Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

September 22, 2017

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

RE: **Notice of Exempt Modification for Sprint 2.5 Rework Crown Site BU: 876327**
Sprint Site ID: CT03XC066
59 McGuire Road, South Windsor, CT 06074
Latitude: 41° 48′ 10.77″ / Longitude: -72° 37′ 1.96″

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 146-foot level of the existing 150-foot monopole at 59 McGuire Road in South Windsor, CT. The tower is owned by Crown Castle. The property is owned by the McGuire Road Associates. Sprint intends to install three (3) antennas, three (3) RRHs, and one (1) hybrid cable.

This facility was approved by the Town of South Windsor in Special Permit No. 96-73P on November, 19, 1996. This approval was given with the following conditions:

4. Monopole must be available for two other co-locaters, if needed.
6. Monopole must be painted an unobtrusive color such as noncontrasting blue, grey, or black. The proposed galvanized steel is acceptable.
7. Routine maintenance must be performed to prevent deterioration of appearance (such as rust, peeling paint, etc.).

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to the Board of Selectman, Town of South Windsor Planning Department, as well as the property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that 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: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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:

Board of Selectman
Town of South Windsor
1540 Sullivan Avenue
South Windsor, CT 06074

Planning Department
Town of South Windsor
1540 Sullivan Avenue
South Windsor, CT 06074

McGuire Road Associates
111 Farm Brook Lane
South Windsor, CT 06074

Town of South Windsor
1540 SULLIVAN AVENUE • SOUTH WINDSOR, CONN. 06074
AREA CODE 860 / 644-2511

November 22, 1996

CERTIFIED MAIL

Thomas A. Cookingham, AICP
300 Research Parkway
Third Floor
Meriden, CT 06045

Dear Mr. Cookingham:

Re: Appl #96-73P, Monopole located at: 59 McGuire Road
South Windsor, CT

We are pleased to advise you that the Planning & Zoning Commission voted on November 19, 1996 to approve with modifications the above-referenced application for a Site Plan of Development on property located at 59 McGuire Road zone as shown on plans prepared by URS Greiner, Job No. 23224 and revised through October 25, 1996. This approval is subject to the following modifications:

1. No building permit will be issued until the final mylars have been filed in the Town Clerk's Office.

2. A landscape bond in the amount of $1,000 is required and must be submitted prior to filing of mylars.

3. All plans used in the field by the developer must bear the stamp and authorized signature of the Town of South Windsor.

4. Monopole must be made available to two other co-locaters, if needed.

5. Specification needed on the plans (i.e., quantities, size) for barberry plantings.

6. Monopole must be painted an unobtrusive color such as noncontrasting blue, grey or black. The proposed galvanized steel is acceptable.

7. Routine maintenance must be performed to prevent deterioration of appearance (such as rust, peeling paint, etc.).

8 Drainage of site low spots must be addressed.

Black and white transparent mylars of Drawing #YHA066C1 with the above modifications, together with three blueprint copies of the entire set of plans (including architectural elevations) must be submitted to this Commission within 30 days to be stamped and signed. The letters of approval of this Commission must be reproduced on the mylars.

After the mylars have been signed by the Commission, they will be returned to you for filing in the Office of the Town Clerk within 90 days. After filing these plans, a copy of the receipt must be submitted to the Planning Department.

Very truly yours,

PLANNING & ZONING COMMISSION

Russell G. Levack, Chairman

RGL/pmm

cc: Town Engineer
Chief Building Official
Assessor
Superintendent of Pollution Control
Fire Marshal
SPRINT PCS, 9 Barnes Industrial Road, Wallingford, CT 06492

Town of South Windsor, CT

Property Listing Report

Map Block Lot 5-14-1 | Account 58500059

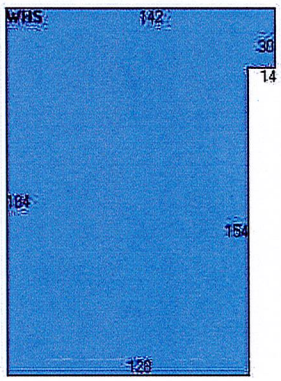
Property Information

Property Location	59 MCGUIRE ROAD
Owner	MCGUIRE ROAD ASSOCIATES LLC
Co-Owner	
Mailing Address	111 FARM BROOK LANE SOUTH WINDSOR CT 06074
Land Use	301 Industrial
Land Class	I
Zoning Code	GC
Census Tract	4875

Neighborhood	C600
Acreage	3.94
Utilities	
Lot Setting/Desc	
Water Information	UNKNOWN MDC AREA
Trash Day	MONDAY

Photo

Sketch



Primary Construction Details

Year Built	1940
Stories	1.00
Building Style	Warehouse
Building Use	Comm/Ind
Building Condition	D
Floors	Concrete
Total Rooms	0

Bedrooms	
Full Bathrooms	2
Half Bathrooms	
Bath Style	n/a
Kitchen Style	n/a
Roof Style	Gable
Roof Cover	Asphalt

Exterior Walls	Asphalt
Interior Walls	Minimum
Heating Type	Forced Hot Air
Heating Fuel	Oil
AC Type	
Gross Bldg Area	23972
Total Living Area	23972

Report Created On 9/20/2017

Town of South Windsor, CT

Property Listing Report | Map Block Lot 5-14-1 | Account 58500059

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	145900	102100
Extras	0	0
Improvements	178600	125000
Outbuildings	32700	22900
Land	369400	258600
Total	548000	383600

Outbuilding and Extra Items

Type	Description
Shed	7424.00 S.F.
Shed W/ Bsmt	540.00 S.F.
Garage	630.00 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	23972	23972

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
MCGUIRE ROAD ASSOCIATES LLC	1677/ 2	12/23/2004	650000
KING EDWARD G	738/ 161	8/27/1993	0

Report Created On 9/20/2017

Town of South Windsor, Connecticut - Assessment Parcel Map

Parcel: 58500059 Address: 59 MCGUIRE ROAD

Approximate Scale:
1 inch = 100 feet

0 80 160 240 Feet

Map Produced:
July 2012

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of South Windsor and its mapping contractors
assume no legal responsibility for the
information contained herein.

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	KINGS LOT
SITE CASCADE:	CT03XC066
SITE NUMBER:	876327
SITE ADDRESS:	59 McGUIRE ROAD SOUTH WINDSOR, CT 06074
SITE TYPE:	MONOPOLE TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 48' 10.83" N
41.803010°

LONGITUDE (NAD83):
72° 50' 12.70" W
-72.6172193°

COUNTY:
HARTFORD

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
TBD

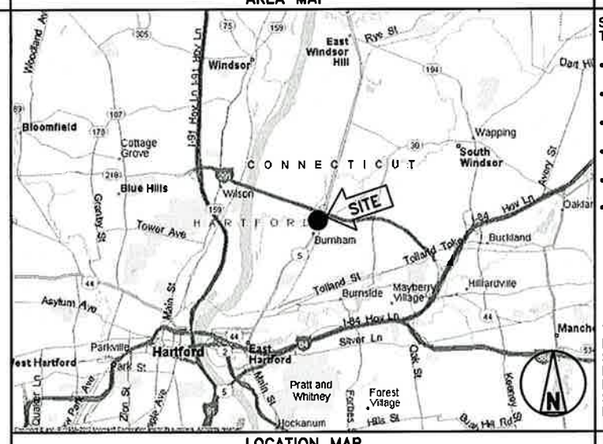
POWER COMPANY:
CONNECTICUT POWER & LIGHT
(860) 947-2000

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

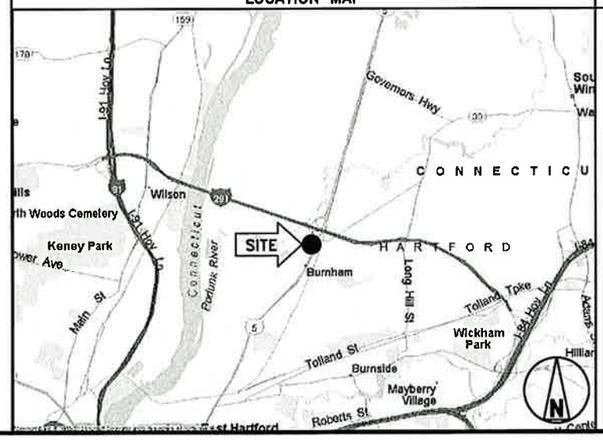
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

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 (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) HYBRID CABLE
- INSTALL (8) NEW BATTERIES IN EXISTING BBU CABINET
- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS CABINET

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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

APPROVED
By Craig Koppang at 11:28 am, Aug 09, 2017

APPROVED
By Jeff Barbadora at 11:26 am, Feb 21, 2014

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

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

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:
KINGS LOT

SITE CASCADE:
CT03XC066

SITE ADDRESS:
59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

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

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

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

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

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:

KINGS
LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

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

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

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

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

1.4 TESTS AND INSPECTIONS:

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

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

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

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

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CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
11. ALL AVAILABLE JURISDICTIONAL INFORMATION
12. PDF SCAN OF REDLINES PRODUCED IN FIELD

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

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

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

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

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING––TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

1. 1SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION––FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING–TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING –TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

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

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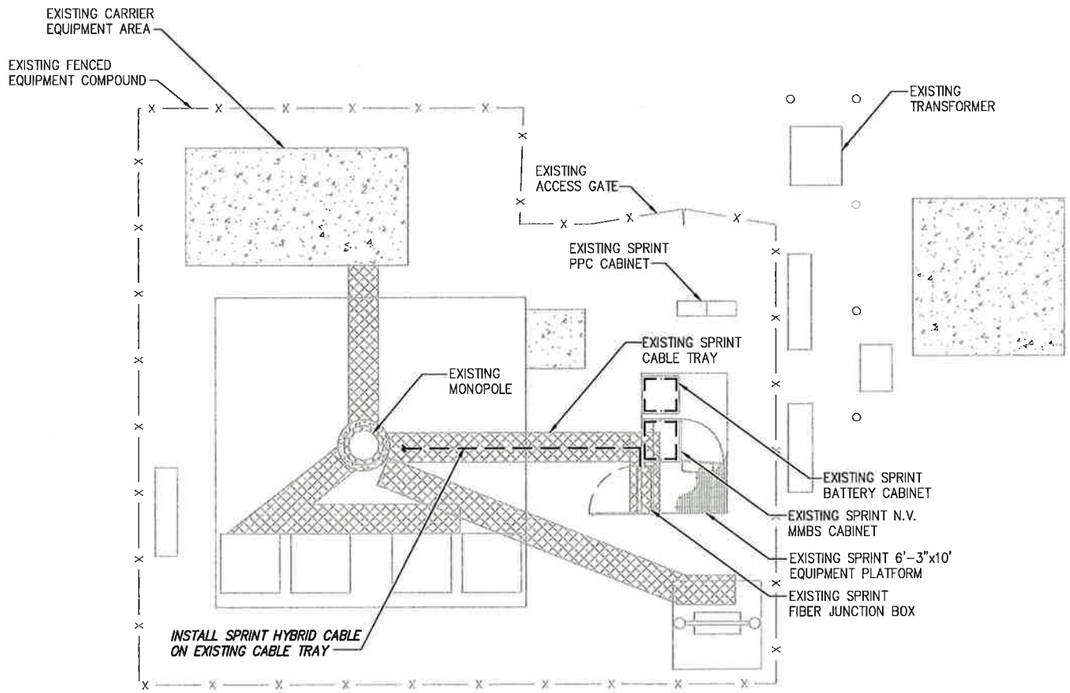
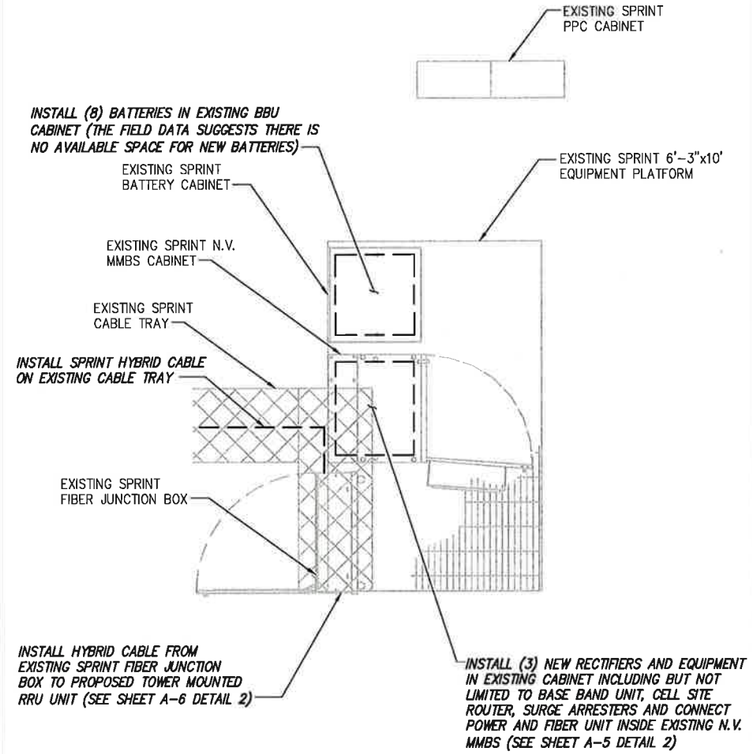
SP-3

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



2.5' 0 2.5' 5' 10'
(IN FEET)
SCALE: 24"x36" SHEET 1" = 5'-0"
SCALE: 11"x17" SHEET 1" = 10'-0"

OVERALL SITE PLAN | NO SCALE | 1



1' 0 1' 2' 4'
(IN FEET)
SCALE: 24"x36" SHEET 1" = 2'-0"
SCALE: 11"x17" SHEET 1" = 4'-0"

SPRINT EQUIPMENT PLAN | NO SCALE | 2

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:

KINGS
LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

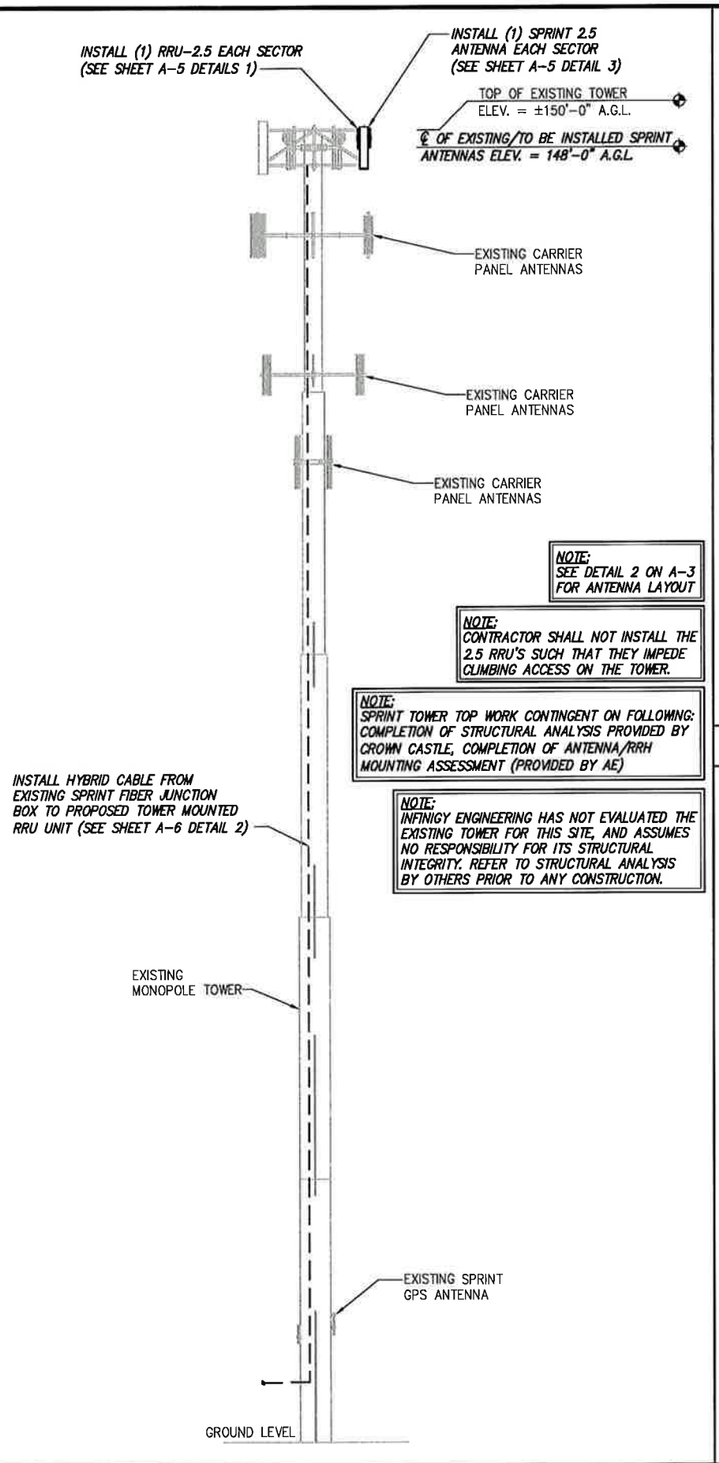
59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1



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

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

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:
INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING TOWER FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

TOWER ELEVATION	NO SCALE	1

DETAIL NOT USED	NO SCALE	2

DETAIL NOT USED	NO SCALE	3

DETAIL NOT USED	NO SCALE	4

PLANS PREPARED FOR:

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KINGS
LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

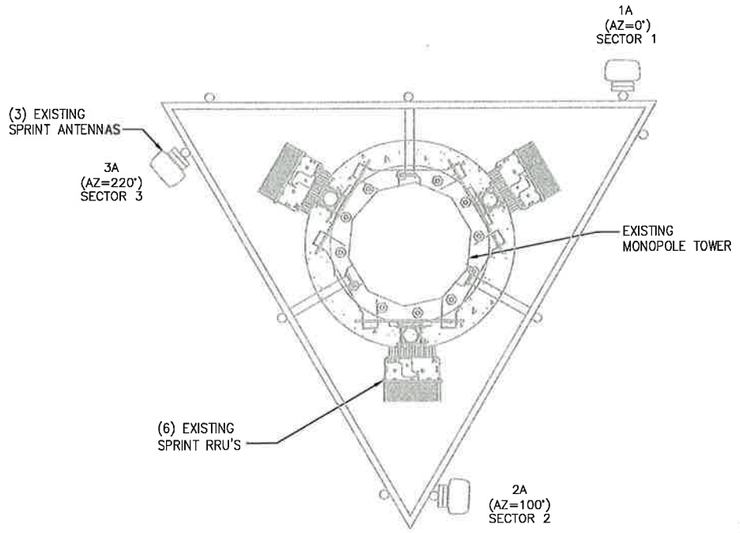
59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

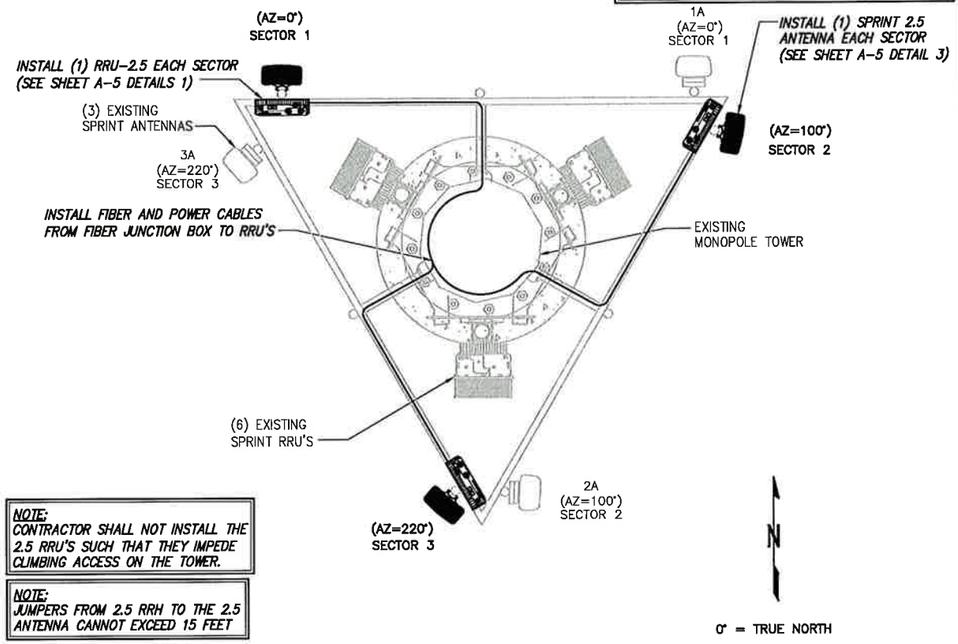
TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-2

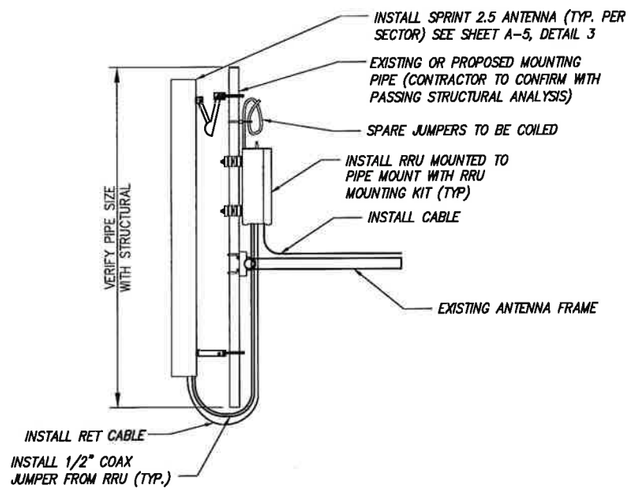


EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1



FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

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

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

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

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

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

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SITE NAME:

KINGS
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SITE CASCADE:

CT03XC066

SITE ADDRESS:

59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

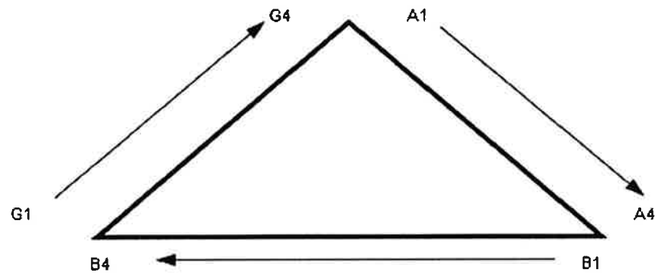
A-3

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

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

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

Figure 1: Antenna Orientation



NOTES:

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.

2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.

3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.

4. THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.

5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.

6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.

7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.

8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

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

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

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KINGS
LOT

SITE CASCADE:
CT03XC066

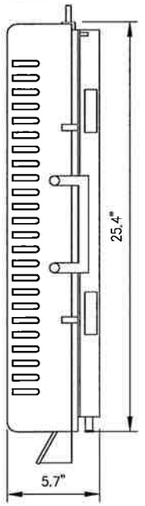
SITE ADDRESS:
59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:
COLOR CODING
AND NOTES

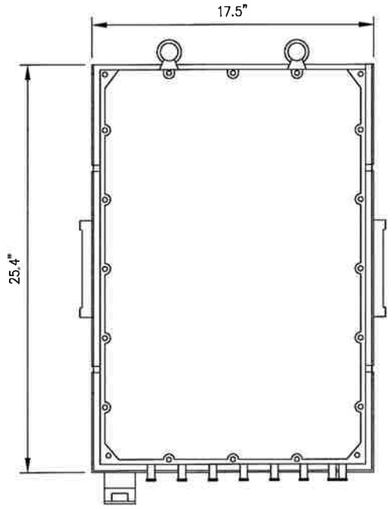
SHEET NUMBER:
A-4

RRU: ALCATEL LUCENT TD-RRH8X20

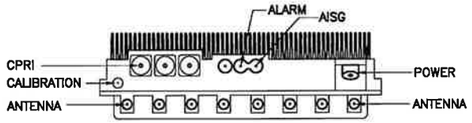
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

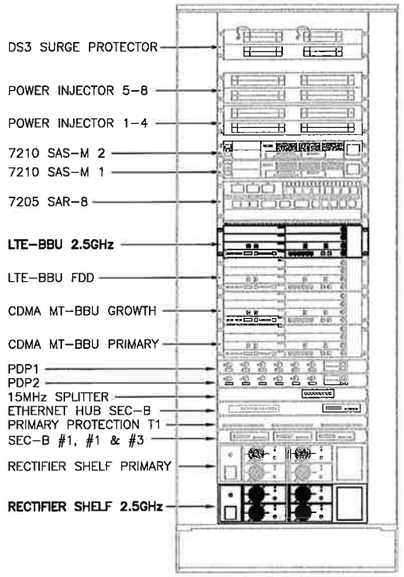


PLAN VIEW

NOTES

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

2.5 RRU'S | NO SCALE | 1

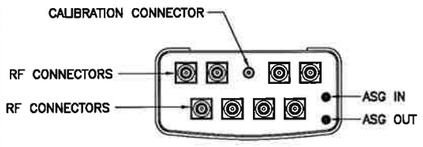


FRONT VIEW

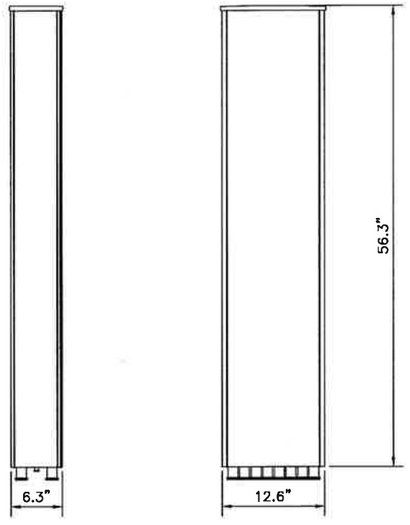
2.5 EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

ANTENNA RFS APXVTM14-C-I20

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



PLAN VIEW



2.5 ANTENNA | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

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Sprint
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SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-5

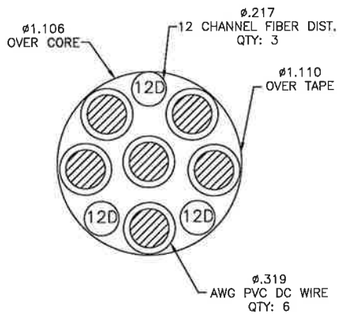
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

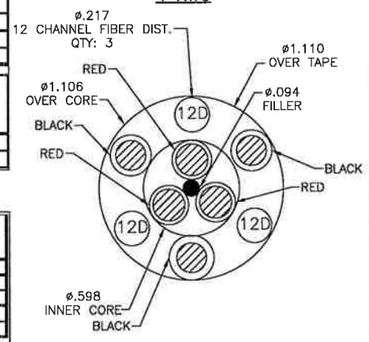
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

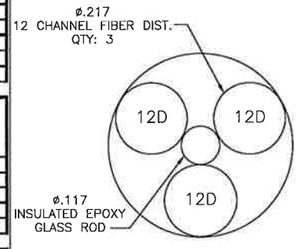
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



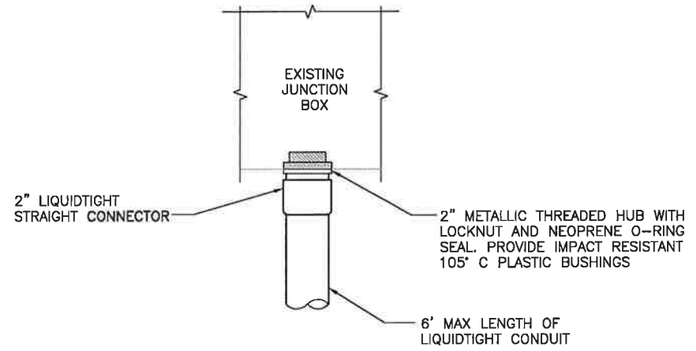
4 AWG



8 & 6 AWG



FIBER ONLY



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 3

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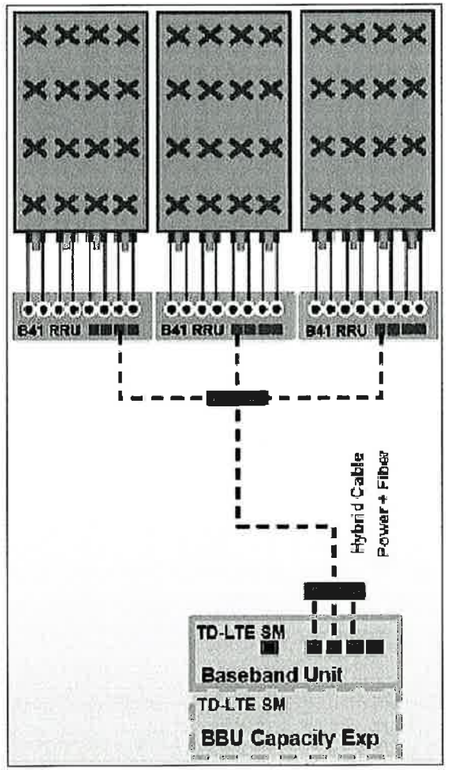
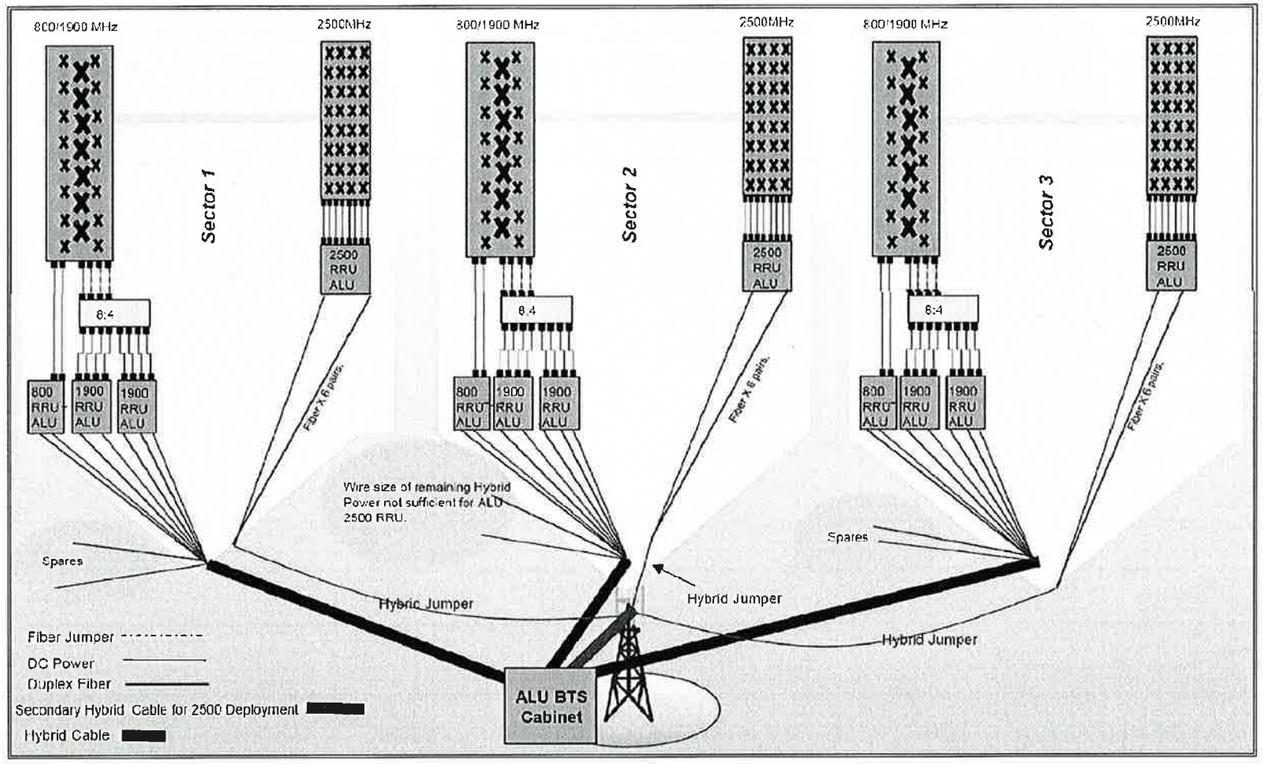
CIVIL DETAILS

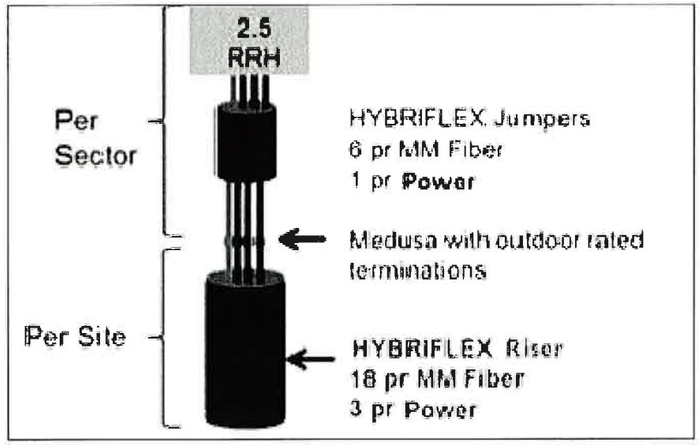
SHEET NUMBER:
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM | NO SCALE | 1

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Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:

KINGS
LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

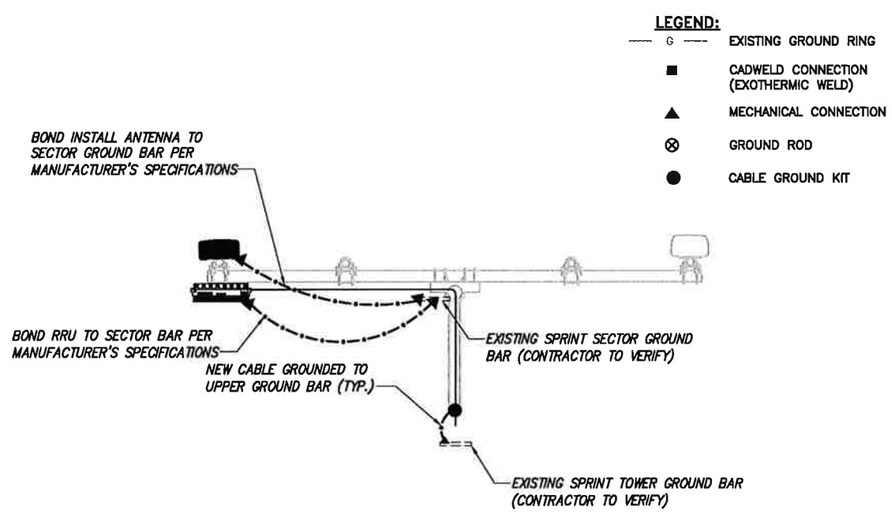
SHEET DESCRIPTION:

PLUMBING DIAGRAM

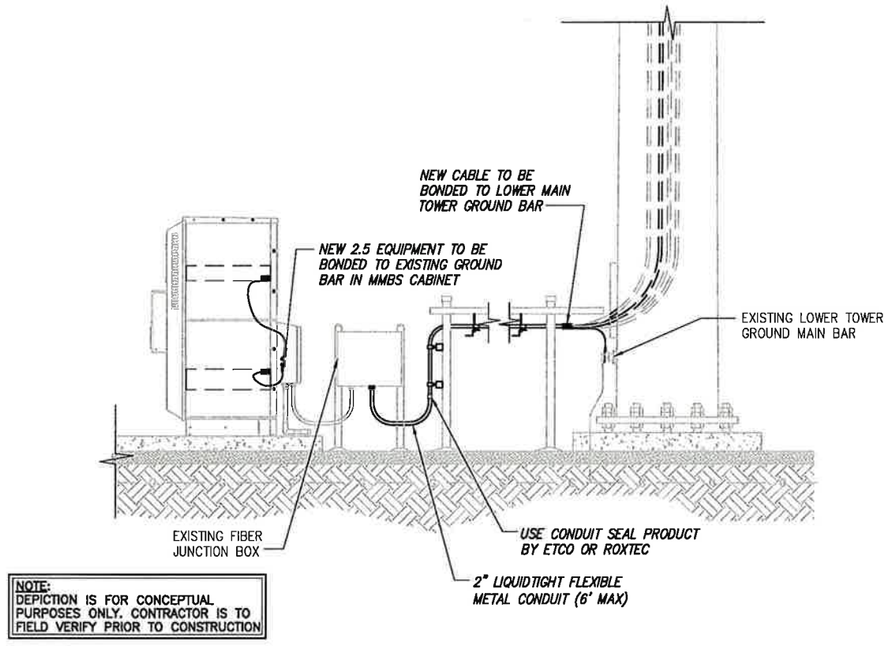
SHEET NUMBER:

A-7

PLAN NOT USED | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:

KINGS
LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

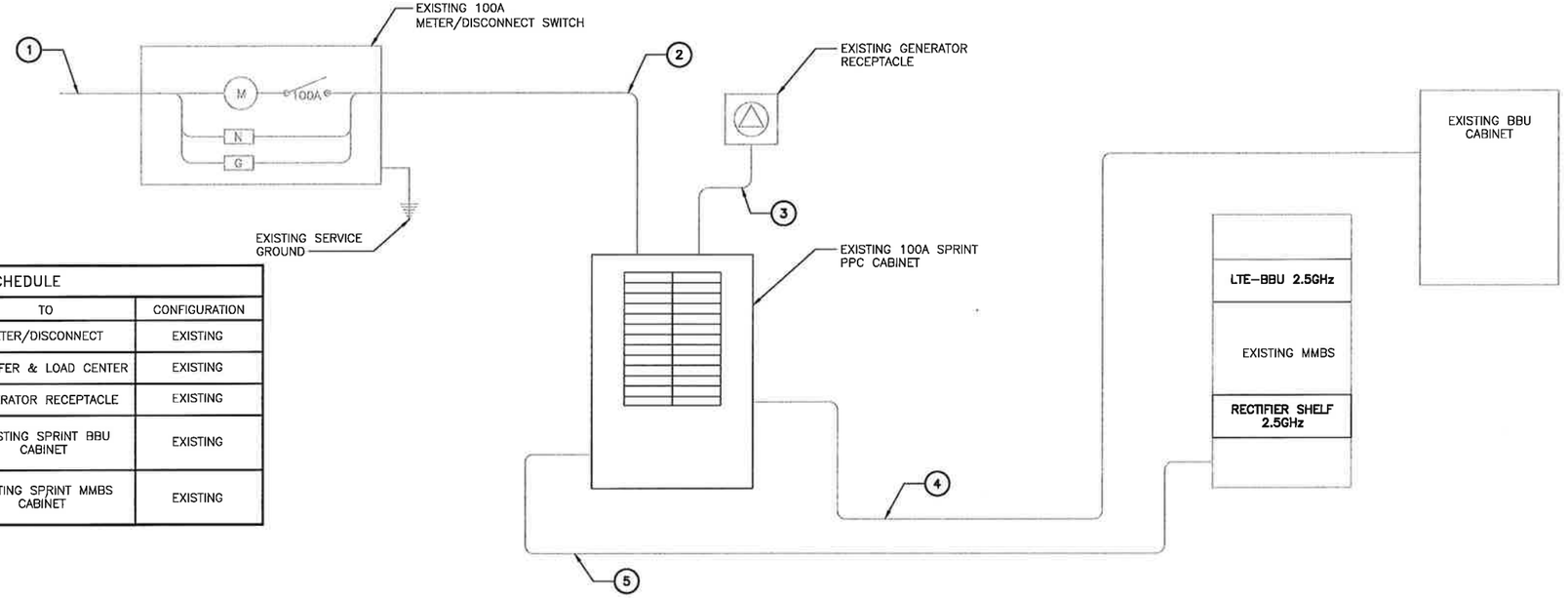
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

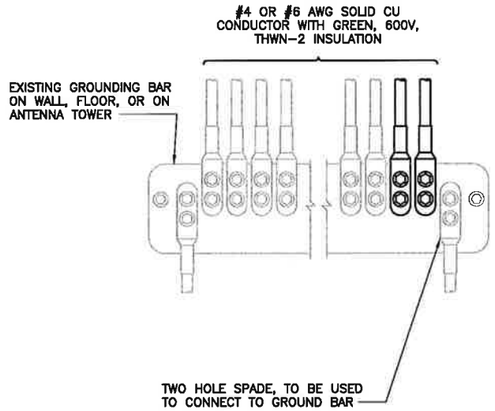
NOTES

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



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

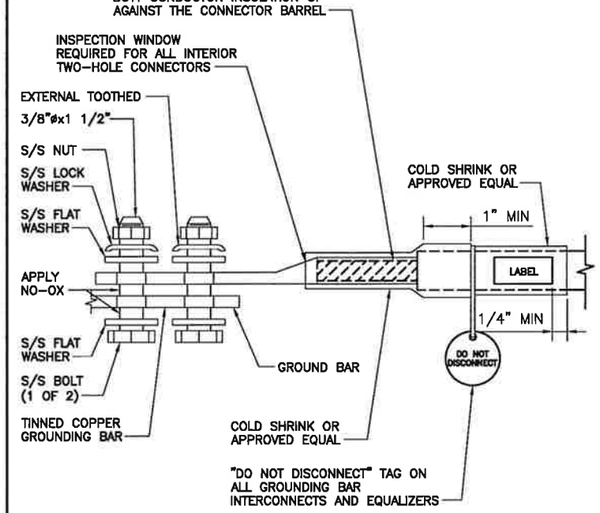
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



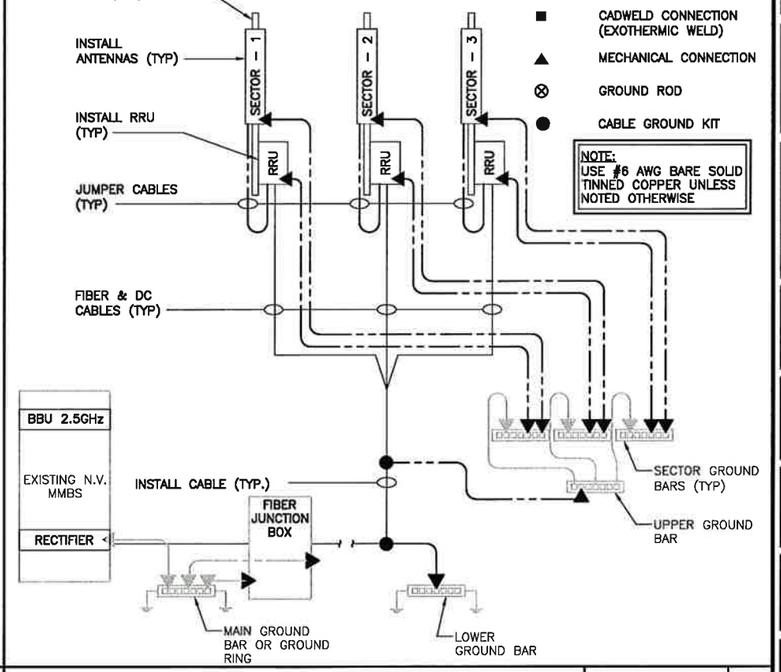
NOTES

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

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



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISED PER COMMENT	02/12/14	MAP	B
ISSUED FOR REVIEW	01/10/14	MJB	A

SITE NAME:

KINGS LOT

SITE CASCADE:

CT03XC066

SITE ADDRESS:

59 McGUIRE ROAD
SOUTH WINDSOR, CT 06074

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

PJF PAUL J. FORD & COMPANY

Date: **August 03, 2017**

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704)405-6580

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
614-221-6679
mtimas@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC066
	Carrier Site Name:	CT03XC066
Crown Castle Designation:	**Crown Castle BU Number:**	876327
	Crown Castle Site Name:	KINGS LOT
	Crown Castle JDE Job Number:	450508
	Crown Castle Work Order Number:	1436998
	Crown Castle Application Number:	399144 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37517-2698.001.7805
Site Data:	**59 McGuire Road, SOUTH WINDSOR, Hartford County, CT** **Latitude *41° 48' 10.77"*, Longitude *-72° 37' 1.96"*** **150 Foot - Monopole Tower**	

Dear Marianne Dunst,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1064303, in accordance with application 399144, revision 0.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

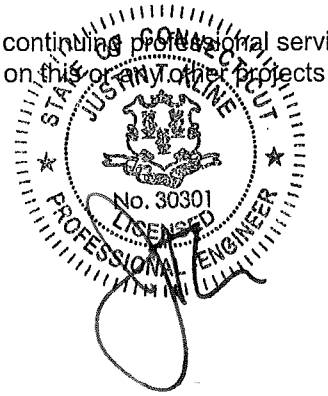
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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

Respectfully submitted by:

Michael Timas, E.I.
Structural Designer ML?

tnxTower Report - version 7.0.5.1



AUG 04 2017

PAUL J. FORD & COMPANY

Date: **August 03, 2017**

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704)405-6580

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250 East Broad St., Suite 600
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mtimas@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC066
	Carrier Site Name:	CT03XC066
Crown Castle Designation:	**Crown Castle BU Number:**	876327
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We at *Paul J. Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Michael Timas, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150-ft Monopole tower designed by ROHN in December of 1996. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, “Structural Standard for Antenna Supporting Structures and Antennas”, with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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
146.0	148.0	3	alcatel lucent	TD-RRH8x20-25	1	5/8	-
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	149.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
	148.0	1	tower mounts	Side Arm Mount [SO 102-3]			
146.0	148.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3 1	1-1/4 1	1
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	146.0	1	tower mounts	Platform Mount [LP 502-1]			
138.0	138.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	7	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
		1	tower mounts	Platform Mount [LP 1201-1]			
124.0	124.0	3	ericsson	RRUS 11	-	-	1
		1	tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
122.0	123.0	2	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe	2 1 12	3/4 3/8 1-1/4	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		12	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			
	122.0	1	tower mounts	T-Arm Mount [TA 602-3]			
13.0	14.0	1	lucent	KS24019-L112A	1	1/2	1
	13.0	1	tower mounts	Side Arm Mount [SO 701-1]			
12.0	13.0	1	lucent	KS24019-L112A	1	1/2	1
	12.0	1	tower mounts	Side Arm Mount [SO 701-1]			

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)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 07-11433G, 09/30/09	2192521	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 34738SW, 12/19/96	1620564	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738SW, 12/19/96	1619441	CCISITES
4-POST-MODIFICATION INSPECTION	Vertical Soultions, 080627.06, 11/11/08	2366960	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 160294, 5/3/2016	6250604	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was modified in conformance with referenced modification drawings
5) In accordance with discussions with CCI Corporate Engineering: Based on the assumption that the monopole manufacturer (ROHN/PiRod) has designed the flange plates at splices to adequately develop the full capacity of the unreinforced shaft section using unpublished and/or proprietary methodologies, we are assuming that if our analysis shows that both the existing shaft and the existing flange bolts are at a usage capacity of 105% or less, then the existing flange plates are at a usage capacity of 105% or less and no additional analysis of the flange plate is required.
6) The shaft reinforcement and post installed anchors from document ID 2366960 were found to be ineffective and therefore not considered in this analysis

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 120	Pole	P24x0.25	1	-9.69	662.26	70.9	Pass
L2	120 - 90	Pole	30" x 0.375"	2	-14.81	1311.06	86.2	Pass
L3	90 - 78.04	Pole	36" x 0.375"	3	-17.23	1490.10	79.1	Pass
L4	78.04 - 60	Pole	RPS 36" x 0.51087"	4	-22.01	1947.97	83.4	Pass
L5	60 - 30	Pole	RPS 42" x 0.58495"	5	-34.22	2667.26	82.9	Pass
L6	30 - 7	Pole	RPS 42" x 0.65547"	6	-45.34	3045.79	95.4	Pass
L7	7 - 4	Pole	RPS 42" x 0.67553"	7	-46.57	3090.13	96.4	Pass
L8	4 - 0	Pole	RPS 42" x 0.82394"	8	-48.50	3593.36	83.7	Pass
							Summary	
						Pole (L7)	96.4	Pass
						Rating =	**96.4**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	90.0	Pass
1	Base Plate	0	60.4	Pass
1	Base Foundation Structural Steel	0	29.4	Pass
1	Base Foundation Soil Interaction	0	83.1	Pass
1	Flange Connection	30	98.4	Pass
1	Flange Connection	60	85.7	Pass
1,2	Flange Connection	90	86.2	Pass
1,2	Flange Connection	120	70.9	Pass

Structure Rating (max from all components) =	**98.4%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) See Assumption 5

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.0000 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Temperature drop of 50 °F.
13) Deflections calculated using a wind speed of 60 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	150.0000-120.0000	30.0000	P24x0.25	A53-B-42 (42 ksi)	5.00
L2	115.0000-85.0000	30.0000	30" x 0.375"	A53-B-42 (42 ksi)	5.00
L3	85.0000-73.0400	11.9600	36" x 0.375"	A53-B-42 (42 ksi)	5.00
L4	73.0400-55.0000	18.0400	RPS 36" x 0.51087"	Reinf 38.45 ksi (38 ksi)	5.00
L5	55.0000-25.0000	30.0000	RPS 42" x 0.58495"	Reinf 38.94 ksi (39 ksi)	5.00
L6	25.0000-2.0000	23.0000	RPS 42" x 0.65547"	Reinf 39.75 ksi	5.00

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L7	2.0000-1.0000	3.0000	RPS 42" x 0.67553"	(40 ksi) Reinf 39.15 ksi (39 ksi)	5.00
L8	1.0000-3.0000	4.0000	RPS 42" x 0.82394"	Reinf 37.46 ksi (37 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.0000-120.0000				1	1	1			
L2 120.0000-90.0000				1	1	1			
L3 90.0000-78.0400				1	1	1			
L4 78.0400-60.0000				1	1	1			
L5 60.0000-30.0000				1	1	1			
L6 30.0000-7.0000				1	1	1			
L7 7.0000-4.0000				1	1	1			
L8 4.0000-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB114-1-08U4-M5J(1-1/4)	C	No	CaAa (Out Of Face)	146.0000 - 0.0000	1	No Ice	0.1540	1.08
						1/2" Ice	0.2540	2.33
						1" Ice	0.3540	4.18
HB114-1-08U4-M5J(1-1/4)	C	No	CaAa (Out Of Face)	146.0000 - 0.0000	2	No Ice	0.0000	1.08
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.18
MLE 14F x 8(1)	C	No	CaAa (Out Of Face)	146.0000 - 0.0000	1	No Ice	0.0000	0.77
						1/2" Ice	0.0000	1.69
						1" Ice	0.0000	3.21
HB058-M12-XXXF(5/8)	C	No	CaAa (Out Of Face)	146.0000 - 0.0000	1	No Ice	0.0000	0.24
						1/2" Ice	0.0000	1.06
						1" Ice	0.0000	2.49
**********								
AL7-50(1-5/8)	C	No	Inside Pole	138.0000 - 0.0000	6	No Ice	0.0000	0.52
						1/2" Ice	0.0000	0.52
						1" Ice	0.0000	0.52
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	C	No	CaAa (Out Of Face)	138.0000 - 0.0000	1	No Ice	0.1625	1.07
						1/2" Ice	0.2625	2.37
						1" Ice	0.3625	4.28
**********								
2" Conduit (1 1/2" EMT)	C	No	Inside Pole	122.0000 - 0.0000	2	No Ice	0.0000	1.16
						1/2" Ice	0.0000	1.16
						1" Ice	0.0000	1.16
LDF6-50A(1-1/4)	C	No	Inside Pole	122.0000 - 0.0000	12	No Ice	0.0000	0.60
						1/2" Ice	0.0000	0.60
						1" Ice	0.0000	0.60
FB-L98B-002-75000(3/8)	C	No	Inside Pole	122.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	122.0000 - 0.0000	2	No Ice	0.0000	0.58

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
**********								
LDF4-50A(1/2)	C	No	Inside Pole	13.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
**********								
LDF4-50A(1/2)	C	No	Inside Pole	12.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
****								
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	15.0000 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	29.5000 - 1.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	60.0000 - 30.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	80.0000 - 60.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.0000-120.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.929	0.21
L2	120.0000-90.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.495	0.58
L3	90.0000-78.0400	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.112	0.23
L4	78.0400-60.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.716	0.35
L5	60.0000-30.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	15.745	0.58
L6	30.0000-7.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.696	0.44
L7	7.0000-4.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.075	0.06
L8	4.0000-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.599	0.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.0000-120.0000	A	2.303	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	27.192	1.81
L2	120.0000-90.0000	A	2.245	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	36.440	2.44

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L3	90.0000-78.0400	A	2.196	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.574	0.94
L4	78.0400-60.0000	A	2.153	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	32.885	1.38
L5	60.0000-30.0000	A	2.063	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	54.254	2.15
L6	30.0000-7.0000	A	1.888	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	42.855	1.49
L7	7.0000-4.0000	A	1.672	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.310	0.17
L8	4.0000-0.0000	A	1.511	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.368	0.21

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.0000-120.0000	-0.2690	0.1553	-0.7157	0.4132
L2	120.0000-90.0000	-0.3649	0.2107	-0.9647	0.5570
L3	90.0000-78.0400	-0.4007	0.2313	-1.0871	0.6276
L4	78.0400-60.0000	-0.5406	0.3121	-1.3710	0.7915
L5	60.0000-30.0000	-0.5929	0.3423	-1.4547	0.8399
L6	30.0000-7.0000	-0.6194	0.3576	-1.4920	0.8614
L7	7.0000-4.0000	-0.7501	0.4331	-1.6258	0.9387
L8	4.0000-0.0000	-0.7120	0.4111	-1.4971	0.8644

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	1.0000 0.00 1.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.0000 0.00 1.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	1.0000 0.00 1.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
(2) 800MHz 2X50W RRH W/FILTER	C	From Leg	1.0000 0.00 1.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
2.375" OD x 4' Mount Pipe	A	From Leg	0.0000 0.00 0.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04
2.375" OD x 4' Mount Pipe	B	From Leg	0.0000 0.00 0.00	0.00	148.0000	No Ice 1/2" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
2.375" OD x 4' Mount Pipe	C	From Leg	0.0000 0.00 0.00	0.00	148.0000	No Ice 1/2" Ice 1" Ice	0.8657 1.1106 1.3648	0.8657 1.1106 1.3648	0.02 0.03 0.04
Side Arm Mount [SO 102-3]	C	None		0.00	148.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14
**********									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
TD-RRH8x20-25	A	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	7.4708 8.6564 9.5559	0.09 0.16 0.24
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	146.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
Platform Mount [LP 502-1]	C	None		0.00	146.0000	No Ice 1/2" Ice 1" Ice	32.3472 45.6677 58.9882	32.3472 45.6677 58.9882	0.93 1.19 1.46
**********									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00	0.00	138.0000	No Ice 1/2"	6.3186 6.7646	5.6334 6.4160	0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice 1" Ice	7.2032	7.1208	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
RRUS 11 B12	A	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.0000 0.00 0.00	0.00	138.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
Platform Mount [LP 1201-1]	C	None		0.00	138.0000	No Ice 1/2" Ice 1" Ice	23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
**********									
RRUS 11	A	From Leg	1.0000 0.00 0.00	0.00	124.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	B	From Leg	1.0000 0.00 0.00	0.00	124.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	C	From Leg	1.0000 0.00 0.00	0.00	124.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
Side Arm Mount [SO 102-3]	C	None		0.00	124.0000	No Ice 1/2"	3.0000 3.4800	3.0000 3.4800	0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						Ice 1" Ice	3.9600	3.9600	0.14
**********									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.3042 7.4790 8.3676	0.07 0.14 0.21
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	11.8229 12.5940 13.3752	9.0563 10.6186 12.2051	0.09 0.18 0.28
(4) LGP2140X	A	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 0.03
(4) LGP2140X	B	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 0.03
(4) LGP2140X	C	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	1.0800 1.2137 1.3548	0.3580 0.4536 0.5563	0.01 0.02 0.03
DC6-48-60-18-8F	A	From Leg	4.0000 0.00 1.00	0.00	122.0000	No Ice 1/2" Ice 1" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.02 0.04 0.06
T-Arm Mount [TA 602-3]	C	None		0.00	122.0000	No Ice 1/2" Ice 1" Ice	11.5900 15.4400 19.2900	11.5900 15.4400 19.2900	0.77 0.99 1.21
**********									
KS24019-L112A	A	From Leg	4.0000 0.00 1.00	0.00	13.0000	No Ice 1/2" Ice 1" Ice	0.1407 0.1979 0.2621	0.1407 0.1979 0.2621	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	A	None		0.00	13.0000	No Ice 1/2" Ice 1" Ice	0.8500 1.1400 1.4300	1.6700 2.3400 3.0100	0.07 0.08 0.09
**********									
KS24019-L112A	A	From Leg	4.0000 0.00 1.00	0.00	12.0000	No Ice 1/2" Ice 1" Ice	0.1407 0.1979 0.2621	0.1407 0.1979 0.2621	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	C	None		0.00	12.0000	No Ice 1/2" Ice 1" Ice	0.8500 1.1400 1.4300	1.6700 2.3400 3.0100	0.07 0.08 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
**********									
(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	C	None		0.00	30.0000	No Ice	2.4045	21.8330	0.55
						1/2" Ice	3.7047	22.7112	0.63
						1" Ice	5.0172	23.5969	0.72
(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	C	None		0.00	60.0000	No Ice	2.4045	21.8330	0.55
						1/2" Ice	3.7047	22.7112	0.63
						1" Ice	5.0172	23.5969	0.72
**********									

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 150.0000-120.0000	135.0000	1.348	30.85	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	6.929
L2 120.0000-90.0000	105.0000	1.279	29.26	75.000	A	0.000	75.000	75.000	100.00	0.000	0.000
					B	0.000	75.000		100.00	0.000	0.000
					C	0.000	75.000		100.00	0.000	9.495
L3 90.0000-78.0400	84.0200	1.22	27.92	35.880	A	0.000	35.880	35.880	100.00	0.000	0.000
					B	0.000	35.880		100.00	0.000	0.000
					C	0.000	35.880		100.00	0.000	4.112
L4 78.0400-60.0000	69.0200	1.171	26.79	54.120	A	0.000	54.120	54.120	100.00	0.000	0.000
					B	0.000	54.120		100.00	0.000	0.000
					C	0.000	54.120		100.00	0.000	8.716
L5 60.0000-30.0000	45.0000	1.07	24.48	105.000	A	0.000	105.000	105.000	100.00	0.000	0.000
					B	0.000	105.000		100.00	0.000	0.000
					C	0.000	105.000		100.00	0.000	15.745
L6 30.0000-7.0000	18.5000	0.887	20.30	80.500	A	0.000	80.500	80.500	100.00	0.000	0.000
					B	0.000	80.500		100.00	0.000	0.000
					C	0.000	80.500		100.00	0.000	12.696
L7 7.0000-4.0000	5.5000	0.85	19.45	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	2.075
L8 4.0000-0.0000	2.0000	0.85	19.45	14.000	A	0.000	14.000	14.000	100.00	0.000	0.000
					B	0.000	14.000		100.00	0.000	0.000
					C	0.000	14.000		100.00	0.000	2.599

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 150.0000-120.0000	135.0000	1.348	8.20	2.3026	71.513	A	0.000	71.513	71.513	100.00	0.000	0.000
						B	0.000	71.513		100.00	0.000	0.000
						C	0.000	71.513		100.00	0.000	27.192
L2 120.0000-90.0000	105.0000	1.279	7.77	2.2454	86.227	A	0.000	86.227	86.227	100.00	0.000	0.000
						B	0.000	86.227		100.00	0.000	0.000
						C	0.000	86.227		100.00	0.000	36.440
L3 90.0000-78.0400	84.0200	1.22	7.42	2.1959	40.257	A	0.000	40.257	40.257	100.00	0.000	0.000
						B	0.000	40.257		100.00	0.000	0.000
						C	0.000	40.257		100.00	0.000	15.574

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L4 78.0400-60.0000	69.0200	1.171	7.12	2.1532	60.594	A	0.000	60.594	60.594	100.00	0.000	0.000
						B	0.000	60.594		100.00	0.000	0.000
						C	0.000	60.594		100.00	0.000	32.885
L5 60.0000-30.0000	45.0000	1.07	6.50	2.0630	115.315	A	0.000	115.315	115.315	100.00	0.000	0.000
						B	0.000	115.315		100.00	0.000	0.000
						C	0.000	115.315		100.00	0.000	54.254
L6 30.0000-7.0000	18.5000	0.887	5.39	1.8875	87.736	A	0.000	87.736	87.736	100.00	0.000	0.000
						B	0.000	87.736		100.00	0.000	0.000
						C	0.000	87.736		100.00	0.000	42.855
L7 7.0000-4.0000	5.5000	0.85	5.17	1.6719	11.336	A	0.000	11.336	11.336	100.00	0.000	0.000
						B	0.000	11.336		100.00	0.000	0.000
						C	0.000	11.336		100.00	0.000	6.310
L8 4.0000-0.0000	2.0000	0.85	5.17	1.5111	15.007	A	0.000	15.007	15.007	100.00	0.000	0.000
						B	0.000	15.007		100.00	0.000	0.000
						C	0.000	15.007		100.00	0.000	7.368

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.0000-120.0000	135.0000	1.348	10.56	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	6.929
L2 120.0000-90.0000	105.0000	1.279	10.02	75.000	A	0.000	75.000	75.000	100.00	0.000	0.000
					B	0.000	75.000		100.00	0.000	0.000
					C	0.000	75.000		100.00	0.000	9.495
L3 90.0000-78.0400	84.0200	1.22	9.56	35.880	A	0.000	35.880	35.880	100.00	0.000	0.000
					B	0.000	35.880		100.00	0.000	0.000
					C	0.000	35.880		100.00	0.000	4.112
L4 78.0400-60.0000	69.0200	1.171	9.17	54.120	A	0.000	54.120	54.120	100.00	0.000	0.000
					B	0.000	54.120		100.00	0.000	0.000
					C	0.000	54.120		100.00	0.000	8.716
L5 60.0000-30.0000	45.0000	1.07	8.38	105.000	A	0.000	105.000	105.000	100.00	0.000	0.000
					B	0.000	105.000		100.00	0.000	0.000
					C	0.000	105.000		100.00	0.000	15.745
L6 30.0000-7.0000	18.5000	0.887	6.95	80.500	A	0.000	80.500	80.500	100.00	0.000	0.000
					B	0.000	80.500		100.00	0.000	0.000
					C	0.000	80.500		100.00	0.000	12.696
L7 7.0000-4.0000	5.5000	0.85	6.66	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	2.075
L8 4.0000-0.0000	2.0000	0.85	6.66	14.000	A	0.000	14.000	14.000	100.00	0.000	0.000
					B	0.000	14.000		100.00	0.000	0.000
					C	0.000	14.000		100.00	0.000	2.599

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice

Comb. No.	Description
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 120	Pole	Max Tension	8	0.00	0.00	0.00
			Max. Compression	26	-30.91	1.07	-1.30
			Max. Mx	20	-9.69	274.33	-0.03
			Max. My	14	-9.70	0.04	-273.45
			Max. Vy	20	-16.22	274.33	-0.03
			Max. Vx	14	16.14	0.04	-273.45
			Max. Torque	19			0.63
L2	120 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.40	3.61	-2.81
			Max. Mx	20	-14.81	805.96	0.26
			Max. My	14	-14.82	-0.19	-802.65
			Max. Vy	20	-19.15	805.96	0.26
			Max. Vx	14	19.07	-0.19	-802.65
			Max. Torque	10			-0.96
L3	90 - 78.04	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.66	4.75	-3.48
			Max. Mx	20	-17.23	1042.54	0.37
			Max. My	14	-17.24	-0.26	-1038.25
			Max. Vy	20	-20.40	1042.54	0.37
			Max. Vx	14	20.32	-0.26	-1038.25
			Max. Torque	10			-1.22
L4	78.04 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.12	6.39	-4.44

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-22.01	1429.43	0.55
			Max. My	14	-22.02	-0.38	-1423.68
			Max. Vy	20	-22.46	1429.43	0.55
			Max. Vx	14	22.38	-0.38	-1423.68
			Max. Torque	10			-1.75
L5	60 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.28	9.27	-6.12
			Max. Mx	20	-34.22	2247.99	0.81
			Max. My	14	-34.23	-0.53	-2239.77
			Max. Vy	20	-28.95	2247.99	0.81
			Max. Vx	14	28.87	-0.53	-2239.77
			Max. Torque	12			-2.84
L6	30 - 7	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.61	11.07	-6.95
			Max. Mx	20	-45.34	2996.43	1.09
			Max. My	14	-45.34	-0.64	-2986.28
			Max. Vy	20	-33.50	2996.43	1.09
			Max. Vx	14	33.43	-0.64	-2986.28
			Max. Torque	12			-3.60
L7	7 - 4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.13	11.27	-7.07
			Max. Mx	20	-46.57	3097.23	1.12
			Max. My	14	-46.57	-0.66	-3086.84
			Max. Vy	20	-33.72	3097.23	1.12
			Max. Vx	14	33.65	-0.66	-3086.84
			Max. Torque	12			-3.73
L8	4 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.42	11.51	-7.20
			Max. Mx	20	-48.50	3232.67	1.15
			Max. My	14	-48.50	-0.68	-3221.96
			Max. Vy	20	-34.01	3232.67	1.15
			Max. Vx	14	33.94	-0.68	-3221.96
			Max. Torque	12			-3.88

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	89.42	-0.00	0.00
	Max. H_x	21	36.38	34.00	0.01
	Max. H_z	3	36.38	0.01	33.92
	Max. M_x	2	3220.70	0.01	33.92
	Max. M_z	8	3230.46	-34.00	-0.01
	Max. Torsion	24	3.88	17.01	29.38
	Min. Vert	21	36.38	34.00	0.01
	Min. H_x	9	36.38	-34.00	-0.01
	Min. H_z	15	36.38	-0.01	-33.92
	Min. M_x	14	-3221.96	-0.01	-33.92
	Min. M_z	20	-3232.67	34.00	0.01
	Min. Torsion	12	-3.88	-17.01	-29.38

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	40.43	-0.00	0.00	0.51	0.89	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	48.51	-0.01	-33.92	-3220.70	2.87	-3.07
0.9 Dead+1.6 Wind 0 deg - No Ice	36.38	-0.01	-33.92	-3192.13	2.57	-3.07
1.2 Dead+1.6 Wind 30 deg - No Ice	48.51	16.99	-29.37	-2788.43	-1613.27	-1.44

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 30 deg - No Ice	36.38	16.99	-29.37	-2763.65	-1599.11	-1.44
1.2 Dead+1.6 Wind 60 deg - No Ice	48.51	29.44	-16.95	-1608.61	-2796.83	0.58
0.9 Dead+1.6 Wind 60 deg - No Ice	36.38	29.44	-16.95	-1594.38	-2772.08	0.58
1.2 Dead+1.6 Wind 90 deg - No Ice	48.51	34.00	0.01	2.40	-3230.46	2.44
0.9 Dead+1.6 Wind 90 deg - No Ice	36.38	34.00	0.01	2.22	-3201.91	2.45
1.2 Dead+1.6 Wind 120 deg - No Ice	48.51	29.45	16.97	1612.92	-2798.60	3.65
0.9 Dead+1.6 Wind 120 deg - No Ice	36.38	29.45	16.97	1598.34	-2773.83	3.65
1.2 Dead+1.6 Wind 150 deg - No Ice	48.51	17.01	29.38	2791.45	-1616.34	3.88
0.9 Dead+1.6 Wind 150 deg - No Ice	36.38	17.01	29.38	2766.33	-1602.15	3.88
1.2 Dead+1.6 Wind 180 deg - No Ice	48.51	0.01	33.92	3221.96	-0.68	3.07
0.9 Dead+1.6 Wind 180 deg - No Ice	36.38	0.01	33.92	3193.07	-0.94	3.07
1.2 Dead+1.6 Wind 210 deg - No Ice	48.51	-16.99	29.37	2789.69	1615.47	1.44
0.9 Dead+1.6 Wind 210 deg - No Ice	36.38	-16.99	29.37	2764.58	1600.74	1.44
1.2 Dead+1.6 Wind 240 deg - No Ice	48.51	-29.44	16.95	1609.86	2799.04	-0.58
0.9 Dead+1.6 Wind 240 deg - No Ice	36.38	-29.44	16.95	1595.31	2773.72	-0.58
1.2 Dead+1.6 Wind 270 deg - No Ice	48.51	-34.00	-0.01	-1.15	3232.67	-2.45
0.9 Dead+1.6 Wind 270 deg - No Ice	36.38	-34.00	-0.01	-1.30	3203.55	-2.45
1.2 Dead+1.6 Wind 300 deg - No Ice	48.51	-29.45	-16.97	-1611.68	2800.80	-3.65
0.9 Dead+1.6 Wind 300 deg - No Ice	36.38	-29.45	-16.97	-1597.42	2775.47	-3.65
1.2 Dead+1.6 Wind 330 deg - No Ice	48.51	-17.01	-29.38	-2790.20	1618.53	-3.88
0.9 Dead+1.6 Wind 330 deg - No Ice	36.38	-17.01	-29.38	-2765.40	1603.78	-3.88
1.2 Dead+1.0 Ice+1.0 Temp	89.42	0.00	-0.00	7.20	11.51	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	89.42	0.00	-11.59	-1191.30	11.55	-1.96
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	89.42	5.80	-10.04	-1030.82	-588.10	-1.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	89.42	10.04	-5.80	-592.13	-1027.04	0.19
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	89.42	11.60	-0.00	7.18	-1187.61	1.35
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	89.42	10.04	5.80	606.53	-1026.91	2.15
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	89.42	5.80	10.04	1045.32	-587.88	2.37
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	89.42	-0.00	11.59	1205.93	11.81	1.96
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	89.42	-5.80	10.04	1045.46	611.46	1.03
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	89.42	-10.04	5.80	606.76	1050.40	-0.18
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	89.42	-11.60	0.00	7.45	1210.97	-1.35
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	89.42	-10.04	-5.80	-591.90	1050.27	-2.15
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	89.42	-5.80	-10.04	-1030.69	611.23	-2.37
Dead+Wind 0 deg - Service	40.43	-0.00	-7.26	-685.27	1.29	0.11
Dead+Wind 30 deg - Service	40.43	3.63	-6.28	-593.20	-342.74	0.14

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg - Service	40.43	6.30	-3.63	-342.04	-594.70	0.13
Dead+Wind 90 deg - Service	40.43	7.27	0.00	0.90	-687.06	0.08
Dead+Wind 120 deg - Service	40.43	6.30	3.63	343.75	-595.07	0.01
Dead+Wind 150 deg - Service	40.43	3.64	6.29	594.62	-343.40	-0.06
Dead+Wind 180 deg - Service	40.43	0.00	7.26	686.31	0.54	-0.11
Dead+Wind 210 deg - Service	40.43	-3.63	6.28	594.25	344.58	-0.14
Dead+Wind 240 deg - Service	40.43	-6.30	3.63	343.09	596.53	-0.13
Dead+Wind 270 deg - Service	40.43	-7.27	-0.00	0.15	688.89	-0.08
Dead+Wind 300 deg - Service	40.43	-6.30	-3.63	-342.70	596.91	-0.01
Dead+Wind 330 deg - Service	40.43	-3.64	-6.29	-593.58	345.23	0.06

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-40.43	0.00	0.00	40.43	-0.00	0.000%
2	-0.01	-48.51	-33.92	0.01	48.51	33.92	0.003%
3	-0.01	-36.38	-33.92	0.01	36.38	33.92	0.003%
4	16.99	-48.51	-29.37	-16.99	48.51	29.37	0.000%
5	16.99	-36.38	-29.37	-16.99	36.38	29.37	0.000%
6	29.44	-48.51	-16.95	-29.44	48.51	16.95	0.000%
7	29.44	-36.38	-16.95	-29.44	36.38	16.95	0.000%
8	34.00	-48.51	0.01	-34.00	48.51	-0.01	0.003%
9	34.00	-36.38	0.01	-34.00	36.38	-0.01	0.003%
10	29.45	-48.51	16.97	-29.45	48.51	-16.97	0.000%
11	29.45	-36.38	16.97	-29.45	36.38	-16.97	0.000%
12	17.01	-48.51	29.38	-17.01	48.51	-29.38	0.000%
13	17.01	-36.38	29.38	-17.01	36.38	-29.38	0.000%
14	0.01	-48.51	33.92	-0.01	48.51	-33.92	0.003%
15	0.01	-36.38	33.92	-0.01	36.38	-33.92	0.003%
16	-16.99	-48.51	29.37	16.99	48.51	-29.37	0.000%
17	-16.99	-36.38	29.37	16.99	36.38	-29.37	0.000%
18	-29.44	-48.51	16.95	29.44	48.51	-16.95	0.000%
19	-29.44	-36.38	16.95	29.44	36.38	-16.95	0.000%
20	-34.00	-48.51	-0.01	34.00	48.51	0.01	0.003%
21	-34.00	-36.38	-0.01	34.00	36.38	0.01	0.003%
22	-29.45	-48.51	-16.97	29.45	48.51	16.97	0.000%
23	-29.45	-36.38	-16.97	29.45	36.38	16.97	0.000%
24	-17.01	-48.51	-29.38	17.01	48.51	29.38	0.000%
25	-17.01	-36.38	-29.38	17.01	36.38	29.38	0.000%
26	0.00	-89.42	0.00	-0.00	89.42	0.00	0.001%
27	0.00	-89.42	-11.59	-0.00	89.42	11.59	0.000%
28	5.80	-89.42	-10.04	-5.80	89.42	10.04	0.000%
29	10.05	-89.42	-5.80	-10.04	89.42	5.80	0.000%
30	11.60	-89.42	-0.00	-11.60	89.42	0.00	0.000%
31	10.04	-89.42	5.80	-10.04	89.42	-5.80	0.000%
32	5.80	-89.42	10.04	-5.80	89.42	-10.04	0.000%
33	-0.00	-89.42	11.59	0.00	89.42	-11.59	0.000%
34	-5.80	-89.42	10.04	5.80	89.42	-10.04	0.000%
35	-10.05	-89.42	5.80	10.04	89.42	-5.80	0.000%
36	-11.60	-89.42	0.00	11.60	89.42	-0.00	0.000%
37	-10.04	-89.42	-5.80	10.04	89.42	5.80	0.000%
38	-5.80	-89.42	-10.04	5.80	89.42	10.04	0.000%
39	-0.00	-40.43	-7.26	0.00	40.43	7.26	0.002%
40	3.63	-40.43	-6.28	-3.63	40.43	6.28	0.002%
41	6.30	-40.43	-3.63	-6.30	40.43	3.63	0.002%
42	7.27	-40.43	0.00	-7.27	40.43	-0.00	0.002%
43	6.30	-40.43	3.63	-6.30	40.43	-3.63	0.002%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
44	3.64	-40.43	6.29	-3.64	40.43	-6.29	0.002%
45	0.00	-40.43	7.26	-0.00	40.43	-7.26	0.002%
46	-3.63	-40.43	6.28	3.63	40.43	-6.28	0.002%
47	-6.30	-40.43	3.63	6.30	40.43	-3.63	0.002%
48	-7.27	-40.43	-0.00	7.27	40.43	0.00	0.002%
49	-6.30	-40.43	-3.63	6.30	40.43	3.63	0.002%
50	-3.64	-40.43	-6.29	3.64	40.43	6.29	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00004226	0.00010481
3	Yes	15	0.00002866	0.00008575
4	Yes	19	0.00000001	0.00007050
5	Yes	18	0.00000001	0.00012382
6	Yes	19	0.00000001	0.00007039
7	Yes	18	0.00000001	0.00012359
8	Yes	15	0.00004224	0.00010836
9	Yes	15	0.00002865	0.00008865
10	Yes	19	0.00000001	0.00007410
11	Yes	18	0.00000001	0.00013026
12	Yes	19	0.00000001	0.00006906
13	Yes	18	0.00000001	0.00012115
14	Yes	15	0.00004225	0.00010044
15	Yes	15	0.00002866	0.00008235
16	Yes	19	0.00000001	0.00007181
17	Yes	18	0.00000001	0.00012610
18	Yes	19	0.00000001	0.00007210
19	Yes	18	0.00000001	0.00012661
20	Yes	15	0.00004224	0.00010379
21	Yes	15	0.00002865	0.00008509
22	Yes	19	0.00000001	0.00006910
23	Yes	18	0.00000001	0.00012118
24	Yes	19	0.00000001	0.00007396
25	Yes	18	0.00000001	0.00013002
26	Yes	11	0.00000001	0.00005151
27	Yes	17	0.00000001	0.00012569
28	Yes	18	0.00000001	0.00008154
29	Yes	18	0.00000001	0.00008185
30	Yes	17	0.00000001	0.00012499
31	Yes	18	0.00000001	0.00008518
32	Yes	18	0.00000001	0.00008232
33	Yes	17	0.00000001	0.00012762
34	Yes	18	0.00000001	0.00008626
35	Yes	18	0.00000001	0.00008590
36	Yes	17	0.00000001	0.00012776
37	Yes	18	0.00000001	0.00008303
38	Yes	18	0.00000001	0.00008597
39	Yes	14	0.00000001	0.00002735
40	Yes	14	0.00000001	0.00004423
41	Yes	14	0.00000001	0.00003860
42	Yes	14	0.00000001	0.00002737
43	Yes	14	0.00000001	0.00004194
44	Yes	14	0.00000001	0.00004254
45	Yes	14	0.00000001	0.00002742
46	Yes	14	0.00000001	0.00003873
47	Yes	14	0.00000001	0.00004461
48	Yes	14	0.00000001	0.00002743
49	Yes	14	0.00000001	0.00004119
50	Yes	14	0.00000001	0.00004036

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	19.14	48	1.11	0.00
L2	120 - 90	12.39	48	0.97	0.00
L3	90 - 78.04	6.95	48	0.72	0.00
L4	78.04 - 60	5.27	48	0.62	0.00
L5	60 - 30	3.20	48	0.47	0.00
L6	30 - 7	0.86	48	0.26	0.00
L7	7 - 4	0.05	48	0.06	0.00
L8	4 - 0	0.01	48	0.03	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.0000	(2) PCS 1900MHz 4x45W-65MHz	48	18.67	1.10	0.00	43294
146.0000	APXVTM14-C-120 w/ Mount Pipe	48	18.20	1.10	0.00	43294
138.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	16.35	1.07	0.00	18039
124.0000	RRUS 11	48	13.23	1.00	0.00	8327
122.0000	(2) 7770.00 w/ Mount Pipe	48	12.81	0.98	0.00	7768
60.0000	(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	48	3.20	0.47	0.00	8189
30.0000	(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	48	0.86	0.26	0.00	7563
13.0000	KS24019-L112A	48	0.16	0.12	0.00	6209
12.0000	KS24019-L112A	48	0.14	0.11	0.00	6141

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 120	89.83	20	5.23	0.01
L2	120 - 90	58.16	20	4.56	0.01
L3	90 - 78.04	32.63	20	3.37	0.01
L4	78.04 - 60	24.74	20	2.90	0.00
L5	60 - 30	15.04	20	2.20	0.00
L6	30 - 7	4.02	20	1.24	0.00
L7	7 - 4	0.21	20	0.30	0.00
L8	4 - 0	0.07	20	0.16	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.0000	(2) PCS 1900MHz 4x45W-65MHz	20	87.64	5.19	0.01	9360
146.0000	APXVTM14-C-120 w/ Mount Pipe	20	85.45	5.16	0.01	9360
138.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	76.77	5.01	0.01	3899
124.0000	RRUS 11	20	62.13	4.68	0.01	1797
122.0000	(2) 7770.00 w/ Mount Pipe	20	60.13	4.62	0.01	1676
60.0000	(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	20	15.04	2.20	0.00	1747
30.0000	(3) Bridge Stiffener (138.5" x	20	4.02	1.24	0.00	1611

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	15.5" x 1.25")					
13.0000	KS24019-L112A	20	0.76	0.57	0.00	1323
12.0000	KS24019-L112A	20	0.65	0.53	0.00	1308

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 120 (1)	P24x0.25	30.0000	0.0000	0.0	18.6532	-9.69	662.26	0.015
L2	120 - 90 (2)	30" x 0.375"	30.0000	0.0000	0.0	34.9011	-14.81	1311.06	0.011
L3	90 - 78.04 (3)	36" x 0.375"	11.9600	0.0000	0.0	41.9697	-17.23	1490.10	0.012
L4	78.04 - 60 (4)	RPS 36" x 0.51087"	18.0400	0.0000	0.0	56.9581	-22.01	1947.97	0.011
L5	60 - 30 (5)	RPS 42" x 0.58495"	30.0000	0.0000	0.0	76.1074	-34.22	2667.26	0.013
L6	30 - 7 (6)	RPS 42" x 0.65547"	23.0000	0.0000	0.0	85.1375	-45.34	3045.79	0.015
L7	7 - 4 (7)	RPS 42" x 0.67553"	3.0000	0.0000	0.0	87.7004	-46.57	3090.13	0.015
L8	4 - 0 (8)	RPS 42" x 0.82394"	4.0000	0.0000	0.0	106.5840	-48.50	3593.36	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 120 (1)	P24x0.25	274.33	396.68	0.692	0.00	396.68	0.000
L2	120 - 90 (2)	30" x 0.375"	805.96	947.86	0.850	0.00	947.86	0.000
L3	90 - 78.04 (3)	36" x 0.375"	1042.53	1338.81	0.779	0.00	1338.81	0.000
L4	78.04 - 60 (4)	RPS 36" x 0.51087"	1429.43	1738.45	0.822	0.00	1738.45	0.000
L5	60 - 30 (5)	RPS 42" x 0.58495"	2247.98	2757.07	0.815	0.00	2757.07	0.000
L6	30 - 7 (6)	RPS 42" x 0.65547"	2996.43	3192.00	0.939	0.00	3192.00	0.000
L7	7 - 4 (7)	RPS 42" x 0.67553"	3097.23	3264.01	0.949	0.00	3264.01	0.000
L8	4 - 0 (8)	RPS 42" x 0.82394"	3232.67	3925.29	0.824	0.00	3925.29	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 120 (1)	P24x0.25	16.22	331.13	0.049	0.61	648.61	0.001
L2	120 - 90 (2)	30" x 0.375"	19.15	655.53	0.029	0.92	1598.37	0.001
L3	90 - 78.04 (3)	36" x 0.375"	20.40	745.05	0.027	1.07	2189.07	0.000
L4	78.04 - 60 (4)	RPS 36" x 0.51087"	22.46	973.98	0.023	1.37	2840.20	0.000
L5	60 - 30 (5)	RPS 42" x 0.58495"	28.95	1333.63	0.022	1.96	4539.50	0.000
L6	30 - 7 (6)	RPS 42" x 0.65547"	33.50	1522.90	0.022	2.31	5166.37	0.000
L7	7 - 4 (7)	RPS 42" x 0.67553"	33.72	1545.06	0.022	2.37	5236.56	0.000
L8	4 - 0 (8)	RPS 42" x 0.82394"	34.01	1796.68	0.019	2.45	6046.49	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 120 (1)	0.015	0.692	0.000	0.049	0.001	0.709	1.000	4.8.2
L2	120 - 90 (2)	0.011	0.850	0.000	0.029	0.001	0.862	1.000	4.8.2
L3	90 - 78.04 (3)	0.012	0.779	0.000	0.027	0.000	0.791	1.000	4.8.2
L4	78.04 - 60 (4)	0.011	0.822	0.000	0.023	0.000	0.834	1.000	4.8.2
L5	60 - 30 (5)	0.013	0.815	0.000	0.022	0.000	0.829	1.000	4.8.2
L6	30 - 7 (6)	0.015	0.939	0.000	0.022	0.000	0.954	1.000	4.8.2
L7	7 - 4 (7)	0.015	0.949	0.000	0.022	0.000	0.964	1.000	4.8.2
L8	4 - 0 (8)	0.013	0.824	0.000	0.019	0.000	0.837	1.000	4.8.2

Section Capacity Table

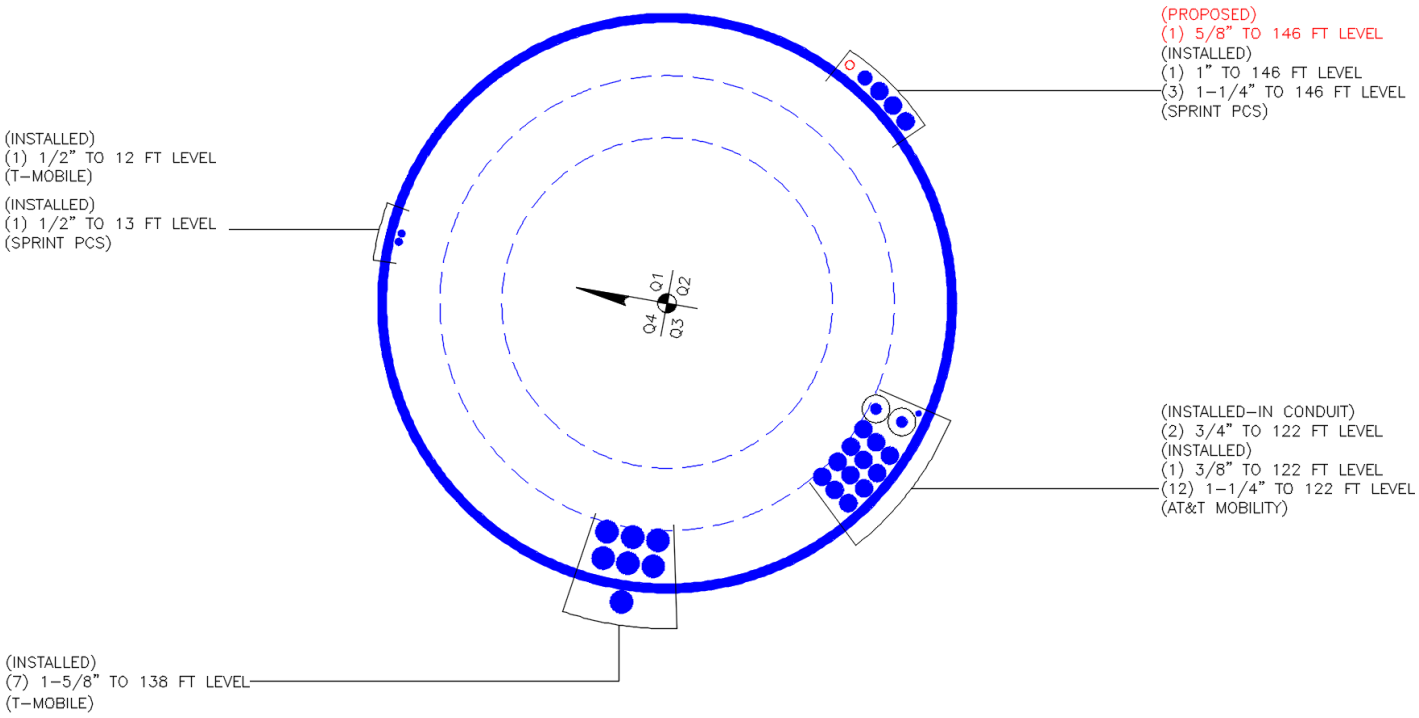
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 120	Pole	P24x0.25	1	-9.69	662.26	70.9	Pass
L2	120 - 90	Pole	30" x 0.375"	2	-14.81	1311.06	86.2	Pass
L3	90 - 78.04	Pole	36" x 0.375"	3	-17.23	1490.10	79.1	Pass
L4	78.04 - 60	Pole	RPS 36" x 0.51087"	4	-22.01	1947.97	83.4	Pass
L5	60 - 30	Pole	RPS 42" x 0.58495"	5	-34.22	2667.26	82.9	Pass
L6	30 - 7	Pole	RPS 42" x 0.65547"	6	-45.34	3045.79	95.4	Pass
L7	7 - 4	Pole	RPS 42" x 0.67553"	7	-46.57	3090.13	96.4	Pass
L8	4 - 0	Pole	RPS 42" x 0.82394"	8	-48.50	3593.36	83.7	Pass
							Summary	
						Pole (L7)	96.4	Pass
						RATING =	**96.4**	**Pass**

APPENDIX A

TNXTOWER OUTPUT

APPENDIX B

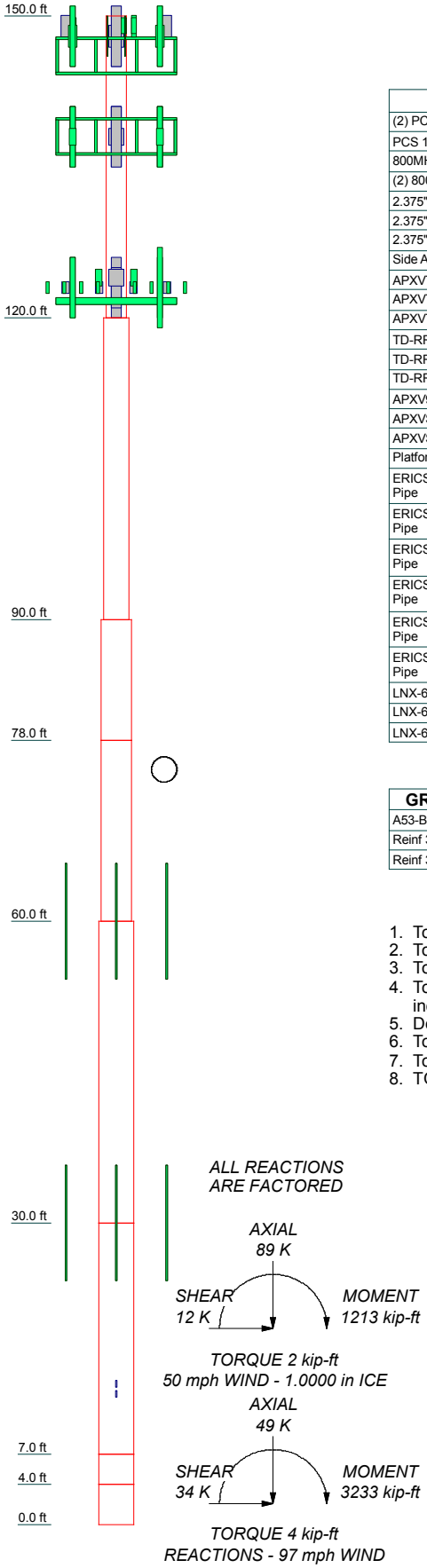
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	Size	Length (ft)	Socket Length (ft)	Grade	Weight (K)
1	P24x0.25	30.0000	5.0000	A53-B-42	1.9
2	30" x 0.375"	30.0000	5.0000		3.6
3	36" x 0.375"	11.9600	5.0000		1.7
4	RPS 36" x 0.51087"	18.0400	5.0000	Reinf 38.45 ksi	3.5
5	RPS 42" x 0.58495"	30.0000	5.0000	Reinf 38.94 ksi	7.8
6	RPS 42" x 0.65547"	23.0000	5.0000	Reinf 39.75 ksi	6.7
7	RPS 42" x 0.57553"	3.0000	5.0000	Reinf 38.45 ksi	0.9
8	RPS 42" x 0.48239"	4.0000		Reinf 37.46 ksi	1.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) PCS 1900MHz 4x45W-65MHz	148	KRY 112 144/1	138
PCS 1900MHz 4x45W-65MHz	148	KRY 112 144/1	138
800MHz 2X50W RRH W/FILTER	148	KRY 112 144/1	138
(2) 800MHz 2X50W RRH W/FILTER	148	RRUS 11 B12	138
2.375" OD x 4' Mount Pipe	148	RRUS 11 B12	138
2.375" OD x 4' Mount Pipe	148	RRUS 11 B12	138
2.375" OD x 4' Mount Pipe	148	Platform Mount [LP 1201-1]	138
Side Arm Mount [SO 102-3]	148	RRUS 11	124
APXVTM14-C-120 w/ Mount Pipe	146	RRUS 11	124
APXVTM14-C-120 w/ Mount Pipe	146	RRUS 11	124
APXVTM14-C-120 w/ Mount Pipe	146	Side Arm Mount [SO 102-3]	124
TD-RRH8x20-25	146	(2) 7770.00 w/ Mount Pipe	122
TD-RRH8x20-25	146	(2) 7770.00 w/ Mount Pipe	122
TD-RRH8x20-25	146	(2) 7770.00 w/ Mount Pipe	122
APXV9ERR18-C-A20 w/ Mount Pipe	146	AM-X-CD-14-65-00T-RET w/ Mount Pipe	122
APXVSPP18-C-A20 w/ Mount Pipe	146		
APXVSPP18-C-A20 w/ Mount Pipe	146	AM-X-CD-16-65-00T-RET w/ Mount Pipe	122
Platform Mount [LP 502-1]	146		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	138	P65-17-XLH-RR w/ Mount Pipe	122
		(4) LGP2140X	122
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	138	(4) LGP2140X	122
		(4) LGP2140X	122
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	138	DC6-48-60-18-8F	122
		T-Arm Mount [TA 602-3]	122
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	138	(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	60
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	138	(3) Bridge Stiffener (138.5" x 15.5" x 1.25")	30
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	138	Side Arm Mount [SO 701-1]	13
		KS24019-L112A	13
LNX-6515DS-VTM w/ Mount Pipe	138	KS24019-L112A	12
LNX-6515DS-VTM w/ Mount Pipe	138	Side Arm Mount [SO 701-1]	12
LNX-6515DS-VTM w/ Mount Pipe	138		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	Reinf 39.75 ksi	40 ksi	50 ksi
Reinf 38.45 ksi	38 ksi	48 ksi	Reinf 39.15 ksi	39 ksi	49 ksi
Reinf 38.94 ksi	39 ksi	49 ksi	Reinf 37.46 ksi	37 ksi	47 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 96.4%

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

Job:	150' MP; Kings Lot; South Windsor, CT
Project:	PJF# 37517-2698.001.7805 (BU# 876327)
Client: Crown Castle International	Drawn by: mtimas / App'd:
Code: TIA-222-G	Date: 08/04/17 / Scale: NTS
Path:	Dwg No. E-1

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

Site Data

BU#: *876327*
Site Name: *Kings Lot*
App #:

Reactions		
Mu	274.33	ft-kips
Axial, Pu:	9.69	kips
Shear, Vu:	16.22	kips
Elevation:	120	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	12		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	35		

Plate Data		
Diam:	41	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:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

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

Flange Bolt Results | Rigid

Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.02	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	30.54	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.535	in	
Min PL "treq" for actual **T w/ Pry**:	1.005	in	
Min PL "t1" for actual **T w/o Pry**:	1.330	in	
T allowable with Prying:	87.60	kips	0≤α'≤1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	30.54	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	27.5%	**Pass**	

Exterior Flange Plate Results Flexural Check | Rigid

Compression Side Plate Stress:	Rohn/Pirod, OK	TIA G
Allowable Plate Stress:	32.4 ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		25.48
Tension Side Stress Ratio, (treq/t)^2:	25.2% **Pass**	

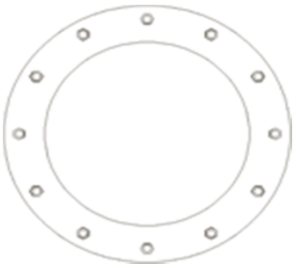
n/a

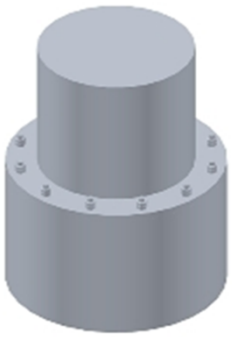
Stiffener Results N/A for Rohn / Pirod

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 G

Site Data

BU#: *876327*
Site Name: *Kings Lot*
App #:

Reactions		
Mu	274.33	ft-kips
Axial, Pu:	9.69	kips
Shear, Vu:	16.22	kips
Elevation:	120	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	12		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	35		

Plate Data		
Diam:	41	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	7.85	in

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

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

Flange Bolt Results — Rigid

Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.02	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	30.54	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.376	in	
Min PL "treq" for actual **T w/ Pry**:	0.538	in	
Min PL "t1" for actual **T w/o Pry**:	0.722	in	
T allowable w/o Prying:	111.04	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	30.54	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	27.5%	**Pass**	

Exterior Flange Plate Results — Flexural Check — Rigid

Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			18.03
Tension Side Stress Ratio, (treq/t)^2:	7.2%	**Pass**	

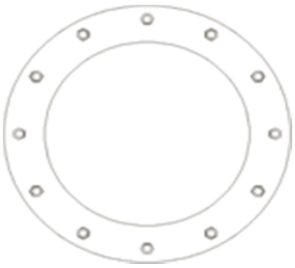
n/a

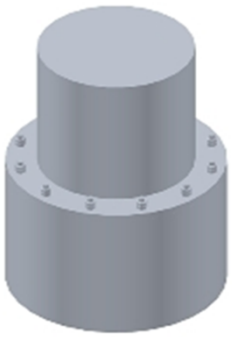
Stiffener Results — N/A for Rohn / Pirod

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 G

Site Data

BU#: *876327*
Site Name: *Kings Lot*
App #:

Reactions		
Mu	805.96	ft-kips
Axial, Pu:	14.81	kips
Shear, Vu:	19.15	kips
Elevation:	90	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	16		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	41		

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

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

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

Flange Bolt Results

			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.02	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	58.05	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.618	in	
Min PL "treq" for actual **T w/ Pry**:	1.437	in	
Min PL "t1" for actual **T w/o Pry**:	1.893	in	
T allowable with Prying:	85.19	kips	0≤α'≤1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	58.05	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	52.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			27.95
Tension Side Stress Ratio, (treq/t)^2:	51.6%	**Pass**	

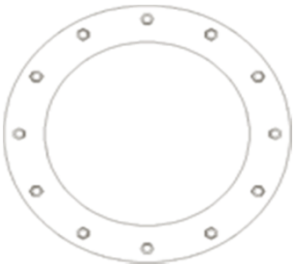
n/a

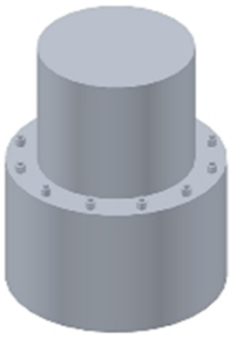
Stiffener Results N/A for Rohn / Pirod

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 G

Site Data

BU#: *876327*
Site Name: *Kings Lot*
App #:

Reactions		
Mu	805.96	ft-kips
Axial, Pu:	14.81	kips
Shear, Vu:	19.15	kips
Elevation:	90	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	16		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	41		

Plate Data		
Diam:	47	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	7.07	in

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

Flange Bolt Results | Rigid

Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.02	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	58.05	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.451	in	
Min PL "treq" for actual **T w/ Pry**:	0.786	in	
Min PL "t1" for actual **T w/o Pry**:	1.049	in	
T allowable w/o Prying:	111.04	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	58.05	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	52.3%	**Pass**	

Exterior Flange Plate Results Flexural Check | Rigid

Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			19.62
Tension Side Stress Ratio, (treq/t)^2:	15.5%	**Pass**	

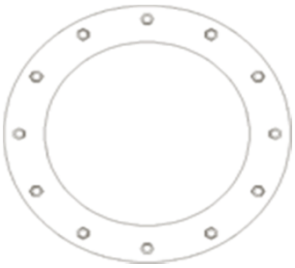
n/a

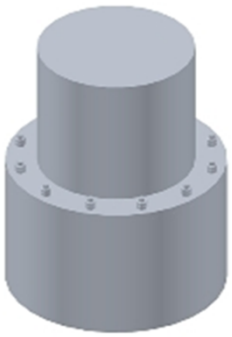
Stiffener Results N/A for Rohn / Pirod

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

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v2.1, Effective Date: 05-03-17

Date: 8/4/2017
Project No: 37517-2698.001.7805
Site Name: Kings Lot
Site Number/BUN: 876327
Description: 150' Monopole
Owner: Crown Castle International
Engineer: MJT

Welded Bridge Stiffener Analysis per TIA-222-G & AISC 13th Ed. (Black)

General Parameters and Loading:

Flange Elevation:	60.00	ft
TIA Reference Standard:	TIA-222-G	
AISC Manual:	13th Ed. (Black)	
Method:	LRFD	
ASD Stress Increase, ASIF:	N/A	
Moment, Muf:	1429.4	k-ft
Axial, Puf:	22.0	kips
Shear, Vf:	22.5	kips

Pole Parameters:

	Upper Pole	Lower Pole	
Pole Diameter, Dp:	36.00	42.00	in
Pole Thickness, tp:	0.3750	0.3750	in
Pole Fy:	42	42	ksi
Pole Fu:	60	60	ksi
Flange Diameter, Df:	53.00	53.00	in

Bridge Stiffener Parameters:

	Stiffener Type 1	Stiffener Type 2	
Qty. Stiffeners:	3	0	
Upper Weld Length, L1:	66.25	0.00	in
Lower Weld Length, L2:	67.13	0.00	in
Weld Size, w:	0.3750	0.0000	in
Electrode:	E80	E70	
Effective Stiffener Width, Ws:	7.00	0.00	in
Stiffener Thickness, ts:	1.25	0.00	in
Notch, n:	0.50	0.00	in
Stiffener Fy:	65	0	ksi
Stiffener Fu:	80	0	ksi
Unbraced Length, L:	4.63	0.00	in
K:	0.80	0.00	
Stiffener Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	60	0	degrees
Stiffener Circle:	61.00	53.00	in = Df + 2 n + Ws
Upper Eccentricity, e1:	12.50	8.50	in = (Df - Dp) / 2 + n + Ws / 2
Lower Eccentricity, e2:	9.50	5.50	in = (Df - Dp) / 2 + n + Ws / 2

Flange Bolt Parameters:

Number of Bolt Circles: (1) Bolt Circle

	Bolt Circle 1	Bolt Circle 2	
Qty. Bolts:	0	0	
Bolt Diameter:	1.50	0.00	in
Bolt Circle:	47.00	0.00	in
Bolt Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Bolt Area, Ag:	0.0000	0.0000	in
Max. Tension:	0.00	0.00	kips
Max. Net Tension:	0.00	0.00	kips
Max. Net Compression:	0.00	0.00	kips
Moment to Bolt Circle:	0.00	0.00	k-ft
Axial to Bolt Circle:	0.00	0.00	kips
Shear to Bolt Circle:	0.00	0.00	kips
Equivalent Bolt Circle:	0.00	0.00	in

Weld Analysis per AISC Tables 8-4 & 8-3:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.1887	0.0000	= e1 / L1
k:	0	0	
C:	3.5462	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	382.5	0.0	kips
Axial Capacity, ΦPn:	1088.9	0.0	kips = Φ C C1 D L
Ratio:	35.1%	0.0%	

Lower Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.1415	0.0000	= e2 / L2
k:	0	0	
C:	3.6785	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	382.5	0.0	kips
Axial Capacity, ΦPn:	1144.5	0.0	kips = Φ C C1 D L
Ratio:	33.4%	0.0%	

Pole Analysis per AISC Table J2.5 & Sect. J4.2:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, Pu:	382.5	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	2.9	0.0	kips/in= Pu / (2 L1)
Section Modulus, S:	1463.0	0.0	in^2 = $L1^2$ / 3
Bending Stress, fub:	3.3	0.0	kips/in = Pu e1 / S
Combined Stress, fu:	4.4	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	9.5	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	46.1%	0.0%	

Lower Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, Pu:	382.5	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	2.8	0.0	ksi = Pu / (2 L2)
Section Modulus, S:	1501.9	0.0	in^2 = $L2^2$ / 3
Bending Stress, fub:	2.4	0.0	ksi = Pu e2 / S
Combined Stress, fu:	3.7	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	9.5	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	39.6%	0.0%	

Stiffener 1 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 1	
Gross Area, Ag:	8.7500	in^2
Effective Net Area, Aen:	8.7500	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	382.5	kips
Stiffener Stress, fu:	43.7	ksi = Pu / Ag
b:	16.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	12.8000	in
Q, Where Qa = 1.0:	0.8794	= Qa 1.34 - 0.76 (b / ts) (Fy / E)$^{1/2}$
r:	0.3608	in^3
K L / r:	10.2537	
Φ:	0.9000	
Axial Capacity, ΦFcr:	51.00	ksi = Φ Q [0.658$^{Q\,Fy\,/\,Fe}$] Fy
Φ:	0.9000	
Ten. Yielding Cap., ΦFnt:	58.50	ksi = Φ Fy
Φ:	0.7500	
Ten. Rupture Cap., ΦFnr:	60.00	ksi = Φ Fu (Aen / Ag)
Ratio:	85.7%	

Stiffener 2 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 2	
Gross Area, Ag:	0.0000	in^2
Effective Net Area, Aen:	0.0000	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	0.0	kips
Stiffener Stress, fu:	0.0	ksi = Pu / Ag
b:	0.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	0.0000	in
Q, Where Qa = 1.0:	0.0000	
r:	0.0000	in^3
K L / r:	0.0000	
Φ:	0.0000	
Axial Capacity, ΦFcr:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Yielding Cap., ΦFnt:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Rupture Cap., ΦFnr:		ksi = Φ Fu (Aen / Ag)
Ratio:	0.0%	

Analysis Summary:

Bridge Stiffener Type 1
Weld Analysis Ratio: 35.1% PASS
Pole Analysis Ratio: 46.1% PASS
Stiffener Analysis Ratio: 85.7% PASS

Bridge Stiffener Type 2
Weld Analysis Ratio: 0.0% PASS
Pole Analysis Ratio: 0.0% PASS
Stiffener Analysis Ratio: 0.0% PASS

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v2.1, Effective Date: 05-03-17

Date: 8/4/2017
Project No: 37517-2698.001.7805
Site Name: Kings Lot
Site Number/BUN: 876327
Description: 150' Monopole
Owner: Crown Castle International
Engineer: MJT

Welded Bridge Stiffener Analysis per TIA-222-G & AISC 13th Ed. (Black)

General Parameters and Loading:

Flange Elevation:	30.00	ft
TIA Reference Standard:	TIA-222-G	
AISC Manual:	13th Ed. (Black)	
Method:	LRFD	
ASD Stress Increase, ASIF:	N/A	
Moment, Muf:	2248.0	k-ft
Axial, Puf:	34.2	kips
Shear, Vf:	29.0	kips

Pole Parameters:

	Upper Pole	Lower Pole	
Pole Diameter, Dp:	42.00	42.00	in
Pole Thickness, tp:	0.3750	0.5000	in
Pole Fy:	42	42	ksi
Pole Fu:	60	60	ksi
Flange Diameter, Df:	53.00	53.00	in

Bridge Stiffener Parameters:

	Stiffener Type 1	Stiffener Type 2	
Qty. Stiffeners:	3	0	
Upper Weld Length, L1:	66.25	0.00	in
Lower Weld Length, L2:	67.13	0.00	in
Weld Size, w:	0.3750	0.0000	in
Electrode:	E80	E70	
Effective Stiffener Width, Ws:	9.00	0.00	in
Stiffener Thickness, ts:	1.25	0.00	in
Notch, n:	0.50	0.00	in
Stiffener Fy:	65	0	ksi
Stiffener Fu:	80	0	ksi
Unbraced Length, L:	4.63	0.00	in
K:	0.80	0.00	
Stiffener Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	60	0	degrees
Stiffener Circle:	63.00	53.00	in = Df + 2 n + Ws
Upper Eccentricity, e1:	10.50	5.50	in = (Df - Dp) / 2 + n + Ws / 2
Lower Eccentricity, e2:	10.50	5.50	in = (Df - Dp) / 2 + n + Ws / 2

Flange Bolt Parameters:

Number of Bolt Circles: (1) Bolt Circle

	Bolt Circle 1	Bolt Circle 2	
Qty. Bolts:	0	0	
Bolt Diameter:	1.50	0.00	in
Bolt Circle:	47.00	0.00	in
Bolt Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Bolt Area, Ag:	0.0000	0.0000	in
Max. Tension:	0.00	0.00	kips
Max. Net Tension:	0.00	0.00	kips
Max. Net Compression:	0.00	0.00	kips
Moment to Bolt Circle:	0.00	0.00	k-ft
Axial to Bolt Circle:	0.00	0.00	kips
Shear to Bolt Circle:	0.00	0.00	kips
Equivalent Bolt Circle:	0.00	0.00	in

Weld Analysis per AISC Tables 8-4 & 8-3:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.1585	0.0000	= e1 / L1
k:	0	0	
C:	3.6428	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	582.6	0.0	kips
Axial Capacity, ΦPn:	1118.6	0.0	kips = Φ C C1 D L
Ratio:	52.1%	0.0%	

Lower Pole			
D:	6	0	Num. of Sixteenths in Weld
a:	0.1564	0.0000	= e2 / L2
k:	0	0	
C:	3.6494	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	582.6	0.0	kips
Axial Capacity, ΦPn:	1135.4	0.0	kips = Φ C C1 D L
Ratio:	51.3%	0.0%	

Pole Analysis per AISC Table J2.5 & Sect. J4.2:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, Pu:	582.6	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	4.4	0.0	kips/in= Pu / (2 L1)
Section Modulus, S:	1463.0	0.0	in^2 = $L1^2$ / 3
Bending Stress, fub:	4.2	0.0	kips/in = Pu e1 / S
Combined Stress, fu:	6.1	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	9.5	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	64.2%	0.0%	

Lower Pole			
Stiffener Axial, Pu:	582.6	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	4.3	0.0	ksi = Pu / (2 L2)
Section Modulus, S:	1501.9	0.0	in^2 = $L2^2$ / 3
Bending Stress, fub:	4.1	0.0	ksi = Pu e2 / S
Combined Stress, fu:	6.0	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	12.6	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	47.2%	0.0%	

Stiffener 1 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 1	
Gross Area, Ag:	11.2500	in^2
Effective Net Area, Aen:	11.2500	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	582.6	kips
Stiffener Stress, fu:	51.8	ksi = Pu / Ag
b:	15.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	12.0000	in
Q, Where Qa = 1.0:	0.9082	= Qa 1.34 - 0.76 (b / ts) (Fy / E)$^{1/2}$
r:	0.3608	in^3
K L / r:	10.2537	
Φ:	0.9000	
Axial Capacity, ΦFcr:	52.65	ksi = Φ Q [0.658$^{Q\,Fy\,/\,Fe}$] Fy
Φ:	0.9000	
Ten. Yielding Cap., ΦFnt:	58.50	ksi = Φ Fy
Φ:	0.7500	
Ten. Rupture Cap., ΦFnr:	60.00	ksi = Φ Fu (Aen / Ag)
Ratio:	98.4%	

Stiffener 2 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 2	
Gross Area, Ag:	0.0000	in^2
Effective Net Area, Aen:	0.0000	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	0.0	kips
Stiffener Stress, fu:	0.0	ksi = Pu / Ag
b:	0.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	0.0000	in
Q, Where Qa = 1.0:	0.0000	
r:	0.0000	in^3
K L / r:	0.0000	
Φ:	0.0000	
Axial Capacity, ΦFcr:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Yielding Cap., ΦFnt:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Rupture Cap., ΦFnr:		ksi = Φ Fu (Aen / Ag)
Ratio:	0.0%	

Analysis Summary:

Bridge Stiffener Type 1	Bridge Stiffener Type 2
Weld Analysis Ratio: 52.1% PASS	Weld Analysis Ratio: 0.0% PASS
Pole Analysis Ratio: 64.2% PASS	Pole Analysis Ratio: 0.0% PASS
Stiffener Analysis Ratio: 98.4% PASS	Stiffener Analysis Ratio: 0.0% PASS

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v4.4 - Effective 7-12-13

Date: 8/4/2017
PJF Project: 37517-2698.001.7805
Client Ref. # BU 876327
Site Name: Kings Lot
Description: 150' MP
Owner: CCI
Engineer: MJT

Asymmetric Anchor Rod Analysis

Moment =	3233	k-ft	TIA Ref.	G	Location =	Base Plate		
Axial =	49.0	kips	ASIF =	N/A	η =	0.50	for BP, Rev. G Sect. 4.9.9	
Shear =	34.0	kips	Max Ratio =	105.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	23							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.500	A354 Gr BC	109	125	0.0	47.00	0.00	1.77	86.16	82.81	88.49	0.00	141.00	62.8%
2	1.500	A354 Gr BC	109	125	20.0	47.00	0.00	1.77	81.22	77.87	83.54	0.00	141.00	59.3%
3	1.500	A354 Gr BC	109	125	40.0	47.00	0.00	1.77	76.48	73.13	78.80	0.00	141.00	55.9%
4	1.500	A354 Gr BC	109	125	60.0	47.00	0.00	1.77	73.59	70.24	75.92	0.00	141.00	53.8%
5	1.500	A354 Gr BC	109	125	80.0	47.00	0.00	1.77	73.85	70.50	76.17	0.00	141.00	54.0%
6	1.500	A354 Gr BC	109	125	100.0	47.00	0.00	1.77	77.26	73.91	79.58	0.00	141.00	56.4%
7	1.500	A354 Gr BC	109	125	120.0	47.00	0.00	1.77	82.55	79.20	84.87	0.00	141.00	60.2%
8	1.500	A354 Gr BC	109	125	140.0	47.00	0.00	1.77	88.01	84.66	90.33	0.00	141.00	64.1%
9	1.500	A354 Gr BC	109	125	160.0	47.00	0.00	1.77	92.30	88.95	94.63	0.00	141.00	67.1%
10	1.500	A354 Gr BC	109	125	180.0	47.00	0.00	1.77	94.79	91.43	97.11	0.00	141.00	68.9%
11	1.500	A354 Gr BC	109	125	200.0	47.00	0.00	1.77	95.51	92.16	97.83	0.00	141.00	69.4%
12	1.500	A354 Gr BC	109	125	220.0	47.00	0.00	1.77	95.06	91.71	97.38	0.00	141.00	69.1%
13	1.500	A354 Gr BC	109	125	240.0	47.00	0.00	1.77	94.24	90.89	96.57	0.00	141.00	68.5%
14	1.500	A354 Gr BC	109	125	260.0	47.00	0.00	1.77	93.69	90.34	96.01	0.00	141.00	68.1%
15	1.500	A354 Gr BC	109	125	280.0	47.00	0.00	1.77	93.54	90.19	95.86	0.00	141.00	68.0%
16	1.500	A354 Gr BC	109	125	300.0	47.00	0.00	1.77	93.36	90.01	95.68	0.00	141.00	67.9%
17	1.500	A354 Gr BC	109	125	320.0	47.00	0.00	1.77	92.41	89.06	94.74	0.00	141.00	67.2%
18	1.500	A354 Gr BC	109	125	340.0	47.00	0.00	1.77	90.07	86.72	92.39	0.00	141.00	65.5%
19	2.250	A193 Gr B7	105	125	20.0	64.50	0.00	3.98	254.87	247.33	260.10	0.00	325.00	80.0%
20	2.250	A193 Gr B7	105	125	70.0	64.50	0.00	3.98	233.53	225.99	238.76	0.00	325.00	73.5%
21	2.250	A193 Gr B7	105	125	110.0	64.50	0.00	3.98	250.13	242.59	255.36	0.00	325.00	78.6%
22	2.250	A193 Gr B7	105	125	197.0	64.50	0.00	3.98	287.32	279.78	292.55	0.00	325.00	90.0%
23	2.250	A193 Gr B7	105	125	302.0	64.50	0.00	3.98	281.79	274.25	287.02	0.00	325.00	88.3%
								51.69						

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876327*
Site Name: *Kings Lot*
App #:

Pole Manufacturer:	*Other*

Reactions		
Mu:	1653.7538	ft-kips
Axial, Pu:	30.2	kips
Shear, Vu:	20.9	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Reactions have been adjusted to account for additional anchor rods.

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

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

Anchor Rod Results

Max Rod (Cu+ Vu/ή): 97.8 Kips

SEE ASYMMETRICAL SPREADSHEET FOR ANCHOR CALCS

Stiffened
AISC LRFD
φ*Tn

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

Base Plate Results Flexural Check

Base Plate Stress:	19.6	ksi
Allowable Plate Stress:	32.4	ksi
Base Plate Stress Ratio:	60.4%	**Pass**

Stiffened
AISC LRFD
φ*Fy
Y.L. Length:
N/A, Roark

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Both	
Groove Depth:	0.25	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.25	in
Fillet V. Weld:	0.25	in
Width:	5.75	in
Height:	14.25	in
Thick:	0.5	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

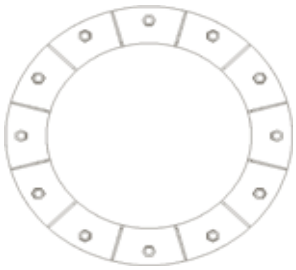
Stiffener Results

Horizontal Weld :	44.4%	**Pass**
Vertical Weld:	34.1%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	14.6%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	45.7%	**Pass**
Plate Comp. (AISC Bracket):	48.6%	**Pass**

Pole Results

Pole Punching Shear Check:	8.9%	**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



* 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

foundation loads

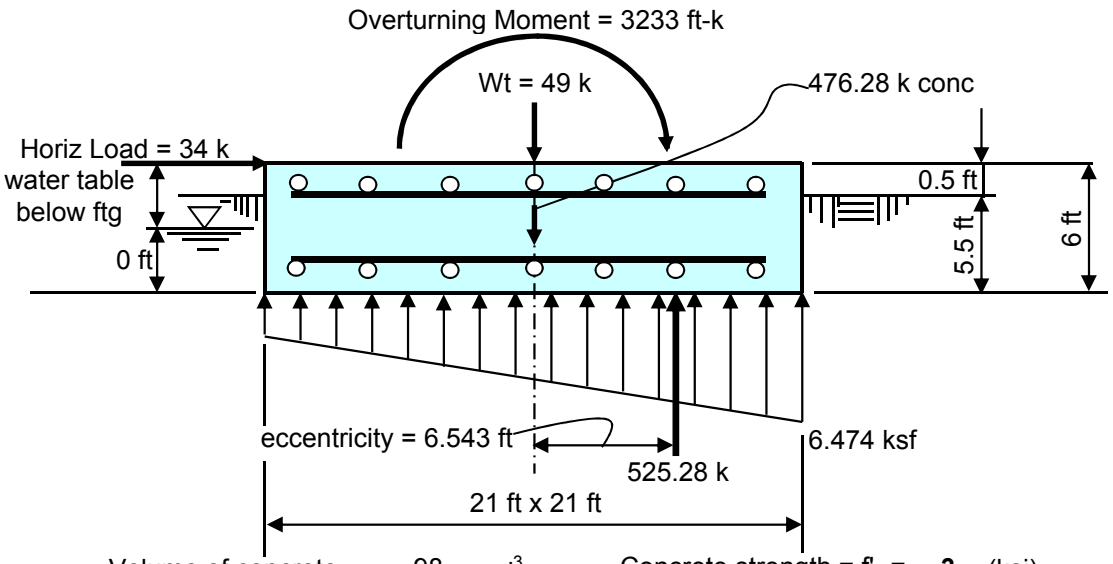
Limit states Tower or Pole Weight =	**49**	kips
limit states total horizontal force =	**34**	kips
limit states overturning moment =	**3233**	ft-kips

soil properties

Safety factor against overturning =	**1**	
Soil Density =	**115**	pcf
Ultimate soil bearing =	**16**	ksf
Depth to water table =	**99**	ft

mat dimensions

depth to bottom of footing =	**5.5**	ft
Footing thickness =	**6**	ft
Footing Width =	**21**	ft
Footing Length =	**21**	ft
Tower/Pole Center Offset =	**0**	ft



Volume of concrete = 98 yd^3 Concrete strength = f'_c = **3** (ksi)

Rebar = (88) #8 bars by 20.5 ft long

reinforcing steel = **(22) #8 @ 11.71 in o.c. ea way top and bottom**

Summary of analysis results

Overturning Moment: (Stress Ratio = 0.831) **< CONTROLLING CRITERIA**

Calculated Ultimate Overturning Moment = 3437 ft-kips

Resisting Moment = 4136.6 ft-kips

Factor of Safety against overturning = 1.204 **> 1 okay**

Rebar strength = F_y = **60** (ksi)

minimum cover over rebar = **3** inches

Soil Bearing (Stress Ratio = 0.539)

Limit States Maximum Net Soil Bearing = 12 ksf

Calculated limit states Soil Bearing Pressure = 6.474 **ksf < 12 ksf okay**

Bending Moment (Stress Ratio = 0.294)

Ultimate Bending Moment Resistance = 5216 ft-kips

Calculated Ultimate Bending Moment = 1535 **ft-kips < 5216 ft-kips okay**

Bending Shear (Stress Ratio = 0.19)

Ultimate Bending Shear Resistance = 1584 kips

Calculated Ultimate Bending Shear = 300 **kips < 1584 kips okay**

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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT03XC066

Kings Lot
59 McGuire Road
South Windsor, CT 06074

September 12, 2017

EBI Project Number: 6217003921

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	7.49 %

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

EBI Consulting
environmental | engineering | due diligence

September 12, 2017

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

Emissions Analysis for Site: **CT03XC066 – Kings Lot**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **59 McGuire Road, South Windsor, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **59 McGuire Road, South Windsor, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 and the RFS APXVTM14-C-120** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **148 feet** above ground level (AGL) for **Sector A**, **148 feet** above ground level (AGL) for **Sector B** and **148 feet** above ground level (AGL) for Sector C.

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.

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SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXV9ERR18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd
Height (AGL):	**148 feet**	Height (AGL):	**148 feet**	Height (AGL):	**148 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	5,873.76	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	**1.17 %**	Antenna B1 MPE%	**1.52 %**	Antenna C1 MPE%	**1.52 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**148 feet**	Height (AGL):	**148 feet**	Height (AGL):	**148 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.11 %**	Antenna B2 MPE%	**1.11 %**	Antenna C2 MPE%	**1.11 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.63 %**
T-Mobile	2.31 %
AT&T	2.55 %
Site Total MPE %:	**7.49 %**

SPRINT Sector A Total:	2.28 %
SPRINT Sector B Total:	2.63 %
SPRINT Sector C Total:	2.63 %
Site Total:	7.49 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector (Sectors B & C)	**# Channels**	**Watts ERP (Per Channel)**	**Height (feet)**	**Total Power Density (μW/cm²)**	**Frequency (MHz)**	**Allowable MPE (μW/cm²)**	**Calculated % MPE**
Sprint 850 MHz CDMA	1	437.55	148	0.78	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	437.55	148	1.56	850 MHz	567	0.28%
Sprint 1900 MHz (PCS) CDMA	5	622.47	148	5.55	1900 MHz (PCS)	1000	0.55%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	148	5.55	1900 MHz (PCS)	1000	0.55%
Sprint 2500 MHz (BRS) LTE	8	778.09	148	11.10	2500 MHz (BRS)	1000	1.11%
						Total:	**2.63%**

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.28 %
Sector B:	2.63 %
Sector C:	2.63 %
SPRINT Maximum Total (per sector):	2.63 %
Site Total:	7.49 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.49 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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