 200 2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 63.5487 in - 212	21.69	11.11	122.2	32.500	2.2500	9203.87	73125.00	0.126 ✔

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T11	87.5625 - 80.8125	L2x2x3/16	12.32	12.32	239.7	29.000	0.4308	1837.95	12492.70	0.147 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	14.41	280.2	29.000	0.4308	2357.36	12492.70	0.189 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	17.28	223.0	29.000	0.9394	2973.64	27241.90	0.109 ✔
T18	30.3125 - 20.2083	L3x3x3/16	18.31	18.31	234.0	29.000	0.7120	3341.32	20648.90	0.162 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L2x2x1/8	6.52	6.52	125.0	29.000	0.3047	418.70	8835.94	0.047 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	125.9	29.000	0.3047	508.23	8835.94	0.058 ✔

Section Capacity Table

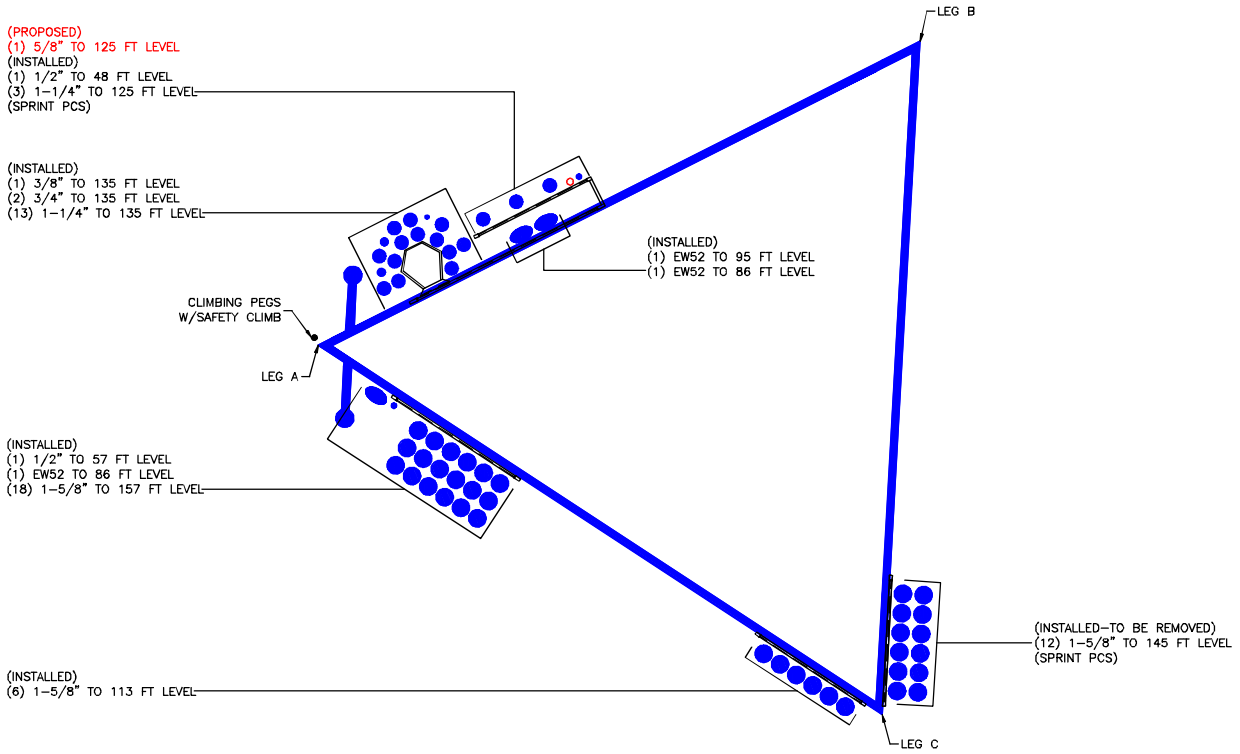
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	161.375 - 141.25	Leg	ROHN 2 STD	3	-15269.20	32298.46	47.3	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	39	-16850.60	65601.99	25.7	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	51	-24439.40	65600.53	37.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	60	-31043.20	65600.53	47.3	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	69	-43761.50	65601.99	66.7	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	78	-48801.90	83786.24	58.2	Pass
T7	114.396 - 107.729	Leg	ROHN 3 EH	87	-59154.10	83784.51	70.6	Pass
T8	107.729 - 100.979	Leg	ROHN 3 EH	96	-74449.80	83786.78	88.9	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	105	-79588.70	110272.15	72.2	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	114	-89225.70	110269.22	80.9	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	123	-105980.00	132220.66	80.2	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	135	-110742.00	139069.22	79.6	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	144	-120727.00	139067.89	86.8	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	153	-135922.00	161110.37	84.4	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	165	-142768.00	177462.28	80.4	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	174	-165211.00	177462.28	93.1	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	183	-171456.00	217442.95	78.9	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	195	-192655.00	217500.27	88.6	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	207	-219537.00	251897.00	87.2	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	12	-2259.16	8233.69	27.4 42.2 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	48	-2186.49	6292.83	34.7 39.8 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	57	-3341.32	5692.96	58.7 60.8 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	63	-3645.04	5163.16	70.6	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	72	-4514.56	7121.45	63.4 82.6 (b)	Pass
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	81	-5223.81	13636.32	38.3 80.8 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	90	-5085.99	12364.21	41.1 79.5 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	99	-5284.56	11251.04	47.0 81.7 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	111	-5528.26	7928.39	69.7	Pass
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x3/16	120	-6716.75	7231.13	92.9	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	129	-7524.79	28255.60	26.6 68.6 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	141	-7559.06	10664.01	70.9	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	150	-7363.05	9783.97	75.3	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	159	-7667.96	9013.80	85.1	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	171	-8685.26	29304.00	29.6 73.7 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	180	-8791.60	27080.03	32.5 75.3 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	189	-8777.14	32519.33	27.0 74.4 (b)	Pass
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	201	-9363.46	29757.36	31.5 75.8 (b)	Pass
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	213	-9767.65	40256.47	24.3 80.2 (b)	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	131	-1837.95	4040.92	45.5	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	162	-2357.36	2956.31	79.7	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	192	-2973.64	9343.57	31.8 34.6 (b)	Pass
T18	30.3125 - 20.2083	Secondary Horizontal	L3x3x3/16	203	-3341.32	6383.47	52.3	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-449.50	2488.54	18.1	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	40	-391.32	2452.43	16.0	Pass
							Summary	
							Leg (T16) 93.1	Pass
							Diagonal (T10) 92.9	Pass
							Secondary Horizontal (T14) 79.7	Pass
							Top Girt (T1) 18.1	Pass
							Bolt Checks 82.6	Pass
							RATING = 93.1	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806378 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING

PLOT DATE: 23/12/2013 FILE NAME: 806378_BASELEVEL.dwg

Xref R:\Standards - URE\CAD Standards V5.0\Templates\Typical Blocks For Templates\TITLE BLOCK STD-VER 5.1.dwg

CROWN REGION ADDRESS

USA

28/11/11	AS-BUILT INFORMATION ADDED PER WORK ORDER # 432216/446829	LAH
25/04/12	UPDATED PER WORK ORDER #464581	SF
04/09/12	UPDATED PER WORK ORDER # 498222	ATF
12/07/12	UPDATED PER WORK ORDER # 506609	MAJ
11/10/12	UPDATED PER WORK ORDER # 540705	EAH
18/07/13	UPDATED PER WORK ORDER # 632030	ARR
15/11/13	UPDATED PER WORK ORDER # 668095	KW
15/11/13	UPDATED PER WORK ORDER # 670174	KW
23/12/13	UPDATED PER WORK ORDER # 693800 681480	TAS

DRAWN BY: KD/MDB
CHECKED BY: SL
DRAWING DATE: 04/05/06

SITE NUMBER:
SITE NAME:

SITE NAME

HRT 606 943248

BUSINESS UNIT NUMBER

806378

SITE ADDRESS

126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071
TOLLAND COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

APPENDIX C

ADDITIONAL CALCULATIONS

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	HRT 086, CT BU#806378
Job Number:	2014-004-002
Tower Model:	160' Rohn SSV Self-Supporting Tower
Date:	1/9/2014

Input Information:

# Bolts	6	
Bolt Diameter	1	in
Bolt Ultimate Tensile Strength, F_u	120	ksi
Steel Grade	A449	
Applied Shear	21.597	kips
Uplift per Leg	186.697	kips

Bolt Cross-Sectional Area, **A**	0.785	in^2
Applied Shear, f_v	4.58	ksi
Maximum Allowable Tensile Stress, F_t	39.6	ksi
Allowable Tension Force	186.61	kips
Maximum Allowable	248.75	kips
% Capacity	**75.1%**	

The Bolt Group is sufficient for the applied Uplift Force

Maximum Allowable Tensile Stress, F_t

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

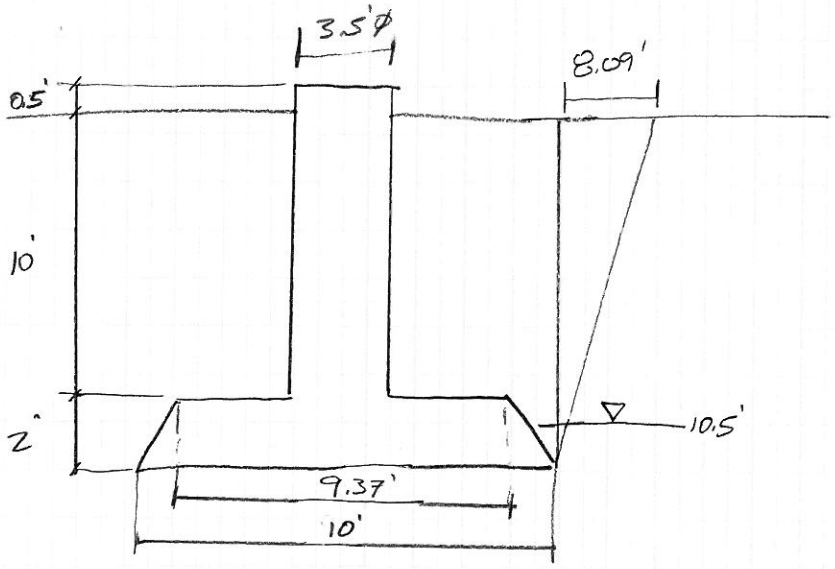
This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

VERTICAL STRUCTURES, INC.
309 Spangler Drive, Suite E
Richmond, Kentucky 40475
Phone: (859) 624-8360
Fax: (859) 624-8369

Subject: FOUNDATION CALCS

Design By: BC
Date: 1-9-14
Chk'd By: AM
Page

Cust: CROWN
Job No.
Location: HART 086, CT



$\gamma_s = 105 pcf$

$\phi = 34°$

$\sigma_{ALL} = 8.25 ksf$

CONSERVATIVELY NEGLECT ADDITIONAL BALLAST FROM TRIANGULAR MAT

$$V_s = \frac{12}{3}\left(100 + 685.4 + \sqrt{100 \times 685.4}\right) - V_c = 4188.8 - V_c$$

$$V_c = \frac{3.5^2\pi}{4} \times 10.5 + 9.37^2 \times 2 = 276.6\ ft^3$$

$$\therefore V_s = 3912.2\ ft^3$$

$$W_s = 0.105\,(3912.2) = 410.8^k$$

$$W_c = 0.150\left[\frac{3.5^2\pi}{4} \times 10.5 + 9.37^2 \times 0.5\right] + (0.15 - 0.0624)(9.37^2 \times 1.5) = 33.3^k$$

$$U_{12} = \frac{33.3^k}{1.25} + \frac{410.8^k}{2} = 232.0^k$$

Applied Bearing = P/A + M/S

A = 100 sq. ft.

S = 166.7 cub. ft

$\frac{218.512\ k}{100\ sq.\ ft} + \frac{(24.405\ k)(12.5')}{166.7\ cub.\ ft} = 4.02\ ksf < 8.25\ ksf$ OK

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC556

Ellington (Crown)

126 Pioneer Heights Road
Somers, CT 06071

March 21, 2014

EBI Project Number: 62141423

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

EBI Consulting
environmental | engineering | due diligence

March 21, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC556 – Ellington (Crown)

Site Total: 55.341% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 126 Pioneer Heights Road, Somers, 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 126 Pioneer Heights Road, Somers, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTMM-C-120 has a 15.9 dBd gain value at its main lobe at 2500 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.
7) The antenna mounting height centerline for the proposed antennas is 126 **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	CT33XC556 - Ellington (Crown)
Site Addresss	126 Pioneer Heights Road, Somers, CT 06071
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	126	120	1/2 "	0.5	3	695.12033	1.73542%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	126	120	1/2 "	0.5	3	195.44744	0.86058%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	126	120	1/2 "	0.5	3	390.89489	1.72116%
														Sector total Power Density Value:		4.317%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	126	120	1/2 "	0.5	3	695.12033	1.73542%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	126	120	1/2 "	0.5	3	195.44744	0.86058%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	126	120	1/2 "	0.5	3	390.89489	1.72116%
														Sector total Power Density Value:		4.317%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	126	120	1/2 "	0.5	3	695.12033	1.73542%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	126	120	1/2 "	0.5	3	195.44744	0.86058%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	126	120	1/2 "	0.5	3	390.89489	1.72116%
														Sector total Power Density Value:		4.317%

Site Composite MPE %

Carrier	MPE %
Sprint	12.951%
AT&T	22.640%
MetroPCS	5.150%
Nextel	2.440%
Verizon Wireless	12.160%
Total Site MPE %	**55.341%**

EBI Consulting
environmental | engineering | due diligence

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 **15.555% (5.185% from each sector)** 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 **55.341%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803