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

June 26, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 806384**
Sprint PCS Site ID: CT03XC110
Located at: 93 Roxbury Road, Niantic, CT 06357

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of Sprint PCS (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mr. Paul Formica, First Selectman, Town of East Lyme.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **93 Roxbury Road, Niantic, CT 06357**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

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

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

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

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

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

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

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

Sincerely,

Jeff Barbadora
Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Paul Formica, First Selectmen
Town of East Lyme
East Lyme Town Hall
108 Pennsylvania Avenue
Niantic, CT 06357

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	EAST LYME
SITE CASCADE:	CT03XC110
SITE NUMBER:	806384
SITE ADDRESS:	93 ROXBURY ROAD NIANTIC, CT 06357
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° 20' 8.35" N
41.335653°

LONGITUDE (NAD83):
72° 13' 18.28" W
-72.221744°

COUNTY:
NEW LONDON

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
R40

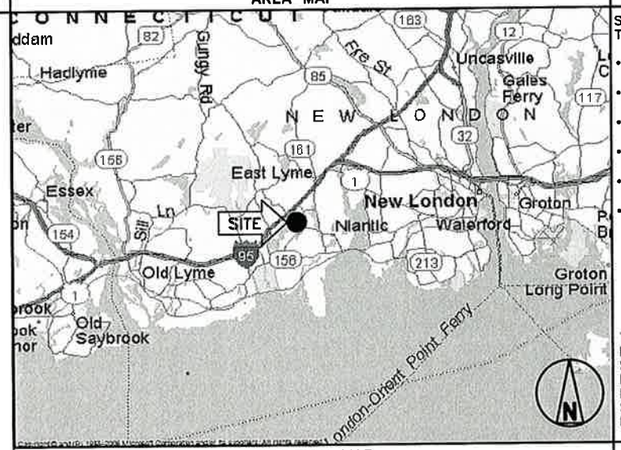
POWER COMPANY:
CL&P
(888)-783-6617

SPRINT PM:
PETER GIARD
(508) 801-0074
PETER.GIARD@SPRINT.COM

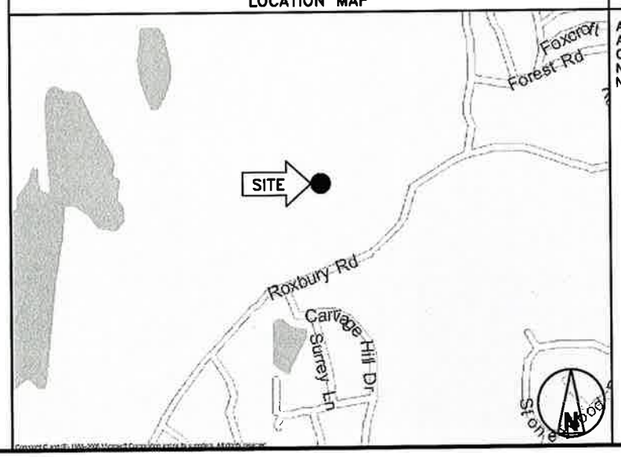
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

CROWN CM:
JASON D'AMICO
PHONE: 860-209-0104
JASON.D'AMICO@CROWNCASTLE.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

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

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME: EAST LYME

SITE CASCADE: CT03XC110

SITE ADDRESS: 93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION: TITLE SHEET & PROJECT DATA

SHEET NUMBER: T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

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 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

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

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

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

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

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

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

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

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

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

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

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

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

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

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

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

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

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

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

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

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

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

1. 1SHELTER AND TOWER OVERVIEW.

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

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

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

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

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

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

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

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

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

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

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

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

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

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

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

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

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

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

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

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

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING –TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

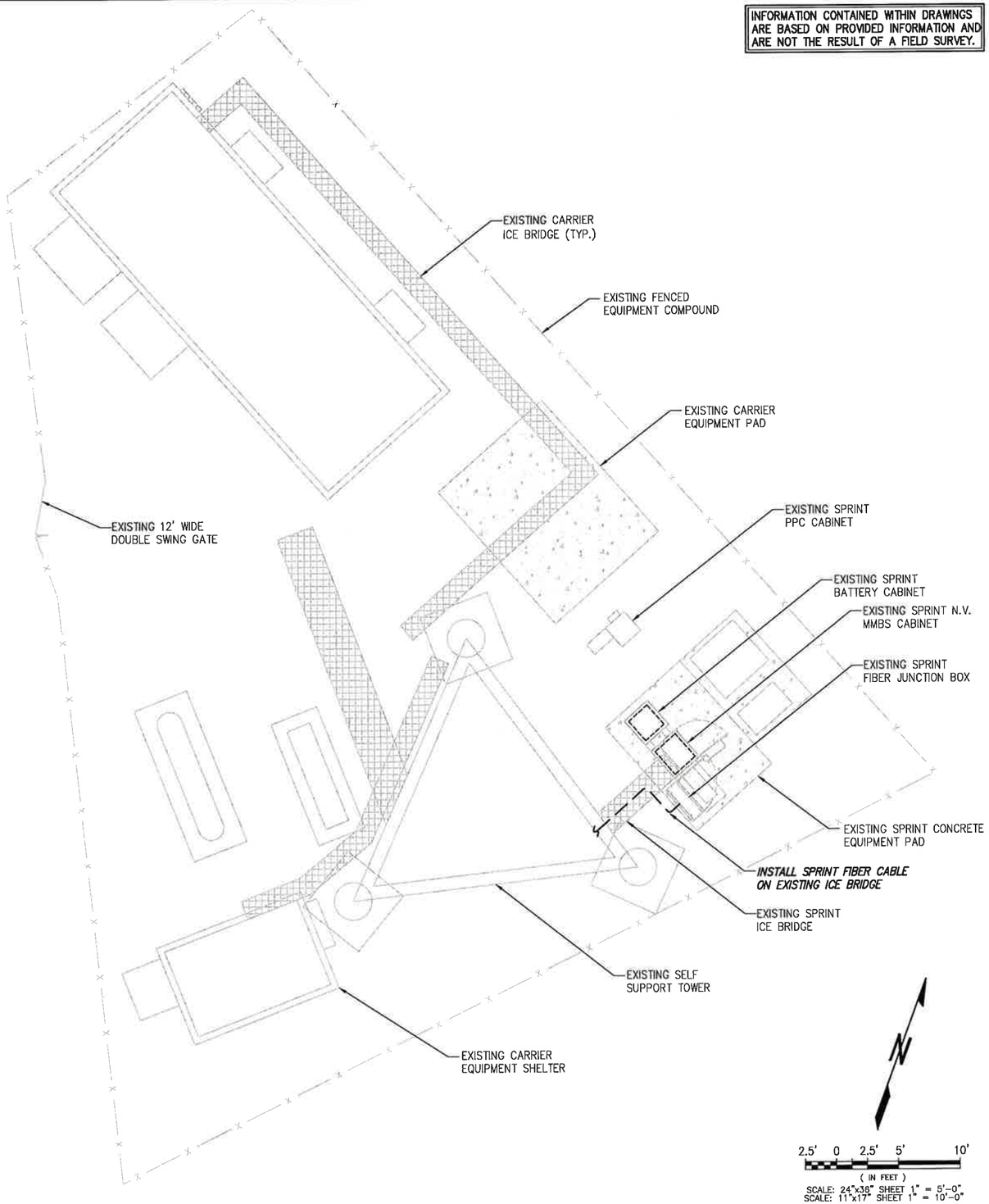
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

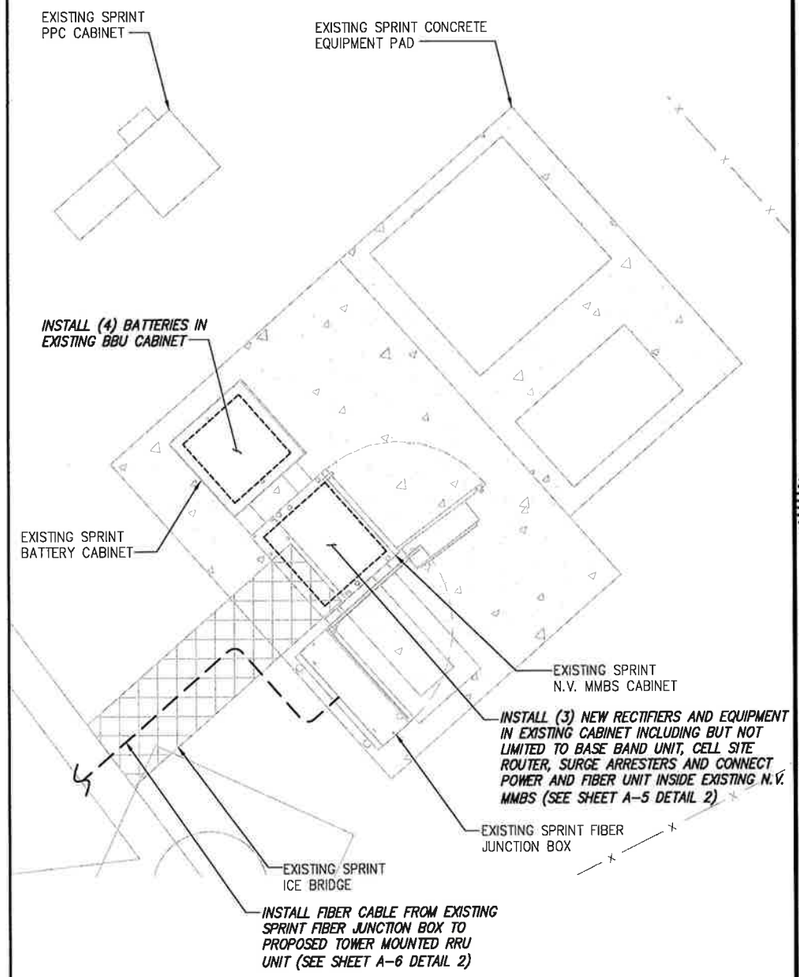
SHEET NUMBER:

SP-3

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



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

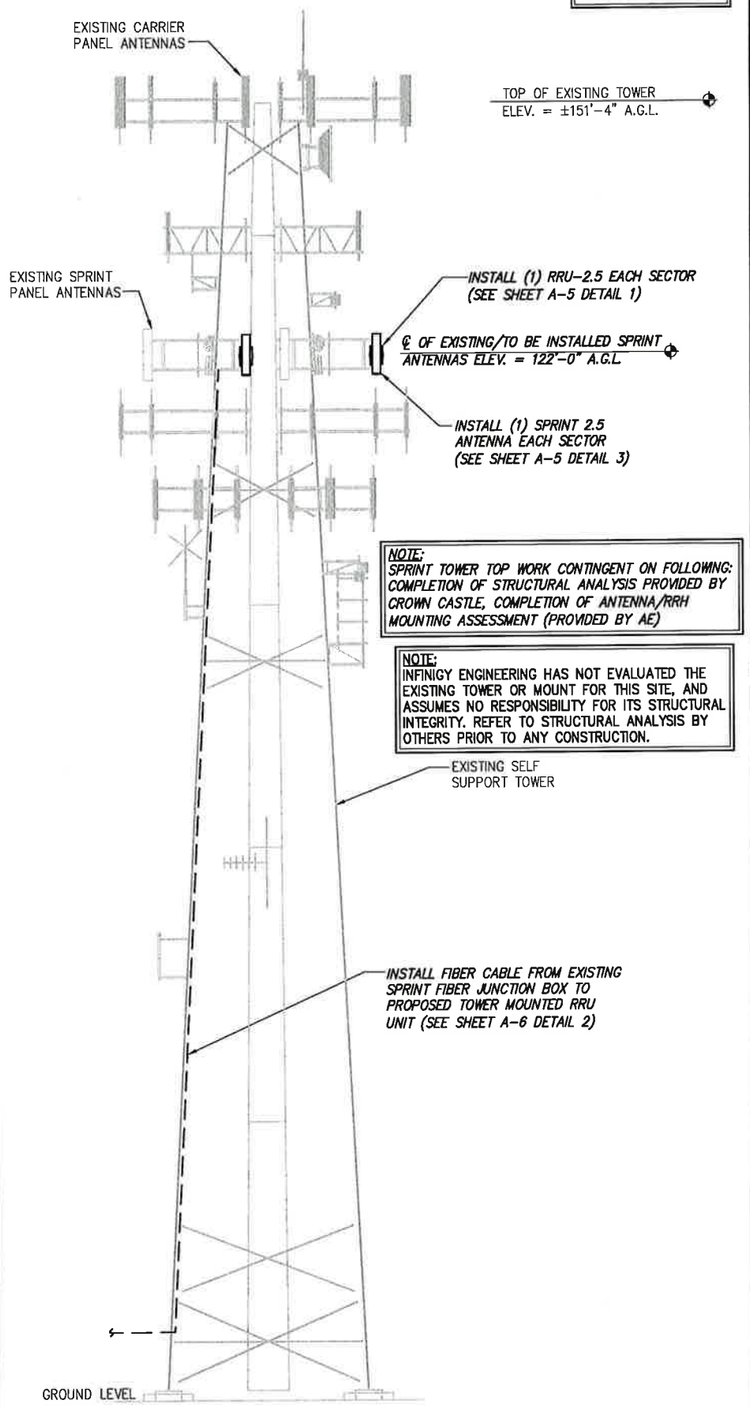
93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1



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 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

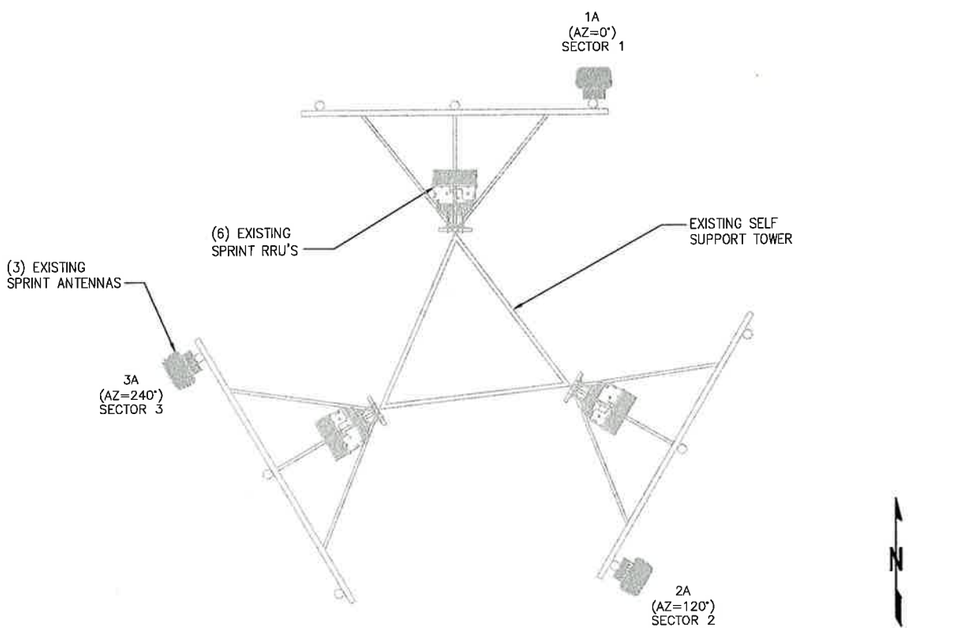
93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

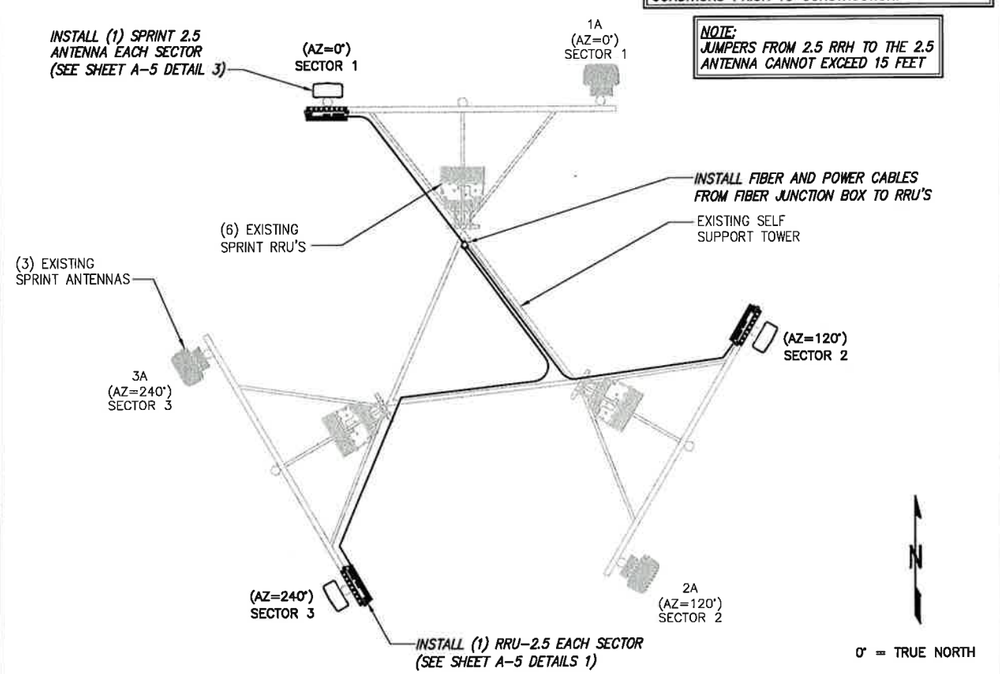
TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-2

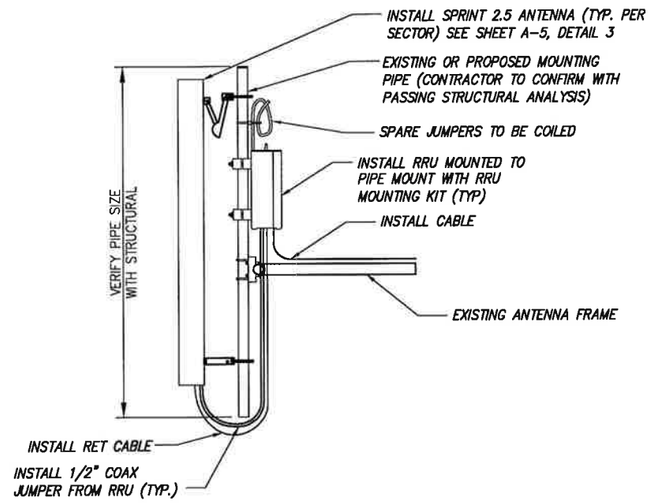


EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1



FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

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

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

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

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

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

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

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

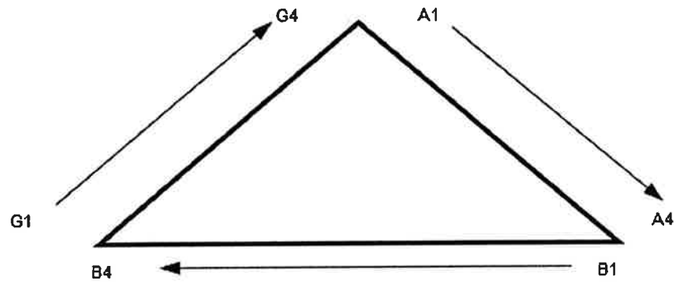
A-3

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	Yellow	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	Yellow	Yellow	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	Yellow	Yellow	Yellow
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 353-XXX

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:
EAST LYME

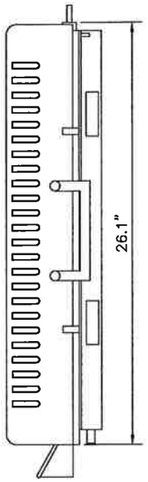
SITE CASCADE:
CT03XC110

SITE ADDRESS:
93 ROXBURY ROAD
NIANTIC, CT 06357

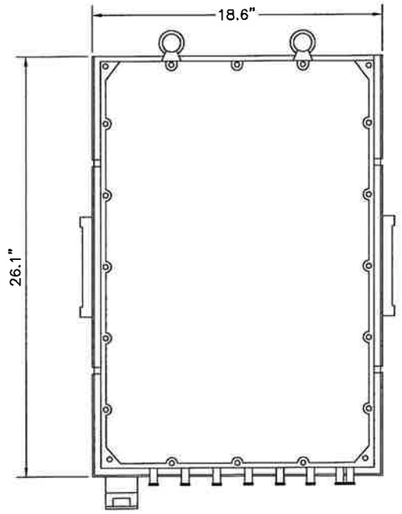
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

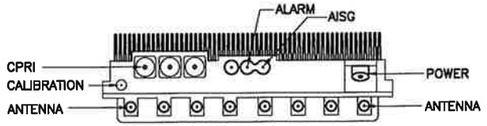
RRU: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

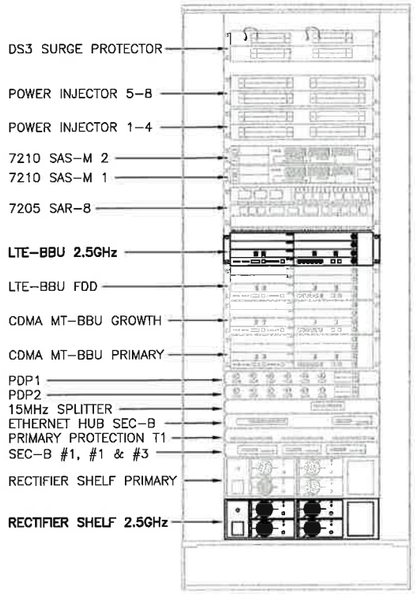


PLAN VIEW

NOTES

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

2.5 RRU	NO SCALE	1

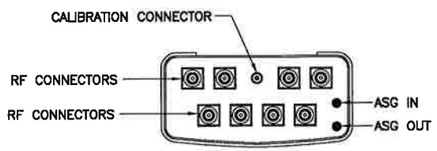


FRONT VIEW

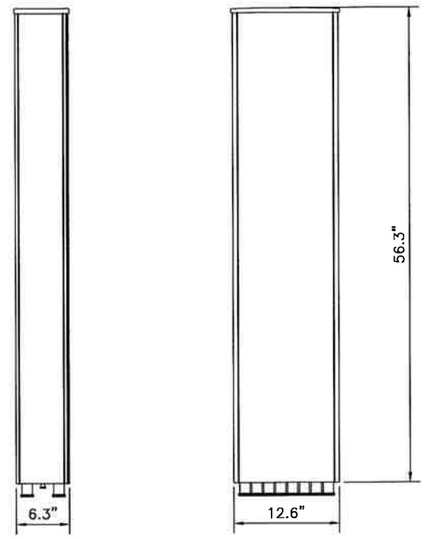
NEW EQUIPMENT IN EXISTING CABINET	NO SCALE	2

ANTENNA: RFS APXVTM14-C-I20

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



PLAN VIEW



2.5 ANTENNA	NO SCALE	3

DETAIL NOT USED	NO SCALE	4

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0700
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:
EAST LYME

SITE CASCADE:
CT03XC110

SITE ADDRESS:
93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

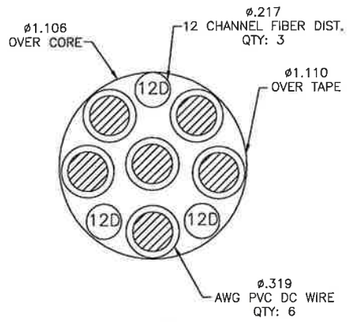
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	Hybrid cable MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	Hybrid cable MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

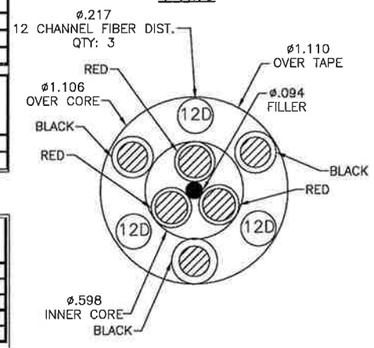
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

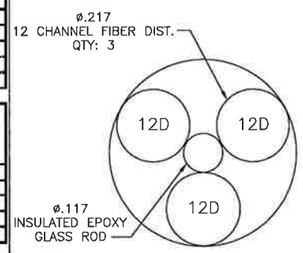
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

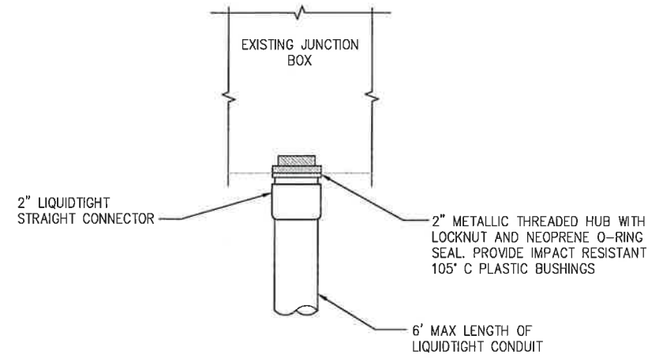


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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

PLANS PREPARED BY:

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

JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

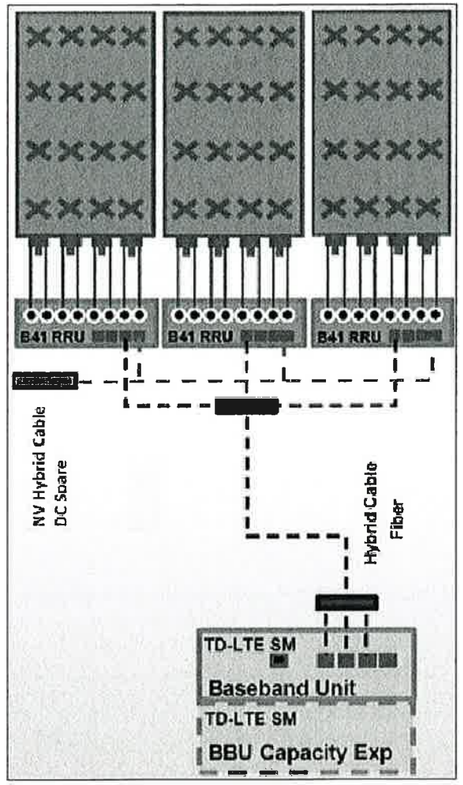
SITE NAME:
EAST LYME

SITE CASCADE:
CT03XC110

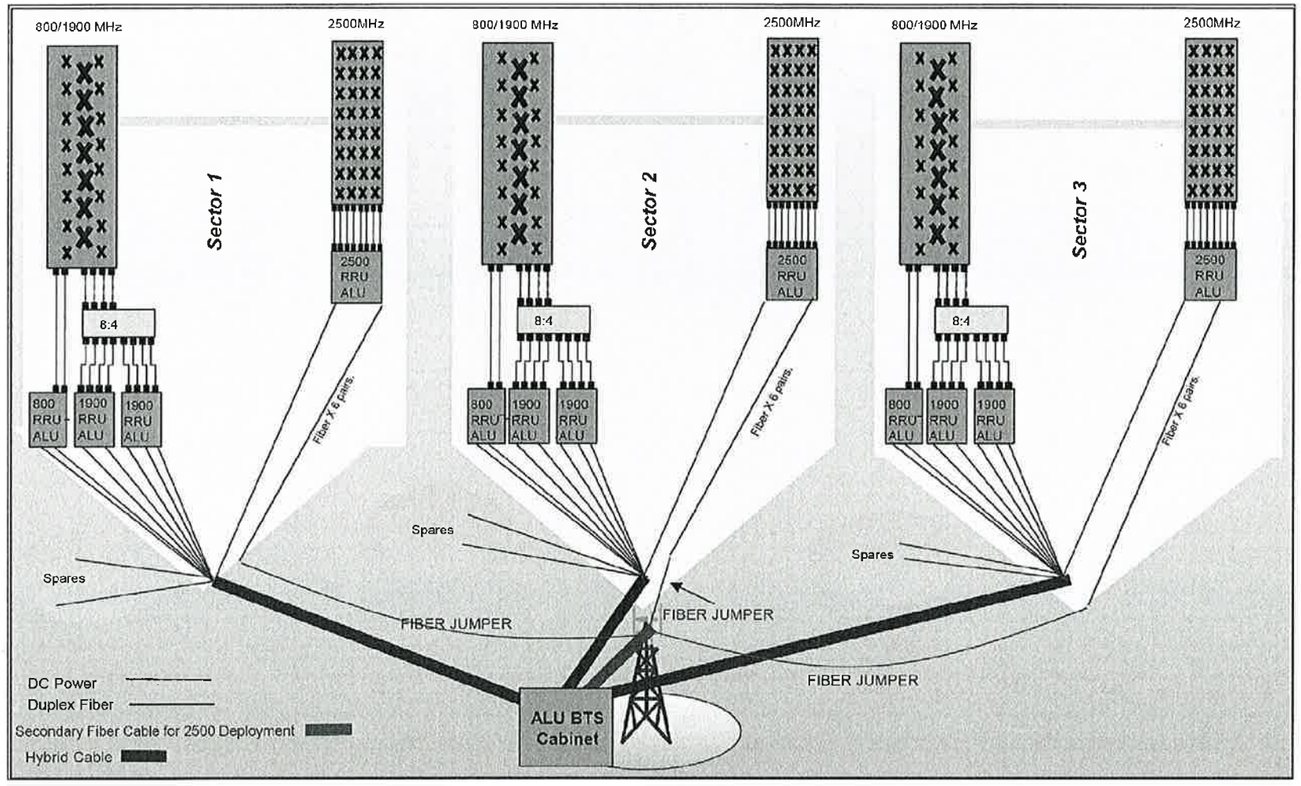
SITE ADDRESS:
93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:
CIVIL DETAILS

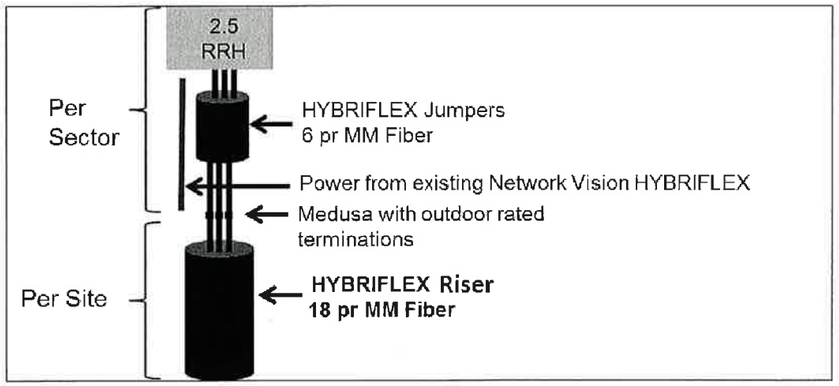
SHEET NUMBER:
A-6



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 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

CIVIL DETAILS

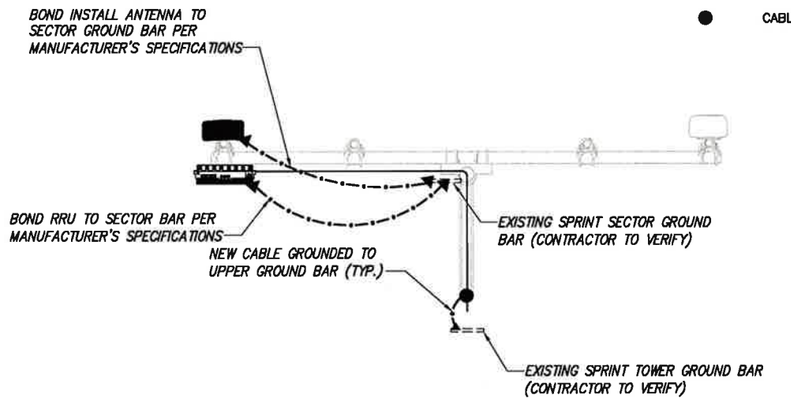
SHEET NUMBER:

A-7

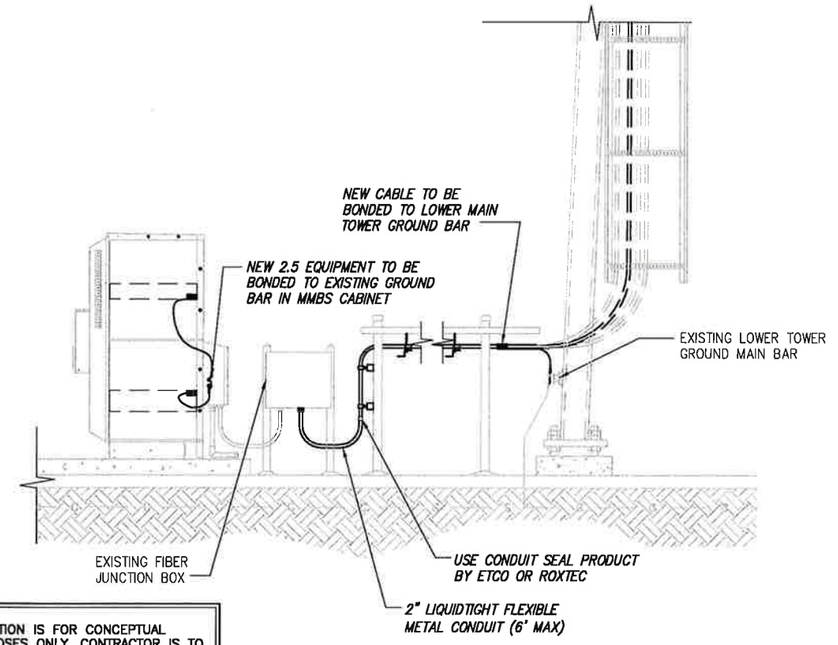
PLAN NOT USED | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

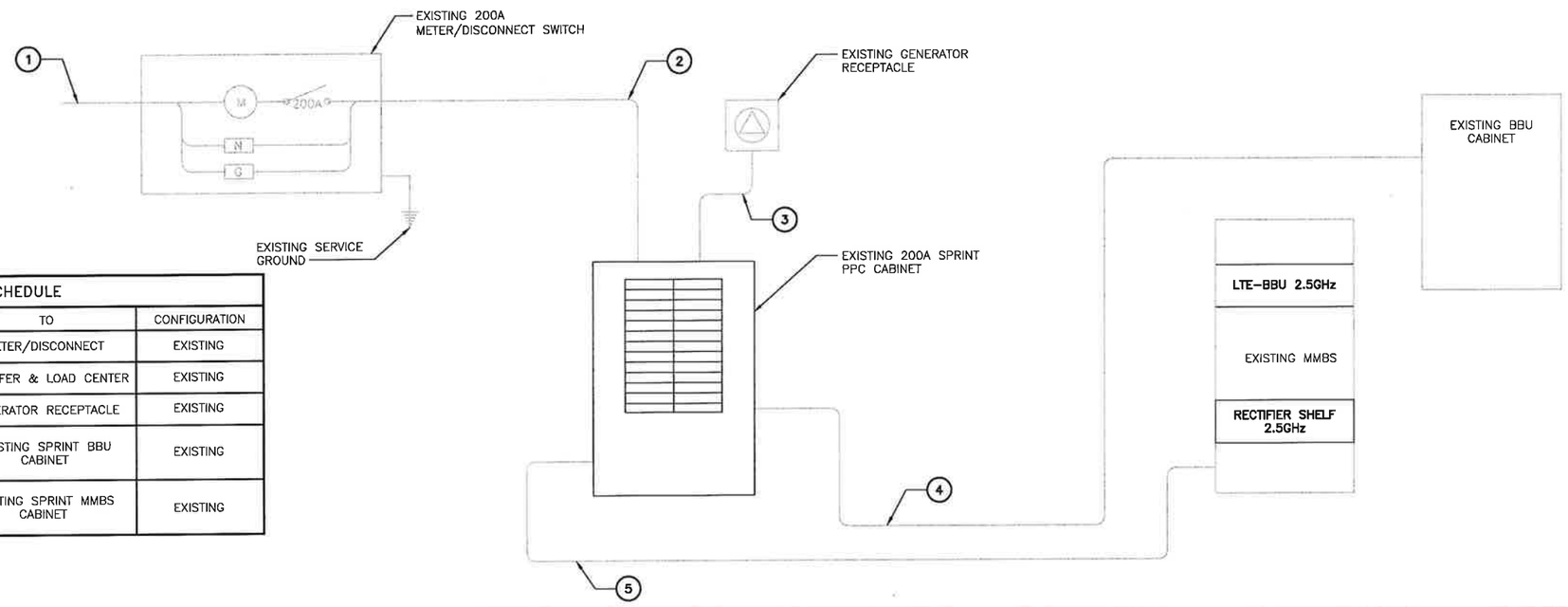
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

NOTES

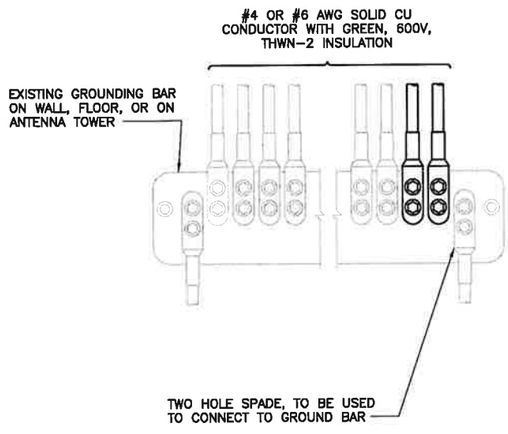
CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE

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

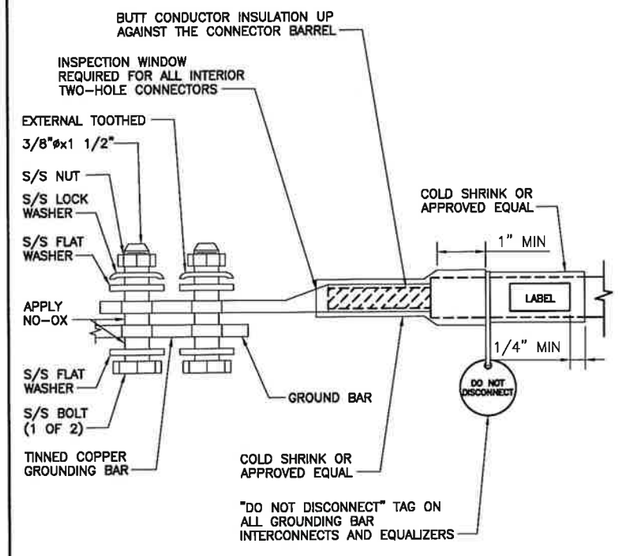
ELECTRICAL ONE-LINE DIAGRAM — NO SCALE — 1



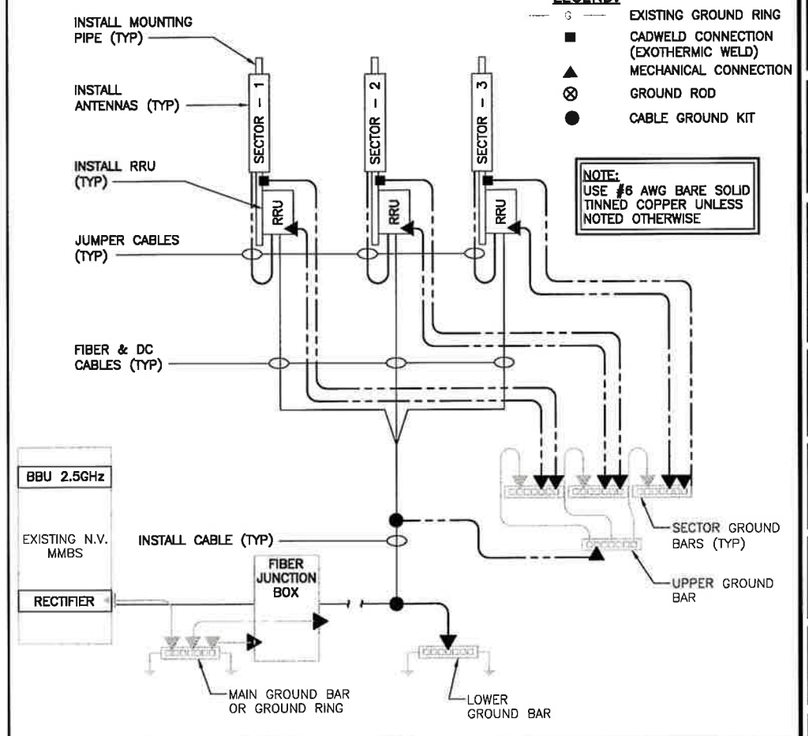
NOTES

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

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



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	05/22/14	MAP	0

SITE NAME:

EAST LYME

SITE CASCADE:

CT03XC110

SITE ADDRESS:

93 ROXBURY ROAD
NIANTIC, CT 06357

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **May 16, 2014**

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

Paul J Ford and Company
250 E. Broad St Suite 600
Columbus, OH 43215
614-221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate:**	**Scenario 2.5B**
	Carrier Site Number:	CT03XC110
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	286422
	Crown Castle Work Order Number:	757757
	Crown Castle Application Number:	245620 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-1269_8701
Site Data:	**93 ROXBURY ROAD, EAST LYME, New London County, CT** **Latitude *41° 20' 8.35"*, Longitude *-72° 13' 18.28"*** **151.292 Foot - Self Support Tower**	

Dear Patrick Byrum,

Paul J Ford and Company 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 646416, in accordance with application 245620, revision 0.

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

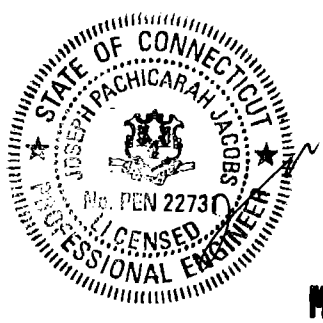
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment with an importance factor of 1.15 based upon a wind speed of 91.2 mph fastest mile with no ice, 37.6 mph with 0.9375 inch ice thickness and 50 mph under service loads.

We at *Paul J Ford and Company* 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:

Christina Hedges, E.I.T
Project Engineer



tnxTower Report - version 6.1.4.1

MAY 19 2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **May 16, 2014**

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

Paul J Ford and Company
250 E. Broad St Suite 600
Columbus, OH 43215
614-221-6679

Subject: Structural Analysis Report

Carrier Designation:	***Sprint PCS* Co-Locate:**	**Scenario 2.5B**
	Carrier Site Number:	CT03XC110
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	286422
	Crown Castle Work Order Number:	757757
	Crown Castle Application Number:	245620 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-1269_8701
Site Data:	**93 ROXBURY ROAD, EAST LYME, New London County, CT** **Latitude *41° 20' 8.35"*, Longitude *-72° 13' 18.28"*** **151.292 Foot - Self Support Tower**	

Dear Patrick Byrum,

Paul J Ford and Company 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 646416, in accordance with application 245620, revision 0.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment with an importance factor of 1.15 based upon a wind speed of 91.2 mph fastest mile with no ice, 37.6 mph with 0.9375 inch ice thickness and 50 mph under service loads.

We at *Paul J Ford and Company* 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:

Christina Hedges, E.I.T
Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 151.292 ft Self Support tower designed by ROHN in March of 1990. The tower was originally designed for a wind speed of 85 mph per EIA-222-D.

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 91.2 mph with no ice, 37.6 mph with 0.9375 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
121.0	122.0	3	alcatel lucent	TD-RRH8x20-25	1	1 1/4	
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	157.0	1	telewave	ANT150F2	1 1	7/8 5/16	1
	152.0	1	motorola	WB2618			
	150.0	1	tower mounts	Side Arm Mount [SO 304-1]			
148.0	149.0	3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			2
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe	6 6	1 5/8 7/8	1
		4	antel	LPA-80063/6CF w/ Mount Pipe			
		2	decibel	DB846H80E-SX w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
	148.0	1	tower mounts	Sector Mount [SM 510-3]			
143.0	143.0	1	andrew	PL6-59W	1	EW52	1
		1	tower mounts	Pipe Mount [PM 601-1]			
133.0	133.0	3	kathrein	800 10504 w/ Mount Pipe	6	1 5/8	1
		1	tower mounts	Sector Mount [SM 104-3]			
128.0	130.0	1	til-tek	TA-2450	1	7/8	1
	128.0	1	tower mounts	Side Arm Mount [SO 305-1]			
126.0	126.0	1	motorola	WB2618	1	5/16	1
		1	tower mounts	Side Arm Mount [SO 305-1]			
121.0	122.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1 1/4	2
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	121.0	3	alcatel lucent	1900MHz RRH (65MHz)			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		1	tower mounts	Sector Mount [SM 505-3]			1
112.0	112.0	9	decibel	DB844H90E-XY w/Mount Pipe	9	7/8	1
		1	tower mounts	Sector Mount [SM 510-3]			
103.0	103.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1 5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		6	ems wireless	RR90-17-02DP w/ Mount Pipe	6 3	1 5/8 5/16	3
		6	ericsson	KRY 112 71			
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Sector Mount [SM 701-3]	12	1 5/8	
95.0	94.0	1	motorola	WB2618	1	5/16	1
90.0	96.0	1	sinclair	SRL-217 Ground Plane 10.67' x 4.83'	1	7/8	1
	90.0	1	tower mounts	Side Arm Mount [SO 302-1]			
85.0	90.0	1	telewave	ANT150D3	1	7/8	1
	85.0	1	tower mounts	Side Arm Mount [SO 305-1]			
61.0	61.0	1	bluewave	BW246Y	1	1/4	1
50.0	52.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 305-1]			

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

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Drawings	March 5, 1990, Rohn	24792JC	258359
Foundation Drawings	March 5, 1990, Rohn	24792JC	958525
Geotechnical Report	July 19, 1989, Dr. Clarence Welti	-	258373
Modification Drawings	January 16, 2003, All Points Technology	CT105761	801526
Modification Drawings	February 26, 2008, (Revised July 9, 2008) Vertical Structures	2008-004-030	2215933
Modification Drawings	May 14, 2009, PJF	41709-0057	2457486
Modification Drawings	May 10, 2011, PJF	37511-0187Mod	2883931
Structural Analysis	May 10, 2011, PJF	37511-0187Mod	2883926

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company 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	151.292 - 146.229	Leg	ROHN 2.5 STD	1	-2294.20	37965.40	14.9	Pass
T2	146.229 - 141.167	Leg	ROHN 2.5 STD	14	-7390.80	50607.87	18.5	Pass
T3	141.167 - 121.042	Leg	ROHN 2.5 EH	23	-29406.40	52977.02	55.5	Pass
T4	121.042 - 114.313	Leg	ROHN 2.5 EH (GR)	47	-34807.30	61869.99	56.3	Pass
T5	114.313 - 107.646	Leg	ROHN 2.5 EH (GR)	56	-46380.70	61867.72	75.0	Pass
T6	107.646 - 100.917	Leg	ROHN 2.5 EH (GR)	65	-64803.00	91492.98	70.8	Pass
T7	100.917 - 94.2014	Leg	ROHN 3 EH (GR)	77	-70551.50	102414.52	68.9	Pass
T8	94.2014 - 87.4861	Leg	ROHN 3 EH (GR)	86	-82785.20	132155.48	62.6	Pass
T9	87.4861 - 80.7708	Leg	ROHN 3 EH (GR)	98	-102040.00	132524.46	77.0	Pass
T10	80.7708 - 70.6875	Leg	ROHN 4 EH (GR)	110	-110743.00	136793.79	81.0	Pass
T11	70.6875 - 60.6041	Leg	ROHN 4 EH (GR)	119	-128661.00	193618.24	66.5 78.3 (b)	Pass
T12	60.6041 - 50.5104	Leg	ROHN 4 EH (GR)	131	-156825.00	194567.34	80.6	Pass
T13	50.5104 - 40.4166	Leg	ROHN 4 EH (GR)	143	-174651.00	194647.32	89.7	Pass
T14	40.4166 - 30.3125	Leg	ROHN 5 EH (GR)	155	-182977.00	231920.66	78.9	Pass
T15	30.3125 - 20.2083	Leg	ROHN 5 EH (GR)	163	179426.00	244417.54	73.4 87.8 (b)	Pass
T16	20.2083 - 10.1041	Leg	ROHN 5 EH (GR)	175	185937.00	244417.54	76.1	Pass
T17	10.1041 - 0	Leg	ROHN 5 EH (GR)	187	207882.00	244417.54	85.1	Pass
T1	151.292 - 146.229	Diagonal	L 1.5 x 1.5 x 3/16	12	-857.43	2936.81	29.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T2	146.229 - 141.167	Diagonal	L 2 x 2 x 3/16	18	-3122.54	7183.02	43.5 47.3 (b)	Pass
T3	141.167 - 121.042	Diagonal	L2 1/2x2 1/2x3/16	30	-4600.51	8577.46	53.6 83.7 (b)	Pass
T4	121.042 - 114.313	Diagonal	L2 1/2x2 1/2x3/16	51	-6083.53	7802.10	78.0	Pass
T5	114.313 - 107.646	Diagonal	L2 1/2x2 1/2x3/16	60	-6674.40	7121.94	93.7	Pass
T6	107.646 - 100.917	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	69	-7845.09	27668.41	28.4 71.4 (b)	Pass
T7	100.917 - 94.2014	Diagonal	L3x3x3/16	81	-8285.65	10656.04	77.8	Pass
T8	94.2014 - 87.4861	Diagonal	L3x3x3/16	90	-8498.80	9740.18	87.3	Pass
T9	87.4861 - 80.7708	Diagonal	2L 3 x 3 x 3/16 (1/4)	102	-9080.66	35614.03	25.5 82.6 (b)	Pass
T10	80.7708 - 70.6875	Diagonal	2L3x3x3/16x1/4	114	-10269.50	29260.28	35.1 89.3 (b)	Pass
T11	70.6875 - 60.6041	Diagonal	2L3x3x3/16x1/4	123	-10812.60	26882.74	40.2 90.6 (b)	Pass
T12	60.6041 - 50.5104	Diagonal	2L3x3x1/4x1/4	135	-11029.00	32676.90	33.8 94.7 (b)	Pass
T13	50.5104 - 40.4166	Diagonal	2L3x3x1/4x1/4	147	-11618.20	29874.53	38.9 67.6 (b)	Pass
T14	40.4166 - 30.3125	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-11841.50	43629.75	27.1 68.9 (b)	Pass
T15	30.3125 - 20.2083	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12743.40	40231.14	31.7 74.2 (b)	Pass
T16	20.2083 - 10.1041	Diagonal	2L 4 x 4 x 1/4 (1/4)	180	-12631.60	55366.02	22.8 73.5 (b)	Pass
T17	10.1041 - 0	Diagonal	2L 4 x 4 x 1/4 (1/4)	192	-13931.60	51311.17	27.2 81.1 (b)	Pass
T6	107.646 - 100.917	Secondary Horizontal	L 2 x 2 x 3/16	73	-1123.85	4253.63	26.4	Pass
T8	94.2014 - 87.4861	Secondary Horizontal	L 2 x 2 x 3/16	95	-1435.81	3443.41	41.7	Pass
T9	87.4861 - 80.7708	Secondary Horizontal	L 2 x 2 x 3/16	106	-1769.76	3111.40	56.9	Pass
T11	70.6875 - 60.6041	Secondary Horizontal	L2 1/2x2 1/2x3/16	127	-2231.22	4890.70	45.6	Pass
T12	60.6041 - 50.5104	Secondary Horizontal	L3x3x1/4	139	-2719.86	9857.64	27.6 49.5 (b)	Pass
T13	50.5104 - 40.4166	Secondary Horizontal	L3x3x1/4	151	-3029.03	8745.97	34.6 55.1 (b)	Pass
T15	30.3125 - 20.2083	Secondary Horizontal	L 3 x 3 x 3/16	172	-3646.63	5467.17	66.7	Pass
T16	20.2083 - 10.1041	Secondary Horizontal	L3x3x3/16	185	-3787.85	4943.07	76.6	Pass
T17	10.1041 - 0	Secondary Horizontal	L 3.5 x 3.5 x 1/4	196	-4261.75	9469.10	45.0 49.6 (b)	Pass
T1	151.292 - 146.229	Top Girt	L2 1/2x2 1/2x3/16	6	-144.52	4410.47	3.3	Pass
T3	141.167 - 121.042	Top Girt	L2 1/2x2 1/2x3/16	25	-609.01	4403.90	13.8	Pass
							Summary	
						Leg (T13)	89.7	Pass
						Diagonal (T12)	94.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
						Secondary Horizontal (T16)	76.6	Pass
						Top Girt (T3)	13.8	Pass
						Bolt Checks	94.7	Pass
						Rating =	94.7	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods		80.2	Pass
1	Base Foundation		41.5	Pass
1	Base Foundation Soil Interaction		96.7	Pass

Structure Rating (max from all components) =	96.7%

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

APPENDIX A

TNXTOWER OUTPUT

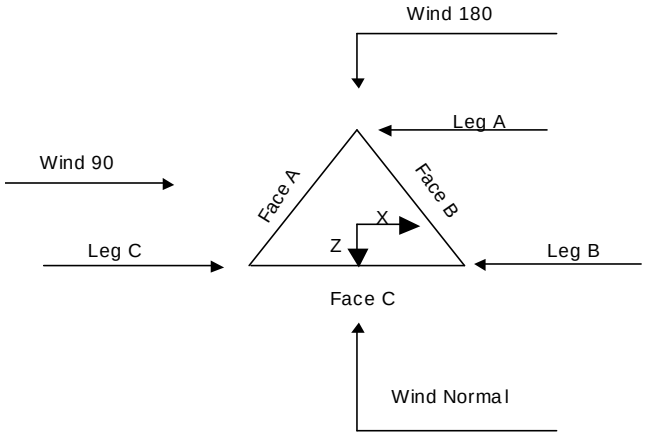
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 151.29 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 8.56 ft at the top and 22.78 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

4) Tower is located in New London County, Connecticut.
5) Basic wind speed of 91 mph.
6) Nominal ice thickness of 0.9375 in.
7) Ice thickness is considered to increase with height.
8) Ice density of 56 pcf.
9) A wind speed of 38 mph is used in combination with ice.
10) Deflections calculated using a wind speed of 50 mph.
11) A non-linear (P-delta) analysis was used.
12) Grouted pipe f'_c is 7 ksi.
13) Pressures are calculated at each section.
14) Stress ratio used in tower member design is 1.333.
15) 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	151.29-146.23			8.56	1	5.06
T2	146.23-141.17			8.56	1	5.06
T3	141.17-121.04			8.56	1	20.13
T4	121.04-114.31			10.56	1	6.73
T5	114.31-107.65			11.24	1	6.67
T6	107.65-100.92			11.92	1	6.73
T7	100.92-94.20			12.60	1	6.72
T8	94.20-87.49			13.30	1	6.72
T9	87.49-80.77			14.00	1	6.72
T10	80.77-70.69			14.70	1	10.08
T11	70.69-60.60			15.70	1	10.08
T12	60.60-50.51			16.70	1	10.09
T13	50.51-40.42			17.73	1	10.09
T14	40.42-30.31			18.77	1	10.10
T15	30.31-20.21			19.78	1	10.10
T16	20.21-10.10			20.78	1	10.10
T17	10.10-0.00			21.78	1	10.10

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	151.29-146.23	4.94	X Brace	No	No	0.7500	0.7500
T2	146.23-141.17	4.94	X Brace	No	No	0.7500	0.7500
T3	141.17-121.04	6.67	X Brace	No	No	0.7500	0.7500
T4	121.04-114.31	6.67	X Brace	No	No	0.7500	0.0000
T5	114.31-107.65	6.67	X Brace	No	No	0.0000	0.0000
T6	107.65-100.92	6.67	X Brace	No	Yes	0.0000	0.7500
T7	100.92-94.20	6.65	X Brace	No	No	0.7500	0.0000
T8	94.20-87.49	6.72	X Brace	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T9	87.49-80.77	6.63	X Brace	No	Yes	0.0000	1.0000
T10	80.77-70.69	10.00	X Brace	No	No	1.0000	0.0000
T11	70.69-60.60	10.08	X Brace	No	Yes	0.0000	0.0000
T12	60.60-50.51	9.91	X Brace	No	Yes	1.0000	1.2500
T13	50.51-40.42	9.91	X Brace	No	Yes	1.0000	1.2500
T14	40.42-30.31	10.00	X Brace	No	No	1.2500	0.0000
T15	30.31-20.21	10.00	X Brace	No	Yes	0.0000	1.2500
T16	20.21-10.10	10.00	X Brace	No	Yes	1.2500	0.0000
T17	10.10-0.00	10.00	X Brace	No	Yes	0.0000	1.2500

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 151.29-146.23	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T2 146.23-141.17	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)
T3 141.17-121.04	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 121.04-114.31	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 114.31-107.65	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 107.65-100.92	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Double Angle	2L 2.5 x 2.5 x 3/16 (3/16)	A36 (36 ksi)
T7 100.92-94.20	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 94.20-87.49	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T9 87.49-80.77	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 3/16 (1/4)	A36 (36 ksi)
T10 80.77-70.69	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T11 70.69-60.60	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T12 60.60-50.51	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T13 50.51-40.42	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T14 40.42-30.31	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T15 30.31-20.21	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T16 20.21-10.10	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 1/4 (1/4)	A572-50 (50 ksi)
T17 10.10-0.00	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 1/4 (1/4)	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 151.29-146.23	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 141.17-121.04	Single Angle	L2 1/2x2 1/2x3/16	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
T6 107.65-100.92	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T8 94.20-87.49	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 87.49-80.77	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 70.69-60.60	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T12 60.60-50.51	Single Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 50.51-40.42	Single Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T15 30.31-20.21	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 20.21-10.10	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 10.10-0.00	Single Angle	L 3.5 x 3.5 x 1/4	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 151.29-146.23	0.30	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T2 146.23-141.17	0.30	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T3 141.17-121.04	0.80	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T4 121.04-114.31	0.27	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T5 114.31-107.65	0.27	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T6 107.65-100.92	1.25	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T7 100.92-94.20	0.93	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T8 94.20-87.49	0.47	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T9 87.49-80.77	0.47	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T10 80.77-70.69	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T11 70.69-60.60	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T12 60.60-50.51	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T13 50.51-40.42	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T14 40.42-30.31	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T15 30.31-20.21	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T16 20.21-10.10	1.50	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000

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
T17 10.10-0.00	1.50	0.5000	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	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 151.29-146.23	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 146.23-141.17	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 141.17-121.04	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 121.04-114.31	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 114.31-107.65	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 107.65-100.92	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T7 100.92-94.20	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 94.20-87.49	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T9 87.49-80.77	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T10 80.77-70.69	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 70.69-60.60	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T12 60.60-50.51	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T13 50.51-40.42	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T14 40.42-30.31	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T15 30.31-20.21	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T16 20.21-10.10	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T17 10.10-0.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	0.5	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 151.29-146.23	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 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
T2 146.23-141.17	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
T3 141.17-121.04	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
T4 121.04-114.31	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
T5 114.31-107.65	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
T6 107.65-100.92	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
T7 100.92-94.20	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
T8 94.20-87.49	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
T9 87.49-80.77	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
T10 80.77-70.69	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
T11 70.69-60.60	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 60.60-50.51	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 50.51-40.42	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
T14 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
T15 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
T16 20.21-10.10	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 10.10-0.00	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 151.29-146.23	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 146.23-141.17	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 141.17-121.04	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 121.04-114.31	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 114.31-107.65	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 107.65-100.92	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 100.92-94.20	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T8 94.20-87.49	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T9 87.49-80.77	2.5000	3.8438	2.5000	3.8438	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
T10 80.77-70.69	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T11 70.69-60.60	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T12 60.60-50.51	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T13 50.51-40.42	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T14 40.42-30.31	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T15 30.31-20.21	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T16 20.21-10.10	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T17 10.10-0.00	2.5000	4.8750	2.5000	4.8750	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 151.29-146.23	Flange	0.6250 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	1
T2 146.23-141.17	Flange	0.6250 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T3 141.17-121.04	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T4 121.04-114.31	Flange	0.7500 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	1
T5 114.31-107.65	Flange	0.7500 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	1
T6 107.65-100.92	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	1
T7 100.92-94.20	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	1
T8 94.20-87.49	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	1
T9 87.49-80.77	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
T10 80.77-70.69	Flange	0.8750 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	1
T11 70.69-60.60	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 60.60-50.51	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	0.5000 A325N	1
T13 50.51-40.42	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T14 40.42-30.31	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	1
T15 30.31-20.21	Flange	1.0625 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T16 20.21-10.10	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	1
T17 10.10-0.00	Flange	1.0000 A354-BC	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

Grouted Pipe Properties

Size	F_y ksi	A_s in^2	A_c in^2	Wt plf	E_c ksi	E_m ksi	F_{ym} ksi
ROHN 2.5 EH (GR)	50	2.2535	4.2383	16.498	4769	36175	61
ROHN 3 EH (GR)	50	3.0159	6.6052	24.023	4769	37356	63
ROHN 4 EH (GR)	50	4.4074	11.4969	38.949	4769	38952	66
ROHN 5 EH (GR)	50	6.1120	18.1937	58.701	4769	40357	68

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
**												
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	103.00 - 8.00	0.0000	0.45	2	2	12.0000 1.5000	1.5000	6.0000	1.80
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	103.00 - 8.00	0.0000	0.45	13	7	0.2700	1.9800		0.82
LDF4P-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	50.00 - 8.00	-1.0000	0.49	1	1	0.6300	0.6300		0.15
**												
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	90.00 - 8.00	-1.0000	-0.4	17	10	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	112.00 - 90.00	-1.0000	-0.4	16	9	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 112.00	-1.0000	-0.4	8	8	1.0000	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 8.00	2.0000	-0.45	3	2	0.2700 1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 8.00	2.0000	-0.35	3	2	0.2700 1.0000	1.9800		0.82
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	148.00 - 8.00	0.0000	-0.4	2	2	30.0000 1.5000	1.5000	6.0000	1.80
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	121.00 - 8.00	-1.0000	-0.35	1	1	30.0000 1.5000	1.5000	6.0000	1.80
HB114-1-08U4-M5J(1 1/4")	B	Yes	Ar (CfAe)	121.00 - 8.00	-2.0000	-0.35	4	4	0.7600 1.5400	1.5400		1.08
**												
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	133.00 - 8.00	0.0000	0.4	2	2	12.0000 1.5000	1.5000	6.0000	1.80
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	85.00 - 8.00	0.0000	0.45	2	2	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	128.00 - 85.00	0.0000	0.45	1	1	1.0000	1.0900		0.33
9207 (5/16")	A	Yes	Ar (CfAe)	95.00 - 8.00	0.0000	0.4	3	3	0.3300	0.3300		0.06
9207 (5/16")	A	Yes	Ar (CfAe)	126.00 - 8.00	0.0000	0.4	2	2	0.3300	0.3300		0.06
9207 (5/16")	A	Yes	Ar (CfAe)	151.29 - 8.00	0.0000	0.4	1	1	0.3300	0.3300		0.06
FXL 1873 PE(1 5/8")	A	Yes	Ar (CfAe)	133.00 - 8.00	0.0000	0.4	6	6	0.2700	1.9800		0.01
**												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
EW52	B	No	CaAa (In Face)	143.00 - 8.00	0.0000	-0.35	1	No Ice	0.00	0.59
								1/2" Ice	0.00	1.95
								1" Ice	0.00	3.93
								2" Ice	0.00	9.71
								4" Ice	0.00	28.60
**										

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Side Arm Mount [SO 304-1]	A	From Leg	1.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.63 1.00 1.37 2.11 3.59	0.94 1.45 1.96 2.98 5.02	23.00 31.92 40.83 58.66 94.32
WB2618	A	From Leg	2.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.04 2.24 2.44 2.87 3.82	0.53 0.65 0.78 1.07 1.75	12.10 23.53 37.28 72.51 179.32
ANT150F2	A	From Leg	2.00 0.00 7.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.60 1.91 2.57 4.06	1.29 1.60 1.91 2.57 4.06	13.00 23.28 37.06 75.67 201.46
**									
Sector Mount [SM 510-3]	B	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2396.40 3089.00 3781.60 5166.80 7937.20
(2) LPA-80063/6CF w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.58 11.24 11.87 13.16 15.87	10.67 11.93 12.91 14.92 19.16	52.22 144.64 245.54 476.36 1087.76
(2) DB846H80E-SX w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.33 5.89 6.41 7.48 9.83	7.74 8.93 9.84 11.71 15.89	40.70 98.82 164.69 323.29 782.19
(2) LPA-80063/6CF w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.58 11.24 11.87 13.16 15.87	10.67 11.93 12.91 14.92 19.16	52.22 144.64 245.54 476.36 1087.76
BXA-70063-6CF-2 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	7.97 8.61 9.22 10.46	5.80 6.95 7.82 9.60	42.25 103.01 171.49 335.23

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	13.07	13.37	803.52
						4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	42.25 103.01 171.49 335.23 803.52
BXA-70063-6CF-2 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	42.25 103.01 171.49 335.23 803.52
(2) FD9R6004/2C-3L	B	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	3.10 5.40 8.79 19.61 62.87
(4) FD9R6004/2C-3L	C	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	3.10 5.40 8.79 19.61 62.87
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.97 4.86 6.77	3.35 3.97 4.60 5.90 8.89	28.93 61.12 98.80 193.53 487.85
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.97 4.86 6.77	3.35 3.97 4.60 5.90 8.89	28.93 61.12 98.80 193.53 487.85
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.97 4.86 6.77	3.35 3.97 4.60 5.90 8.89	28.93 61.12 98.80 193.53 487.85
**									
Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	65.00 79.14 93.27 121.55 178.10
**									
Sector Mount [SM 104-3]	A	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	30.02 40.48 50.94 71.86 113.70	30.02 40.48 50.94 71.86 113.70	952.50 1404.60 1856.70 2760.90 4569.30
800 10504 w/ Mount Pipe	A	From Leg	3.50 3.50 0.00	44.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.59 4.01 4.42 5.34 7.38	3.18 3.91 4.58 5.98 8.98	37.75 70.42 108.95 206.66 513.56
800 10504 w/ Mount Pipe	B	From Leg	3.50	44.0000	133.00	No Ice	3.59	3.18	37.75

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			3.50 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	4.01 4.42 5.34 7.38	3.91 4.58 5.98 8.98	70.42 108.95 206.66 513.56
800 10504 w/ Mount Pipe **	C	From Leg	3.50 3.50 0.00	44.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.59 4.01 4.42 5.34 7.38	3.18 3.91 4.58 5.98 8.98	37.75 70.42 108.95 206.66 513.56
Side Arm Mount [SO 305-1]	C	From Leg	1.50 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
TA-2450	C	From Leg	3.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.84 1.08 1.34 1.87 3.19	0.84 1.08 1.34 1.87 3.19	15.00 21.99 31.80 60.52 158.57
Side Arm Mount [SO 305-1]	A	From Leg	1.50 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
WB2618 **	A	From Leg	3.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.04 2.24 2.44 2.87 3.82	0.53 0.65 0.78 1.07 1.75	12.10 23.53 37.28 72.51 179.32
Sector Mount [SM 505-3]	A	None		0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1725.30 2316.90 2908.50 4091.70 6458.10
1900MHz RRH (65MHz)	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.84 3.09 3.61 4.74	59.50 82.62 108.98 172.17 345.91
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64.00 86.12 111.30 171.62 337.52
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	121.00	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
1900MHz RRH (65MHz)	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice	2.71 2.95 3.20 3.72	2.61 2.84 3.09 3.61	59.50 82.62 108.98 172.17

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* lb
						2" Ice	4.86	4.74	345.91
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64.00 86.12 111.30 171.62 337.52
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	121.00	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	87.55 158.04 236.54 421.23 935.37
1900MHz RRH (65MHz)	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.84 3.09 3.61 4.74	59.50 82.62 108.98 172.17 345.91
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64.00 86.12 111.30 171.62 337.52
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	121.00	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
TD-RRH8x20-25	A	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	70.00 97.15 127.83 200.54 396.84
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	76.77 131.38 192.68 338.48 752.45
TD-RRH8x20-25	B	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	70.00 97.15 127.83 200.54 396.84
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	76.77 131.38 192.68 338.48 752.45
TD-RRH8x20-25	C	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	70.00 97.15 127.83 200.54 396.84
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	121.00	No Ice 1/2" Ice	7.13 7.66 8.18	4.96 5.75 6.47	76.77 131.38 192.68

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
						1" Ice	9.26	8.01	338.48
						2" Ice	11.53	11.41	752.45
						4" Ice			
**									
Sector Mount [SM 510-3]	B	None		0.0000	112.00	No Ice	40.10	40.10	2396.40
						1/2" Ice	57.33	57.33	3089.00
							74.56	74.56	3781.60
						1" Ice	109.02	109.02	5166.80
						2" Ice	177.94	177.94	7937.20
						4" Ice			
(3) DB844H90E-XY w/Mount Pipe	A	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	79.42
							4.73	7.30	129.38
						1" Ice	5.86	8.96	251.21
						2" Ice	8.27	12.49	616.53
						4" Ice			
(3) DB844H90E-XY w/Mount Pipe	B	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	79.42
							4.73	7.30	129.38
						1" Ice	5.86	8.96	251.21
						2" Ice	8.27	12.49	616.53
						4" Ice			
(3) DB844H90E-XY w/Mount Pipe	C	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	79.42
							4.73	7.30	129.38
						1" Ice	5.86	8.96	251.21
						2" Ice	8.27	12.49	616.53
						4" Ice			
**									
Sector Mount [SM 701-3]	A	None		0.0000	103.00	No Ice	19.73	19.73	825.00
						1/2" Ice	27.41	27.41	1165.99
							35.09	35.09	1506.98
						1" Ice	50.45	50.45	2188.96
						2" Ice	81.17	81.17	3552.92
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	6.83	5.64	112.18
						1/2" Ice	7.35	6.48	169.02
							7.86	7.26	232.59
						1" Ice	8.93	8.86	383.07
						2" Ice	11.18	12.29	806.82
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	6.82	5.63	112.18
						1/2" Ice	7.34	6.47	168.96
							7.85	7.25	232.45
						1" Ice	8.92	8.85	382.76
						2" Ice	11.17	12.28	806.09
						4" Ice			
KRY 112 144/1	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	0.41	0.20	11.00
						1/2" Ice	0.50	0.27	14.18
							0.59	0.35	18.58
						1" Ice	0.81	0.53	31.87
						2" Ice	1.36	1.00	81.78
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	6.83	5.64	112.18
						1/2" Ice	7.35	6.48	169.02
							7.86	7.26	232.59
						1" Ice	8.93	8.86	383.07
						2" Ice	11.18	12.29	806.82
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	6.82	5.63	112.18
						1/2" Ice	7.34	6.47	168.96
							7.85	7.25	232.45
						1" Ice	8.92	8.85	382.76
						2" Ice	11.17	12.28	806.09
						4" Ice			

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
KRY 112 144/1	B	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	11.00 14.18 18.58 31.87 81.78
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	112.18 169.02 232.59 383.07 806.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	112.18 168.96 232.45 382.76 806.09
KRY 112 144/1	C	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	11.00 14.18 18.58 31.87 81.78
**									
3'x2" Pipe Mount	A	From Leg	1.50 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.52 0.71 0.90 1.33 2.44	0.52 0.71 0.90 1.33 2.44	27.00 31.81 38.81 59.99 135.33
WB2618	A	From Leg	3.00 0.00 -1.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.04 2.24 2.44 2.87 3.82	0.53 0.65 0.78 1.07 1.75	12.10 23.53 37.28 72.51 179.32
10'x2" Pipe Mount	A	From Leg	3.00 0.00 0.00	0.0000	95.00 - 85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.00 3.02 4.07 5.70 8.26	2.00 3.02 4.07 5.70 8.26	70.00 85.50 107.47 171.40 383.58
Side Arm Mount [SO 305-1]	A	From Leg	1.50 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
ANT150D3	A	From Leg	3.00 0.00 5.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.88 4.16 6.72 11.84	1.60 2.88 4.16 6.72 11.84	18.00 23.40 28.80 39.60 61.20
**									
Side Arm Mount [SO 302-1]	B	From Leg	2.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.67 2.51 3.35 5.03 8.39	3.27 4.99 6.71 10.15 17.03	55.00 88.07 121.14 187.28 319.57
SRL-217 Ground Plane 10.67' x 4.83'	B	From Leg	4.00 0.00 6.00	0.0000	90.00	No Ice 1/2" Ice	2.21 3.30 4.41	2.21 3.30 4.41	6.50 23.49 47.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1" Ice	6.27	6.27	116.33
						2" Ice	8.98	8.98	343.56
						4" Ice			
BW246Y	A	From Leg	1.50	0.0000	61.00	No Ice	1.35	0.39	7.00
			0.00			1/2" Ice	2.73	0.88	24.00
			0.00			1" Ice	4.11	1.36	41.00
						2" Ice	6.88	2.32	75.00
						4" Ice	12.41	4.25	143.00
**									
Side Arm Mount [SO 305-1]	B	From Leg	1.50	0.0000	50.00	No Ice	0.94	1.41	30.00
			0.00			1/2" Ice	1.48	2.17	43.27
			0.00			1" Ice	2.02	2.93	56.54
						2" Ice	3.10	4.45	83.07
						4" Ice	5.26	7.49	136.14

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
PL6-59W	A	Paraboloid w/Radome	From Leg	1.00	-90.0000		143.00	6.00	No Ice	28.27	143.00
				0.00					1/2" Ice	29.05	292.13
				0.00					1" Ice	29.83	441.25
									2" Ice	31.39	739.50
									4" Ice	34.51	1336.01

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice

Comb. No.	Description
26	Dead+Wind 330 deg+Ice
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	10	241390.73	26229.83	-16711.68
	Max. H_x	10	241390.73	26229.83	-16711.68
	Max. H_z	4	-206654.75	-22756.87	14608.82
	Min. Vert	4	-206654.75	-22756.87	14608.82
	Min. H_x	4	-206654.75	-22756.87	14608.82
	Min. H_z	10	241390.73	26229.83	-16711.68
Leg B	Max. Vert	6	244391.38	-26002.22	-17443.54
	Max. H_x	12	-203008.64	22240.21	15008.37
	Max. H_z	12	-203008.64	22240.21	15008.37
	Min. Vert	12	-203008.64	22240.21	15008.37
	Min. H_x	6	244391.38	-26002.22	-17443.54
	Min. H_z	6	244391.38	-26002.22	-17443.54
Leg A	Max. Vert	2	242551.09	653.64	31033.14
	Max. H_x	11	15165.01	5800.67	1202.72
	Max. H_z	2	242551.09	653.64	31033.14
	Min. Vert	8	-201235.67	-633.69	-26702.15
	Min. H_x	5	15538.74	-5804.61	1244.68
	Min. H_z	8	-201235.67	-633.69	-26702.15

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151.292 - 146.229	3.527	27	0.1939	0.0406
T2	146.229 - 141.167	3.327	27	0.1936	0.0405
T3	141.167 - 121.042	3.121	27	0.1922	0.0390
T4	121.042 - 114.313	2.327	27	0.1771	0.0307
T5	114.313 - 107.646	2.075	27	0.1693	0.0276
T6	107.646 - 100.917	1.838	27	0.1597	0.0246
T7	100.917 - 94.2014	1.618	27	0.1479	0.0228
T8	94.2014 - 87.4861	1.406	27	0.1381	0.0198
T9	87.4861 - 80.7708	1.209	27	0.1272	0.0168
T10	80.7708 - 70.6875	1.033	27	0.1148	0.0151

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T11	70.6875 - 60.6041	0.791	27	0.1013	0.0127
T12	60.6041 - 50.5104	0.582	27	0.0865	0.0104
T13	50.5104 - 40.4166	0.405	27	0.0704	0.0084
T14	40.4166 - 30.3125	0.266	27	0.0534	0.0064
T15	30.3125 - 20.2083	0.157	27	0.0408	0.0047
T16	20.2083 - 10.1041	0.076	31	0.0277	0.0030
T17	10.1041 - 0	0.021	31	0.0140	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Side Arm Mount [SO 304-1]	27	3.477	0.1939	0.0407	50743
148.00	Sector Mount [SM 510-3]	27	3.398	0.1938	0.0407	50743
143.00	PL6-59W	27	3.196	0.1929	0.0397	147315
133.00	Sector Mount [SM 104-3]	27	2.792	0.1877	0.0358	87292
128.00	Side Arm Mount [SO 305-1]	27	2.595	0.1838	0.0337	81060
126.00	Side Arm Mount [SO 305-1]	27	2.517	0.1820	0.0328	78809
121.00	Sector Mount [SM 505-3]	27	2.325	0.1771	0.0306	72120
112.00	Sector Mount [SM 510-3]	27	1.991	0.1663	0.0265	33517
103.00	Sector Mount [SM 701-3]	27	1.685	0.1514	0.0234	63610
95.00	3'x2" Pipe Mount	27	1.430	0.1393	0.0202	37208
90.00	10'x2" Pipe Mount	27	1.280	0.1316	0.0178	24364
85.00	10'x2" Pipe Mount	27	1.142	0.1225	0.0160	29417
61.00	BW246Y	27	0.590	0.0871	0.0104	41707
50.00	Side Arm Mount [SO 305-1]	27	0.397	0.0695	0.0083	29704

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151.292 - 146.229	11.675	6	0.6384	0.1350
T2	146.229 - 141.167	11.014	6	0.6378	0.1345
T3	141.167 - 121.042	10.334	6	0.6336	0.1297
T4	121.042 - 114.313	7.707	6	0.5853	0.1019
T5	114.313 - 107.646	6.875	6	0.5597	0.0919
T6	107.646 - 100.917	6.089	6	0.5279	0.0816
T7	100.917 - 94.2014	5.363	6	0.4889	0.0758
T8	94.2014 - 87.4861	4.658	6	0.4568	0.0659
T9	87.4861 - 80.7708	4.005	6	0.4205	0.0558
T10	80.7708 - 70.6875	3.423	6	0.3796	0.0501
T11	70.6875 - 60.6041	2.623	6	0.3350	0.0423
T12	60.6041 -	1.931	6	0.2861	0.0344

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T13	50.5104 - 40.4166	1.345	6	0.2329	0.0280
T14	40.4166 - 30.3125	0.884	6	0.1767	0.0214
T15	30.3125 - 20.2083	0.521	6	0.1349	0.0157
T16	20.2083 - 10.1041	0.254	6	0.0916	0.0101
T17	10.1041 - 0	0.069	6	0.0462	0.0050

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Side Arm Mount [SO 304-1]	6	11.508	0.6384	0.1351	15424
148.00	Sector Mount [SM 510-3]	6	11.247	0.6383	0.1351	15424
143.00	PL6-59W	6	10.582	0.6356	0.1318	45368
133.00	Sector Mount [SM 104-3]	6	9.247	0.6195	0.1189	26913
128.00	Side Arm Mount [SO 305-1]	6	8.595	0.6070	0.1119	25119
126.00	Side Arm Mount [SO 305-1]	6	8.337	0.6013	0.1090	24209
121.00	Sector Mount [SM 505-3]	6	7.702	0.5852	0.1018	21901
112.00	Sector Mount [SM 510-3]	6	6.596	0.5497	0.0880	10119
103.00	Sector Mount [SM 701-3]	6	5.584	0.5007	0.0776	19641
95.00	3'x2" Pipe Mount	6	4.740	0.4606	0.0673	11154
90.00	10'x2" Pipe Mount	6	4.241	0.4351	0.0591	7345
85.00	10'x2" Pipe Mount	6	3.783	0.4050	0.0533	8877
61.00	BW246Y	6	1.956	0.2882	0.0347	12412
50.00	Side Arm Mount [SO 305-1]	6	1.318	0.2300	0.0277	9064

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	151.292	Diagonal	A325N	0.5000	1	892.39	3126.56	0.285 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	144.52	4123.34	0.035 ✔	1.333	Bolt Shear
T2	146.229	Leg	A325N	0.6250	4	1286.07	13337.60	0.096 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	2999.21	4757.81	0.630 ✔	1.333	Member Bearing
T3	141.167	Leg	A325N	0.6250	4	6224.89	13253.00	0.470 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4600.51	4123.34	1.116 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	714.38	4078.13	0.175 ✔	1.333	Member Bearing
T4	121.042	Diagonal	A325N	0.5000	2	3041.76	4123.34	0.738 ✔	1.333	Bolt Shear
T5	114.313	Diagonal	A325N	0.5000	2	3337.20	4123.34	0.809 ✔	1.333	Bolt Shear
T6	107.646	Leg	A325N	0.7500	4	13314.00	18801.40	0.708 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	7845.09	8246.68	0.951 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1123.85	4553.91	0.247 ✔	1.333	Member Block Shear
T7	100.917	Diagonal	A325N	0.5000	2	4170.01	4123.34	1.011 ✔	1.333	Bolt Shear
T8	94.2014	Diagonal	A325N	0.5000	2	4249.40	4123.34	1.031 ✔	1.333	Bolt Shear

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
		Secondary Horizontal	A325N	0.6250	1	1435.81	4553.91	0.315 ✔	1.333	Member Block Shear
T9	87.4861	Leg	A325N	0.8750	4	21717.80	25884.10	0.839 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	9080.66	8246.68	1.101 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1769.76	4553.91	0.389 ✔	1.333	Member Block Shear
T10	80.7708	Diagonal	A325N	0.6250	1	10250.60	8609.38	1.191 ✔	1.333	Gusset Bearing
T11	70.6875	Leg	A325N	0.8750	4	27604.50	26457.90	1.043 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	10398.40	8609.38	1.208 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2231.22	5097.66	0.438 ✔	1.333	Member Bearing
T12	60.6041	Diagonal	A325N	0.6250	1	10873.30	8609.38	1.263 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.5000	1	2719.86	4123.34	0.660 ✔	1.333	Bolt Shear
T13	50.5104	Leg	A325N	1.0000	4	37477.60	33930.40	1.105 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	11618.20	12885.40	0.902 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.5000	1	3029.03	4123.34	0.735 ✔	1.333	Bolt Shear
T14	40.4166	Diagonal	A325N	0.6250	1	11841.50	12885.40	0.919 ✔	1.333	Bolt Shear
T15	30.3125	Leg	A325N	1.0625	4	44856.50	38345.40	1.170 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	12743.40	12885.40	0.989 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3646.63	5097.66	0.715 ✔	1.333	Member Bearing
T16	20.2083	Diagonal	A325N	0.6250	1	12631.60	12885.40	0.980 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3787.85	5097.66	0.743 ✔	1.333	Member Bearing
T17	10.1041	Leg	A354-BC	1.0000	6	34647.10	32397.70	1.069 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	13931.60	12885.40	1.081 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	4261.75	6442.72	0.661 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	ROHN 2.5 STD	5.06	4.94	62.5 K=1.00	22.279	1.7040	-2778.57	37965.40	0.073* ✔
T2	146.229 - 141.167	ROHN 2.5 STD	5.06	4.94	62.5 K=1.00	22.279	1.7040	-7644.08	37965.40	0.201 ✔
T3	141.167 - 121.042	ROHN 2.5 EH	20.16	6.68	86.7 K=1.00	17.636	2.2535	-29406.40	39742.70	0.740 ✔
T4	121.042 - 114.313	ROHN 2.5 EH (GR)	6.74	6.68	86.7 K=1.00	20.596	2.2535	-34807.30	46414.10	0.750 ✔
T5	114.313 - 107.646	ROHN 2.5 EH (GR)	6.68	6.68	86.7 K=1.00	20.595	2.2535	-46380.70	46412.40	0.999 ✔
T6	107.646 - 100.917	ROHN 2.5 EH (GR)	6.74	3.43	44.6 K=1.00	30.457	2.2535	-64803.00	68636.90	0.944 ✔
T7	100.917 - 94.2014	ROHN 3 EH (GR)	6.73	6.66	70.4 K=1.00	25.475	3.0159	-70551.50	76830.10	0.918

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 $\frac{P}{P_a}$
T8	94.2014 - 87.4861	ROHN 3 EH (GR)	6.73	3.45	36.4 K=1.00	32.873	3.0159	-82785.20	99141.40	0.835 ✔
T9	87.4861 - 80.7708	ROHN 3 EH (GR)	6.73	3.40	35.9 K=1.00	32.964	3.0159	-102040.00	99418.20	1.026 ✔
T10	80.7708 - 70.6875	ROHN 4 EH (GR)	10.10	10.02	81.4 K=1.00	23.284	4.4074	-110743.00	102621.00	1.079 ✔
T11	70.6875 - 60.6041	ROHN 4 EH (GR)	10.10	5.21	42.3 K=1.00	32.956	4.4074	-128661.00	145250.00	0.886 ✔
T12	60.6041 - 50.5104	ROHN 4 EH (GR)	10.11	5.11	41.5 K=1.00	33.117	4.4074	-156825.00	145962.00	1.074 ✔
T13	50.5104 - 40.4166	ROHN 4 EH (GR)	10.11	5.10	41.4 K=1.00	33.131	4.4074	-174651.00	146022.00	1.196 ✔
T14	40.4166 - 30.3125	ROHN 5 EH (GR)	10.12	10.02	65.4 K=1.00	28.466	6.1120	-182977.00	173984.00	1.052 ✔
T15	30.3125 - 20.2083	ROHN 5 EH (GR)	10.12	5.13	33.5 K=1.00	35.792	6.1120	-210278.00	218759.00	0.961 ✔
T16	20.2083 - 10.1041	ROHN 5 EH (GR)	10.12	5.12	33.4 K=1.00	35.800	6.1120	-218424.00	218809.00	0.998 ✔
T17	10.1041 - 0	ROHN 5 EH (GR)	10.12	5.12	33.4 K=1.00	35.807	6.1120	-245752.00	218848.00	1.123 ✔

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	L 1.5 x 1.5 x 3/16	9.24	4.62	189.1 K=1.00	4.178	0.5273	-857.43	2203.16	0.389 ✔
T2	146.229 - 141.167	L 2 x 2 x 3/16	9.24	4.62	140.8 K=1.00	7.537	0.7150	-3122.54	5388.61	0.579 ✔
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	11.56	5.97	144.7 K=1.00	7.134	0.9020	-4600.51	6434.70	0.715 ✔
T4	121.042 - 114.313	L2 1/2x2 1/2x3/16	12.14	6.26	151.7 K=1.00	6.489	0.9020	-6083.53	5853.04	1.039 ✔
T5	114.313 - 107.646	L2 1/2x2 1/2x3/16	12.73	6.55	158.8 K=1.00	5.923	0.9020	-6674.40	5342.79	1.249 ✔
T6	107.646 - 100.917	2L 2.5 x 2.5 x 3/16 (3/16)	13.32	6.84	111.3 K=1.00	11.501	1.8047	-7845.09	20756.50	0.378 ✔
T7	100.917 - 94.2014	2L 'a' > 39.1618 in - 69 L3x3x3/16	13.81	7.09	142.7 K=1.00	7.334	1.0900	-8285.65	7994.03	1.036 ✔
T8	94.2014 - 87.4861	L3x3x3/16	14.46	7.41	149.3 K=1.00	6.704	1.0900	-8498.80	7306.96	1.163 ✔
T9	87.4861 - 80.7708	2L 3 x 3 x 3/16 (1/4)	15.05	7.71	104.1 K=1.00	12.257	2.1797	-9080.66	26717.20	0.340 ✔
T10	80.7708 - 70.6875	2L 'a' > 44.0220 in - 102 2L3x3x3/16x1/4	17.36	8.97	121.1 K=1.00	10.071	2.1797	-10269.50	21950.70	0.468 ✔
T11	70.6875 - 60.6041	2L 'a' > 51.2231 in - 114 2L3x3x3/16x1/4	18.25	9.41	127.0 K=1.00	9.252	2.1797	-10812.60	20167.10	0.536 ✔
T12	60.6041 - 50.5104	2L 'a' > 53.7356 in - 123 2L3x3x1/4x1/4	19.03	9.80	132.3 K=1.00	8.527	2.8750	-11029.00	24513.80	0.450 ✔

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 $\frac{P}{P_a}$
T13	50.5104 - 40.4166	2L 'a' > 56.1325 in - 135 2L3x3x1/4x1/4	19.93	10.24	138.4 K=1.00	7.795	2.8750	-11618.20	22411.50	0.518 ✔
T14	40.4166 - 30.3125	2L 'a' > 58.7062 in - 147 2L3 1/2x3 1/2x1/4x1/4	20.81	10.67	124.1 K=1.00	9.698	3.3750	-11841.50	32730.50	0.362 ✔
T15	30.3125 - 20.2083	2L 'a' > 61.0427 in - 159 2L3 1/2x3 1/2x1/4x1/4	21.69	11.11	129.2 K=1.00	8.942	3.3750	-12743.40	30180.90	0.422 ✔
T16	20.2083 - 10.1041	2L 'a' > 63.5688 in - 168 2L 4 x 4 x 1/4 (1/4)	22.61	11.57	118.0 K=1.00	10.719	3.8750	-12631.60	41534.90	0.304 ✔
T17	10.1041 - 0	2L 'a' > 66.0834 in - 180 2L 4 x 4 x 1/4 (1/4) 2L 'a' > 68.6449 in - 192	23.51	12.01	122.6 K=1.00	9.934	3.8750	-13931.60	38493.00	0.362 ✔

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 $\frac{P}{P_a}$
T6	107.646 - 100.917	L 2 x 2 x 3/16	12.25	12.01	182.9 K=0.50	4.463	0.7150	-1123.85	3191.02	0.352 ✔
T8	94.2014 - 87.4861	L 2 x 2 x 3/16	13.64	13.35	203.3 K=0.50	3.613	0.7150	-1435.81	2583.20	0.556 ✔
T9	87.4861 - 80.7708	L 2 x 2 x 3/16	14.34	14.04	213.9 K=0.50	3.265	0.7150	-1769.76	2334.13	0.758 ✔
T11	70.6875 - 60.6041	L2 1/2x2 1/2x3/16	16.18	15.81	191.6 K=0.50	4.068	0.9020	-2231.22	3668.94	0.608 ✔
T12	60.6041 - 50.5104	L3x3x1/4	17.20	16.82	170.5 K=0.50	5.135	1.4400	-2719.86	7395.08	0.368 ✔
T13	50.5104 - 40.4166	L3x3x1/4	18.24	17.86	181.0 K=0.50	4.556	1.4400	-3029.03	6561.12	0.462 ✔
T15	30.3125 - 20.2083	L 3 x 3 x 3/16	20.26	19.80	199.2 K=0.50	3.763	1.0898	-3646.63	4101.40	0.889 ✔
T16	20.2083 - 10.1041	L3x3x3/16	21.27	20.81	209.5 K=0.50	3.402	1.0900	-3787.85	3708.23	1.021 ✔
T17	10.1041 - 0	L 3.5 x 3.5 x 1/4	22.27	21.80	188.5 K=0.50	4.203	1.6900	-4261.75	7103.60	0.600 ✔

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	151.292 - 146.229	L2 1/2x2 1/2x3/16	8.56	8.32	201.8 K=1.00	3.668	0.9020	-144.52	3308.68	0.044 ✔
T3	141.167 - 121.042	KL/R > 200 (C) - 6 L2 1/2x2 1/2x3/16 KL/R > 200 (C) - 25	8.57	8.33	201.9 K=1.00	3.663	0.9020	-609.01	3303.75	0.184 ✔

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	151.292 - 146.229	ROHN 2.5 STD	5.06	4.94	62.5	30.000	1.7040	542.64	51121.50	0.011 ✔
T2	146.229 - 141.167	ROHN 2.5 STD	5.06	4.94	62.5	30.000	1.7040	5144.27	51121.50	0.101 ✔
T3	141.167 - 121.042	ROHN 2.5 EH	20.16	6.68	86.7	30.000	2.2535	24899.60	67606.20	0.368 ✔
T4	121.042 - 114.313	ROHN 2.5 EH (GR)	6.74	6.68	86.7	30.000	2.2535	28176.20	67606.20	0.417 ✔
T5	114.313 - 107.646	ROHN 2.5 EH (GR)	6.68	6.68	86.7	30.000	2.2535	38125.10	67606.20	0.564 ✔
T6	107.646 - 100.917	ROHN 2.5 EH (GR)	6.74	3.43	44.6	30.000	2.2535	53255.80	67606.20	0.788 ✔
T7	100.917 - 94.2014	ROHN 3 EH (GR)	6.73	6.66	70.4	30.000	3.0159	58375.00	90477.90	0.645 ✔
T8	94.2014 - 87.4861	ROHN 3 EH (GR)	6.73	3.45	36.4	30.000	3.0159	69619.30	90477.90	0.769 ✔
T9	87.4861 - 80.7708	ROHN 3 EH (GR)	6.73	3.40	35.9	30.000	3.0159	86871.20	90477.90	0.960 ✔
T10	80.7708 - 70.6875	ROHN 4 EH (GR)	10.10	10.02	81.4	30.000	4.4074	94471.50	132223.00	0.714 ✔
T11	70.6875 - 60.6041	ROHN 4 EH (GR)	10.10	5.21	42.3	30.000	4.4074	110557.00	132223.00	0.836 ✔
T12	60.6041 - 50.5104	ROHN 4 EH (GR)	10.11	5.11	41.5	30.000	4.4074	134803.00	132223.00	1.020 ✔
T13	50.5104 - 40.4166	ROHN 4 EH (GR)	10.11	5.10	41.4	30.000	4.4074	149910.00	132223.00	1.134 ✔
T14	40.4166 - 30.3125	ROHN 5 EH (GR)	10.12	10.02	65.4	30.000	6.1120	156825.00	183359.00	0.855 ✔
T15	30.3125 - 20.2083	ROHN 5 EH (GR)	10.12	5.13	33.5	30.000	6.1120	179426.00	183359.00	0.979 ✔
T16	20.2083 - 10.1041	ROHN 5 EH (GR)	10.12	5.12	33.4	30.000	6.1120	185937.00	183359.00	1.014 ✔
T17	10.1041 - 0	ROHN 5 EH (GR)	10.12	5.12	33.4	30.000	6.1120	207882.00	183359.00	1.134 ✔

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	151.292 - 146.229	L 1.5 x 1.5 x 3/16	9.24	4.62	121.4	29.000	0.3076	892.39	8920.90	0.100 ✔
T2	146.229 - 141.167	L 2 x 2 x 3/16	9.24	4.62	89.9	29.000	0.4484	2999.21	13002.40	0.231 ✔
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	11.56	5.97	92.1	29.000	0.5886	4347.66	17069.70	0.255 ✔
T4	121.042 - 114.313	L2 1/2x2 1/2x3/16	12.14	6.26	96.5	29.000	0.5886	5763.42	17069.70	0.338 ✔
T5	114.313 - 107.646	L2 1/2x2 1/2x3/16	12.73	6.55	101.0	29.000	0.5886	6590.73	17069.70	0.386 ✔
T6	107.646 -	2L 2.5 x 2.5 x 3/16 (3/16)	13.32	6.84	105.5	29.000	1.1777	7488.37	34154.30	0.219

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 $\frac{P}{P_a}$
	100.917									✔
T7	100.917 - 94.2014	2L 'a' > 39.1618 in - 70 L3x3x3/16	13.81	7.09	90.6	29.000	0.7296	8340.03	21158.70	0.394 ✔
T8	94.2014 - 87.4861	L3x3x3/16	14.46	7.41	94.7	29.000	0.7296	8309.01	21158.70	0.393 ✔
T9	87.4861 - 80.7708	2L 3 x 3 x 3/16 (1/4)	15.05	7.71	98.4	29.000	1.4590	8971.52	42310.50	0.212 ✔
T10	80.7708 - 70.6875	2L 'a' > 44.0220 in - 103 2L3x3x3/16x1/4	17.36	8.97	114.5	29.000	1.4238	10250.60	41291.00	0.248 ✔
T11	70.6875 - 60.6041	2L 'a' > 51.2231 in - 115 2L3x3x3/16x1/4	18.25	9.41	120.2	29.000	1.4238	10398.40	41291.00	0.252 ✔
T12	60.6041 - 50.5104	2L 'a' > 53.7356 in - 124 2L3x3x1/4x1/4	19.03	9.80	126.3	32.500	1.8750	10873.30	60937.50	0.178 ✔
T13	50.5104 - 40.4166	2L 'a' > 56.1325 in - 136 2L3x3x1/4x1/4	19.93	10.24	132.1	32.500	1.8750	11287.90	60937.50	0.185 ✔
T14	40.4166 - 30.3125	2L 'a' > 58.7062 in - 148 2L3 1/2x3 1/2x1/4x1/4	20.81	10.67	117.3	32.500	2.2500	11732.90	73125.00	0.160 ✔
T15	30.3125 - 20.2083	2L 'a' > 61.0427 in - 160 2L3 1/2x3 1/2x1/4x1/4	21.69	11.11	122.2	32.500	2.2500	12026.90	73125.00	0.164 ✔
T16	20.2083 - 10.1041	2L 'a' > 63.5688 in - 169 2L 4 x 4 x 1/4 (1/4)	22.61	11.57	110.8	32.500	2.6250	12582.60	85312.50	0.147 ✔
T17	10.1041 - 0	2L 'a' > 66.0834 in - 181 2L 4 x 4 x 1/4 (1/4)	23.51	12.01	115.1	32.500	2.6250	12790.40	85312.50	0.150 ✔
		2L 'a' > 68.6449 in - 193								

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 $\frac{P}{P_a}$
T6	107.646 - 100.917	L 2 x 2 x 3/16	12.25	12.01	233.6	29.000	0.4308	1123.85	12492.70	0.090 ✔
T8	94.2014 - 87.4861	L 2 x 2 x 3/16	13.64	13.35	259.7	29.000	0.4308	1435.81	12492.70	0.115 ✔
T9	87.4861 - 80.7708	L 2 x 2 x 3/16	14.34	14.04	273.2	29.000	0.4308	1769.76	12492.70	0.142 ✔
T11	70.6875 - 60.6041	L2 1/2x2 1/2x3/16	16.18	15.81	243.8	29.000	0.5710	2231.22	16559.90	0.135 ✔
T12	60.6041 - 50.5104	L3x3x1/4	17.20	16.82	217.1	29.000	0.9628	2719.86	27921.60	0.097 ✔
T13	50.5104 - 40.4166	L3x3x1/4	18.24	17.86	230.5	29.000	0.9628	3029.03	27921.60	0.108 ✔
T15	30.3125 - 20.2083	L 3 x 3 x 3/16	20.26	19.80	252.9	29.000	0.7119	3646.63	20645.50	0.177 ✔
T16	20.2083 - 10.1041	L3x3x3/16	21.27	20.81	266.0	29.000	0.7120	3787.85	20648.90	0.183 ✔
T17	10.1041 - 0	L 3.5 x 3.5 x 1/4	22.27	21.80	239.9	29.000	1.1269	4261.75	32679.40	0.130 ✔

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	151.292 - 146.229	L2 1/2x2 1/2x3/16	8.56	8.32	128.4	29.000	0.5886	108.37	17069.70	0.006 ✔
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	8.57	8.33	128.5	29.000	0.5886	714.38	17069.70	0.042 ✔

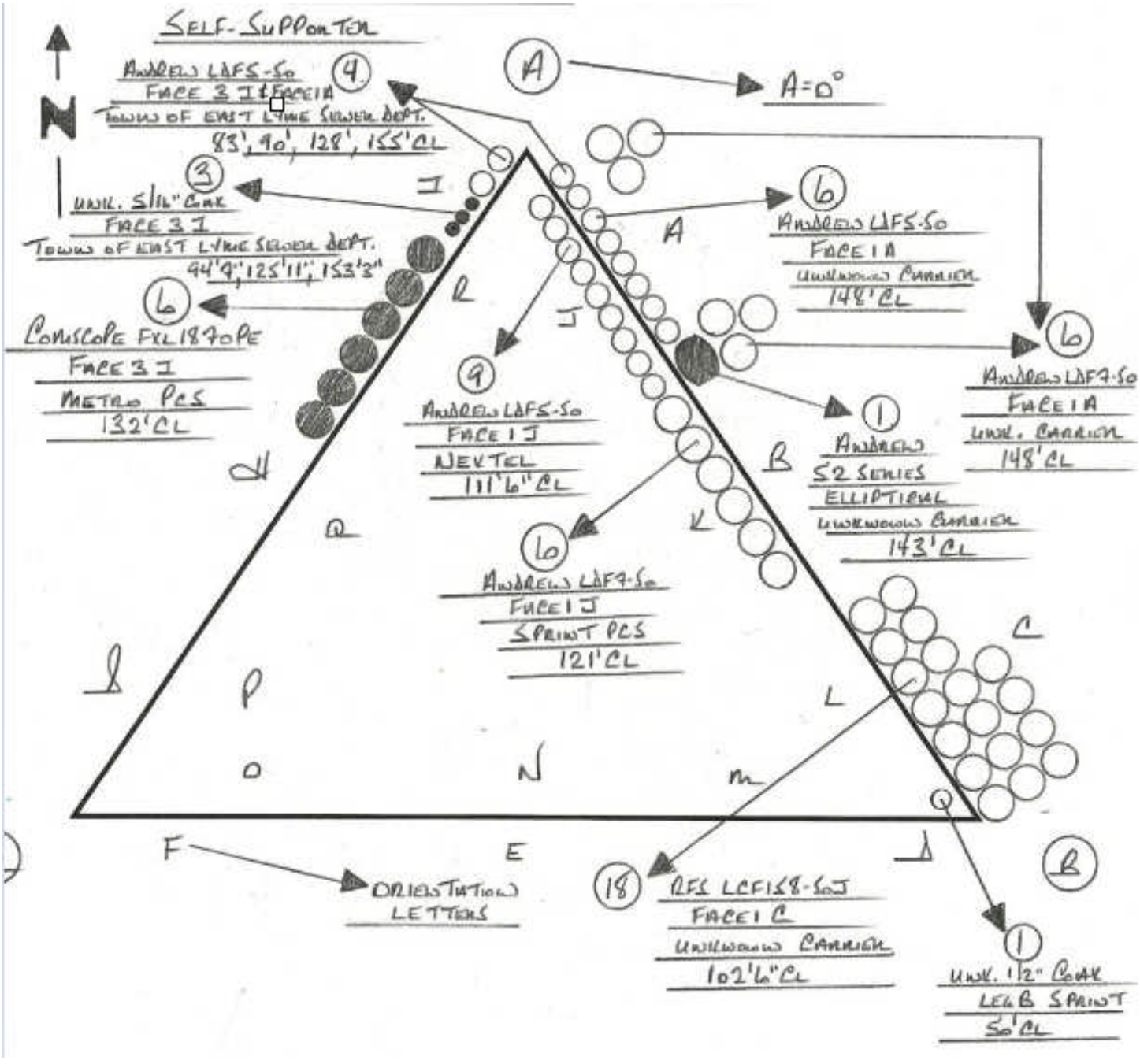
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T1	151.292 - 146.229	Leg	ROHN 2.5 STD	1	-2294.20	37965.40	14.9	Pass
T2	146.229 - 141.167	Leg	ROHN 2.5 STD	14	-7390.80	50607.87	18.5	Pass
T3	141.167 - 121.042	Leg	ROHN 2.5 EH	23	-29406.40	52977.02	55.5	Pass
T4	121.042 - 114.313	Leg	ROHN 2.5 EH (GR)	47	-34807.30	61869.99	56.3	Pass
T5	114.313 - 107.646	Leg	ROHN 2.5 EH (GR)	56	-46380.70	61867.72	75.0	Pass
T6	107.646 - 100.917	Leg	ROHN 2.5 EH (GR)	65	-64803.00	91492.98	70.8	Pass
T7	100.917 - 94.2014	Leg	ROHN 3 EH (GR)	77	-70551.50	102414.52	68.9	Pass
T8	94.2014 - 87.4861	Leg	ROHN 3 EH (GR)	86	-82785.20	132155.48	62.6	Pass
T9	87.4861 - 80.7708	Leg	ROHN 3 EH (GR)	98	-102040.00	132524.46	77.0	Pass
T10	80.7708 - 70.6875	Leg	ROHN 4 EH (GR)	110	-110743.00	136793.79	81.0	Pass
T11	70.6875 - 60.6041	Leg	ROHN 4 EH (GR)	119	-128661.00	193618.24	66.5 78.3 (b)	Pass
T12	60.6041 - 50.5104	Leg	ROHN 4 EH (GR)	131	-156825.00	194567.34	80.6	Pass
T13	50.5104 - 40.4166	Leg	ROHN 4 EH (GR)	143	-174651.00	194647.32	89.7	Pass
T14	40.4166 - 30.3125	Leg	ROHN 5 EH (GR)	155	-182977.00	231920.66	78.9	Pass
T15	30.3125 - 20.2083	Leg	ROHN 5 EH (GR)	163	179426.00	244417.54	73.4 87.8 (b)	Pass
T16	20.2083 - 10.1041	Leg	ROHN 5 EH (GR)	175	185937.00	244417.54	76.1	Pass
T17	10.1041 - 0	Leg	ROHN 5 EH (GR)	187	207882.00	244417.54	85.1	Pass
T1	151.292 - 146.229	Diagonal	L 1.5 x 1.5 x 3/16	12	-857.43	2936.81	29.2	Pass
T2	146.229 - 141.167	Diagonal	L 2 x 2 x 3/16	18	-3122.54	7183.02	43.5 47.3 (b)	Pass
T3	141.167 - 121.042	Diagonal	L2 1/2x2 1/2x3/16	30	-4600.51	8577.46	53.6 83.7 (b)	Pass
T4	121.042 - 114.313	Diagonal	L2 1/2x2 1/2x3/16	51	-6083.53	7802.10	78.0	Pass
T5	114.313 - 107.646	Diagonal	L2 1/2x2 1/2x3/16	60	-6674.40	7121.94	93.7	Pass
T6	107.646 - 100.917	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	69	-7845.09	27668.41	28.4 71.4 (b)	Pass
T7	100.917 - 94.2014	Diagonal	L3x3x3/16	81	-8285.65	10656.04	77.8	Pass
T8	94.2014 - 87.4861	Diagonal	L3x3x3/16	90	-8498.80	9740.18	87.3	Pass
T9	87.4861 -	Diagonal	2L 3 x 3 x 3/16 (1/4)	102	-9080.66	35614.03	25.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
	80.7708						82.6 (b)	
T10	80.7708 - 70.6875	Diagonal	2L3x3x3/16x1/4	114	-10269.50	29260.28	35.1	Pass
							89.3 (b)	
T11	70.6875 - 60.6041	Diagonal	2L3x3x3/16x1/4	123	-10812.60	26882.74	40.2	Pass
							90.6 (b)	
T12	60.6041 - 50.5104	Diagonal	2L3x3x1/4x1/4	135	-11029.00	32676.90	33.8	Pass
							94.7 (b)	
T13	50.5104 - 40.4166	Diagonal	2L3x3x1/4x1/4	147	-11618.20	29874.53	38.9	Pass
							67.6 (b)	
T14	40.4166 - 30.3125	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-11841.50	43629.75	27.1	Pass
							68.9 (b)	
T15	30.3125 - 20.2083	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12743.40	40231.14	31.7	Pass
							74.2 (b)	
T16	20.2083 - 10.1041	Diagonal	2L 4 x 4 x 1/4 (1/4)	180	-12631.60	55366.02	22.8	Pass
							73.5 (b)	
T17	10.1041 - 0	Diagonal	2L 4 x 4 x 1/4 (1/4)	192	-13931.60	51311.17	27.2	Pass
							81.1 (b)	
T6	107.646 - 100.917	Secondary Horizontal	L 2 x 2 x 3/16	73	-1123.85	4253.63	26.4	Pass
T8	94.2014 - 87.4861	Secondary Horizontal	L 2 x 2 x 3/16	95	-1435.81	3443.41	41.7	Pass
T9	87.4861 - 80.7708	Secondary Horizontal	L 2 x 2 x 3/16	106	-1769.76	3111.40	56.9	Pass
T11	70.6875 - 60.6041	Secondary Horizontal	L2 1/2x2 1/2x3/16	127	-2231.22	4890.70	45.6	Pass
T12	60.6041 - 50.5104	Secondary Horizontal	L3x3x1/4	139	-2719.86	9857.64	27.6	Pass
							49.5 (b)	
T13	50.5104 - 40.4166	Secondary Horizontal	L3x3x1/4	151	-3029.03	8745.97	34.6	Pass
							55.1 (b)	
T15	30.3125 - 20.2083	Secondary Horizontal	L 3 x 3 x 3/16	172	-3646.63	5467.17	66.7	Pass
T16	20.2083 - 10.1041	Secondary Horizontal	L3x3x3/16	185	-3787.85	4943.07	76.6	Pass
T17	10.1041 - 0	Secondary Horizontal	L 3.5 x 3.5 x 1/4	196	-4261.75	9469.10	45.0	Pass
							49.6 (b)	
T1	151.292 - 146.229	Top Girt	L2 1/2x2 1/2x3/16	6	-144.52	4410.47	3.3	Pass
T3	141.167 - 121.042	Top Girt	L2 1/2x2 1/2x3/16	25	-609.01	4403.90	13.8	Pass
							Summary	
						Leg (T13)	89.7	Pass
						Diagonal (T12)	94.7	Pass
						Secondary Horizontal (T16)	76.6	Pass
						Top Girt (T3)	13.8	Pass
						Bolt Checks	94.7	Pass
						RATING =	**94.7**	**Pass**

APPENDIX B

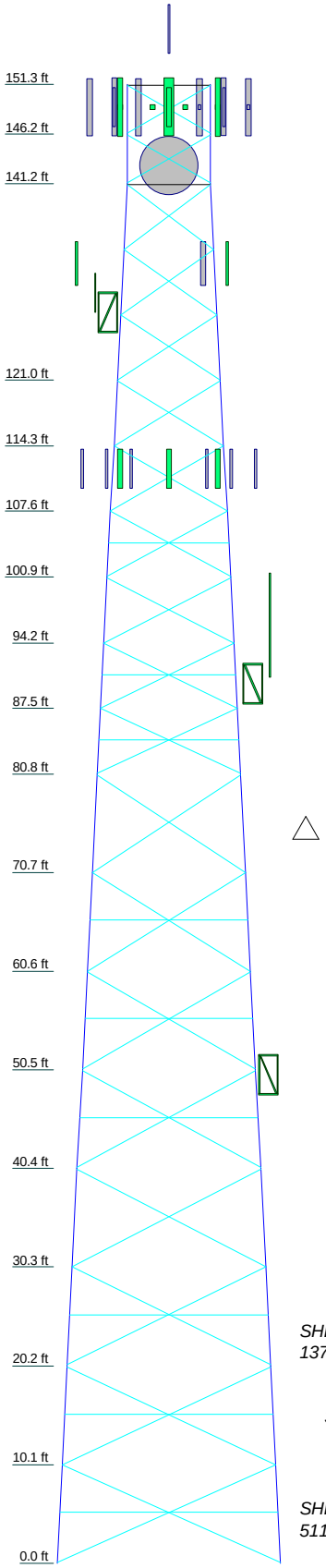
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17
Legs		ROHN 2.5 STD	ROHN 2.5 EH	ROHN 2.5 EH (GR)		ROHN 3 EH (GR)		ROHN 4 EH (GR)		ROHN 5 EH (GR)								
Leg Grade		A572-50																
Diagonals		A	B	L2 1/2x2 1/2x3/16		C		L3x3x3/16		D	2L3x3x3/16x1/4		2L3x3x1/4x1/4			2L3 1/2x3 1/2x1/4x1/4		2L 4 x 4 x 1/4 (1/4)
Diagonal Grade		E	N.A.															
Top Girts				L2 1/2x2 1/2x3/16		A36												
Sec. Horizontals		N.A.																L 3.5 x 3.5 x 1/4
Face Width (ft)	8.5625				10.5625	11.243	11.9236	12.6041	13.302	14	14.6979	15.6979	16.6979	17.7343	18.7708	19.7761	20.7813	21.7813
# Panels @ (ft)	2 @ 4.9375				6 @ 6.66667			@ 6.65278	@ 6.71528	@ 6.63194	1 @ 10	1 @ 10.0833	2 @ 9.90625			3 @ 10		1 @ 9.99997
Weight (lb)	273.3	229.9	1169.5	482.2	490.7	891.5	703.2	792.3	1146.3	1603.8	1792.1	2201.8	2283.9	2668.2	2954.8	3324.1	3542.7	26549.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Side Arm Mount [SO 304-1]	150	TD-RRH8x20-25	121
WB2618	150	APXVTM14-C-120 w/ Mount Pipe	121
ANT150F2	150	TD-RRH8x20-25	121
Sector Mount [SM 510-3]	148	APXVTM14-C-120 w/ Mount Pipe	121
(2) LPA-80063/6CF w/ Mount Pipe	148	TD-RRH8x20-25	121
(2) DB846H80E-SX w/ Mount Pipe	148	APXVTM14-C-120 w/ Mount Pipe	121
(2) LPA-80063/6CF w/ Mount Pipe	148	Sector Mount [SM 505-3]	121
BXA-70063-6CF-2 w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
BXA-70063-6CF-2 w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
BXA-70063-6CF-2 w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
(2) FD9R6004/2C-3L	148	Sector Mount [SM 510-3]	112
(4) FD9R6004/2C-3L	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148	KRY 112 144/1	103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	103
Pipe Mount [PM 601-1]	143	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	103
PL6-59W	143	KRY 112 144/1	103
800 10504 w/ Mount Pipe	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	103
800 10504 w/ Mount Pipe	133	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	103
800 10504 w/ Mount Pipe	133	KRY 112 144/1	103
Sector Mount [SM 104-3]	133	Sector Mount [SM 701-3]	103
TA-2450	128	WB2618	95
Side Arm Mount [SO 305-1]	128	10'x2" Pipe Mount	95 - 85
WB2618	126	3'x2" Pipe Mount	95
Side Arm Mount [SO 305-1]	126	Side Arm Mount [SO 302-1]	90
1900MHz RRH (65MHz)	121	SRL-217 Ground Plane 10.67' x 4.83'	90
800MHz 2X50W RRH W/FILTER	121	ANT150D3	85
APXVSPP18-C-A20 w/ Mount Pipe	121	Side Arm Mount [SO 305-1]	85
1900MHz RRH (65MHz)	121	BW246Y	61
800MHz 2X50W RRH W/FILTER	121	Side Arm Mount [SO 305-1]	50
APXVSPP18-C-A20 w/ Mount Pipe	121		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L 1.5 x 1.5 x 3/16	D	2L 3 x 3 x 3/16 (1/4)
B	L 2 x 2 x 3/16	E	L2 1/2x2 1/2x3/16
C	2L 2.5 x 2.5 x 3/16 (3/16)		

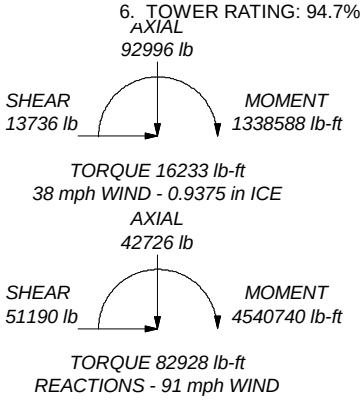
MATERIAL STRENGTH

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

MAX. CORNER REACTIONS AT BAS
D
S
UPLIFT: -206655 lb
SHEAR 27042 lb

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 91 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.94 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. Grouted pipe f'c is 7 ksi
6. TOWER RATING: 94.7%



Paul J Ford and Company
250 E. Broad St Suite 600
Columbus, OH 43215
Phone: 614-221-6679
FAX: 614-448-4105

Job: ***Modified 152-ft S/S Tower; East Lyme, CT***		
Project: ***BU #806384 (PJF #37513-1269)***		
Client: Crown Castle	Drawn by: chedges	App'd:
Code: TIA/EIA-222-F	Date: 05/16/14	Scale: NTS
Path: T:\375_Crown_Castle\2013\37513-1269 BU 806384\WO 757757 BU 806384 - 8701\37513-1269_8701.eri		Dwg No. E-1

Foundation Loads:

Tower leg compression =	**244.39**	(kips)
Tower leg tension =	**206.66**	(kips)
Horizontal load at top of pier =	**0**	(kips)
Overturning moment at top of pier=	**0**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	
Uplift safety factor: conc. weight =	**1.25**	
Uplift safety factor for soil weight =	**2**	

Soil Properties:

Soil density =	**125**	(pcf)
Allowable soil bearing =	**6**	(ksf)
Soil cone of uplift =	**31**	(degrees)
Uplift cone from top or bottom of ftg	**B**	("T" or "B")
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**R**	("R" or "S")
Pier width =	**3**	(ft)
Pier height above grade =	**0.5**	(ft)
depth to bottom of footing =	**12**	(ft)
Footing thickness =	**2**	(ft)
Footing width =	**8.25**	(ft)
Footing length =	**8.25**	(ft)

Concrete:

Concrete strength =	**3**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

Reinforcing Steel:

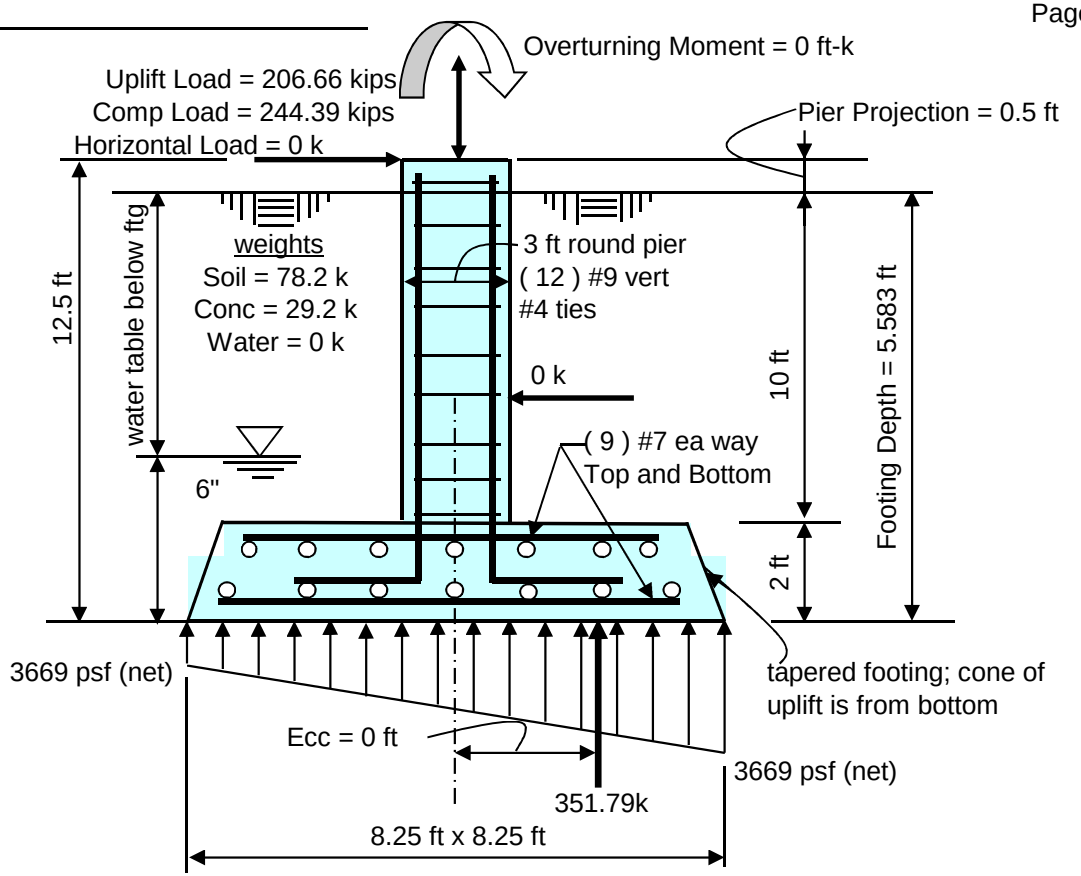
Pad

minimum cover over rebar =	**3**	inches
size of pad rebar =	**#7**	bar
quantity of pad rebar =	**9**	(ea direction)

Pier

size of vert rebar in pier=	**#9**	bar
vertical rebar quantity =	**12**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete =	7.2	cu yd each
(Total volume of concrete =	21.6	cu yd for 3)



Summary of analysis results	
Maximum Net Soil Bearing = 3.669 ksf Allowable Net Soil Bearing = 6 ksf **Soil Bearing Stress Ratio = 0.61 Okay**	Ult Punching Shear Capacity = 641 kips Ult Punching Shear Force = 124 kips **Punching Shear Stress Ratio = 0.19 OK**
Net Ftg Uplift Resistance = 213.8 kips Uplift Force = 206.655 kips Net Uplift Safety Factor = 1.91 **Ratio to Required Safety factor = 0.97 OK**	Ult Bending Shear Capacity = 110 psi Ult Bending Shear Stress = 42 psi **Bending Shear Stress Ratio = 0.39 Okay**
Ftg Overturning Resistance = 1451 ft-kips Overturning Moment = 0 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 999 **Ratio = 0 Okay**	Pad Bending Moment Capacity= 463 ft-k Pad Bending Moment = 134 ft-k **Bending Moment Stress Ratio = 0.29 OK**
	Allow Tension in Pier Rebar = 41.54 ksi Calc Vert Rebar Tension = 17.22 ksi **Ratio = 0.415 Okay**

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT03XC110

East Lyme

93 Roxbury Road
Niantic, CT 06357

June 13, 2014

EBI Project Number: 62143378

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

EBI Consulting
environmental | engineering | due diligence

June 13, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC110 - East Lyme

Site Total: 23.01% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 93 Roxbury Road, Niantic, 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 93 Roxbury Road, Niantic, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 3 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXV9ERR18-C-A20 has a 14.9 dBd gain value at its main lobe at 1900 MHz and 11.9 dBd at its main lobe for 850 MHz . The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **122 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	CT03XC110 - East Lyme
Site Addresss	93 Roxbury Road, Niantic, CT, 06357
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	122	116	1/2 "	0.5	3	104.27	0.28%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	122	116	1/2 "	0.5	3	19.54	0.09%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	122	116	1/2 "	0.5	3	69.51	0.33%
														Sector total Power Density Value:		0.70%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	4.9	122	116	1/2 "	0.5	3	82.82	0.22%
2a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.9	122	116	1/2 "	0.5	3	13.84	0.07%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	122	116	1/2 "	0.5	3	69.51	0.33%
														Sector total Power Density Value:		0.61%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	4.9	122	116	1/2 "	0.5	3	82.82	0.22%
3a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.9	122	116	1/2 "	0.5	3	13.84	0.07%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	122	116	1/2 "	0.5	3	69.51	0.33%
														Sector total Power Density Value:		0.61%

Site Composite MPE %	
Carrier	MPE %
Sprint	1.93%
T-Mobile	0.33%
Verizon Wireless	13.11%
MetroPCS	4.37%
Nextel	2.52%
Town	0.75%
Total Site MPE %	**23.01%**

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 **1.93% (0.70% from sector 1, 0.61% from sector 2 and 0.61% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **23.01%** 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