



Crown Castle
3530 Torringdon 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: 876330
Sprint PCS Site ID: CT03XC081
Located at: 299 Paxton Way, Glastonbury, CT 06033

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. Richard J. Johnson, Manager for Town of Glastonbury.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **299 Paxton Way, Glastonbury, CT 06033**. 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.

Melanie A. Bachman

June 26, 2014

Page 2

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

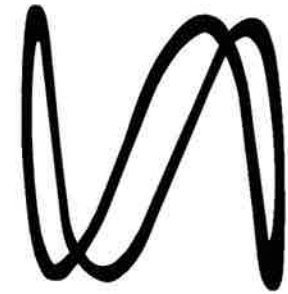
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Richard J. Johnson, Manager
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

Sprint



CROWN CASTLE

PROJECT: 2.5 EQUIPMENT DEPLOYMENT
 SITE NAME: DARRYL H.'S QUARRY
 SITE CASCADE: CT03XC081
 SITE NUMBER: 876330
 SITE ADDRESS: 299 PAXTON WAY
 GLASTONBURY, CT 06033
 SITE TYPE: MONOPOLE
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

TITLE SHEET
& PROJECT DATA

SHEET NUMBER:

T-1

SITE INFORMATION

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

LATITUDE (NAD83):
41° 41' 33.85" N
41.6927397

LONGITUDE (NAD83):
72° 33' 17.87" W
-72.55497

COUNTY:
HARTFORD

ZONING JURISDICTION:
GLASTONBURY

ZONING DISTRICT:
TBD

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

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

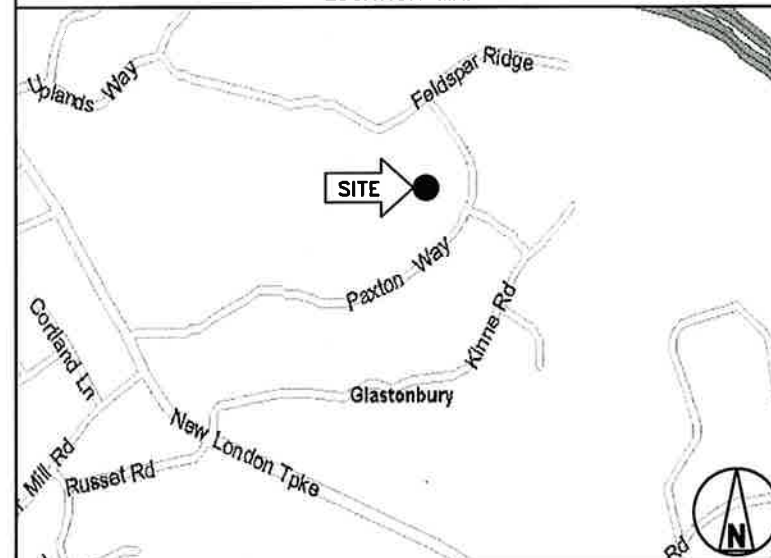
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

- SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.
- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS 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



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

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-10B9 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:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

299 PAXTON WAY
GLASTONBURY, CT 06033

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 ANTENNA 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, AASHTO, AND OTHER METHODS IS NEEDED.
 4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, 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:



6580 Sprint Parkway
Overland Park, Kansas 66251


PLANS PREPARED BY:




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

JOB NUMBER 353-000

MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

**299 PAXTON WAY
GLASTONBURY, CT 06033**

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. SHELTER 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:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

**299 PAXTON WAY
GLASTONBURY, CT 06033**

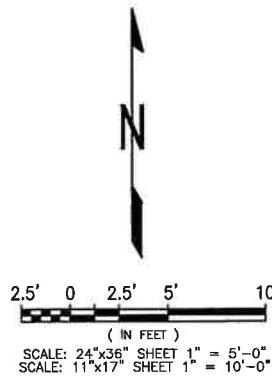
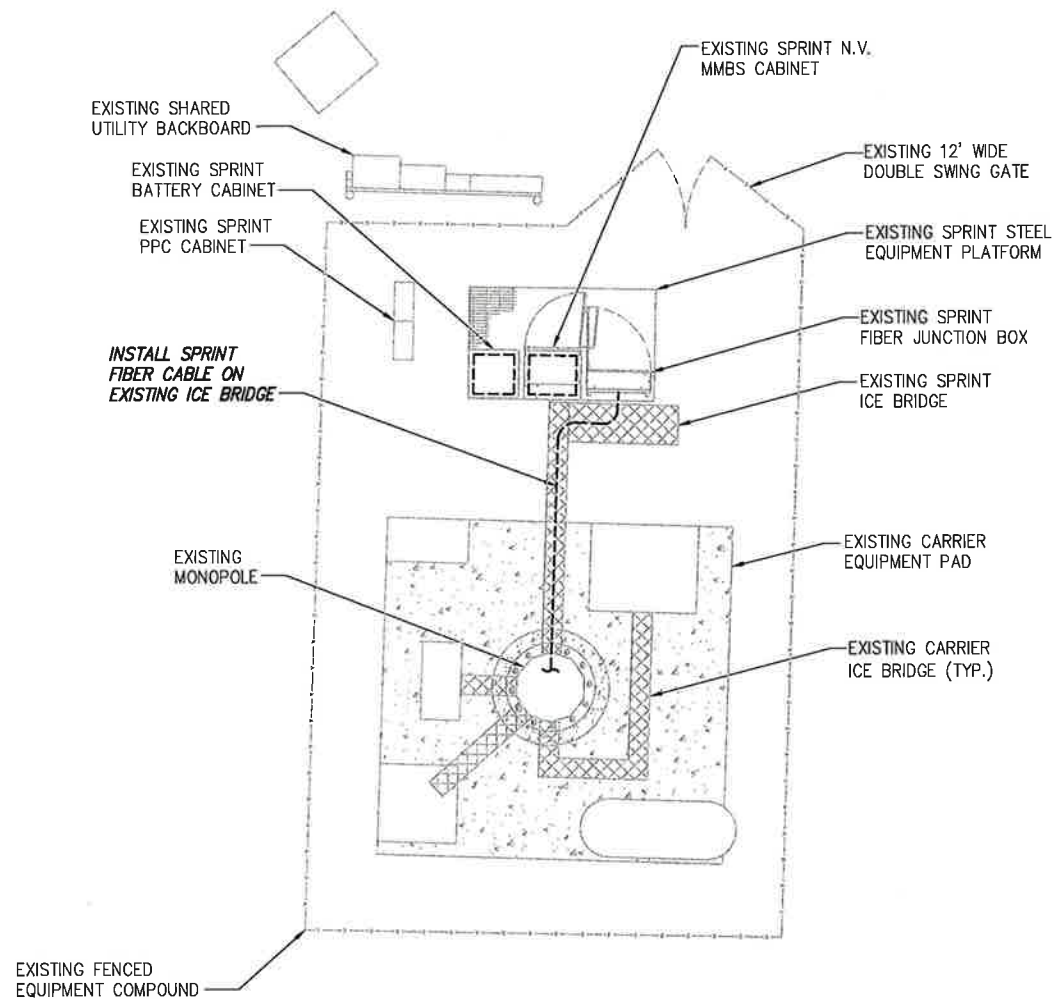
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3

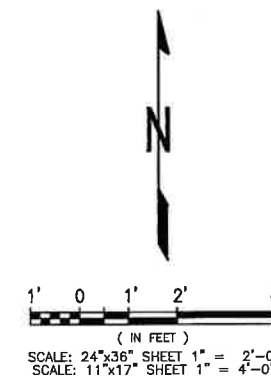
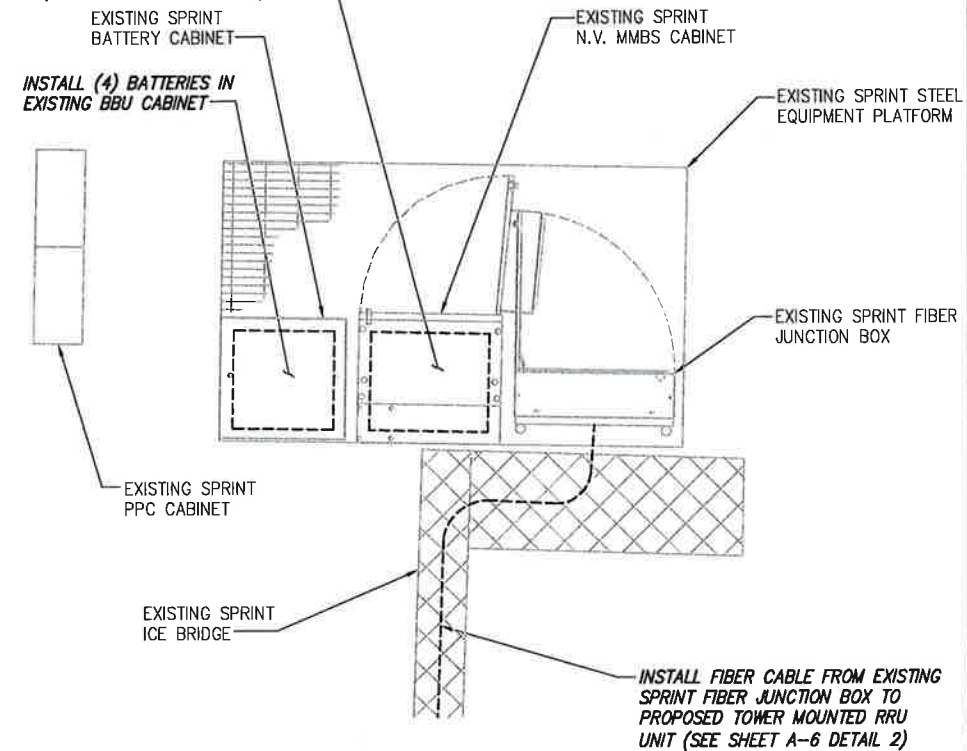
INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.



OVERALL SITE PLAN

SCALE: AS NOTED 1

INSTALL (3) NEW RECTIFIERS AND EQUIPMENT IN EXISTING CABINET INCLUDING BUT NOT LIMITED TO BASE BAND UNIT, CELL SITE ROUTER, SURGE ARRESTERS AND CONNECT POWER AND FIBER UNIT INSIDE EXISTING N.V. MMBS (SEE SHEET A-5 DETAIL 2)



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

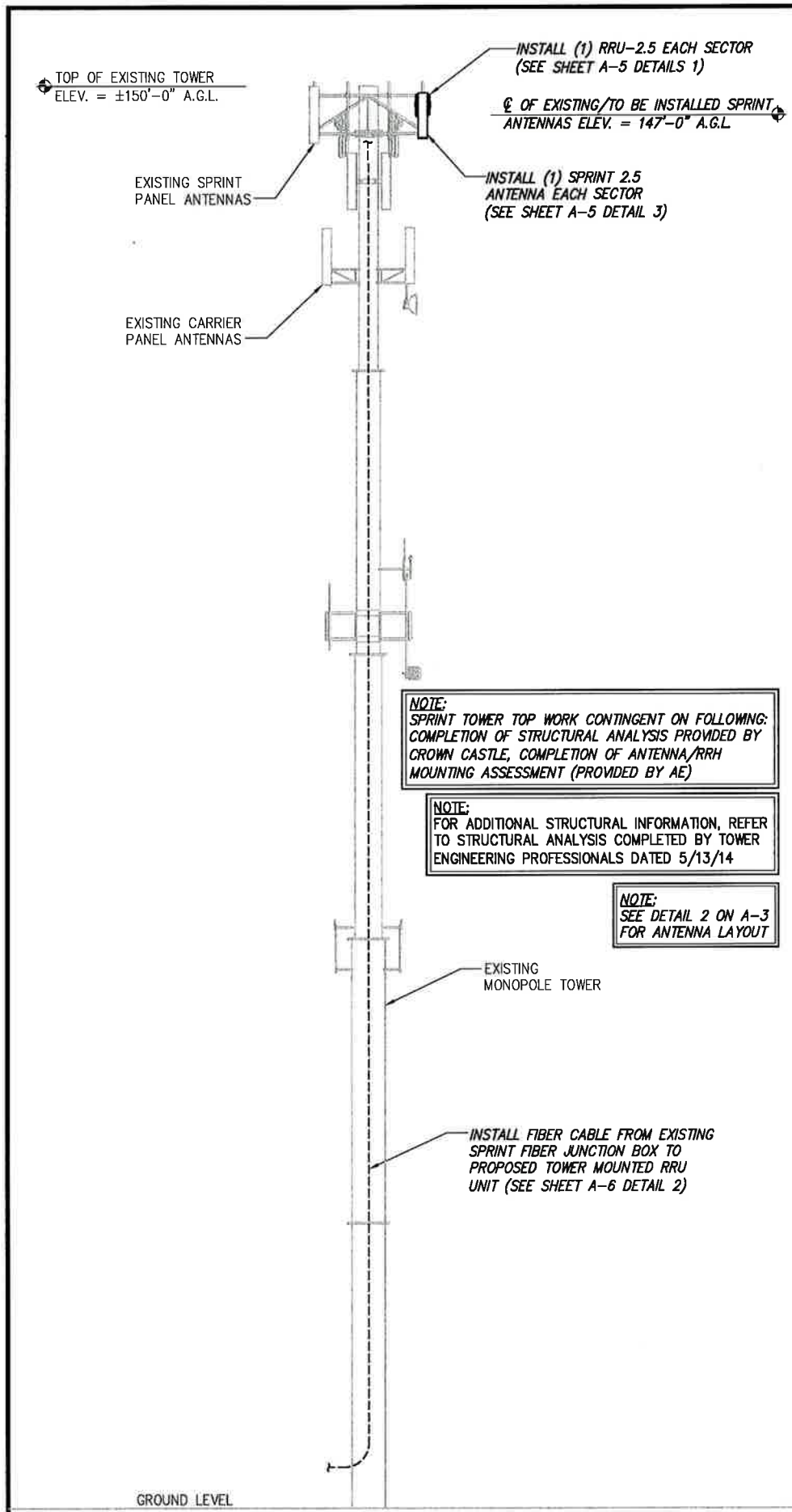
299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1



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

NOTE:
FOR ADDITIONAL STRUCTURAL INFORMATION, REFER
TO STRUCTURAL ANALYSIS COMPLETED BY TOWER
ENGINEERING PROFESSIONALS DATED 5/13/14

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

DETAIL NOT USED NO SCALE 2

TOWER ELEVATION NO SCALE 1

DETAIL NOT USED NO SCALE 3

DETAIL NOT USED NO SCALE 4

PLANS PREPARED FOR:



6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:




Design.
Build.
Deliver.


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

JOB NUMBER 353-000

MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-2



INFINIGY Design. Build. Deliver.
 1033 Watervliet Shaker Rd
 Albany, NY 12205
 Office # (518) 690-0790
 Fax # (518) 690-0793
 JOB NUMBER 353-000



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

REVISIONS:

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

SITE NAME:
DARRYL H.'S QUARRY

SITE CASCADE:
CT03XC081

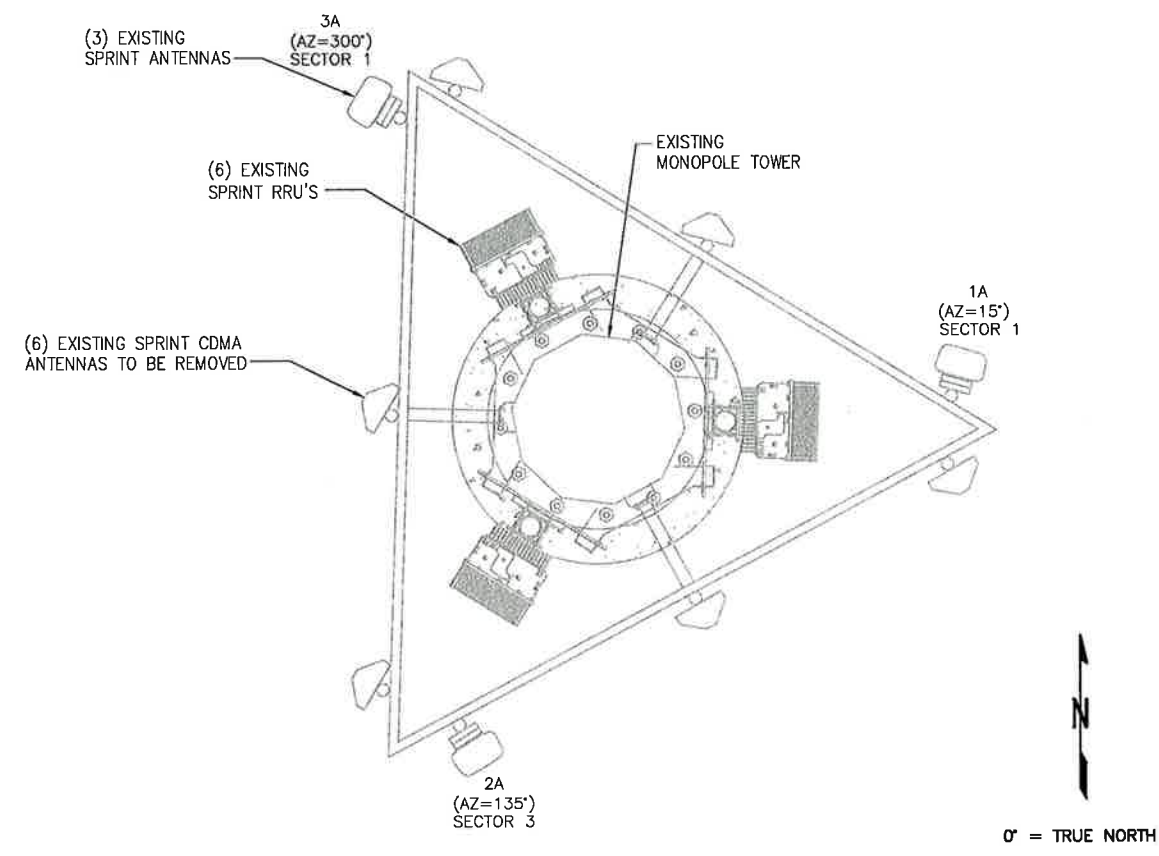
SITE ADDRESS:
**299 PAXTON WAY
GLASTONBURY, CT 06033**

SHEET DESCRIPTION:
**ANTENNA LAYOUT
& MOUNTING DETAILS**

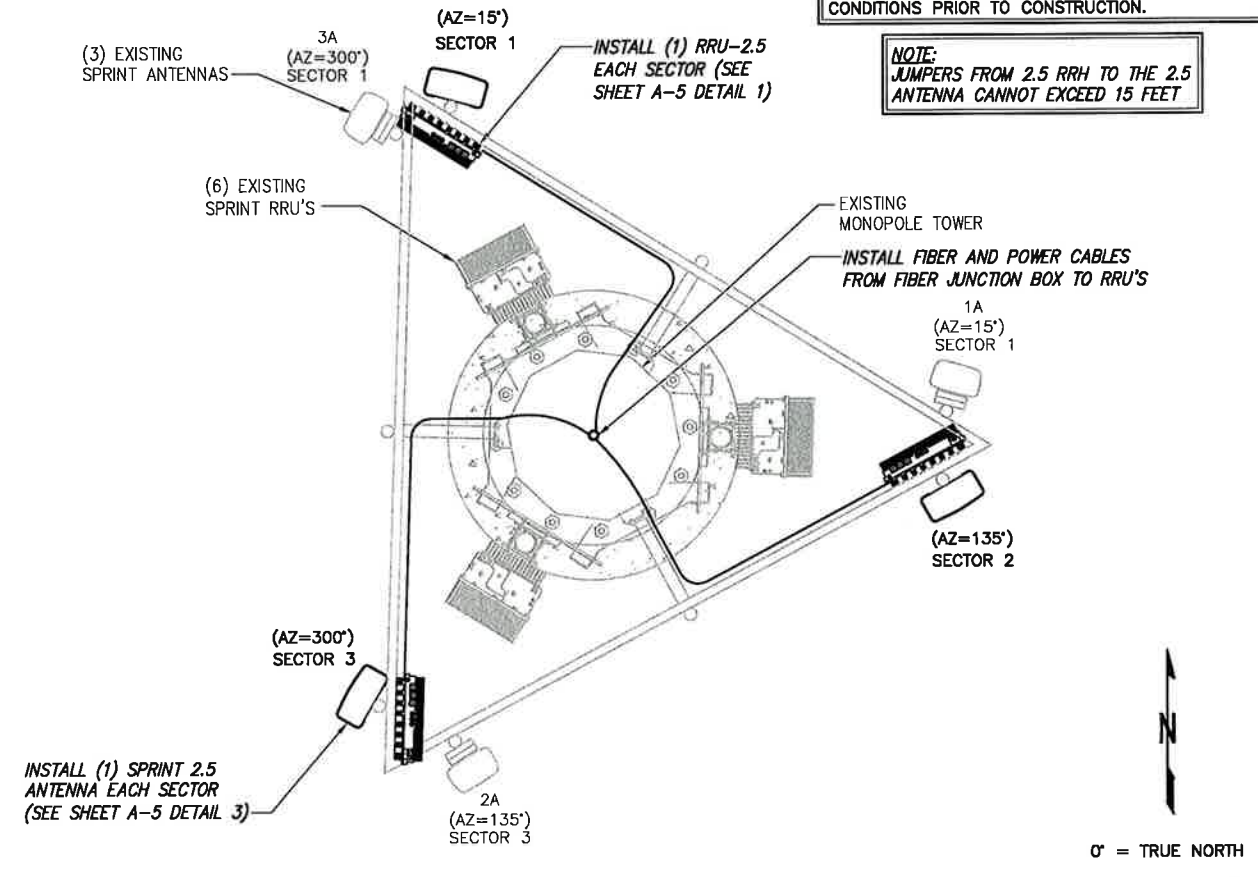
SHEET NUMBER:
A-3

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

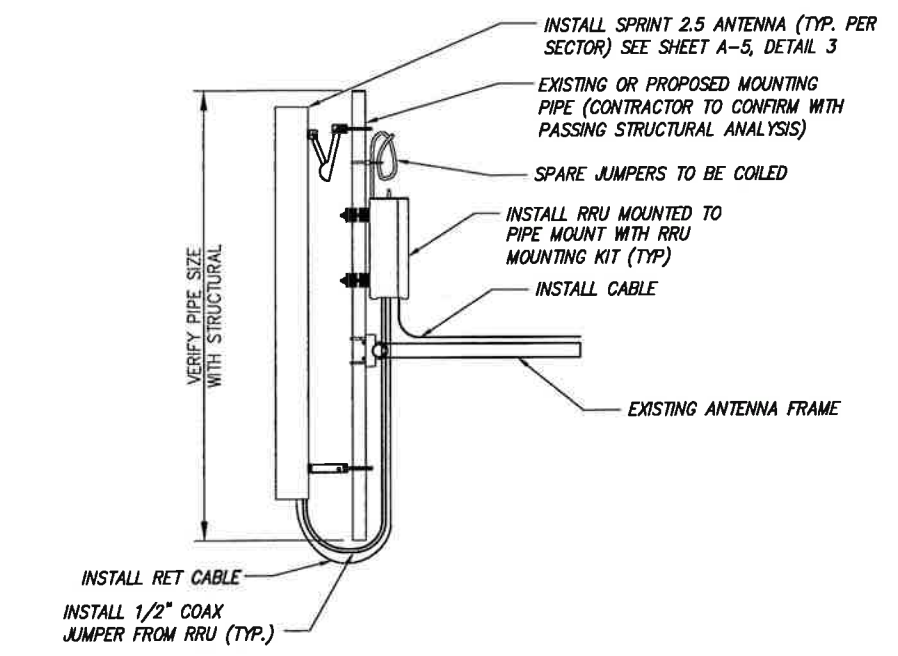
NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET



EXISTING ANTENNA & RRU LAYOUT NO SCALE 1



FINAL ANTENNA LAYOUT NO SCALE 2



- NOTES:**
- CUT DC CONDUCTORS TO LENGTH.
 - COIL FIBER CABLE AND SECURE AT SIDE OF RRU.
 - DO NOT 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.

DETAIL NOT USED NO SCALE 3

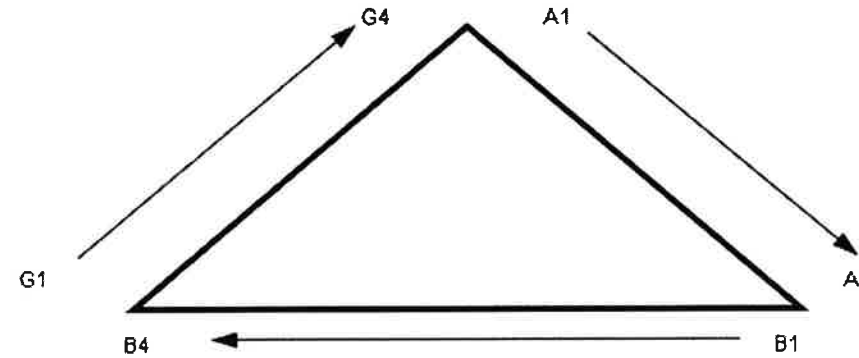
TYPICAL ANTENNA & RRU MOUNTING DETAILS NO SCALE 4

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



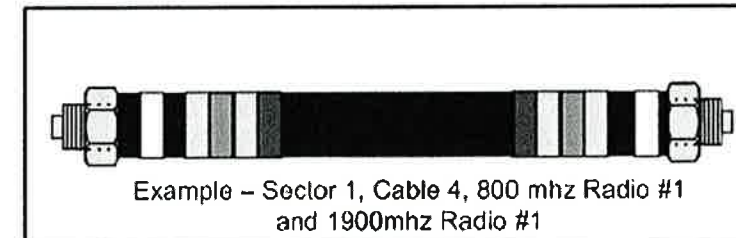
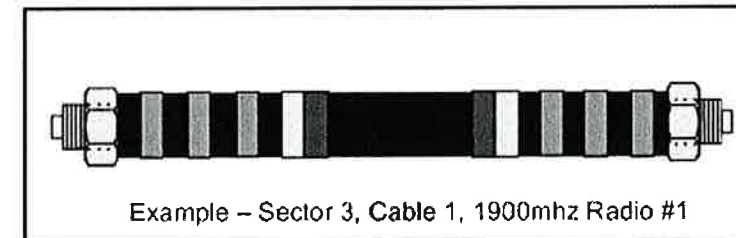
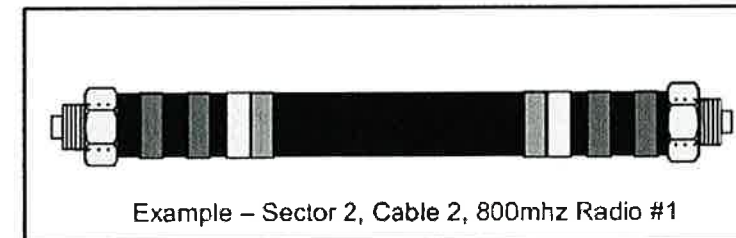
NOTES:

- ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
- 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.
- 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.
- 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.
- 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.
- 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.
- HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
- 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
	2	Blue	No Tape	No Tape
	3	No Tape	No Tape	No Tape
	4	White	No Tape	No Tape
	5	Red	No Tape	No Tape
	6	Grey	No Tape	No Tape
	7	Purple	No Tape	No Tape
	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
	2	Blue	Blue	No Tape
	3	No Tape	No Tape	No Tape
	4	White	White	No Tape
	5	Red	Red	No Tape
	6	Grey	Grey	No Tape
	7	Purple	Purple	No Tape
	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
	2	Blue	Blue	Blue
	3	No Tape	No Tape	No Tape
	4	White	White	White
	5	Red	Red	Red
	6	Grey	Grey	Grey
	7	Purple	Purple	Purple
	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



PLANS PREPARED FOR:

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-000

MLA PARTNER:

ENGINEERING LICENSE:

DRAWING NOTICE:

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

REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION		05/22/14	JDV	0

SITE NAME:
DARRYL H.'S QUARRY

SITE CASCADE:
CT03XC081

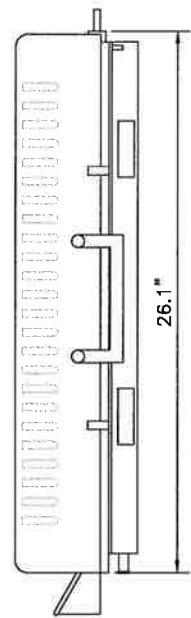
SITE ADDRESS:
299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:
COLOR CODING AND NOTES

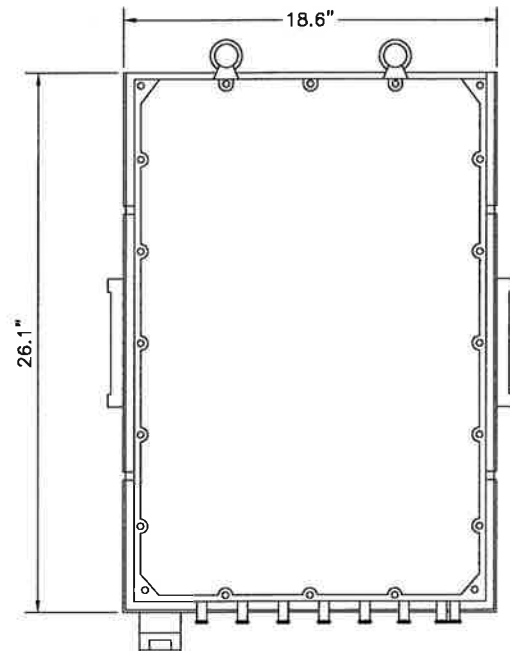
SHEET NUMBER:
A-4

RRU: ALCATEL LUCENT TD-RRH8X20

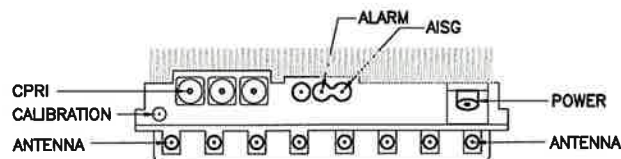
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



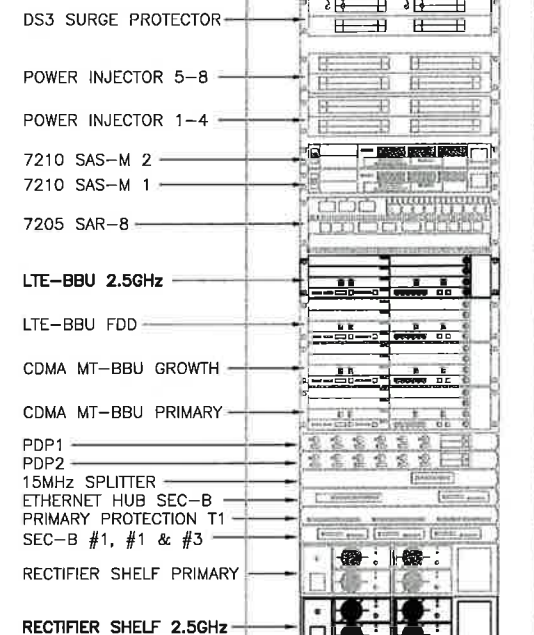
FRONT VIEW



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



FRONT VIEW

- DS3 SURGE PROTECTOR
- POWER INJECTOR 5-8
- POWER INJECTOR 1-4
- 7210 SAS-M 2
- 7210 SAS-M 1
- 7205 SAR-8
- LTE-BBU 2.5GHz
- LTE-BBU FDD
- CDMA MT-BBU GROWTH
- CDMA MT-BBU PRIMARY
- PDP1
- PDP2
- 15MHz SPLITTER
- ETHERNET HUB SEC-B
- PRIMARY PROTECTION T1
- SEC-B #1, #1 & #3
- RECTIFIER SHELF PRIMARY
- RECTIFIER SHELF 2.5GHz

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-5

2.5 RRU

NO SCALE

1

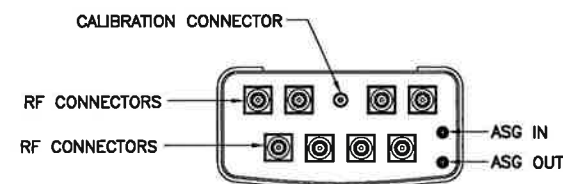
NEW EQUIPMENT IN EXISTING CABINET

NO SCALE

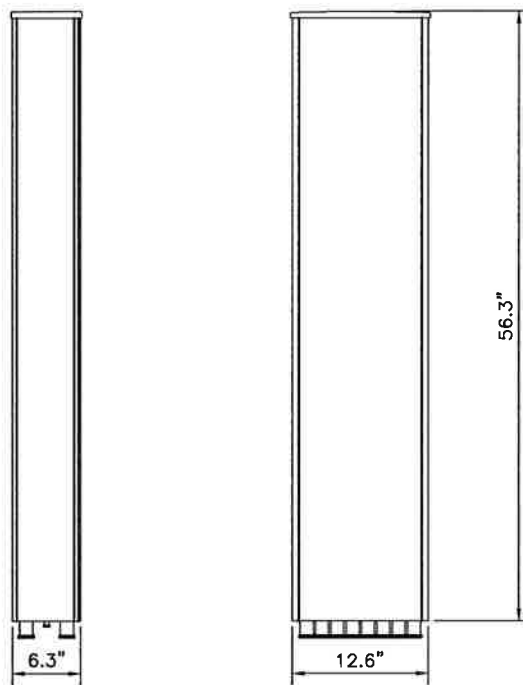
2

ANTENNA: RFS APXVTM14-C-I20

- RADOME MATERIAL: ASA
- RADOME COLOR: LIGHT GRAY
- DIMENSIONS, HxWxD.in(m/m): 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

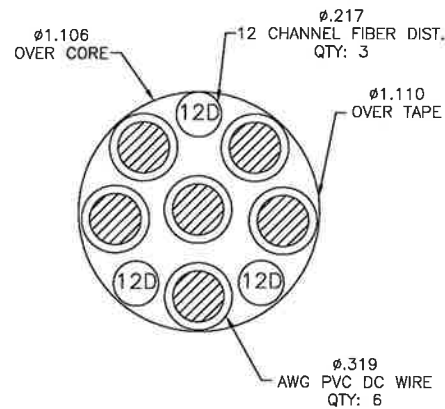
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

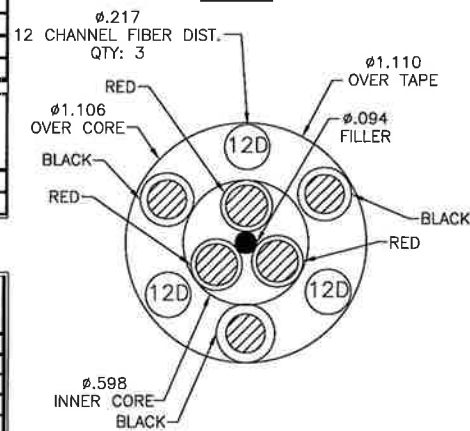
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

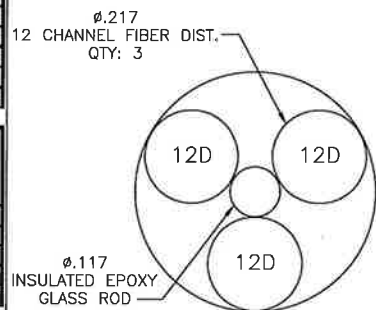
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE
AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF
HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



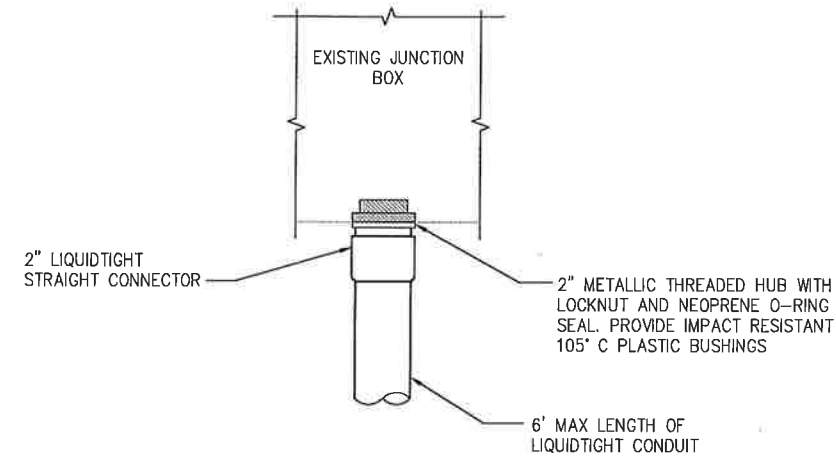
4 AWG



8 & 6 AWG



FIBER ONLY



FIBER JUNCTION BOX PENETRATION

NO SCALE

2

2.5 CABLE CROSS SECTION DATA

NO SCALE

1

DETAIL NOT USED

NO SCALE

3

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

**299 PAXTON WAY
GLASTONBURY, CT 06033**

SHEET DESCRIPTION:

CIVIL DETAILS

SHEET NUMBER:

A-6



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

REVISIONS:

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

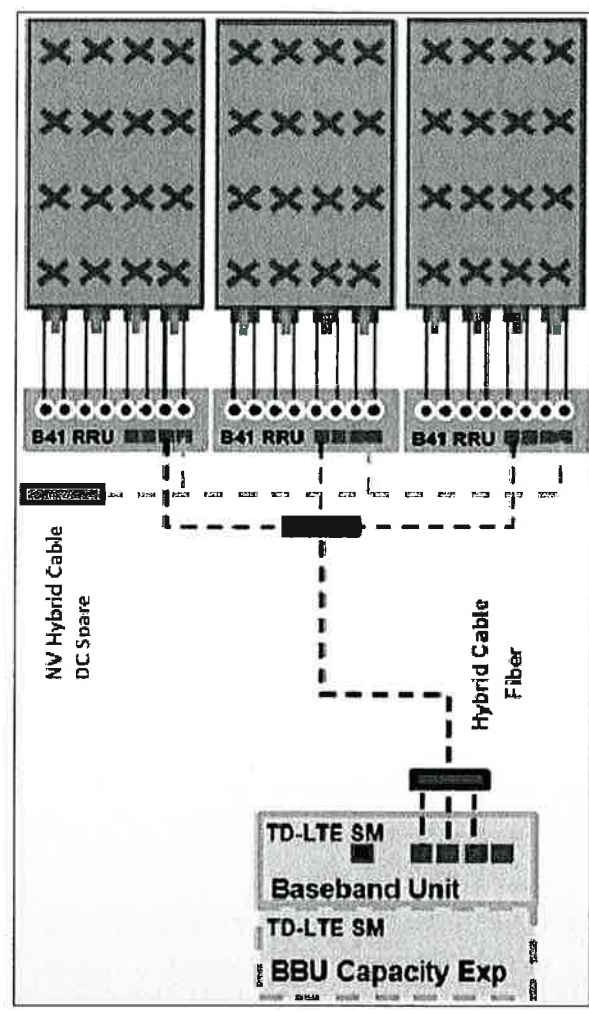
SITE NAME:
DARRYL H.'S QUARRY

SITE CASCADE:
CT03XC081

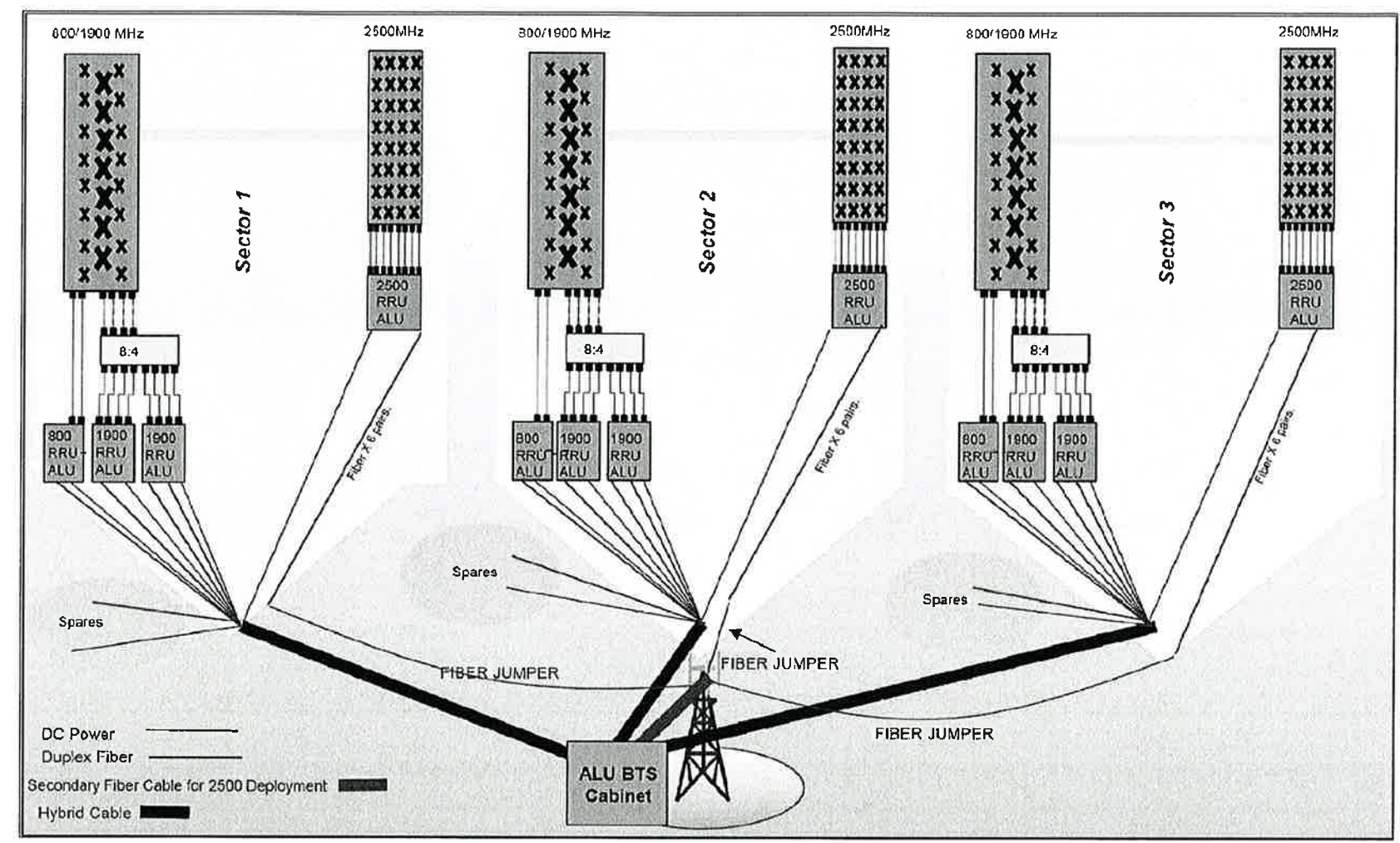
SITE ADDRESS:
 299 PAXTON WAY
 GLASTONBURY, CT 06033

SHEET DESCRIPTION:
CIVIL DETAILS

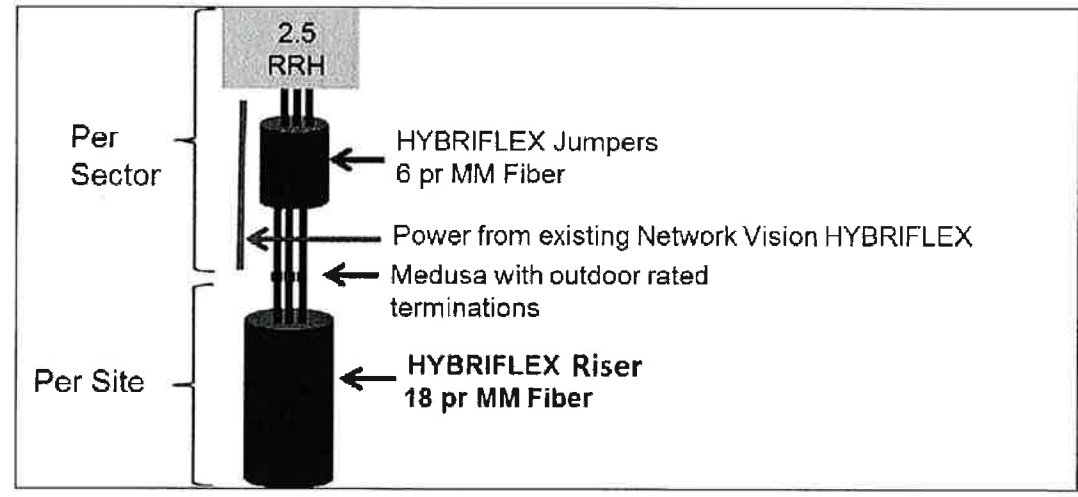
SHEET NUMBER:
A-7



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



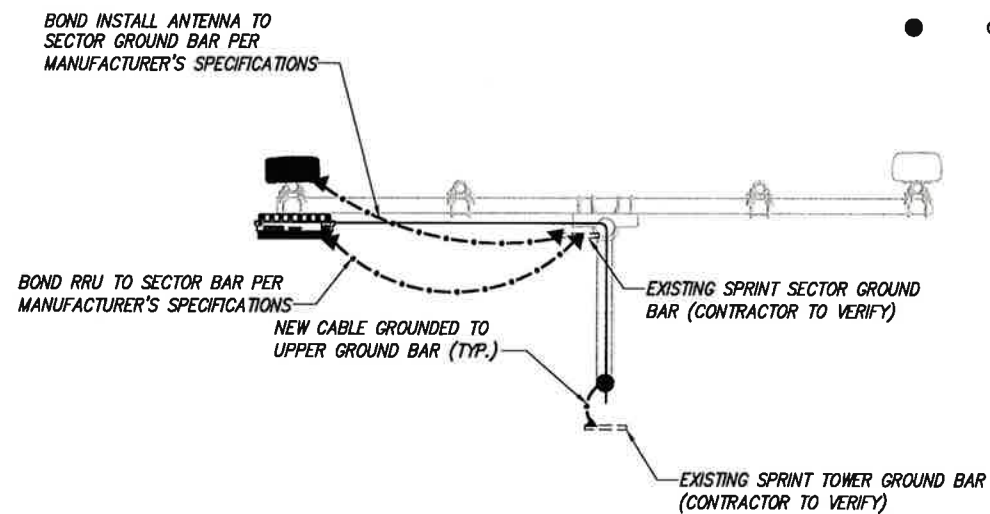
PLAN NOT USED

NO SCALE

1

LEGEND:

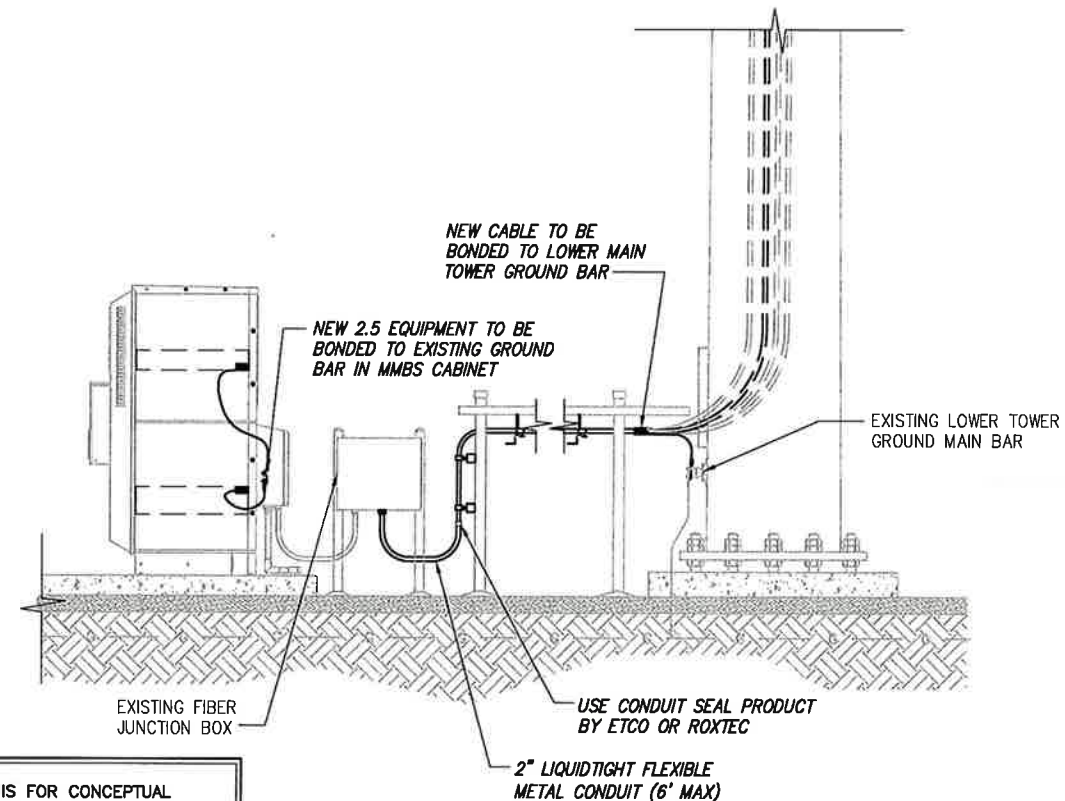
- G — EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2



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

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE

3

DRAWING NOTICE:

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

REVISIONS:

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

SITE NAME:

DARRYL H.'S QUARRY

SITE CASCADE:

CT03XC081

SITE ADDRESS:

299 PAXTON WAY
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

ELECTRICAL &
GROUNDING PLAN

SHEET NUMBER:

E-1

Date: **May 13, 2014**

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



Tower Engineering Professionals
326 Tryon Road.
Raleigh, NC 27603-5263
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation:	Sprint PCS Co-Locate	Scenario 2.5B
	Carrier Site Number:	CT03XC081
	Carrier Site Name:	N/A
Crown Castle Designation:	Crown Castle BU Number:	876330
	Crown Castle Site Name:	Darryl H.'s Quarry Site (Above
	Crown Castle JDE Job Number:	286426
	Crown Castle Work Order Number:	758048
	Crown Castle Application Number:	245342 Rev. 1
Engineering Firm Designation:	TEP Project Number:	25667.19095
Site Data:	299 Paxton Way, Glastonbury, Hartford County, CT 06033 Latitude 41° 41' 33.85", Longitude -72° 33' 17.87" 150 Foot - Monopole Tower	

Dear Patrick Byrum,

Tower Engineering Professionals 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 644971, in accordance with application 245342, revision 1.

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:

LC5: Existing + Proposed Equipment

Note: See Table I and Table II for the proposed and existing loading, respectively.

Sufficient Capacity

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

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Todd Lester, E.I. / RKE

Respectfully submitted by:

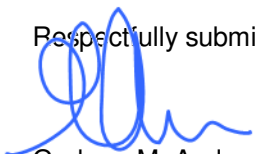

Graham M. Andres, P.E.



TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Component Stresses vs. Capacity

Table 7 - Dish Twist/Sway Results for 50 mph Service Wind Speed

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 150-ft monopole tower designed by Rohn in October of 1996. The tower was originally designed for a wind speed of 85 mph per ANSI/EIA-222-E 1991 for the appurtenances listed in Table 3. The tower has been modified per reinforcement drawings prepared by Tower Engineering Professionals in August of 2008. TEP visited the site in July of 2010 to perform a post-modification inspection. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and ASCE 7-05 Minimum Design Loads for Buildings and Other Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.00 inch escalating 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
145.0	147.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	1
		3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe			

Notes:

- 1) See "Appendix B – Base Level Drawing" for assumed feed line configuration.

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
147.0	149.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	-	-	1
	148.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
	147.0	1	Tower Mounts	Pipe Mount [PM 601-3]			
145.0	147.0	1	RFS Celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1-1/4	1
		2	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	145.0	1	Tower Mounts	Platform Mount [LP 502-1]			
140.0	140.0	3	Kathrein	742 213 w/ Mount Pipe	6	1-5/8	1
130.0	134.0	1	Motorola	TIMING 2000	3 13 3	1/4 1/2 5/16	1
	131.0	3	Kathrein	840 10054			
		3	Samsung Telecommunications	WIMAX DAP HEAD			
	130.0	1	Tower Mount	Side Arm Mount [SO 701-3]			
	127.0	1	Dragonwave	Horizon Compact			
		1	Andrew	VHLP2-11			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	1	Lucent	KS24019-L112A	1	1/2	1
	99.0	1	Tower Mounts	Side Arm Mount [SO 701-1]			
93.0	100.0	1	RFS Celwave	BA6312-1	3	7/8	1
	99.0	1	Tx Rx Systems	101D-90-06-0-03			
	93.0	1	Tower Mounts	Pipe Mount [PM 502-3]			
	88.0	1	Scala	MF-900B			
59.0	66.0	1	Sinclair	SC381-L	2 2	3/8 7/8	1
	61.0	2	Kathrein	OG-860/1920/GPS-A			
	59.0	1	Tower Mounts	Side Arm Mount [SO 701-1]			
		1	Tower Mounts	T-Arm Mount [TA 702-1]			

Notes:

- 1) Existing equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	12	Swedcom	ALP9212	12	1-5/8
130.0	130.0	12	Swedcom	ALP9212	12	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	FDH	2192533	CCISites
Tower Manufacturer Drawings	Rohn	1614573	CCISites
Tower Foundation Drawings	Rohn	1614584	CCISites
Reinforcement Drawings	Tower Engineering Professionals	2296225	CCISites
Post Modification Inspection	Tower Engineering Professionals	2296225	CCISites

3.1) Analysis Method

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

3.2) Assumptions

- 1) The tower and foundation were built in accordance with the manufacturer's specifications.
- 2) The tower and foundation 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 "Appendix B – Base Level Drawing".
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by the standard.
- 5) All tower components are in sufficient condition to carry their full design capacity.
- 6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance. See Table 7.
- 7) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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
L1	150 - 120	Pole	P24x1/4	1	-4516.08	589189.97	61.8	Pass
L2	120 - 90	Pole	P30x3/8	2	-8919.01	1166569.57	64.4	Pass
L3	90 - 60	Pole	P36x3/8	3	-13732.50	1325677.78	84.6	Pass
L4	60 - 30	Pole	P42x3/8	4	-19545.00	1484548.71	99.2	Pass
L5	30 - 0	Pole	P42x1/2	5	-26903.20	2144663.61	96.0	Pass
							Summary	
						Pole (L4)	99.2	Pass
						RATING =	99.2	Pass

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	120.0	36.7	Pass
1	Flange Connection	90.0	67.3	Pass
1	Flange Connection	60.0	91.9	Pass
1	Flange Connection	30.0	67.2	Pass
1	Anchor Rods	-	99.7	Pass
1	Base Plate	-	86.3	Pass
1	Base Foundation Soil Interaction	-	88.9	Pass
1	Base Foundation Structural	-	22.7	Pass

Structure Rating (max from all components) =	99.7%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

Table 7 - Dish Twist/Sway Results for 50 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
127.00	VHLP2-11	18.907	1.3045	0.0055
88.00	MF-900B	9.382	0.9688	0.0036

4.1) Recommendations

- 1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

150.0 ft

120.0 ft

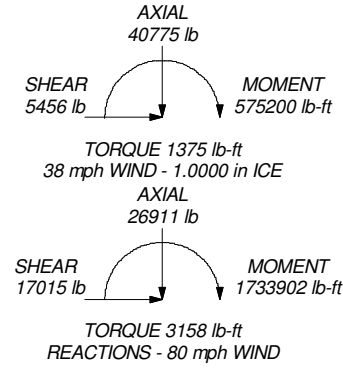
90.0 ft

60.0 ft

30.0 ft

0.0 ft

Section	1	P24x1/4	30.00	1904.2
Section	2	P30x3/8	30.00	3562.8
Section	3	P36x3/8	30.00	4284.4
Section	4	P42x3/8	30.00	5006.0
Section	5	P42x1/2	30.00	6654.6
Grade	A53-B-42			21412.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800MHz 2X50W RRH W/FILTER	147	Side Arm Mount [SO 701-3]	130
800MHz 2X50W RRH W/FILTER	147	840 10054	130
800MHz 2X50W RRH W/FILTER	147	840 10054	130
PCS 1900MHz 4x45W-65MHz	147	840 10054	130
PCS 1900MHz 4x45W-65MHz	147	WIMAX DAP HEAD	130
PCS 1900MHz 4x45W-65MHz	147	WIMAX DAP HEAD	130
Pipe Mount [PM 601-3]	147	WIMAX DAP HEAD	130
2.4" Dia. x 5-ft Pipe	145	Horizon Compact	130
2.4" Dia. x 5-ft Pipe	145	TIMING 2000	130
2.4" Dia. x 5-ft Pipe	145	VHLP2-11	130
APXVSPP18-C-A20 w/ Mount Pipe	145	KS24019-L112A	99
APXV9ERR18-C-A20 w/ Mount Pipe	145	Side Arm Mount [SO 701-1]	99
APXVSPP18-C-A20 w/ Mount Pipe	145	101D-90-06-0-03 w/Mount Pipe	93
APXVTM14-C-120 w/ Mount Pipe	145	2.4" x 3-ft pipe	93
APXVTM14-C-120 w/ Mount Pipe	145	Pipe Mount [PM 502-3]	93
APXVTM14-C-120 w/ Mount Pipe	145	BA6312	93
TD-RRH8x20-25	145	MF-900B	93
TD-RRH8x20-25	145	(2) OG-860/1920/GPS-A	59
TD-RRH8x20-25	145	SC381-L	59
Platform Mount [LP 502-1]	145	1.9" x 2-ft Pipe	59
742 213 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	59
742 213 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	59
742 213 w/ Mount Pipe	140		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.2%

<p>Tower Engineering Professionals</p>	<p>Tower Engineering Professionals</p> <p>326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350</p>		<p>Job: Darryl H.'s Quarry Site (Above (BU 876330))</p>	
	<p>Project: TEP No. 25667.19095</p>		<p>Client: Crown Castle</p>	<p>Drawn by: reaton</p>
	<p>Code: TIA/EIA-222-F</p>		<p>Date: 05/13/14</p>	<p>App'd:</p>
	<p>Path: C:\Users\reaton\Desktop\Darryl H.'s Quarry Site\876330_LC5.dwg</p>		<p>Scale: NTS</p>	<p>Dwg No. E-1</p>

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330)	Page 1 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 38 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption 	<ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Pole Section Geometry

Section	Elevation <i>ft</i>	Section Length <i>ft</i>	Pole Size	Pole Grade	Socket Length <i>ft</i>
L1	150.00-120.00	30.00	P24x1/4	A53-B-42 (42 ksi)	
L2	120.00-90.00	30.00	P30x3/8	A53-B-42 (42 ksi)	
L3	90.00-60.00	30.00	P36x3/8	A53-B-42 (42 ksi)	
L4	60.00-30.00	30.00	P42x3/8	A53-B-42 (42 ksi)	
L5	30.00-0.00	30.00	P42x1/2	A53-B-42	

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 2 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Section	Elevation	Section Length	Pole Size	Pole Grade	Socket Length
	ft	ft			ft
(42 ksi)					

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 150.00-120.00				1	1	1		
L2 120.00-90.00				1	1	1		
L3 90.00-60.00				1	1	1		
L4 60.00-30.00				1	1	1		
L5 30.00-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _{AA}	Weight
				ft		ft ² /ft	plf
LDF5-50A(7/8")	A	No	Inside Pole	59.00 - 0.00	5	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
LDF5-50A(7/8")	A	No	Inside Pole	93.00 - 59.00	3	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
FSJ2-50(3/8")	A	No	Inside Pole	59.00 - 0.00	2	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
AVA7-50(1-5/8)	B	No	Inside Pole	140.00 - 0.00	6	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	145.00 - 0.00	3	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
HB114-21U3M12-XXX F(1-1/4")	C	No	Inside Pole	145.00 - 0.00	1	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
LDF4-50A(1/2")	C	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 3 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight plf
							ft ² /ft	
2" Flex Conduit	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.20	0.32
						1/2" Ice	0.30	1.85
						1" Ice	0.40	3.98
						2" Ice	0.60	10.09
						4" Ice	1.00	29.64
2" Flex Conduit	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
						1" Ice	0.00	3.98
						2" Ice	0.00	10.09
						4" Ice	0.00	29.64
9207(5/16")	C	No	Inside Pole	130.00 - 0.00	3	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
FSJ1-50A(1/4")	C	No	Inside Pole	130.00 - 0.00	3	No Ice	0.00	0.04
						1/2" Ice	0.00	0.04
						1" Ice	0.00	0.04
						2" Ice	0.00	0.04
						4" Ice	0.00	0.04
FSJ4-50B(1/2")	C	No	Inside Pole	130.00 - 0.00	8	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
						2" Ice	0.00	0.14
						4" Ice	0.00	0.14
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	130.00 - 0.00	5	No Ice	0.00	0.14
						1/2" Ice	0.00	0.76
						1" Ice	0.00	2.00
						2" Ice	0.00	6.30
						4" Ice	0.00	22.23
Step Pegs (5/8" SR) 7-in. w/30" step	C	No	CaAa (Out Of Face)	150.00 - 0.00	1	No Ice	0.01	0.24
						1/2" Ice	0.11	0.64
						1" Ice	0.21	1.64
						2" Ice	0.41	5.49
						4" Ice	0.81	20.51
Safety Line 3/8	C	No	CaAa (Out Of Face)	150.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight lb
			ft ²	ft ²	ft ²	ft ²	
L1	150.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	84.00
		C	0.000	0.000	0.000	3.563	169.34
L2	120.00-90.00	A	0.000	0.000	0.000	0.000	2.97
		B	0.000	0.000	0.000	0.000	126.00
		C	0.000	0.000	0.000	7.563	280.82
L3	90.00-60.00	A	0.000	0.000	0.000	0.000	29.70
		B	0.000	0.000	0.000	0.000	126.00
		C	0.000	0.000	0.000	7.563	283.97
L4	60.00-30.00	A	0.000	0.000	0.000	0.000	53.36
		B	0.000	0.000	0.000	0.000	126.00
		C	0.000	0.000	0.000	7.563	283.97

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330)	Page 4 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L5	30.00-0.00	A	0.000	0.000	0.000	0.000	54.18
		B	0.000	0.000	0.000	0.000	126.00
		C	0.000	0.000	0.000	7.563	283.97

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	150.00-120.00	A	1.184	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	84.00
		C		0.000	0.000	0.000	20.141	498.50
L2	120.00-90.00	A	1.149	0.000	0.000	0.000	0.000	2.97
		B		0.000	0.000	0.000	0.000	126.00
		C		0.000	0.000	0.000	28.245	1025.74
L3	90.00-60.00	A	1.104	0.000	0.000	0.000	0.000	29.70
		B		0.000	0.000	0.000	0.000	126.00
		C		0.000	0.000	0.000	27.426	976.21
L4	60.00-30.00	A	1.038	0.000	0.000	0.000	0.000	53.36
		B		0.000	0.000	0.000	0.000	126.00
		C		0.000	0.000	0.000	26.245	900.18
L5	30.00-0.00	A	1.000	0.000	0.000	0.000	0.000	54.18
		B		0.000	0.000	0.000	0.000	126.00
		C		0.000	0.000	0.000	25.563	856.24

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	150.00-120.00	-0.1456	0.0841	-0.6080	0.3511
L2	120.00-90.00	-0.2975	0.1718	-0.8416	0.4859
L3	90.00-60.00	-0.3021	0.1744	-0.8694	0.5019
L4	60.00-30.00	-0.3055	0.1764	-0.8746	0.5050
L5	30.00-0.00	-0.3055	0.1764	-0.8574	0.4950

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb	
147									
800MHz 2X50W RRH W/FILTER	A	From Face	1.00 0.00 2.00	20.0000	147.00	No Ice 1/2" Ice 1" Ice	2.40 2.61 2.83	2.25 2.46 2.68	64.00 86.12 111.30

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 5 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
800MHz 2X50W RRH W/FILTER	B	From Face	1.00	10.0000	147.00	2" Ice	3.30	3.13	171.62
			0.00			4" Ice	4.34	4.15	337.52
			2.00			No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
800MHz 2X50W RRH W/FILTER	C	From Face	1.00	-30.0000	147.00	2" Ice	3.30	3.13	171.62
			0.00			4" Ice	4.34	4.15	337.52
			2.00			No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
PCS 1900MHz 4x45W-65MHz	A	From Face	1.00	20.0000	147.00	2" Ice	3.30	3.13	171.62
			0.00			4" Ice	4.34	4.15	337.52
			1.00			No Ice	2.71	2.61	60.00
						1/2" Ice	2.95	2.85	83.13
						1" Ice	3.20	3.09	109.50
PCS 1900MHz 4x45W-65MHz	B	From Face	1.00	10.0000	147.00	2" Ice	3.72	3.61	172.72
			0.00			4" Ice	4.86	4.74	346.52
			1.00			No Ice	2.71	2.61	60.00
						1/2" Ice	2.95	2.85	83.13
						1" Ice	3.20	3.09	109.50
PCS 1900MHz 4x45W-65MHz	C	From Face	1.00	-30.0000	147.00	2" Ice	3.72	3.61	172.72
			0.00			4" Ice	4.86	4.74	346.52
			1.00			No Ice	2.71	2.61	60.00
						1/2" Ice	2.95	2.85	83.13
						1" Ice	3.20	3.09	109.50
Pipe Mount [PM 601-3]	C	None		0.0000	147.00	2" Ice	3.72	3.61	172.72
						4" Ice	4.86	4.74	346.52
						No Ice	4.39	4.39	195.00
						1/2" Ice	5.48	5.48	237.41
						1" Ice	6.57	6.57	279.82
145						2" Ice	8.75	8.75	364.65
						4" Ice	13.11	13.11	534.30
2.4" Dia. x 5-ft Pipe	A	From Centroid-Le g	4.00	0.0000	145.00	No Ice	1.20	1.20	18.30
			0.00			1/2" Ice	1.50	1.50	27.45
			0.00			1" Ice	1.81	1.81	40.05
						2" Ice	2.47	2.47	76.23
						4" Ice	3.93	3.93	196.71
2.4" Dia. x 5-ft Pipe	B	From Centroid-Le g	4.00	0.0000	145.00	No Ice	1.20	1.20	18.30
			0.00			1/2" Ice	1.50	1.50	27.45
			0.00			1" Ice	1.81	1.81	40.05
						2" Ice	2.47	2.47	76.23
						4" Ice	3.93	3.93	196.71
2.4" Dia. x 5-ft Pipe	C	From Centroid-Le g	4.00	0.0000	145.00	No Ice	1.20	1.20	18.30
			0.00			1/2" Ice	1.50	1.50	27.45
			0.00			1" Ice	1.81	1.81	40.05
						2" Ice	2.47	2.47	76.23
						4" Ice	3.93	3.93	196.71
APXVSP18-C-A20 w/ Mount Pipe	A	From Centroid-Le g	4.00	15.0000	145.00	No Ice	8.50	6.95	82.55
			6.00			1/2" Ice	9.15	8.13	150.56
			2.00			1" Ice	9.77	9.02	226.53
						2" Ice	11.03	10.84	405.98
						4" Ice	13.68	14.85	908.95
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Centroid-Le g	4.00	15.0000	145.00	No Ice	8.50	7.47	87.55
			6.00			1/2" Ice	9.15	8.66	158.03
			2.00			1" Ice	9.77	9.56	236.54
						2" Ice	11.03	11.39	421.23

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 6 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
APXVSPPI8-C-A20 w/ Mount Pipe	C	From Centroid-Le g	4.00	4.00	60.0000	145.00	4" Ice	13.68	15.53	935.37
			6.00	6.00			No Ice	8.50	6.95	82.55
			2.00	2.00			1/2" Ice	9.15	8.13	150.56
							1" Ice	9.77	9.02	226.53
							2" Ice	11.03	10.84	405.98
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Le g	4.00	4.00	15.0000	145.00	4" Ice	13.68	14.85	908.95
			-6.00	-6.00			No Ice	7.13	4.96	76.77
			2.00	2.00			1/2" Ice	7.66	5.75	131.38
							1" Ice	8.18	6.47	192.68
							2" Ice	9.26	8.01	338.48
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Le g	4.00	4.00	15.0000	145.00	4" Ice	11.53	11.41	752.45
			-6.00	-6.00			No Ice	7.13	4.96	76.77
			2.00	2.00			1/2" Ice	7.66	5.75	131.38
							1" Ice	8.18	6.47	192.68
							2" Ice	9.26	8.01	338.48
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Le g	4.00	4.00	60.0000	145.00	4" Ice	11.53	11.41	752.45
			-6.00	-6.00			No Ice	7.13	4.96	76.77
			2.00	2.00			1/2" Ice	7.66	5.75	131.38
							1" Ice	8.18	6.47	192.68
							2" Ice	9.26	8.01	338.48
TD-RRH8x20-25	A	From Centroid-Le g	4.00	4.00	15.0000	145.00	4" Ice	11.53	11.41	752.45
			-6.00	-6.00			No Ice	4.72	1.70	70.00
			2.00	2.00			1/2" Ice	5.01	1.92	97.15
							1" Ice	5.32	2.15	127.83
							2" Ice	5.95	2.62	200.54
TD-RRH8x20-25	B	From Centroid-Le g	4.00	4.00	15.0000	145.00	4" Ice	7.31	3.68	396.84
			-6.00	-6.00			No Ice	4.72	1.70	70.00
			2.00	2.00			1/2" Ice	5.01	1.92	97.15
							1" Ice	5.32	2.15	127.83
							2" Ice	5.95	2.62	200.54
TD-RRH8x20-25	C	From Centroid-Le g	4.00	4.00	60.0000	145.00	4" Ice	7.31	3.68	396.84
			-6.00	-6.00			No Ice	4.72	1.70	70.00
			2.00	2.00			1/2" Ice	5.01	1.92	97.15
							1" Ice	5.32	2.15	127.83
							2" Ice	5.95	2.62	200.54
Platform Mount [LP 502-1]	C	None			0.0000	145.00	4" Ice	7.31	3.68	396.84
							No Ice	32.35	32.35	925.00
							1/2" Ice	45.67	45.67	1192.58
							1" Ice	58.99	58.99	1460.16
							2" Ice	85.63	85.63	1995.32
140						4" Ice	138.91	138.91	3065.64	
742 213 w/ Mount Pipe	A	From Face	0.50	0.50	0.0000	140.00	No Ice	5.37	4.62	48.92
			0.00	0.00			1/2" Ice	5.95	6.00	93.54
			0.00	0.00			1" Ice	6.50	6.98	145.83
							2" Ice	7.61	8.85	277.23
							4" Ice	9.93	12.79	682.54
742 213 w/ Mount Pipe	B	From Face	0.50	0.50	0.0000	140.00	No Ice	5.37	4.62	48.92
			0.00	0.00			1/2" Ice	5.95	6.00	93.54
			0.00	0.00			1" Ice	6.50	6.98	145.83
							2" Ice	7.61	8.85	277.23
							4" Ice	9.93	12.79	682.54
742 213 w/ Mount Pipe	C	From Face	0.50	0.50	0.0000	140.00	No Ice	5.37	4.62	48.92
			0.00	0.00			1/2" Ice	5.95	6.00	93.54
			0.00	0.00			1" Ice	6.50	6.98	145.83
							2" Ice	7.61	8.85	277.23
							4" Ice	9.93	12.79	682.54

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 7 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
130										
Side Arm Mount [SO 701-3]	C	None			0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.83 3.92 5.01 7.19 11.55	2.83 3.92 5.01 7.19 11.55	195.00 237.00 279.00 363.00 531.00
840 10054	A	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.19 5.54 5.91 6.67 8.30	1.36 1.62 1.89 2.44 3.74	30.00 54.15 82.21 150.89 343.85
840 10054	B	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.19 5.54 5.91 6.67 8.30	1.36 1.62 1.89 2.44 3.74	30.00 54.15 82.21 150.89 343.85
840 10054	C	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.19 5.54 5.91 6.67 8.30	1.36 1.62 1.89 2.44 3.74	30.00 54.15 82.21 150.89 343.85
WIMAX DAP HEAD	A	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	30.00 44.58 58.46 93.93 201.10
WIMAX DAP HEAD	B	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	30.00 44.58 58.46 93.93 201.10
WIMAX DAP HEAD	C	From Leg	3.00 0.00 1.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	30.00 44.58 58.46 93.93 201.10
Horizon Compact	A	From Leg	3.00 0.00 -3.00		30.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.84 0.97 1.10 1.39 2.08	0.43 0.53 0.63 0.87 1.44	11.50 17.99 26.19 48.49 122.20
TIMING 2000	B	From Leg	4.50 0.00 4.00		60.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.16 0.21 0.28 0.43 0.85	0.13 0.18 0.24 0.38 0.78	0.69 2.45 5.13 14.05 51.54
99										
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	65.00 79.00 93.00 121.00 177.00
KS24019-L112A	A	From Leg	3.00 0.00 1.00		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.09 0.15 0.22 0.40 0.89	0.09 0.15 0.22 0.40 0.89	5.00 6.25 8.26 15.18 44.91

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 8 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
93									
BA6312	A	From Leg	3.00	0.0000	93.00	No Ice	0.45	0.45	3.00
			0.00			1/2" Ice	1.09	1.09	7.00
			7.00			1" Ice	1.73	1.73	11.00
						2" Ice	3.01	3.01	19.00
						4" Ice	5.57	5.57	35.00
101D-90-06-0-03 w/Mount Pipe	C	From Leg	3.00	0.0000	93.00	No Ice	5.83	7.50	70.00
			0.00			1/2" Ice	6.98	9.37	115.99
			6.00			1" Ice	8.15	10.97	177.74
						2" Ice	9.61	13.32	334.95
						4" Ice	12.61	18.18	818.53
2.4" x 3-ft pipe	A	From Leg	3.00	0.0000	93.00	No Ice	0.59	0.59	11.00
			0.00			1/2" Ice	0.77	0.77	16.61
			-5.00			1" Ice	0.97	0.97	24.45
						2" Ice	1.42	1.42	47.42
						4" Ice	2.54	2.54	126.85
Pipe Mount [PM 502-3]	C	None		0.0000	93.00	No Ice	6.43	6.43	301.00
						1/2" Ice	10.25	10.25	329.55
						1" Ice	14.07	14.07	358.10
						2" Ice	21.71	21.71	415.20
						4" Ice	36.99	36.99	529.39
59									
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.0000	59.00	No Ice	0.85	1.67	65.00
			0.00			1/2" Ice	1.14	2.34	79.00
			0.00			1" Ice	1.43	3.01	93.00
						2" Ice	2.01	4.35	121.00
						4" Ice	3.17	7.03	177.00
Side Arm Mount [SO 701-1]	B	From Leg	1.50	0.0000	59.00	No Ice	0.85	1.67	65.00
			0.00			1/2" Ice	1.14	2.34	79.00
			0.00			1" Ice	1.43	3.01	93.00
						2" Ice	2.01	4.35	121.00
						4" Ice	3.17	7.03	177.00
(2) OG-860/1920/GPS-A	B	From Leg	3.00	0.0000	59.00	No Ice	0.14	0.14	1.65
			0.00			1/2" Ice	0.23	0.23	3.53
			2.00			1" Ice	0.33	0.33	6.44
						2" Ice	0.57	0.57	15.90
						4" Ice	1.17	1.17	53.78
SC381-L	C	From Leg	3.00	0.0000	59.00	No Ice	6.00	6.00	57.00
			0.00			1/2" Ice	7.38	7.38	98.49
			7.00			1" Ice	8.76	8.76	148.74
						2" Ice	10.39	10.39	276.12
						4" Ice	13.75	13.75	642.67
1.9" x 2-ft Pipe	C	From Leg	3.00	0.0000	59.00	No Ice	0.29	0.29	5.44
			0.00			1/2" Ice	0.42	0.42	8.59
			0.00			1" Ice	0.56	0.56	13.30
						2" Ice	0.92	0.92	28.04
						4" Ice	1.76	1.76	83.06

Dishes

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 9 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft ²	lb
VHLP2-11	A	Paraboloid w/Radome	From Leg	3.00 0.00 -3.00	30.0000		130.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.00 47.56 68.12 109.25 191.50
MF-900B	A	Grid	From Leg	4.00 0.00 -5.00	-73.0000		93.00	3.88	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.00 76.17 139.34 265.68 518.36

Load Combinations

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

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 10 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	150 - 120	Pole	Max Tension	11	0.00	-0.00	-0.30
			Max. Compression	14	-9597.34	312.03	140.29
			Max. Mx	11	-4541.19	168844.20	5225.96
			Max. My	8	-4528.16	-5204.84	-171874.86
			Max. Vy	11	-7767.82	168844.20	5225.96
			Max. Vx	8	7917.50	-5204.84	-171874.86
L2	120 - 90	Pole	Max. Torque	9			-1045.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16336.61	1980.01	-318.54
			Max. Mx	11	-8942.09	437885.35	10780.10
			Max. My	8	-8931.22	-10736.68	-445034.85
			Max. Vy	11	-10483.40	437885.35	10780.10
L3	90 - 60	Pole	Max. Vx	8	10634.47	-10736.68	-445034.85
			Max. Torque	8			-2134.44
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23408.78	3034.61	-43.72
			Max. Mx	11	-13748.05	791927.58	17236.04
			Max. My	8	-13744.25	-17331.23	-800010.38
L4	60 - 30	Pole	Max. Vy	11	-12872.98	791927.58	17236.04
			Max. Vx	8	12898.82	-17331.23	-800010.38
			Max. Torque	9			-2472.15
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31508.16	4728.21	-1390.17
			Max. Mx	11	-19554.07	1218777.65	23313.91
L5	30 - 0	Pole	Max. My	8	-19551.53	-23692.17	-1228490.83
			Max. Vy	11	-15161.77	1218777.65	23313.91
			Max. Vx	8	15213.33	-23692.17	-1228490.83
			Max. Torque	8			-3110.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40775.26	5677.36	-1938.17
			Max. Mx	11	-26903.43	1698630.50	29617.81
			Max. My	8	-26903.36	-30173.22	-1709827.96
			Max. Vy	11	-16786.44	1698630.50	29617.81
			Max. Vx	8	16835.90	-30173.22	-1709827.96
			Max. Torque	8			-3158.20

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	20	40775.26	-2826.37	-4662.53
	Max. H _x	11	26910.96	16774.37	208.49
	Max. H _z	2	26910.96	240.43	16796.09
	Max. M _x	2	1705157.72	240.43	16796.09
	Max. M _z	5	1690371.41	-16718.80	-215.71
	Max. Torsion	2	2964.12	240.43	16796.09
	Min. Vert	1	26910.96	0.00	0.00
	Min. H _x	5	26910.96	-16718.80	-215.71
	Min. H _z	8	26910.96	-215.31	-16823.75

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 11 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M _x	8	-1709827.95	-215.31	-16823.75
	Min. M _z	11	-1698630.50	16774.37	208.49
	Min. Torsion	8	-3158.18	-215.31	-16823.75

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	26910.96	0.00	0.00	235.48	811.36	0.00
Dead+Wind 0 deg - No Ice	26910.96	-240.43	-16796.09	-1705157.72	34106.61	-2964.12
Dead+Wind 30 deg - No Ice	26910.96	8144.24	-14433.09	-1461234.11	-816167.74	-2676.44
Dead+Wind 60 deg - No Ice	26910.96	14381.89	-8215.60	-825980.60	-1450214.03	-1896.42
Dead+Wind 90 deg - No Ice	26910.96	16718.80	215.71	31631.43	-1690371.41	-386.47
Dead+Wind 120 deg - No Ice	26910.96	14575.32	8632.77	884400.10	-1478038.49	1304.83
Dead+Wind 150 deg - No Ice	26910.96	8557.66	14706.49	1498101.75	-872988.40	2507.95
Dead+Wind 180 deg - No Ice	26910.96	215.31	16823.75	1709827.95	-30173.65	3158.18
Dead+Wind 210 deg - No Ice	26910.96	-8189.63	14454.72	1464574.02	822436.92	2897.63
Dead+Wind 240 deg - No Ice	26910.96	-14413.81	8230.91	828710.10	1456223.87	1964.17
Dead+Wind 270 deg - No Ice	26910.96	-16774.37	-208.49	-29617.74	1698630.50	580.37
Dead+Wind 300 deg - No Ice	26910.96	-14620.61	-8597.53	-879341.45	1484599.71	-1080.66
Dead+Wind 330 deg - No Ice	26910.96	-8558.80	-14652.01	-1490915.55	874726.77	-2447.71
Dead+Ice+Temp	40775.26	-0.00	0.00	1938.17	5677.36	-0.03
Dead+Wind 0 deg+Ice+Temp	40775.26	-73.87	-5347.65	-563148.21	14690.05	-905.40
Dead+Wind 30 deg+Ice+Temp	40775.26	2703.17	-4577.95	-481608.10	-277194.02	-1374.79
Dead+Wind 60 deg+Ice+Temp	40775.26	4702.28	-2566.72	-268906.33	-488227.90	-1165.53
Dead+Wind 90 deg+Ice+Temp	40775.26	5407.71	96.30	13044.78	-563598.95	-530.60
Dead+Wind 120 deg+Ice+Temp	40775.26	4725.97	2727.17	291361.83	-492262.86	-90.87
Dead+Wind 150 deg+Ice+Temp	40775.26	2826.37	4662.53	495509.88	-292104.72	132.20
Dead+Wind 180 deg+Ice+Temp	40775.26	147.27	5384.30	570884.97	-9894.72	469.52
Dead+Wind 210 deg+Ice+Temp	40775.26	-2653.80	4598.86	487692.76	284322.24	1123.20
Dead+Wind 240 deg+Ice+Temp	40775.26	-4609.39	2647.06	280412.88	491635.63	711.31
Dead+Wind 270 deg+Ice+Temp	40775.26	-5361.55	-40.71	-3797.14	571312.37	293.57
Dead+Wind 300 deg+Ice+Temp	40775.26	-4661.86	-2722.85	-286658.78	498126.30	-304.61
Dead+Wind 330 deg+Ice+Temp	40775.26	-2705.84	-4660.05	-490865.81	292578.98	-860.49
Dead+Wind 0 deg - Service	26910.96	-93.92	-6560.97	-666280.16	13843.83	-1161.51
Dead+Wind 30 deg - Service	26910.96	3181.35	-5637.93	-570935.30	-318460.67	-1048.31
Dead+Wind 60 deg - Service	26910.96	5617.92	-3209.22	-322663.53	-566256.39	-742.61
Dead+Wind 90 deg - Service	26910.96	6530.78	84.26	12507.88	-660125.77	-151.55
Dead+Wind 120 deg - Service	26910.96	5693.48	3372.18	345798.58	-577154.43	510.64
Dead+Wind 150 deg - Service	26910.96	3342.84	5744.72	585657.91	-340684.09	981.99
Dead+Wind 180 deg - Service	26910.96	84.11	6571.78	668396.18	-11281.77	1237.18
Dead+Wind 210 deg - Service	26910.96	-3199.07	5646.38	572529.06	321936.00	1135.69
Dead+Wind 240 deg - Service	26910.96	-5630.39	3215.20	324017.65	569629.90	770.28
Dead+Wind 270 deg - Service	26910.96	-6552.49	-81.44	-11433.24	664377.67	227.84
Dead+Wind 300 deg - Service	26910.96	-5711.18	-3358.41	-343532.29	580741.20	-423.53
Dead+Wind 330 deg - Service	26910.96	-3343.28	-5723.44	-582557.29	342386.23	-959.45

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-26910.96	0.00	0.00	26910.96	0.00	0.000%

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 12 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
2	-240.43	-26910.96	-16796.09	240.43	26910.96	16796.09	0.000%
3	8144.24	-26910.96	-14433.09	-8144.24	26910.96	14433.09	0.000%
4	14381.89	-26910.96	-8215.60	-14381.89	26910.96	8215.60	0.000%
5	16718.80	-26910.96	215.71	-16718.80	26910.96	-215.71	0.000%
6	14575.32	-26910.96	8632.77	-14575.32	26910.96	-8632.77	0.000%
7	8557.66	-26910.96	14706.49	-8557.66	26910.96	-14706.49	0.000%
8	215.31	-26910.96	16823.75	-215.31	26910.96	-16823.75	0.000%
9	-8189.63	-26910.96	14454.72	8189.63	26910.96	-14454.72	0.000%
10	-14413.81	-26910.96	8230.91	14413.81	26910.96	-8230.91	0.000%
11	-16774.37	-26910.96	-208.49	16774.37	26910.96	208.49	0.000%
12	-14620.61	-26910.96	-8597.53	14620.61	26910.96	8597.53	0.000%
13	-8558.80	-26910.96	-14652.01	8558.80	26910.96	14652.01	0.000%
14	0.00	-40775.26	0.00	0.00	40775.26	-0.00	0.000%
15	-73.87	-40775.26	-5347.65	73.87	40775.26	5347.65	0.000%
16	2703.17	-40775.26	-4577.94	-2703.17	40775.26	4577.95	0.000%
17	4702.28	-40775.26	-2566.71	-4702.28	40775.26	2566.72	0.000%
18	5407.70	-40775.26	96.30	-5407.71	40775.26	-96.30	0.000%
19	4725.96	-40775.26	2727.17	-4725.97	40775.26	-2727.17	0.000%
20	2826.37	-40775.26	4662.52	-2826.37	40775.26	-4662.53	0.000%
21	147.27	-40775.26	5384.29	-147.27	40775.26	-5384.30	0.000%
22	-2653.80	-40775.26	4598.85	2653.80	40775.26	-4598.86	0.000%
23	-4609.39	-40775.26	2647.06	4609.39	40775.26	-2647.06	0.000%
24	-5361.54	-40775.26	-40.71	5361.55	40775.26	40.71	0.000%
25	-4661.86	-40775.26	-2722.85	4661.86	40775.26	2722.85	0.000%
26	-2705.84	-40775.26	-4660.04	2705.84	40775.26	4660.05	0.000%
27	-93.92	-26910.96	-6560.97	93.92	26910.96	6560.97	0.000%
28	3181.34	-26910.96	-5637.92	-3181.35	26910.96	5637.93	0.000%
29	5617.92	-26910.96	-3209.22	-5617.92	26910.96	3209.22	0.000%
30	6530.78	-26910.96	84.26	-6530.78	26910.96	-84.26	0.000%
31	5693.48	-26910.96	3372.18	-5693.48	26910.96	-3372.18	0.000%
32	3342.84	-26910.96	5744.72	-3342.84	26910.96	-5744.72	0.000%
33	84.11	-26910.96	6571.78	-84.11	26910.96	-6571.78	0.000%
34	-3199.07	-26910.96	5646.38	3199.07	26910.96	-5646.38	0.000%
35	-5630.39	-26910.96	3215.20	5630.39	26910.96	-3215.20	0.000%
36	-6552.49	-26910.96	-81.44	6552.49	26910.96	81.44	0.000%
37	-5711.18	-26910.96	-3358.41	5711.18	26910.96	3358.41	0.000%
38	-3343.28	-26910.96	-5723.44	3343.28	26910.96	5723.44	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00005694
3	Yes	5	0.00000001	0.00019943
4	Yes	5	0.00000001	0.00023802
5	Yes	4	0.00000001	0.00012704
6	Yes	5	0.00000001	0.00025128
7	Yes	5	0.00000001	0.00022893
8	Yes	5	0.00000001	0.00003681
9	Yes	5	0.00000001	0.00025037
10	Yes	5	0.00000001	0.00020497
11	Yes	4	0.00000001	0.00079482
12	Yes	5	0.00000001	0.00023764
13	Yes	5	0.00000001	0.00026355
14	Yes	4	0.00000001	0.00004031

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330)	Page 13 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

15	Yes	5	0.00000001	0.00017667
16	Yes	5	0.00000001	0.00020291
17	Yes	5	0.00000001	0.00020782
18	Yes	5	0.00000001	0.00017452
19	Yes	5	0.00000001	0.00021127
20	Yes	5	0.00000001	0.00021311
21	Yes	5	0.00000001	0.00017702
22	Yes	5	0.00000001	0.00021297
23	Yes	5	0.00000001	0.00020729
24	Yes	5	0.00000001	0.00017750
25	Yes	5	0.00000001	0.00021350
26	Yes	5	0.00000001	0.00021604
27	Yes	4	0.00000001	0.00031627
28	Yes	4	0.00000001	0.00050211
29	Yes	4	0.00000001	0.00070108
30	Yes	4	0.00000001	0.00006001
31	Yes	4	0.00000001	0.00070851
32	Yes	4	0.00000001	0.00059365
33	Yes	4	0.00000001	0.00027916
34	Yes	4	0.00000001	0.00077701
35	Yes	4	0.00000001	0.00051818
36	Yes	4	0.00000001	0.00012343
37	Yes	4	0.00000001	0.00063136
38	Yes	4	0.00000001	0.00079078

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	25.678	32	1.4365	0.0078
L2	120 - 90	16.972	32	1.2561	0.0050
L3	90 - 60	9.795	32	0.9890	0.0037
L4	60 - 30	4.472	32	0.6752	0.0022
L5	30 - 0	1.170	32	0.3532	0.0010

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	800MHz 2X50W RRH W/FILTER	32	24.777	1.4205	0.0075	35431
145.00	2.4" Dia. x 5-ft Pipe	32	24.177	1.4097	0.0072	35431
140.00	742 213 w/ Mount Pipe	32	22.686	1.3823	0.0067	17715
130.00	Side Arm Mount [SO 701-3]	32	19.761	1.3237	0.0058	8857
127.00	VHLP2-11	32	18.907	1.3045	0.0055	7702
99.00	Side Arm Mount [SO 701-1]	32	11.754	1.0771	0.0040	5851
93.00	BA6312	32	10.429	1.0189	0.0038	5836
88.00	MF-900B	32	9.382	0.9688	0.0036	5822
59.00	Side Arm Mount [SO 701-1]	32	4.327	0.6646	0.0022	5610

Maximum Tower Deflections - Design Wind

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 14 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	65.668	7	3.6756	0.0202
L2	120 - 90	43.413	7	3.2145	0.0129
L3	90 - 60	25.058	7	2.5309	0.0094
L4	60 - 30	11.442	7	1.7277	0.0057
L5	30 - 0	2.994	7	0.9038	0.0025

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	800MHz 2X50W RRH W/FILTER	7	63.366	3.6346	0.0194	13973
145.00	2.4" Dia. x 5-ft Pipe	7	61.833	3.6070	0.0189	13973
140.00	742 213 w/ Mount Pipe	7	58.019	3.5370	0.0175	6986
130.00	Side Arm Mount [SO 701-3]	7	50.543	3.3871	0.0150	3491
127.00	VHLP2-11	7	48.360	3.3382	0.0143	3036
99.00	Side Arm Mount [SO 701-1]	7	30.070	2.7564	0.0103	2298
93.00	BA6312	7	26.681	2.6074	0.0097	2290
88.00	MF-900B	7	24.002	2.4792	0.0092	2283
59.00	Side Arm Mount [SO 701-1]	7	11.071	1.7007	0.0056	2196

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
L1	150 - 120 (1)	P24x1/4	30.00	0.00	0.0	23.696	18.6532	-4516.08	442003.00	0.010
L2	120 - 90 (2)	P30x3/8	30.00	0.00	0.0	25.075	34.9011	-8919.01	875146.00	0.010
L3	90 - 60 (3)	P36x3/8	30.00	0.00	0.0	23.696	41.9697	-13732.50	994507.00	0.014
L4	60 - 30 (4)	P42x3/8	30.00	0.00	0.0	22.711	49.0383	-19545.00	1113690.00	0.018
L5	30 - 0 (5)	P42x1/2	30.00	0.00	0.0	24.681	65.1880	-26903.20	1608900.00	0.017

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 120 (1)	P24x1/4	175430.00	19.206	23.696	0.811	0.00	0.000	23.696	0.000
L2	120 - 90 (2)	P30x3/8	451702.50	21.232	25.075	0.847	0.00	0.000	25.075	0.000
L3	90 - 60 (3)	P36x3/8	812619.17	26.360	23.696	1.112	0.00	0.000	23.696	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Darryl H.'s Quarry Site (Above (BU 876330))	Page 15 of 15
	Project TEP No. 25667.19095	Date 15:28:07 05/13/14
	Client Crown Castle	Designed by reaton

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L4	60 - 30 (4)	P42x3/8	1246791.67	29.581	22.711	1.302	0.00	0.000	22.711	0.000
L5	30 - 0 (5)	P42x1/2	1733900.00	31.131	24.681	1.261	0.00	0.000	24.681	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 120 (1)	P24x1/4	8018.15	0.860	16.800	0.051	786.82	0.043	11.901	0.004
L2	120 - 90 (2)	P30x3/8	10760.80	0.617	16.800	0.037	1880.52	0.044	15.644	0.003
L3	90 - 60 (3)	P36x3/8	13103.10	0.624	16.800	0.037	1323.02	0.021	11.901	0.002
L4	60 - 30 (4)	P42x3/8	15409.20	0.628	16.800	0.037	2452.16	0.029	9.978	0.003
L5	30 - 0 (5)	P42x1/2	17027.40	0.522	16.800	0.031	2507.96	0.023	14.540	0.002

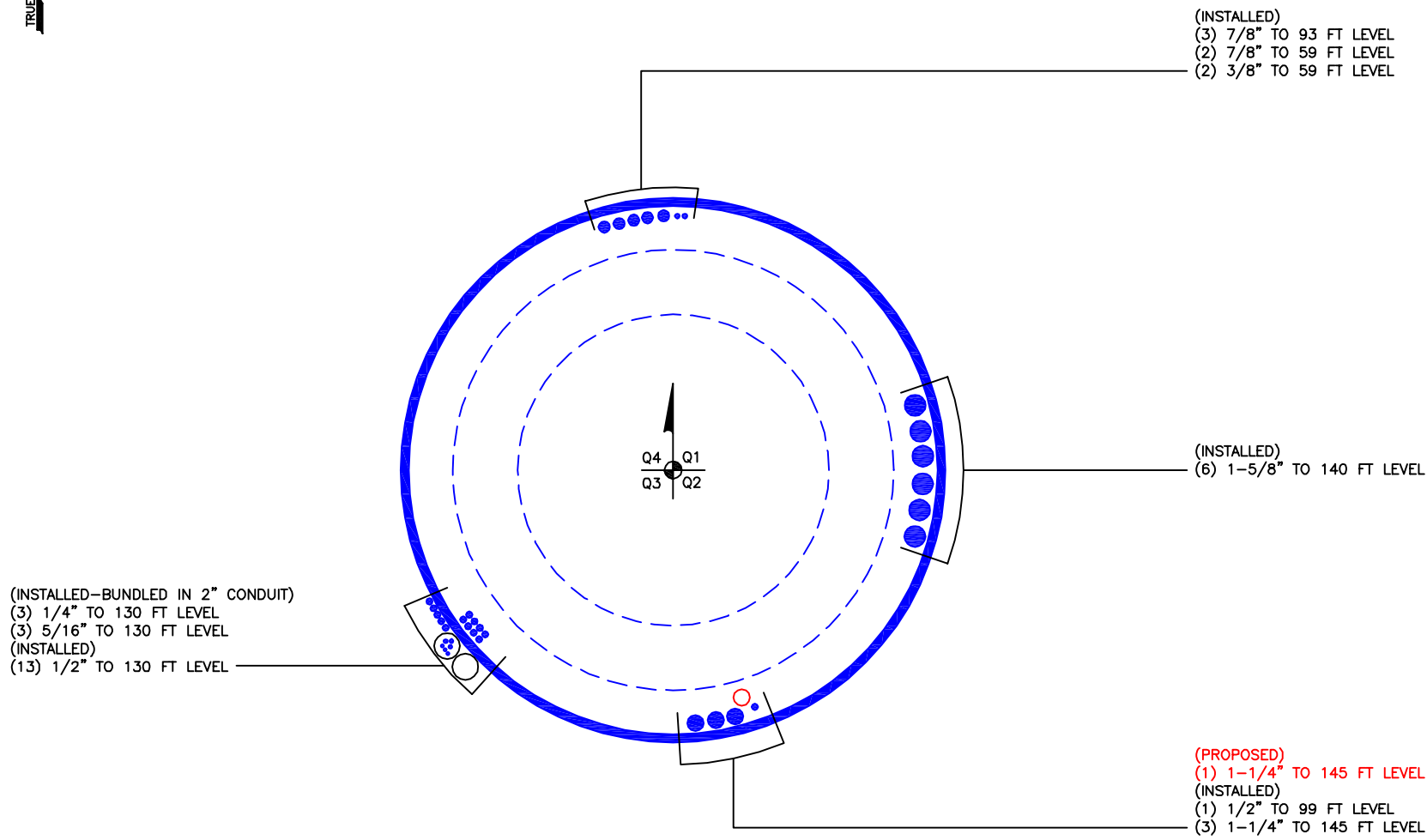
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Ratio f_v F_v	Ratio f_{vt} F_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 120 (1)	0.010	0.811	0.000	0.051	0.004	0.824	1.333	H1-3+VT
L2	120 - 90 (2)	0.010	0.847	0.000	0.037	0.003	0.858	1.333	H1-3+VT
L3	90 - 60 (3)	0.014	1.112	0.000	0.037	0.002	1.128	1.333	H1-3+VT
L4	60 - 30 (4)	0.018	1.302	0.000	0.037	0.003	1.322	1.333	H1-3+VT
L5	30 - 0 (5)	0.017	1.261	0.000	0.031	0.002	1.279	1.333	H1-3+VT

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF * P_{allow}$ lb	% Capacity	Pass Fail
L1	150 - 120	Pole	P24x1/4	1	-4516.08	589189.97	61.8	Pass
L2	120 - 90	Pole	P30x3/8	2	-8919.01	1166569.57	64.4	Pass
L3	90 - 60	Pole	P36x3/8	3	-13732.50	1325677.78	84.6	Pass
L4	60 - 30	Pole	P42x3/8	4	-19545.00	1484548.71	99.2	Pass
L5	30 - 0	Pole	P42x1/2	5	-26903.20	2144663.61	96.0	Pass
Summary								
Pole (L4)							99.2	Pass
RATING =							99.2	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876330
 Site Name: Darryl H.'s Quarry Site (Above)
 App #: 245342 Rev. 1

Reactions

Moment:	175.43	ft-kips
Axial:	4.516	kips
Shear:	8.018	kips
Elevation:	120	feet

Pole Manufacturer: Other

Bolt Data

Qty:	12	Bolt Fu:	105
Diameter (in.):	1.5	Bolt Fy:	81
Bolt Material:	A325	Bolt Fty:	44.00
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	35		

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

Flange Bolt Results

Bolt Tension Capacity, B:	103.65 kips
Max Bolt directly applied T:	19.67 Kips
Min. PL "tc" for B cap. w/o Pry:	3.614 in
Min PL "treq" for actual T w/ Pry:	1.190 in
Min PL "t1" for actual T w/o Pry:	1.575 in
T allowable with Prying:	55.58 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	19.67 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	19.0% Pass

Rigid
Service, ASD
Fty*ASIF

Plate Data

Diam:	41	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	6.28	in

Exterior Flange Plate Results

Flexural Check	
Compression Side Plate Stress:	13.2 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	36.7% Pass
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	35.4% Pass

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
25.48

Stiffener Data (Welding at Both Sides)

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

n/a

Stiffener Results

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

Pole Results

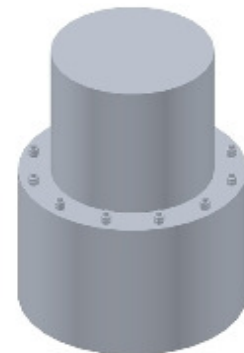
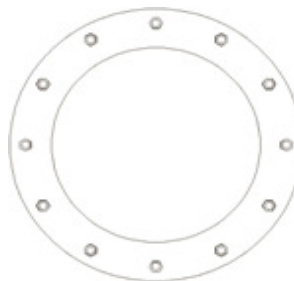
Pole Punching Shear Check: n/a

Pole Data

Diam:	24	in
Thick:	0.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------



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

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876330
 Site Name: Darryl H.'s Quarry Site (Above)
 App #: 245342 Rev. 1

Reactions

Moment:	451.702	ft-kips
Axial:	8.919	kips
Shear:	10.761	kips
Elevation:	90	feet

Pole Manufacturer: Other

Bolt Data

Qty:	16	Bolt Fu:	105
Diameter (in.):	1.5	Bolt Fy:	81
Bolt Material:	A325	Bolt Fty:	44.00
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	41		

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

Flange Bolt Results

Bolt Tension Capacity, B:	103.65 kips
Max Bolt directly applied T:	32.49 Kips
Min. PL "tc" for B cap. w/o Pry:	3.733 in
Min PL "treq" for actual T w/ Pry:	1.587 in
Min PL "t1" for actual T w/o Pry:	2.090 in
T allowable with Prying:	51.62 kips
Prying Force, Q:	3.47 kips
Total Bolt Tension=T+Q:	35.96 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	34.7% Pass

Rigid
Service, ASD
Fty*ASIF

Plate Data

Diam:	47	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	5.89	in

Exterior Flange Plate Results

Flexural Check	
Compression Side Plate Stress:	24.2 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	67.3% Pass
Prying Occurs, PL Check:	
Tension Side Stress Ratio, (treq/t)^2:	63.0% Pass

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
27.95

Stiffener Data (Welding at Both Sides)

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

n/a

Stiffener Results

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

Pole Results

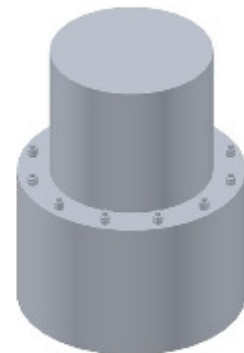
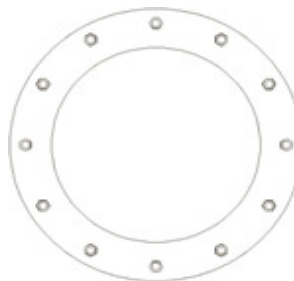
Pole Punching Shear Check: n/a

Pole Data

Diam:	30	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------



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

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876330
 Site Name: Darryl H.'s Quarry Site (Above)
 App #: 245342 Rev. 1

Reactions		
Moment:	812.619	ft-kips
Axial:	13.72	kips
Shear:	13.733	kips
Elevation:	60	feet

Pole Manufacturer:	Other
--------------------	-------

Bolt Data		
Qty:	18	
Diameter (in.):	1.5	Bolt Fu: 105
Bolt Material:	A325	Bolt Fy: 81
N/A:		Bolt Fty: 44.00
N/A:		<-- Disregard
N/A:		<-- Disregard
Circle (in.):	47	

Plate Data		
Diam:	53	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	6.28	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333

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

Flange Bolt Results

Bolt Tension Capacity, B: 103.65 kips
 Max Bolt directly applied T: 45.34 Kips
 Min. PL "tc" for B cap. w/o Pry: 3.614 in
 Min PL "treq" for actual T w/ Pry: 1.806 in
 Min PL "t1" for actual T w/o Pry: 2.391 in
 T allowable with Prying: 55.58 kips
 Prying Force, Q: 17.23 kips
 Total Bolt Tension=T+Q: 62.58 kips
 Prying Bolt Stress Ratio=(T+Q)/(B): 60.4% **Pass**

Rigid
Service, ASD
Fty*ASIF

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 33.1 ksi
 Allowable Plate Stress: 36.0 ksi
 Compression Plate Stress Ratio: 91.9% **Pass**
Prying Occurs, PL Check:
 Tension Side Stress Ratio, (treq/t)^2: 81.6% **Pass**

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length: 30.22

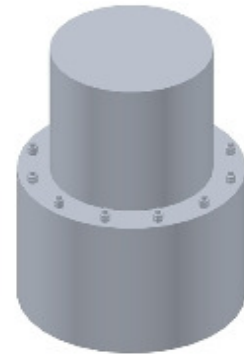
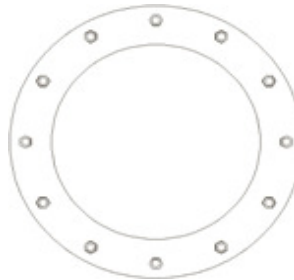
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876330
 Site Name: Darryl H.'s Quarry Site (Above)
 App #: 245342 Rev. 1

Reactions		
Moment:	1246.791	ft-kips
Axial:	19.545	kips
Shear:	15.409	kips
Elevation:	30	feet

Pole Manufacturer:	Other
--------------------	-------

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

Bolt Data		
Qty:	18	
Diameter (in.):	1.5	Bolt Fu: 105
Bolt Material:	A325	Bolt Fy: 81
N/A:		Bolt Fty: 44.00
N/A:		
Circle (in.):	47	

Flange Bolt Results

Bolt Tension Capacity, **B**: 103.65 kips
 Max Bolt directly applied T: 69.65 Kips
 Min. PL "tc" for **B cap. w/o Pry**: 2.031 in
 Min PL "treq" for actual **T w/ Pry**: 1.246 in
 Min PL "t1" for actual **T w/o Pry**: 1.665 in
 T allowable with Prying: 102.65 kips
 Prying Force, Q: 0.00 kips
 Total Bolt Tension=T+Q: 69.65 kips
 Prying Bolt Stress Ratio=(T+Q)/(B): 67.2% **Pass**

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	53	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	7.33	in

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 23.2 ksi
 Allowable Plate Stress: 36.0 ksi
 Compression Plate Stress Ratio: 64.4% **Pass**
No Prying
 Tension Side Stress Ratio, (treq/t)^2: 38.8% **Pass**

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
21.10

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

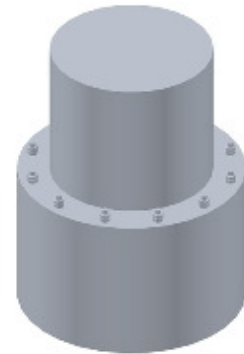
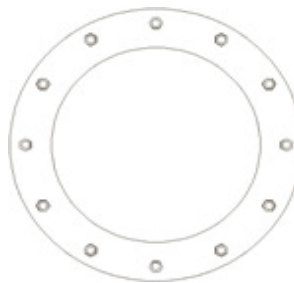
Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333



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

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

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

TIA Rev F

Site Data

BU#: 876330
Site Name: Darryl H.'s Quarry Site (Above)
App #: 245342 Rev. 1
Pole Manufacturer: Other

Reactions

Moment:	1733.902	ft-kips
Axial:	26.911	kips
Shear:	17.015	kips

Anchor Rod Data

Qty:	18	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	47	in

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

Anchor Rod Results

Maximum Rod Tension:	96.9 Kips
Allowable Tension:	97.2 Kips
Anchor Rod Stress Ratio:	99.7% Pass

Stiffened
Service, ASD
Fty*ASIF

Plate Data

Diam:	53	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.33	in

Base Plate Results

Base Plate Stress:	31.1 ksi	Flexural Check
Allowable Plate Stress:	36.0 ksi	
Base Plate Stress Ratio:	86.3% Pass	

Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length:
N/A, Roark

Stiffener Data (Welding at both sides)

Config:	1	*
Weld Type:	Groove	
Groove Depth:	0.375	in **
Groove Angle:	45	degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5	in
Height:	16	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Stiffener Results

Horizontal Weld :	43.9% Pass
Vertical Weld:	26.2% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	8.9% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	44.2% Pass
Plate Comp. (AISC Bracket):	42.9% Pass

Pole Results

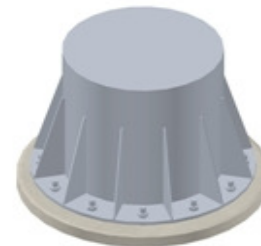
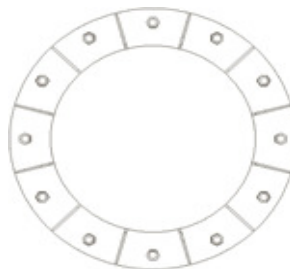
Pole Punching Shear Check:	7.9% Pass
----------------------------	------------------

Pole Data

Diam:	42	in
Thick:	0.5	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------



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

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

JOB: Darryl H.'s Quarry Site (Above (BU 876330))
 SHEET NUMBER: 1 OF 2
 CALCULATED BY: TML DATE 5/13/2014
 CHECKED BY: RKE DATE 5/13/2014

Pad and Pier Foundation for Monopole - TIA-222-F

Q_a , ALLOWABLE SOIL PRESS. (ksf)	10
NET or GROSS	NET
SOIL DENSITY (pcf)	124.5

F'_c (ksi)	3
F'_y (ksi)	60

Base Reactions LC1: Maximum Wind

M , MOMENT (k-ft)	1733.9
P_t , TOTAL DOWNLOAD (k)	26.9
H , HORIZONTAL SHEAR (k)	17.0

Base Reaction LC 2: Ice Wind + Ice

M (k-ft)	576.1
P_t (k)	40.6
H (k)	5.5

Try:

L (ft.)	B (ft.)	t (ft.)	Soil depth to TOP of mat (ft.)	Soil depth to BOT. of mat (ft.)	Pier dia./width (ft.)	Pier Height, h (cu.ft.)	Pier Shape
18.5	18.5	6	0	5.5	3.50	0.00	Round

W_m , Weight of Mat (k) =	308.0
W_p , Weight of Pier (k) =	0.0
W_s , WEIGHT OF SOIL (k) =	0.0

Concrete Vol. (cu ft) 76.06

CHECK DESIGN CRITERIA

CHECK STABILITY:

	LC1	LC2
$Mst = P * (L/2) + (V_{f+s} * L/2) =$	3098.2 k-ft	3225.2 k-ft
$Mot = M + H*(t+h) =$	1836.0 k-ft	609 k-ft
$SF = Mot/Mst =$	1.69 > 1.5	5.30 > 1.5

Capacity: 88.9%

CHECK BEARING PRESSURE

	LC1	LC2
$P = P_t + W_f + W_s =$	334.9 k	348.7 k
$e = M / P =$	5.48 ft	1.75 ft
$L/6 =$	3.08 ft	3.08 ft
Width of Wedge, $L' =$	11.31 ft	18.50 ft
0 Deg Wind: $Q_{max} =$	2.52 ksf	0.91 ksf
45 Deg Wind: $Q_{max} =$	3.69 ksf	1.15 ksf

Capacity: 36.9%

JOB: Darryl H.'s Quarry Site (Above (BU 876330))
 SHEET NUMBER: 2 OF 2
 CALCULATED BY: TML DATE 5/13/2014
 CHECKED BY: RKE DATE 5/13/2014

CHECK ONE WAY SHEAR

$V_u =$ 132.5 k
 $V_c =$ 1240.3 k

Capacity: 10.68%

CHECK TWO WAY SHEAR: PUNCHING + UNBALANCED MOMENT

$V_u =$ 9.7 psi
 $\phi V_c =$ 164.3 psi

Capacity: 5.88%

CALCULATE REINFORCING REQUIRED

$F'_c = 3.0$ ksi $F'_y = 60.0$ ksi

Temp & Shrinkage reinforcing, $A_{s,temp} =$ 0.40 in²/ft (ACI 318 Sec. 10.5.4)

BOTTOM REINFORCING

Bar Size = 8
 Bar Spacing, c-c: 11.3
 d = 67.5 in.

$\mu =$ 691.1 in-k/ft

$\phi M_n = 0.9 * A_s * F_y * d * (1 - 0.59 * A_s * F_y / (b * d * F'_c))$

Solution: $A_{s,req} =$ 0.19 in²/ft

Check, $A_s =$ 0.84 in²/ft

Capacity: 22.69%

TOP REINFORCING

Bar Size = 8
 Bar Spacing, c-c: 11.3
 d = 67.5 in.

$\mu =$ 394.7 in-k/ft

$\phi M_n = 0.9 * A_s * F_y * d * (1 - 0.59 * A_s * F_y / (b * d * F'_c))$

Solution: $A_{s,req} =$ 0.11 in²/ft

Bar Spacing, c-c:

$A_{s,req} < A_{s,t}$, Use $A_{s,t}$

Check, $A_s =$ 0.84 in²/ft

Top Reinforcing O.K.

Capacity: 12.94%