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

August 26, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 876317**
Sprint PCS Site ID: CT03XC027
Located at: 150 Mattatuck Heights, Waterbury, CT 06705

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of Sprint PCS (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Neil M. O'Leary, Mayor for City of Waterbury, and Mr. Leonard Linsker, Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **150 Mattatuck Heights, Waterbury, CT 06705**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

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

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

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

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

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

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

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

Sincerely,

Jeff Barbadora
Real Estate Specialist

Enclosures

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

cc: The Honorable Neil M. O'Leary, Mayor
City of Waterbury
City Hall Building
235 Grand Street
Waterbury, CT 06702

150 MH, LLC
Attention: Leonard Linsker
12 Iselin Terrace
Larchmont, NY 10538-2631

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	WATERBURY
SITE CASCADE:	CT03XC027
SITE NUMBER:	876317
SITE ADDRESS:	150 MATTATUCK HEIGHTS WATERBURY, CT 06705
SITE TYPE:	MONOPOLE TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 32' 16.2852" N
41.537857°

LONGITUDE (NAD83):
72° 59' 6.1116" W
-72.985031°

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
TOWN OF WALLINGFORD

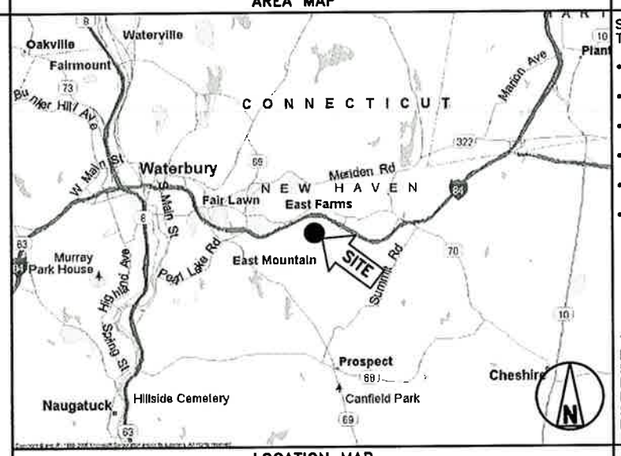
ZONING DISTRICT:
I-P

AAV PROVIDER:
AT&T
(800) 246-2020

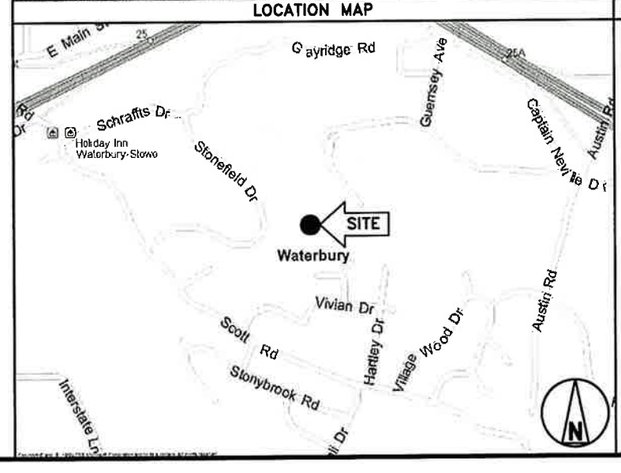
POWER COMPANY:
TBD

SPRINT CM:
WOOD, GARY
GARY.WOOD@SPRINT.COM
860-940-9168

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

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

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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

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

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

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:
WATERBURY

SITE CASCADE:
CT03XC027

SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

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

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

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

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

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

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 CURRENT VERSION OF SPRINT'S TS-0200 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

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

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

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

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

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

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

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

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

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

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

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME: WATERBURY

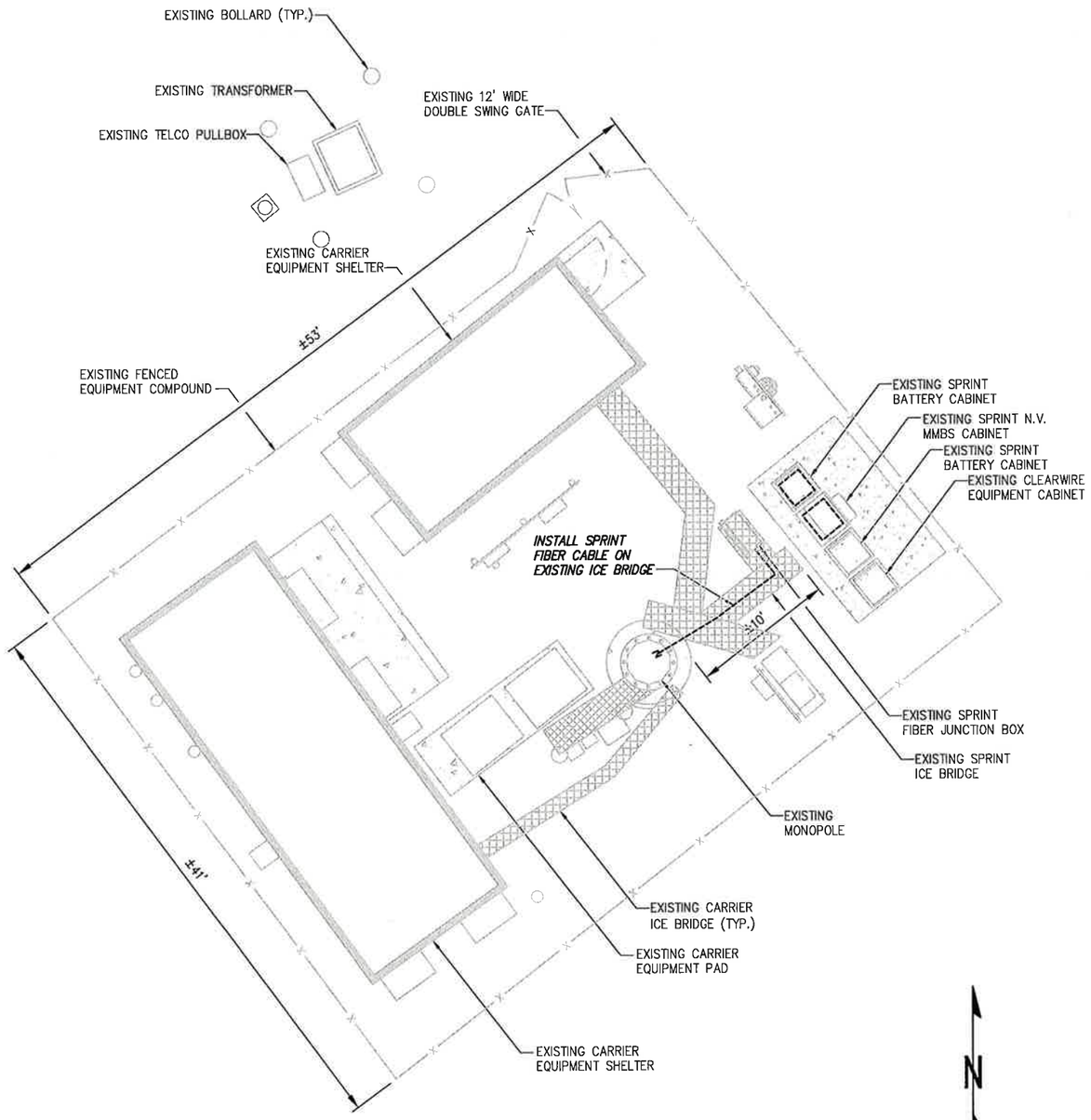
SITE CASCADE: CT03XC027

SITE ADDRESS: 150 MATTATUCK HEIGHTS WATERBURY, CT 06705

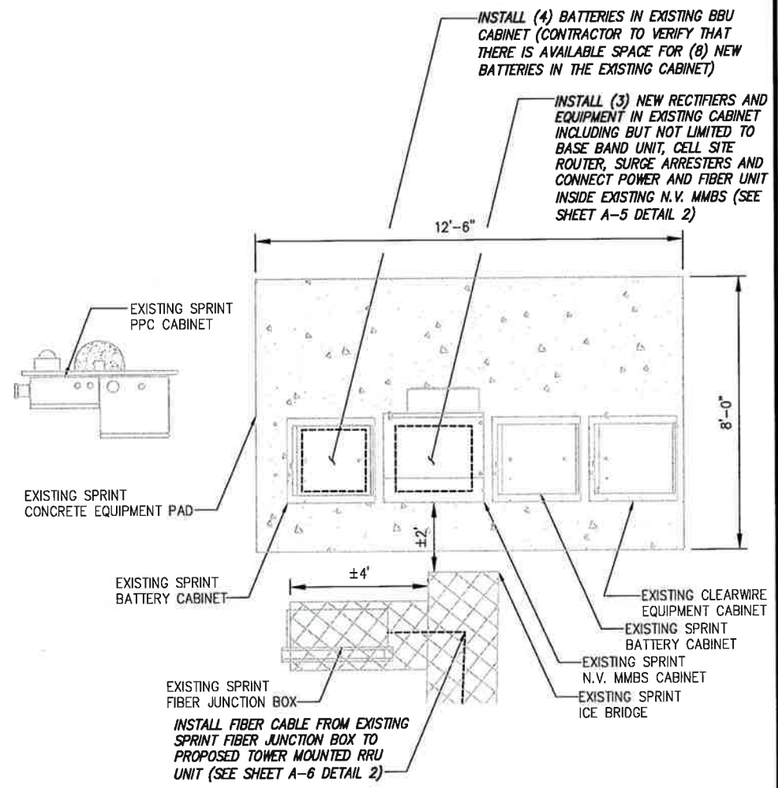
SHEET DESCRIPTION: SPRINT SPECIFICATIONS

SHEET NUMBER: SP-3

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



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

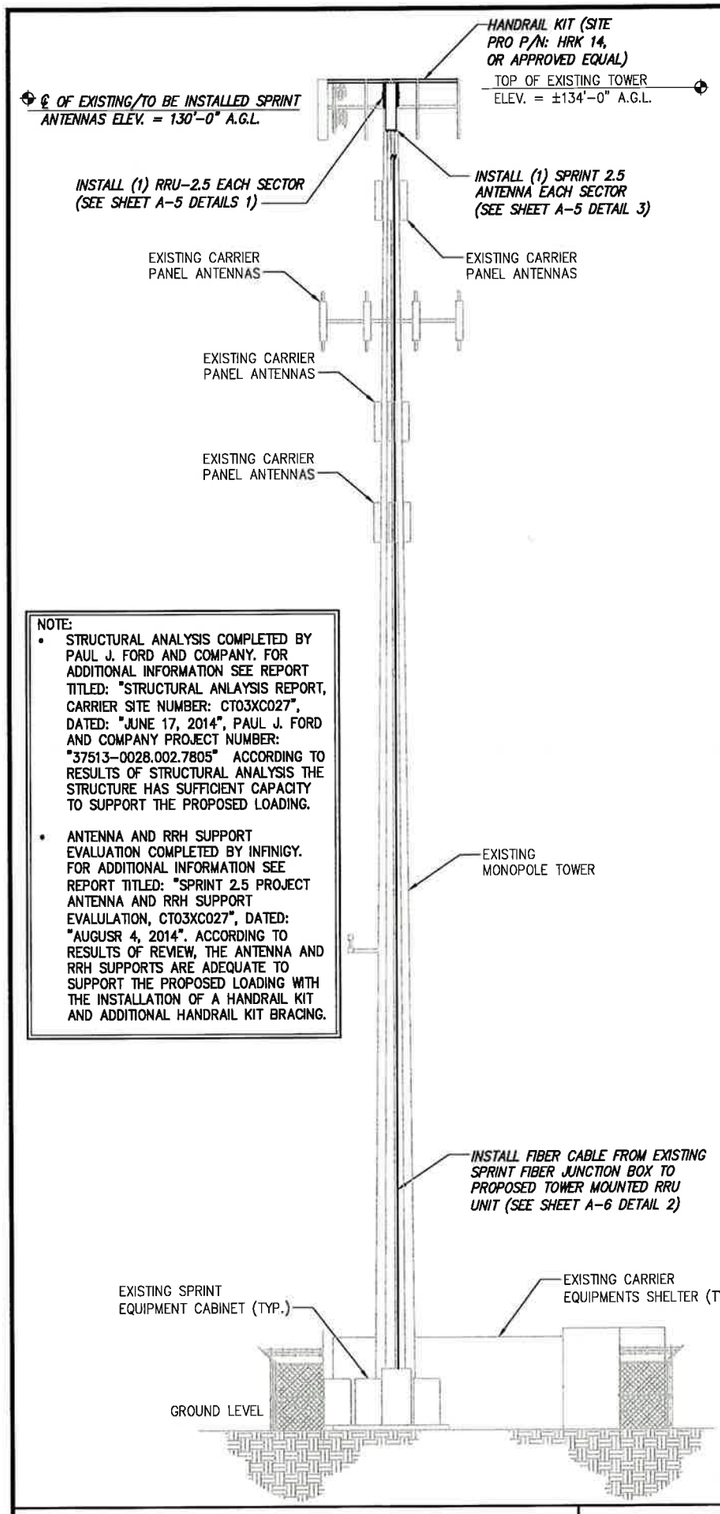
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

SITE PLAN

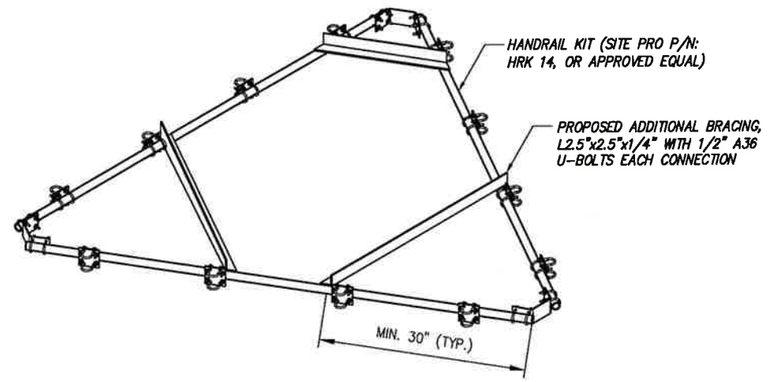
SHEET NUMBER:

A-1



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD AND COMPANY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANLAYSIS REPORT, CARRIER SITE NUMBER: CT03XC027", DATED: "JUNE 17, 2014", PAUL J. FORD AND COMPANY PROJECT NUMBER: "37513-0028.002.7805" ACCORDING TO RESULTS OF STRUCTURAL ANALYSIS THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT 2.5 PROJECT ANTENNA AND RRH SUPPORT EVALULATION, CT03XC027", DATED: "AUGUSR 4, 2014". ACCORDING TO RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS ARE ADEQUATE TO SUPPORT THE PROPOSED LOADING WITH THE INSTALLATION OF A HANDRAIL KIT AND ADDITIONAL HANDRAIL KIT BRACING.

TOWER ELEVATION | NO SCALE | 1



NOTE:
CONTRACTOR TO PROVIDE ADDITIONAL CROSSOVER PLATES FOR ANY ADDITIONAL ANTENNA PIPES

UPPER SUPPORT HANDRAIL | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
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MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

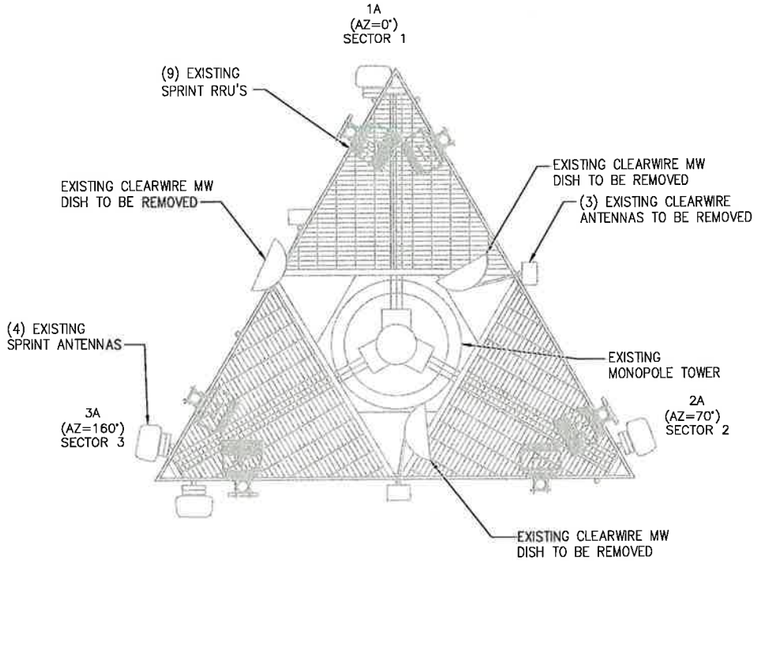
SITE NAME:
WATERBURY

SITE CASCADE:
CT03XC027

SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

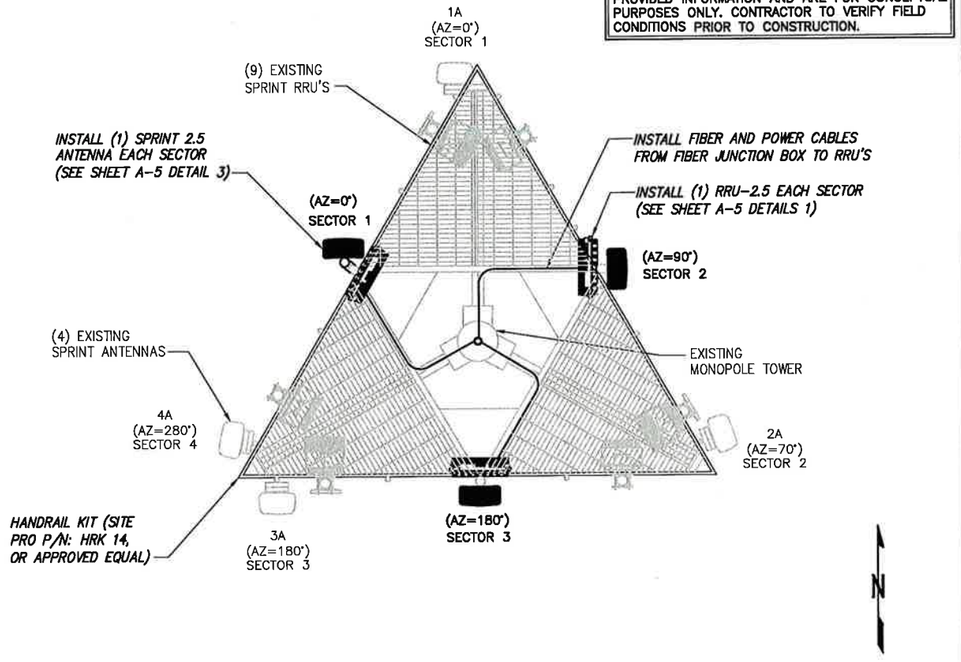
SHEET DESCRIPTION:
TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:
A-2

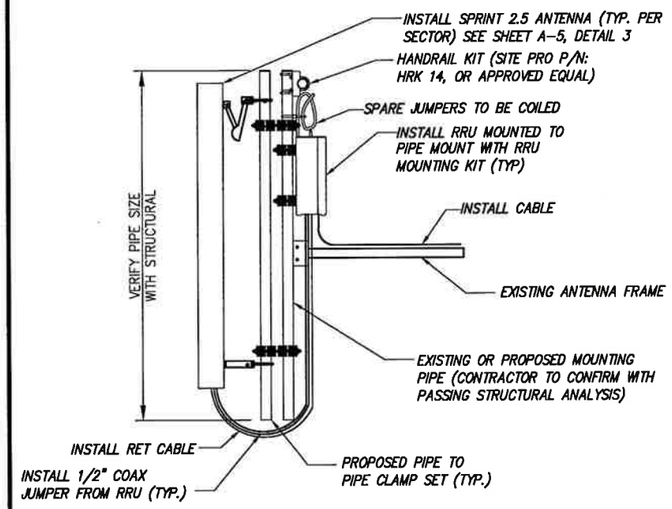


EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

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



FINAL ANTENNA LAYOUT | NO SCALE | 2



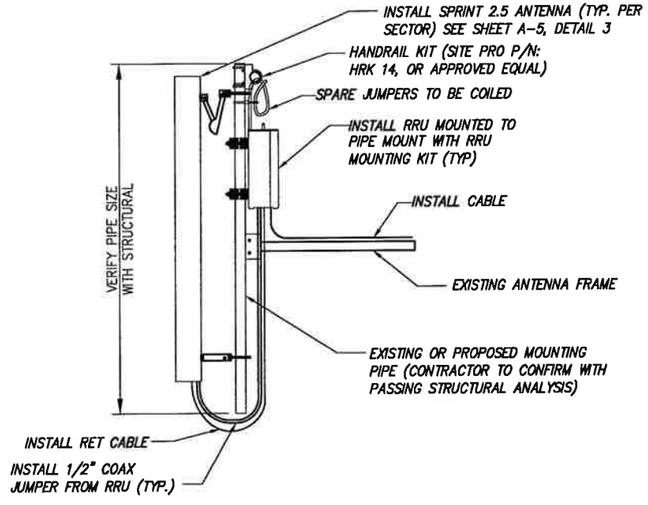
NOTES:

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:
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 (ALPHA SECTOR) | NO SCALE | 3



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NOTE:
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TYPICAL ANTENNA & RRU MOUNTING DETAILS (BETA & GAMMA SECTORS) | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24703
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

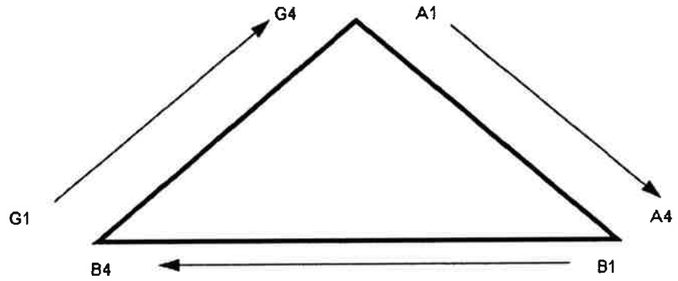
A-3

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

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

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

Figure 1: Antenna Orientation



NOTES:

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

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

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

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

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

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

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

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

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

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

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

Example – Sector 2, Cable 2, 800mhz Radio #1

Example – Sector 3, Cable 1, 1900mhz Radio #1

Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

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JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:
WATERBURY

SITE CASCADE:
CT03XC027

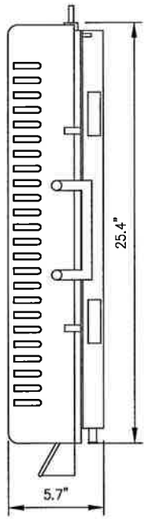
SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:
COLOR CODING AND NOTES

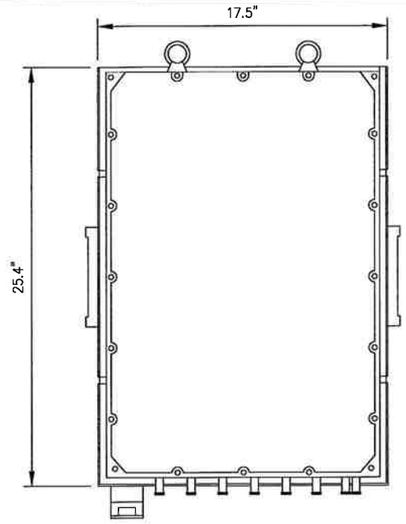
SHEET NUMBER:
A-4

RRU: ALCATEL LUCENT TD-RRH8X20

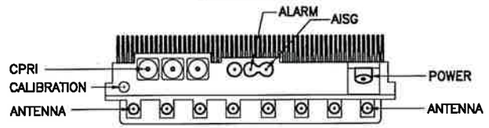
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

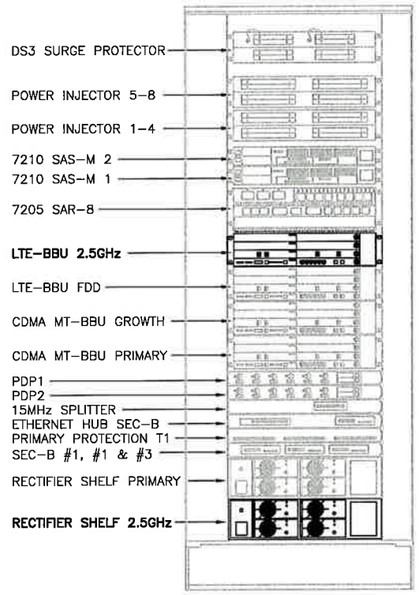


PLAN VIEW

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

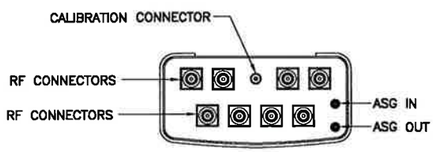


FRONT VIEW

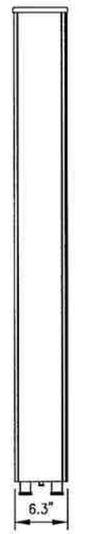
NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

ANTENNA RFS APXVTM14-C-I20

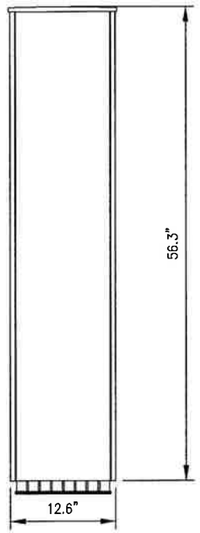
RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mlm):	56.3"x12.6"x6.3" (1430x320x160mm)
WEIGHT:	52.9 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW



SIDE VIEW



FRONT VIEW

2.5 ANTENNA | NO SCALE | 3

NOTES:

1. ALL ANTENNA HEIGHTS ARE TO CENTER OF HORIZONTAL ANTENNA.

2. VERIFY AZIMUTH AND CL HEIGHT WITH AS-BUILT DRAWINGS IF AVAILABLE.

3. NO OBJECT IS TO BE WITHIN 45 DEGREES OF BORE-SIGHT OF 2.5G OR ANY OTHER TOWER ANTENNA. IF NECESSARY, 2.5G ANTENNA CAN BE PLACED AT FAR EDGE OF HORIZONTAL ANTENNA MOUNT MEMBER FOR CLEAR LINE OF SITE OR EVEN ON ANOTHER SECTOR FOR CLEAR LINE OF SITE.

4. 2.5G ANTENNA MUST BE AT LEAST 6" FROM 1900MHZ ANTENNA, 30" FROM 800MHZ ANTENNA AND 30MHZ FROM DUAL BAND 1900MHZ AND 800MHZ ANTENNA.

5. IF ANTENNAS ARE MOUNTED ON A FACE SURFACE SUCH AS A BUILDING WALL, PARAPET WALL, OR WATER TOWER WALL, THIS RFDS MUST BE ACCOMPANIED BY A SKETCH PROVIDED BY ITS ORIGINATING RF ENGINEER CALLING OUT THE EXACT LOCATION OF WHERE ANTENNA IS TO BE LOCATED. CONTACT SPRINT RF ENGINEER IF THE SKETCH IS MISSING.

6. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5G ANTENNA AT SAME CL HEIGHT AS 1.9G ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900 MHZ AND 800 MHZ ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.

7. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.

8. GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5G ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.

9. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/

NOTES | 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:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

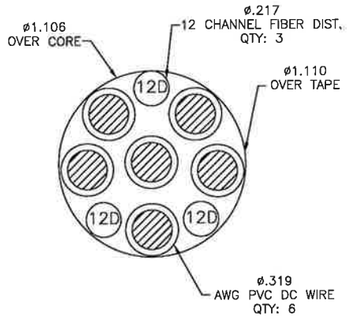
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

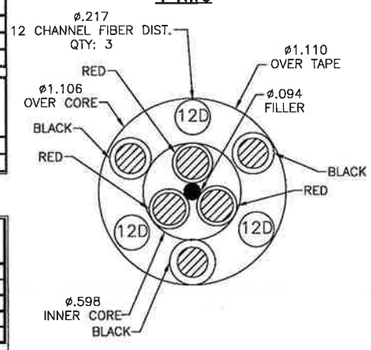
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

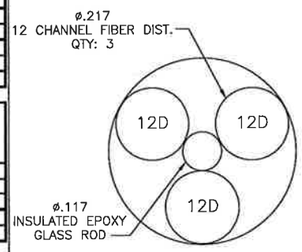
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

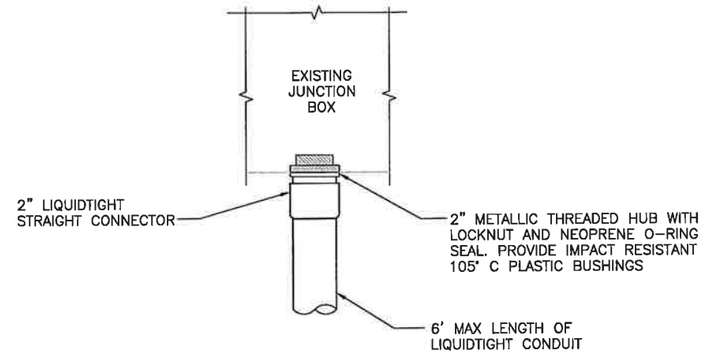


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

PLANS PREPARED FOR:

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Overland Park, Kansas 66251

PLANS PREPARED BY:

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CIVIL DETAILS

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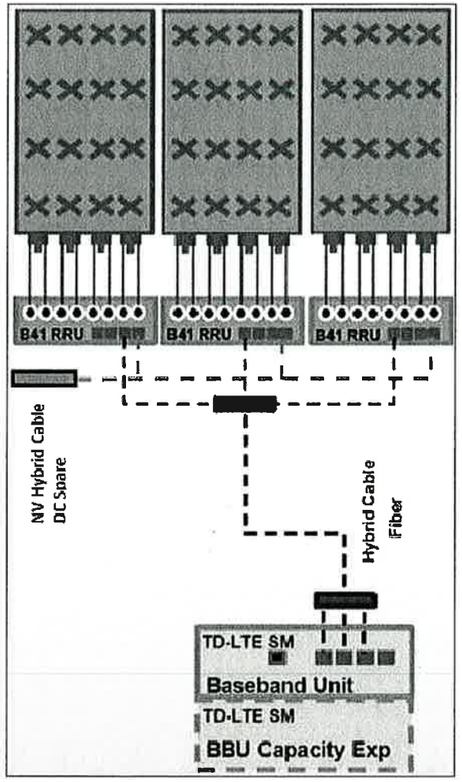
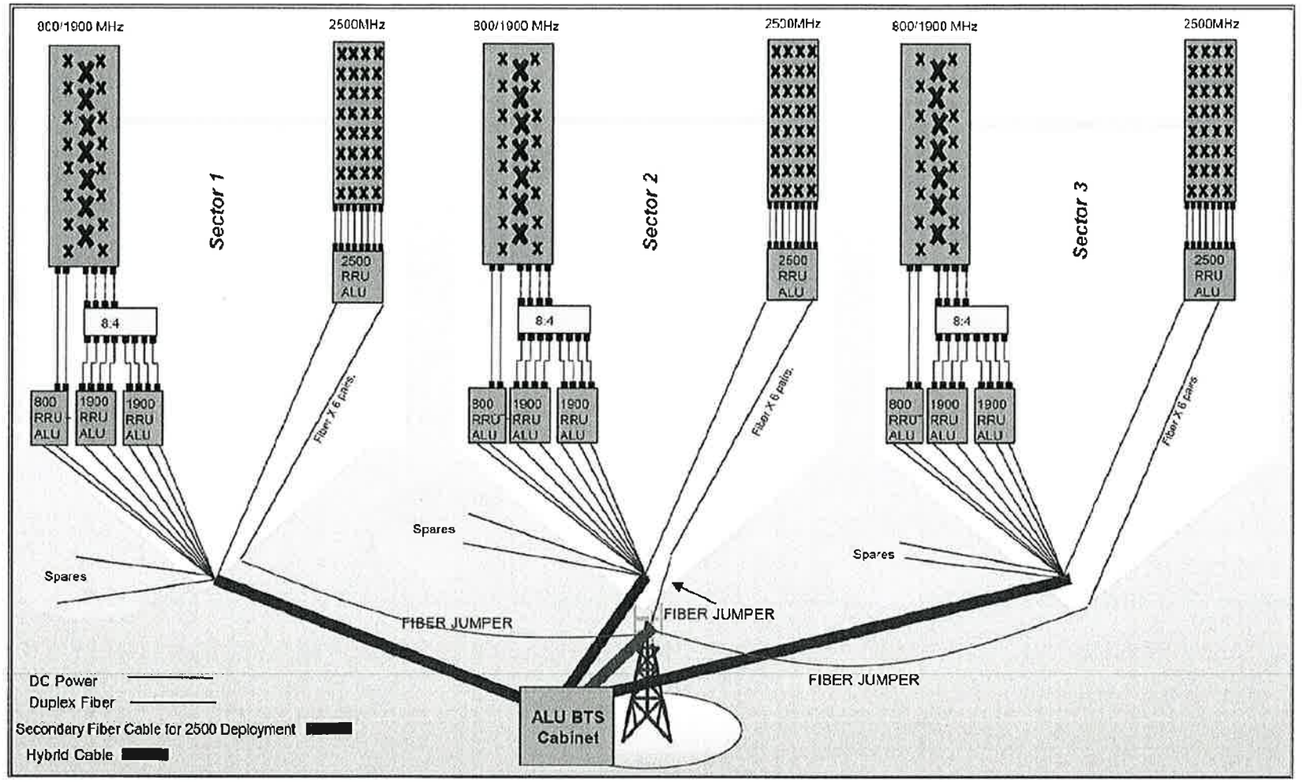
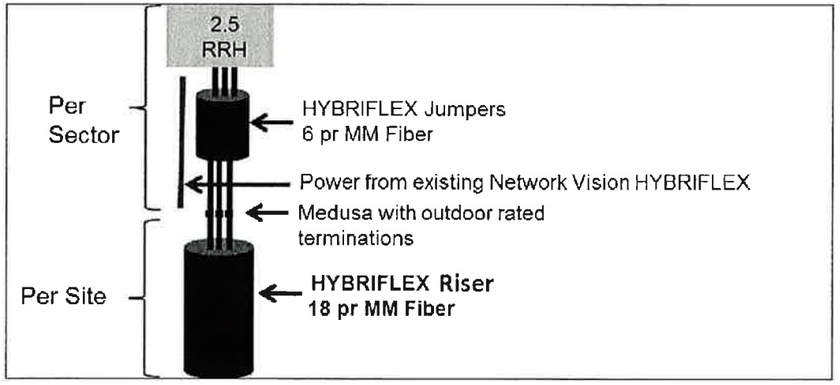
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

PLUMBING DIAGRAM

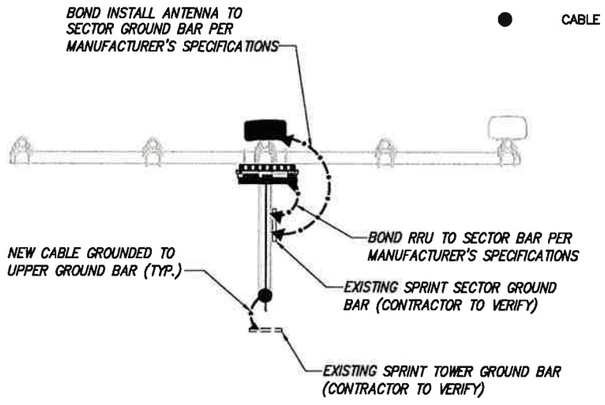
SHEET NUMBER:

A-7

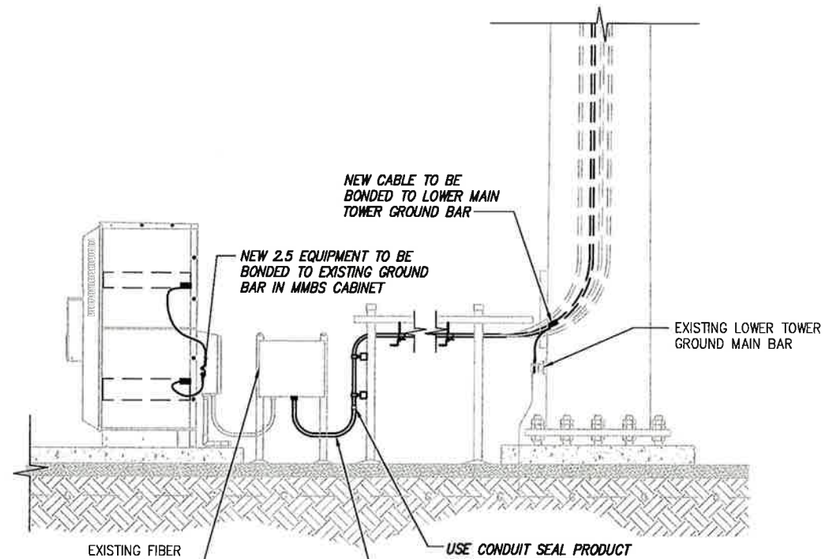
PLAN NOT USED | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

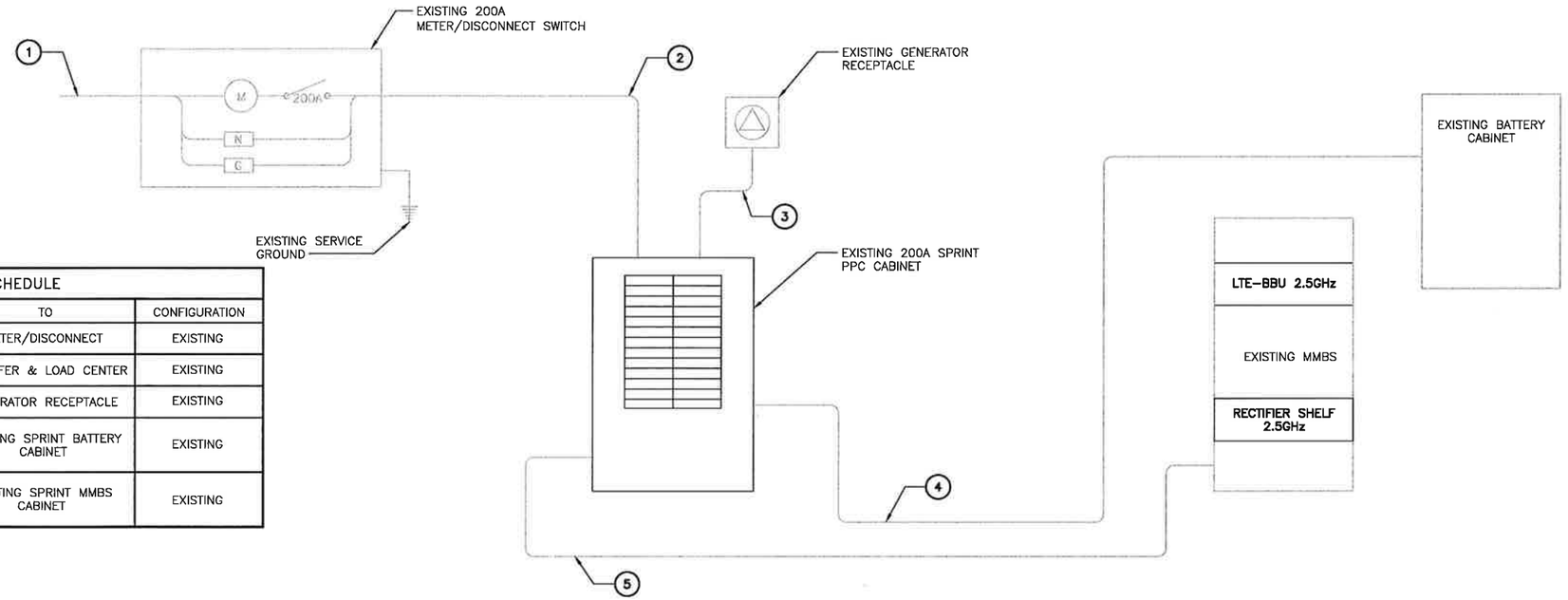
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

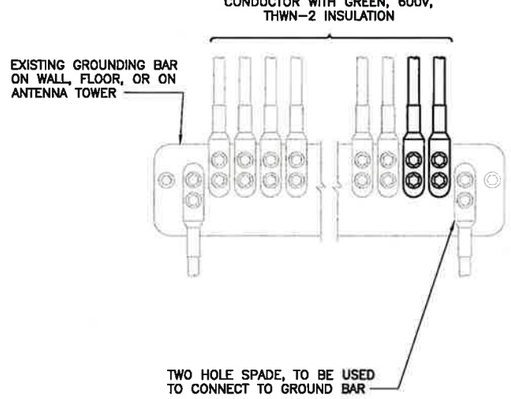
NOTES

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 BATTERY CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

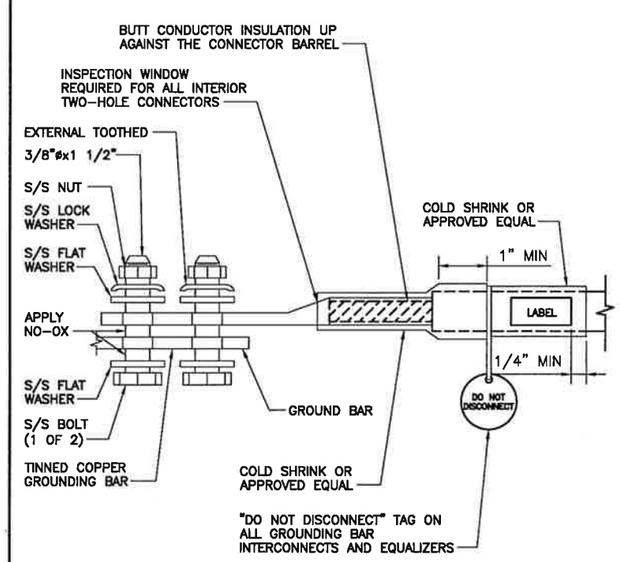
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



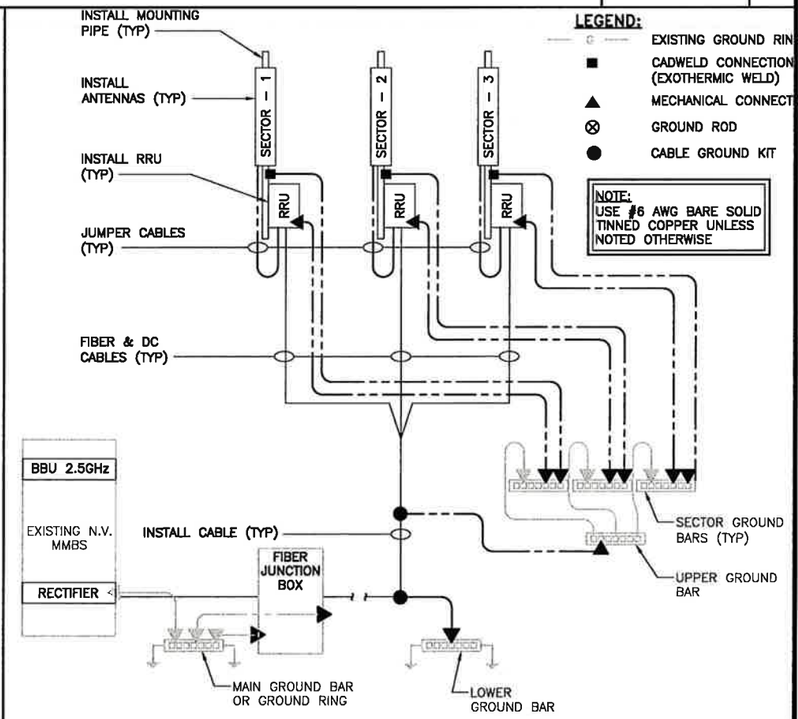
NOTES

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

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



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	8/25/14	JLM	0

SITE NAME:

WATERBURY

SITE CASCADE:

CT03XC027

SITE ADDRESS:

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

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

Date: **June 17, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6532

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
rkoors@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	Scenario 2.5A
	Carrier Site Number:	CT03XC027
	Carrier Site Name:	WATERBURY
Crown Castle Designation:	**Crown Castle BU Number:**	876317
	Crown Castle Site Name:	WATERBURY
	Crown Castle JDE Job Number:	252020
	Crown Castle Work Order Number:	776772
	Crown Castle Application Number:	205539 Rev. 1
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-0028.002.7805
Site Data:	**150 Mattatuck Heights, WATERBURY, New Haven County, CT** **Latitude *41° 32' 16.3"*, Longitude *-72° 59' 6.1"*** **133 Foot - Monopole Tower**	

Dear Patrick Byrum,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 656813, in accordance with application 205539, revision 1.

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

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

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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:

Bob Koors, E.I.
Structural Designer

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED
PROFESSIONAL ENGINEER

JUN 18 2014

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

Date: **June 17, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6532

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
rkoors@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation:	***Sprint PCS* Co-Locate**	Scenario 2.5A
	Carrier Site Number:	CT03XC027
	Carrier Site Name:	WATERBURY
Crown Castle Designation:	**Crown Castle BU Number:**	876317
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Respectfully submitted by:

Bob Koors, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 133 ft Monopole tower designed by VALMONT in July of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
133.0	133.0	6	alcatel lucent	1900MHz RRH (65MHz)	4	1-1/4	-
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		3	alcatel lucent	TD-RRH8x20-25			
		12	rfs celwave	ACU-A20-N			
		4	rfs celwave	IBC1900HB-2			
		2	rfs celwave	PD2DE-700/2700			
	130.0	4	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
133.0	135.0	1	andrew	VHLP2-18	3	1/2	1
		2	andrew	VHLP2-23			
	133.0	1	tower mounts	Platform Mount [LP 601-1]			
		2	decibel	932DG65T2E-M w/ Mount Pipe	6 6	1-1/4 5/16	3
		2	ems wireless	DR65-15-00DPL2 w/ Mount Pipe			
		1	ems wireless	FR90-16-00DP w/ Mount Pipe			
		1	ems wireless	RV65-17-00DPL2 w/ Mount Pipe			
	131.0	3	argus technologies	LLPX310R w/ Mount Pipe			
		3	samsung telecommunications	FDD_R6_RRH			

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	122.0	3	decibel	DB855DD90ESX w/ Mount Pipe	9	7/8	3
		1	tower mounts	Pipe Mount [PM 601-3]			
110.0	110.0	3	alcatel lucent	RRH2x40-AWS	1	1-5/8	2
		3	antel	BXA-171063/12CF w/ Mount Pipe			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		3	antel	BXA-80063/4CF w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L	12 1	1-5/8 1/2	1
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 602-1]			
	113.0	1	trimble	BULLET III			
100.0	100.0	2	andrew	TMZXX-6516-R2M w/ Mount Pipe	6 8	7/8 1-1/4	1
		1	andrew	TMZXXX-6516-R2M w/ Mount Pipe			
		6	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Pipe Mount [PM 601-3]			
90.0	90.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clough, Harbour, & Associates, 5835.07.46, 03/20/1997	1529737	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37512-2083 BP, 08/09/2012	3315244	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Semaan, 17232-98, 04/22/1998	1630930	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 18701-99, 07/09/1999	1530953	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 090120.01, 02/03/2009	2381113	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.

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 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	133 - 105.75	Pole	TP18.9274x13.48x0.1875	1	-4.42	588.19	98.3	Pass
L2	105.75 - 98.5	Pole	TP20.3767x18.9274x0.3436	2	-5.47	1102.95	72.0	Pass
L3	98.5 - 95	Pole	TP21.0764x20.3767x0.5891	3	-6.03	1305.34	70.3	Pass
L4	95 - 89.25	Pole	TP21.8501x21.0764x0.6408	4	-7.31	1476.74	74.9	Pass
L5	89.25 - 88.25	Pole	TP22.0499x21.8501x0.768	5	-7.52	2107.17	54.5	Pass
L6	88.25 - 79.5	Pole	TP23.7979x22.0499x0.5741	6	-9.06	1727.07	79.6	Pass
L7	79.5 - 62	Pole	TP27.2938x23.7979x0.6442	7	-12.80	2237.48	81.6	Pass
L8	62 - 59.5	Pole	TP27.7933x27.2938x0.6355	8	-13.37	2250.72	83.7	Pass
L9	59.5 - 45.25	Pole	TP30.64x27.7933x0.6592	9	-15.68	2632.21	79.9	Pass
L10	45.25 - 39.5	Pole	TP31.293x28.3728x0.7014	10	-17.96	2802.91	81.7	Pass
L11	39.5 - 34.5	Pole	TP32.2939x31.293x0.6869	11	-20.89	2998.49	82.7	Pass
L12	34.5 - 29.75	Pole	TP33.2447x32.2939x0.6413	12	-22.17	2929.85	87.8	Pass
L13	29.75 - 12.917	Pole	TP36.6143x33.2447x0.6152	13	-26.85	3136.80	92.3	Pass
L14	12.917 - 12	Pole	TP36.7979x36.6143x0.687	14	-27.15	3384.89	86.3	Pass
L15	12 - 0	Pole	TP39.2x36.7979x0.6075	15	-30.71	3175.78	98.5	Pass
							Summary	
						Pole (L15)	98.5	Pass
						RATING =	98.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC11

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	88.6	Pass
1	Base Plate	0	53.2	Pass
1	Base Foundation Steel	0	64.6	Pass
1	Base Foundation Soil Interaction	0	93.0	Pass

Structure Rating (max from all components) =	**98.6%**

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	133.00-105.75	27.25	0.00	12	13.4800	18.9274	0.1875	0.7500	A572-65 (65 ksi)
L2	105.75-98.50	7.25	0.00	12	18.9274	20.3767	0.3436	1.3744	Reinf 62.22 ksi (62 ksi)
L3	98.50-95.00	3.50	0.00	12	20.3767	21.0764	0.5890	2.3562	Reinf 42.12 ksi (42 ksi)
L4	95.00-89.25	5.75	0.00	12	21.0764	21.8501	0.6408	2.5632	Reinf 42.19 ksi (42 ksi)
L5	89.25-88.25	1.00	0.00	12	21.8501	22.0498	0.7680	3.0720	Reinf 50.06 ksi (50 ksi)
L6	88.25-79.50	8.75	0.00	12	22.0498	23.7979	0.5741	2.2963	Reinf 50.30 ksi (50 ksi)
L7	79.50-62.00	17.50	0.00	12	23.7979	27.2938	0.6442	2.5766	Reinf 50.61 ksi (51 ksi)
L8	62.00-59.50	2.50	0.00	12	27.2938	27.7933	0.6355	2.5419	Reinf 50.64 ksi (51 ksi)
L9	59.50-45.25	14.25	4.75	12	27.7933	30.6400	0.6592	2.6366	Reinf 53.41 ksi (53 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L10	45.25-39.50	10.50	0.00	12	28.3728	31.2930	0.7014	2.8056	Reinf 53.52 ksi (54 ksi)
L11	39.50-34.50	5.00	0.00	12	31.2930	32.2939	0.6869	2.7475	Reinf 53.63 ksi (54 ksi)
L12	34.50-29.75	4.75	0.00	12	32.2939	33.2447	0.6413	2.5652	Reinf 54.41 ksi (54 ksi)
L13	29.75-12.92	16.83	0.00	12	33.2447	36.6143	0.6152	2.4607	Reinf 55.00 ksi (55 ksi)
L14	12.92-12.00	0.92	0.00	12	36.6143	36.7979	0.6870	2.7480	Reinf 52.98 ksi (53 ksi)
L15	12.00-0.00	12.00		12	36.7979	39.2000	0.6075	2.4299	Reinf 52.60 ksi (53 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.9555	8.0253	180.9936	4.7587	6.9826	25.9205	366.7420	3.9498	3.1101	16.587
	19.5951	11.3142	507.1583	6.7089	9.8044	51.7277	1027.6401	5.5685	4.5700	24.374
L2	19.5951	20.5604	906.3276	6.6530	9.8044	92.4411	1836.4654	10.1192	4.1517	12.083
	21.0955	22.1638	1135.3423	7.1718	10.5551	107.5631	2300.5113	10.9084	4.5401	13.214
L3	21.0955	37.5320	1875.7544	7.0840	10.5551	177.7103	3800.7870	18.4721	3.8823	6.591
	21.8198	38.8591	2081.8439	7.3345	10.9175	190.6878	4218.3802	19.1253	4.0698	6.909
L4	21.8198	42.1669	2247.6540	7.3159	10.9175	205.8753	4554.3564	20.7532	3.9311	6.135
	22.6209	43.7634	2512.7441	7.5929	11.3183	222.0064	5091.5008	21.5390	4.1385	6.458
L5	22.6209	52.1351	2957.6271	7.5474	11.3183	261.3128	5992.9543	25.6593	3.7976	4.945
	22.8277	52.6292	3042.5041	7.6189	11.4218	266.3764	6164.9382	25.9025	3.8511	5.014
L6	22.8277	39.6988	2337.0095	7.6883	11.4218	204.6092	4735.4148	19.5385	4.3708	7.614
	24.6373	42.9300	2955.3737	8.3141	12.3273	239.7424	5988.3884	21.1288	4.8393	8.43
L7	24.6373	48.0253	3286.2168	8.2890	12.3273	266.5807	6658.7663	23.6366	4.6515	7.221
	28.2567	55.2766	5010.8519	9.5406	14.1382	354.4191	10153.3445	27.2055	5.5884	8.675
L8	28.2567	54.5487	4948.0907	9.5437	14.1382	349.9800	10026.1732	26.8472	5.6117	8.831
	28.7737	55.5707	5231.4326	9.7225	14.3969	363.3718	10600.3007	27.3502	5.7455	9.041
L9	28.7737	57.5912	5412.1933	9.7140	14.3969	375.9273	10966.5710	28.3446	5.6821	8.62
	31.7209	63.6332	7300.5891	10.7331	15.8715	459.9805	14792.9727	31.3183	6.4450	9.778
L10	30.7413	62.4969	6108.1013	9.9064	14.6971	415.5989	12376.6692	30.7591	5.7241	8.161
	32.3969	69.0923	8253.1293	10.9518	16.2098	509.1457	16723.0774	34.0051	6.5067	9.277
L11	32.3969	67.6922	8093.5741	10.9570	16.2098	499.3026	16399.7755	33.3160	6.5457	9.53
	33.4331	69.9059	8913.8596	11.3153	16.7282	532.8636	18061.8961	34.4055	6.8139	9.92
L12	33.4331	65.3631	8358.6462	11.3316	16.7282	499.6734	16936.8834	32.1697	6.9360	10.815
	34.4174	67.3266	9134.7804	11.6720	17.2208	530.4518	18509.5416	33.1361	7.1909	11.213
L13	34.4174	64.6341	8783.5368	11.6814	17.2208	510.0553	17797.8269	31.8109	7.2609	11.803
	37.9059	71.3088	11795.4085	12.8877	18.9662	621.9171	23900.6955	35.0960	8.1640	13.271
L14	37.9059	79.4762	13093.9989	12.8620	18.9662	690.3857	26531.9917	39.1158	7.9715	11.603
	38.0959	79.8823	13295.7259	12.9277	19.0613	697.5249	26940.7453	39.3156	8.0207	11.675
L15	38.0959	70.7903	11834.4055	12.9562	19.0613	620.8606	23979.7140	34.8408	8.2338	13.554
	40.5828	75.4890	14350.8098	13.8161	20.3056	706.7415	29078.6313	37.1534	8.8776	14.614

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
L1 133.00-105.75				1	1	1		
L2 105.75-98.50				1	1	1		
L3 98.50-95.00				1	1	1		
L4 95.00-89.25				1	1	1		
L5 89.25-88.25				1	1	1		
L6 88.25-79.50				1	1	1		
L7 79.50-62.00				1	1	1		
L8 62.00-59.50				1	1	1		
L9 59.50-45.25				1	1	1		
L10 45.25-39.50				1	1	1		
L11 39.50-34.50				1	1	1		
L12 34.50-29.75				1	1	1		
L13 29.75-12.92				1	1	1		
L14 12.92-12.00				1	1	1		
L15 12.00-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**										

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
7983A(1/2")	C	No	CaAa (Out Of Face)	133.00 - 0.00	3	No Ice	0.06	0.08
						1/2" Ice	0.16	0.74
						1" Ice	0.26	2.01
						2" Ice	0.46	6.39
						4" Ice	0.86	22.47
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	133.00 - 0.00	3	No Ice	0.00	1.20
						1/2" Ice	0.00	2.45
						1" Ice	0.00	4.30
						2" Ice	0.00	9.85
						4" Ice	0.00	28.27
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	133.00 - 0.00	1	No Ice	0.15	1.20
						1/2" Ice	0.25	2.45
						1" Ice	0.35	4.30
						2" Ice	0.55	9.85
						4" Ice	0.95	28.27

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
**								
**								
LDF4-50A(1/2")	C	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF7-50A(1-5/8")	C	No	Inside Pole	110.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
						2" Ice	0.00	1.30
						4" Ice	0.00	1.30
**								
AVA5-50(7/8")	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.30
						1/2" Ice	0.00	0.30
						1" Ice	0.00	0.30
						2" Ice	0.00	0.30
						4" Ice	0.00	0.30
LDF6-50A(1-1/4")	C	No	Inside Pole	100.00 - 0.00	8	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
**								
LCF158-50JL(1-5/8")	C	No	CaAa (Out Of Face)	90.00 - 0.00	2	No Ice	0.00	0.52
						1/2" Ice	0.00	2.03
						1" Ice	0.00	4.16
						2" Ice	0.00	10.24
						4" Ice	0.00	29.74
LCF158-50JL(1-5/8")	C	No	Inside Pole	90.00 - 0.00	4	No Ice	0.00	0.52
						1/2" Ice	0.00	0.52
						1" Ice	0.00	0.52
						2" Ice	0.00	0.52
						4" Ice	0.00	0.52
**								
LDF4-50A(1/2")	C	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
**								
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	100.00 - 0.00	1	No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
						2" Ice	0.65	0.00
						4" Ice	1.10	0.00
**								
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	108.00 - 10.00	1	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
						2" Ice	0.57	0.00
						4" Ice	1.01	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	133.00-105.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

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
		C	0.000	0.000	0.000	9.219	0.19
L2	105.75-98.50	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	3.597	0.13
L3	98.50-95.00	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	2.315	0.08
L4	95.00-89.25	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	3.803	0.14
L5	89.25-88.25	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	0.661	0.03
L6	88.25-79.50	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	5.787	0.23
L7	79.50-62.00	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	11.573	0.46
L8	62.00-59.50	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	1.653	0.07
L9	59.50-45.25	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	9.424	0.38
L10	45.25-39.50	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	3.803	0.15
L11	39.50-34.50	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	3.307	0.13
L12	34.50-29.75	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	3.141	0.13
L13	29.75-12.92	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	11.132	0.45
L14	12.92-12.00	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	0.606	0.02
L15	12.00-0.00	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	6.686	0.32

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	133.00-105.75	A	0.874	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	28.720	0.60
L2	105.75-98.50	A	0.859	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	10.248	0.24
L3	98.50-95.00	A	0.853	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	6.031	0.13
L4	95.00-89.25	A	0.848	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	9.873	0.23
L5	89.25-88.25	A	0.845	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	1.712	0.05
L6	88.25-79.50	A	0.839	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

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
		C		0.000	0.000	0.000	14.920	0.41
L7	79.50-62.00	A	0.822	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	29.466	0.81
L8	62.00-59.50	A	0.807	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	4.164	0.12
L9	59.50-45.25	A	0.793	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	23.478	0.65
L10	45.25-39.50	A	0.773	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	9.474	0.26
L11	39.50-34.50	A	0.760	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	8.038	0.22
L12	34.50-29.75	A	0.750	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	7.575	0.21
L13	29.75-12.92	A	0.750	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	26.843	0.75
L14	12.92-12.00	A	0.750	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	1.462	0.04
L15	12.00-0.00	A	0.750	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	16.219	0.53

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.00-105.75	-0.3531	0.2039	-0.7278	0.4202
L2	105.75-98.50	-0.4959	0.2863	-0.9430	0.5444
L3	98.50-95.00	-0.6212	0.3587	-1.0762	0.6213
L4	95.00-89.25	-0.6272	0.3621	-1.0939	0.6316
L5	89.25-88.25	-0.6310	0.3643	-1.1050	0.6380
L6	88.25-79.50	-0.6382	0.3684	-1.1268	0.6506
L7	79.50-62.00	-0.6555	0.3784	-1.1790	0.6807
L8	62.00-59.50	-0.6669	0.3851	-1.2126	0.7001
L9	59.50-45.25	-0.6756	0.3901	-1.2365	0.7139
L10	45.25-39.50	-0.6817	0.3936	-1.2587	0.7267
L11	39.50-34.50	-0.6875	0.3969	-1.2621	0.7287
L12	34.50-29.75	-0.6916	0.3993	-1.2711	0.7339
L13	29.75-12.92	-0.7000	0.4042	-1.3022	0.7518
L14	12.92-12.00	-0.7064	0.4078	-1.3260	0.7656
L15	12.00-0.00	-0.6149	0.3550	-1.1963	0.6907

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment ° ft	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	133.00	No Ice 1/2"	8.50 9.15	6.95 8.13	0.08 0.15

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
			-3.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
(2) IBC1900HB-2	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.31 1.48 1.66 2.04 2.91	0.79 0.94 1.10 1.44 2.23	0.04 0.05 0.06 0.09 0.18
IBC1900HB-2	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.31 1.48 1.66 2.04 2.91	0.79 0.94 1.10 1.44 2.23	0.04 0.05 0.06 0.09 0.18
IBC1900HB-2	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.31 1.48 1.66 2.04 2.91	0.79 0.94 1.10 1.44 2.23	0.04 0.05 0.06 0.09 0.18
(4) 1900MHz RRH (65MHz)	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.84 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
(2) 1900MHz RRH (65MHz)	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.84 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
(2) 800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
(2) 800MHZ RRH	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.71 2.93 3.41 4.46	2.07 2.27 2.48 2.93 3.93	0.05 0.07 0.10 0.16 0.32
800MHZ RRH	B	From Leg	4.00	0.0000	133.00	No Ice	2.49	2.07	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.93 3.41 4.46	2.27 2.48 2.93 3.93	0.07 0.10 0.16 0.32
(6) ACU-A20-N	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
(3) ACU-A20-N	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
(3) ACU-A20-N	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
PD2DE-700/2700	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.11 0.19 0.27 0.47 0.96	0.11 0.19 0.27 0.47 0.96	0.00 0.00 0.00 0.01 0.05
PD2DE-700/2700	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.11 0.19 0.27 0.47 0.96	0.11 0.19 0.27 0.47 0.96	0.00 0.00 0.00 0.01 0.05
Platform Mount [LP 601-1]	C	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
** **									
MG D3-800Tx w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
BULLET III	C	From Leg	4.00 0.00 3.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.29 0.65	0.08 0.12 0.17 0.29 0.65	0.00 0.00 0.00 0.01 0.04
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
BXA-171063/12CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.03 5.58 6.10 7.17 9.44	5.29 6.46 7.35 9.15 12.95	0.04 0.09 0.14 0.27 0.68
BXA-171063/12CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice	5.03 5.58 6.10	5.29 6.46 7.35	0.04 0.09 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	7.17	9.15	0.27
						2" Ice	9.44	12.95	0.68
						4" Ice			
BXA-171063/12CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	5.03	5.29	0.04
						1/2" Ice	5.58	6.46	0.09
						1" Ice	6.10	7.35	0.14
						2" Ice	7.17	9.15	0.27
						4" Ice	9.44	12.95	0.68
BXA-70063/6CF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	7.97	5.40	0.04
						1/2" Ice	8.61	6.55	0.10
						1" Ice	9.22	7.41	0.17
						2" Ice	10.46	9.18	0.33
						4" Ice	13.07	12.93	0.79
BXA-70063/6CF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	7.97	5.40	0.04
						1/2" Ice	8.61	6.55	0.10
						1" Ice	9.22	7.41	0.17
						2" Ice	10.46	9.18	0.33
						4" Ice	13.07	12.93	0.79
BXA-70063/6CF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	7.97	5.40	0.04
						1/2" Ice	8.61	6.55	0.10
						1" Ice	9.22	7.41	0.17
						2" Ice	10.46	9.18	0.33
						4" Ice	13.07	12.93	0.79
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	5.40	3.42	0.03
						1/2" Ice	5.84	4.02	0.07
						1" Ice	6.30	4.64	0.12
						2" Ice	7.24	5.92	0.23
						4" Ice	9.26	8.93	0.56
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	5.40	3.42	0.03
						1/2" Ice	5.84	4.02	0.07
						1" Ice	6.30	4.64	0.12
						2" Ice	7.24	5.92	0.23
						4" Ice	9.26	8.93	0.56
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	5.40	3.42	0.03
						1/2" Ice	5.84	4.02	0.07
						1" Ice	6.30	4.64	0.12
						2" Ice	7.24	5.92	0.23
						4" Ice	9.26	8.93	0.56
RRH2x40-AWS	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2x40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2x40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00	0.0000	110.00	No Ice	5.60	2.33	0.04
						1/2"	5.92	2.56	0.08

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	6.24	2.79	0.12
						1" Ice	6.91	3.28	0.21
						2" Ice	8.37	4.37	0.45
						4" Ice			
Platform Mount [LP 602-1]	C	None		0.0000	110.00	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26
						2" Ice	58.75	58.75	3.17
						4" Ice	85.47	85.47	5.00
**									
TMZXX-6516-R2M w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	6.18	4.53	0.06
						1/2" Ice	6.65	5.20	0.10
						1" Ice	7.14	5.90	0.16
						2" Ice	8.13	7.37	0.29
						4" Ice	10.26	10.56	0.67
TMZXXX-6516-R2M w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	10.10	3.33	0.05
						1/2" Ice	10.63	4.01	0.11
						1" Ice	11.17	4.66	0.18
						2" Ice	12.28	6.01	0.33
						4" Ice	14.61	9.00	0.75
TMZXX-6516-R2M w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	6.18	4.53	0.06
						1/2" Ice	6.65	5.20	0.10
						1" Ice	7.14	5.90	0.16
						2" Ice	8.13	7.37	0.29
						4" Ice	10.26	10.56	0.67
(2) ATMAA1412D-1A20	A	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
(2) ATMAA1412D-1A20	B	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
(2) ATMAA1412D-1A20	C	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
Pipe Mount [PM 601-3]	C	None		0.0000	100.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
						4" Ice	13.11	13.11	0.53
**									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68

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
						4" Ice			
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
Pipe Mount [PM 601-3]	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.39 5.48 6.57 8.75 13.11	4.39 5.48 6.57 8.75 13.11	0.20 0.24 0.28 0.36 0.53
**									
KS24019-L112A	C	From Leg	4.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.16 0.22 0.30 0.48 0.95	0.16 0.22 0.30 0.48 0.95	0.01 0.01 0.01 0.02 0.06
Side Arm Mount [SO 701-1]	C	From Leg	2.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-23	A	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.20
VHLP2-23	C	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.20
VHLP2-18	B	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.20

Tower Pressures - No Ice

G_H = 1.690

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 133.00-105.75	118.61	1.441	27	36.796	A	0.000	36.796	36.796	100.00	0.000	0.000
					B	0.000	36.796		100.00	0.000	0.000
					C	0.000	36.796		100.00	0.000	9.219
L2 105.75-98.50	102.08	1.381	26	11.873	A	0.000	11.873	11.873	100.00	0.000	0.000
					B	0.000	11.873		100.00	0.000	0.000
					C	0.000	11.873		100.00	0.000	3.597
L3 98.50-95.00	96.74	1.36	25	6.045	A	0.000	6.045	6.045	100.00	0.000	0.000
					B	0.000	6.045		100.00	0.000	0.000
					C	0.000	6.045		100.00	0.000	2.315
L4 95.00-89.25	92.11	1.341	25	10.284	A	0.000	10.284	10.284	100.00	0.000	0.000
					B	0.000	10.284		100.00	0.000	0.000
					C	0.000	10.284		100.00	0.000	3.803
L5 89.25-88.25	88.75	1.327	25	1.829	A	0.000	1.829	1.829	100.00	0.000	0.000
					B	0.000	1.829		100.00	0.000	0.000
					C	0.000	1.829		100.00	0.000	0.661
L6 88.25-79.50	83.82	1.305	24	16.715	A	0.000	16.715	16.715	100.00	0.000	0.000
					B	0.000	16.715		100.00	0.000	0.000
					C	0.000	16.715		100.00	0.000	5.787
L7 79.50-62.00	70.55	1.242	23	37.254	A	0.000	37.254	37.254	100.00	0.000	0.000
					B	0.000	37.254		100.00	0.000	0.000
					C	0.000	37.254		100.00	0.000	11.573
L8 62.00-59.50	60.75	1.19	22	5.738	A	0.000	5.738	5.738	100.00	0.000	0.000
					B	0.000	5.738		100.00	0.000	0.000
					C	0.000	5.738		100.00	0.000	1.653
L9 59.50-45.25	52.26	1.14	21	34.695	A	0.000	34.695	34.695	100.00	0.000	0.000
					B	0.000	34.695		100.00	0.000	0.000
					C	0.000	34.695		100.00	0.000	9.424
L10 45.25-39.50	42.35	1.074	20	14.611	A	0.000	14.611	14.611	100.00	0.000	0.000
					B	0.000	14.611		100.00	0.000	0.000
					C	0.000	14.611		100.00	0.000	3.803
L11 39.50-34.50	36.99	1.033	19	13.247	A	0.000	13.247	13.247	100.00	0.000	0.000
					B	0.000	13.247		100.00	0.000	0.000
					C	0.000	13.247		100.00	0.000	3.307
L12 34.50-29.75	32.11	1	18	12.971	A	0.000	12.971	12.971	100.00	0.000	0.000
					B	0.000	12.971		100.00	0.000	0.000
					C	0.000	12.971		100.00	0.000	3.141
L13 29.75-12.92	21.20	1	18	48.997	A	0.000	48.997	48.997	100.00	0.000	0.000
					B	0.000	48.997		100.00	0.000	0.000
					C	0.000	48.997		100.00	0.000	11.132
L14 12.92-12.00	12.46	1	18	2.805	A	0.000	2.805	2.805	100.00	0.000	0.000
					B	0.000	2.805		100.00	0.000	0.000
					C	0.000	2.805		100.00	0.000	0.606
L15 12.00-0.00	5.94	1	18	37.999	A	0.000	37.999	37.999	100.00	0.000	0.000
					B	0.000	37.999		100.00	0.000	0.000
					C	0.000	37.999		100.00	0.000	6.686

Tower Pressure - With Ice

G_H = 1.690

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
L1 133.00-105.75	118.61	1.441	5	0.8744	40.767	A	0.000	40.767	40.767	100.00	0.000	0.000
						B	0.000	40.767		100.00	0.000	0.000
						C	0.000	40.767		100.00	0.000	28.720
L2 105.75-98.50	102.08	1.381	5	0.8588	12.911	A	0.000	12.911	12.911	100.00	0.000	0.000
						B	0.000	12.911		100.00	0.000	0.000
						C	0.000	12.911		100.00	0.000	10.248
L3 98.50-95.00	96.74	1.36	5	0.8533	6.543	A	0.000	6.543	6.543	100.00	0.000	0.000
						B	0.000	6.543		100.00	0.000	0.000
						C	0.000	6.543		100.00	0.000	6.031
L4 95.00-89.25	92.11	1.341	5	0.8483	11.097	A	0.000	11.097	11.097	100.00	0.000	0.000
						B	0.000	11.097		100.00	0.000	0.000

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
						C	0.000	11.097		100.00	0.000	9.873
L5 89.25-88.25	88.75	1.327	5	0.8445	1.970	A	0.000	1.970	1.970	100.00	0.000	0.000
						B	0.000	1.970		100.00	0.000	0.000
						C	0.000	1.970		100.00	0.000	1.712
L6 88.25-79.50	83.82	1.305	5	0.8388	17.939	A	0.000	17.939	17.939	100.00	0.000	0.000
						B	0.000	17.939		100.00	0.000	0.000
						C	0.000	17.939		100.00	0.000	14.920
L7 79.50-62.00	70.55	1.242	4	0.8216	39.651	A	0.000	39.651	39.651	100.00	0.000	0.000
						B	0.000	39.651		100.00	0.000	0.000
						C	0.000	39.651		100.00	0.000	29.466
L8 62.00-59.50	60.75	1.19	4	0.8070	6.074	A	0.000	6.074	6.074	100.00	0.000	0.000
						B	0.000	6.074		100.00	0.000	0.000
						C	0.000	6.074		100.00	0.000	4.164
L9 59.50-45.25	52.26	1.14	4	0.7925	36.577	A	0.000	36.577	36.577	100.00	0.000	0.000
						B	0.000	36.577		100.00	0.000	0.000
						C	0.000	36.577		100.00	0.000	23.478
L10 45.25-39.50	42.35	1.074	4	0.7728	15.371	A	0.000	15.371	15.371	100.00	0.000	0.000
						B	0.000	15.371		100.00	0.000	0.000
						C	0.000	15.371		100.00	0.000	9.474
L11 39.50-34.50	36.99	1.033	4	0.7603	13.881	A	0.000	13.881	13.881	100.00	0.000	0.000
						B	0.000	13.881		100.00	0.000	0.000
						C	0.000	13.881		100.00	0.000	8.038
L12 34.50-29.75	32.11	1	4	0.7500	13.565	A	0.000	13.565	13.565	100.00	0.000	0.000
						B	0.000	13.565		100.00	0.000	0.000
						C	0.000	13.565		100.00	0.000	7.575
L13 29.75-12.92	21.20	1	4	0.7500	51.101	A	0.000	51.101	51.101	100.00	0.000	0.000
						B	0.000	51.101		100.00	0.000	0.000
						C	0.000	51.101		100.00	0.000	26.843
L14 12.92-12.00	12.46	1	4	0.7500	2.920	A	0.000	2.920	2.920	100.00	0.000	0.000
						B	0.000	2.920		100.00	0.000	0.000
						C	0.000	2.920		100.00	0.000	1.462
L15 12.00-0.00	5.94	1	4	0.7500	39.499	A	0.000	39.499	39.499	100.00	0.000	0.000
						B	0.000	39.499		100.00	0.000	0.000
						C	0.000	39.499		100.00	0.000	16.219

Tower Pressure - Service

G_H = 1.690

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 133.00-105.75	118.61	1.441	9	36.796	A	0.000	36.796	36.796	100.00	0.000	0.000
					B	0.000	36.796		100.00	0.000	0.000
					C	0.000	36.796		100.00	0.000	9.219
L2 105.75-98.50	102.08	1.381	9	11.873	A	0.000	11.873	11.873	100.00	0.000	0.000
					B	0.000	11.873		100.00	0.000	0.000
					C	0.000	11.873		100.00	0.000	3.597
L3 98.50-95.00	96.74	1.36	9	6.045	A	0.000	6.045	6.045	100.00	0.000	0.000
					B	0.000	6.045		100.00	0.000	0.000
					C	0.000	6.045		100.00	0.000	2.315
L4 95.00-89.25	92.11	1.341	9	10.284	A	0.000	10.284	10.284	100.00	0.000	0.000
					B	0.000	10.284		100.00	0.000	0.000
					C	0.000	10.284		100.00	0.000	3.803
L5 89.25-88.25	88.75	1.327	8	1.829	A	0.000	1.829	1.829	100.00	0.000	0.000
					B	0.000	1.829		100.00	0.000	0.000
					C	0.000	1.829		100.00	0.000	0.661
L6 88.25-79.50	83.82	1.305	8	16.715	A	0.000	16.715	16.715	100.00	0.000	0.000
					B	0.000	16.715		100.00	0.000	0.000
					C	0.000	16.715		100.00	0.000	5.787
L7 79.50-62.00	70.55	1.242	8	37.254	A	0.000	37.254	37.254	100.00	0.000	0.000
					B	0.000	37.254		100.00	0.000	0.000

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
					C	0.000	37.254		100.00	0.000	11.573
L8 62.00-59.50	60.75	1.19	8	5.738	A	0.000	5.738	5.738	100.00	0.000	0.000
					B	0.000	5.738		100.00	0.000	0.000
					C	0.000	5.738		100.00	0.000	1.653
L9 59.50-45.25	52.26	1.14	7	34.695	A	0.000	34.695	34.695	100.00	0.000	0.000
					B	0.000	34.695		100.00	0.000	0.000
					C	0.000	34.695		100.00	0.000	9.424
L10 45.25-39.50	42.35	1.074	7	14.611	A	0.000	14.611	14.611	100.00	0.000	0.000
					B	0.000	14.611		100.00	0.000	0.000
					C	0.000	14.611		100.00	0.000	3.803
L11 39.50-34.50	36.99	1.033	7	13.247	A	0.000	13.247	13.247	100.00	0.000	0.000
					B	0.000	13.247		100.00	0.000	0.000
					C	0.000	13.247		100.00	0.000	3.307
L12 34.50-29.75	32.11	1	6	12.971	A	0.000	12.971	12.971	100.00	0.000	0.000
					B	0.000	12.971		100.00	0.000	0.000
					C	0.000	12.971		100.00	0.000	3.141
L13 29.75-12.92	21.20	1	6	48.997	A	0.000	48.997	48.997	100.00	0.000	0.000
					B	0.000	48.997		100.00	0.000	0.000
					C	0.000	48.997		100.00	0.000	11.132
L14 12.92-12.00	12.46	1	6	2.805	A	0.000	2.805	2.805	100.00	0.000	0.000
					B	0.000	2.805		100.00	0.000	0.000
					C	0.000	2.805		100.00	0.000	0.606
L15 12.00-0.00	5.94	1	6	37.999	A	0.000	37.999	37.999	100.00	0.000	0.000
					B	0.000	37.999		100.00	0.000	0.000
					C	0.000	37.999		100.00	0.000	6.686

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	2.12	77.90	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.68	94.22	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.36	103.72	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.60	104.93	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.11	105.55	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.94	107.25	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	1.94	110.84	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.28	112.58	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	1.61	112.96	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.63	110.06	C
			B	1	1.03	1	1	1	14.611			
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.55	109.48	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.52	108.59	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	1.93	114.39	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.11	119.15	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-0.00	0.32	2.99	A	1	1.03	1	1	1	37.999	1.43	119.37	C
			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	852.60 kip-ft	13.81		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	2.12	77.90	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.68	94.22	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.36	103.72	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.60	104.93	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.11	105.55	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.94	107.25	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	1.94	110.84	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.28	112.58	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	1.61	112.96	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.63	110.06	C
			B	1	1.03	1	1	1	14.611			
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.55	109.48	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.52	108.59	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	1.93	114.39	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.11	119.15	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-	0.32	2.99	A	1	1.03	1	1	1	37.999	1.43	119.37	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
0.00			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	852.60 kip-ft	13.81		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	2.12	77.90	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.68	94.22	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.36	103.72	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.60	104.93	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.11	105.55	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.94	107.25	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	1.94	110.84	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.28	112.58	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	1.61	112.96	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.63	110.06	C
			B	1	1.03	1	1	1	14.611			
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.55	109.48	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.52	108.59	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	1.93	114.39	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.11	119.15	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-0.00	0.32	2.99	A	1	1.03	1	1	1	37.999	1.43	119.37	C
			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	852.60 kip-ft	13.81		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.60	1.41	A	1	1.061	1	1	1	40.767	0.63	23.29	C
			B	1	1.061	1	1	1	40.767			
			C	1	1.061	1	1	1	40.767			
L2 105.75-98.50	0.24	0.69	A	1	1.03	1	1	1	12.911	0.20	27.43	C
			B	1	1.03	1	1	1	12.911			
			C	1	1.03	1	1	1	12.911			
L3 98.50-95.00	0.13	0.54	A	1	1.03	1	1	1	6.543	0.11	30.35	C
			B	1	1.03	1	1	1	6.543			
			C	1	1.03	1	1	1	6.543			
L4 95.00-89.25	0.23	0.98	A	1	1.03	1	1	1	11.097	0.17	30.38	C
			B	1	1.03	1	1	1	11.097			
			C	1	1.03	1	1	1	11.097			
L5 89.25-88.25	0.05	0.20	A	1	1.03	1	1	1	1.970	0.03	30.36	C
			B	1	1.03	1	1	1	1.970			
			C	1	1.03	1	1	1	1.970			
L6 88.25-79.50	0.41	1.45	A	1	1.03	1	1	1	17.939	0.27	30.47	C
			B	1	1.03	1	1	1	17.939			
			C	1	1.03	1	1	1	17.939			
L7 79.50-62.00	0.81	3.55	A	1	1.03	1	1	1	39.651	0.53	30.53	C
			B	1	1.03	1	1	1	39.651			
			C	1	1.03	1	1	1	39.651			
L8 62.00-59.50	0.12	0.54	A	1	1.03	1	1	1	6.074	0.08	30.35	C
			B	1	1.03	1	1	1	6.074			
			C	1	1.03	1	1	1	6.074			
L9 59.50-45.25	0.65	3.36	A	1	1.03	1	1	1	36.577	0.43	29.93	C
			B	1	1.03	1	1	1	36.577			
			C	1	1.03	1	1	1	36.577			
L10 45.25-39.50	0.26	2.52	A	1	1.03	1	1	1	15.371	0.17	28.91	C
			B	1	1.03	1	1	1	15.371			
			C	1	1.03	1	1	1	15.371			
L11 39.50-34.50	0.22	1.33	A	1	1.03	1	1	1	13.881	0.14	28.23	C
			B	1	1.03	1	1	1	13.881			
			C	1	1.03	1	1	1	13.881			
L12 34.50-29.75	0.21	1.22	A	1	1.03	1	1	1	13.565	0.13	27.75	C
			B	1	1.03	1	1	1	13.565			
			C	1	1.03	1	1	1	13.565			
L13 29.75-12.92	0.75	4.46	A	1	1.03	1	1	1	51.101	0.49	28.88	C
			B	1	1.03	1	1	1	51.101			
			C	1	1.03	1	1	1	51.101			
L14 12.92-12.00	0.04	0.28	A	1	1.03	1	1	1	2.920	0.03	29.81	C
			B	1	1.03	1	1	1	2.920			
			C	1	1.03	1	1	1	2.920			
L15 12.00-0.00	0.53	3.42	A	1	1.03	1	1	1	39.499	0.35	29.00	C
			B	1	1.03	1	1	1	39.499			
			C	1	1.03	1	1	1	39.499			
Sum Weight:	5.26	25.94						OTM	240.78 kip-ft	3.75		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.60	1.41	A	1	1.061	1	1	1	40.767	0.63	23.29	C
			B	1	1.061	1	1	1	40.767			
			C	1	1.061	1	1	1	40.767			
L2 105.75-98.50	0.24	0.69	A	1	1.03	1	1	1	12.911	0.20	27.43	C
			B	1	1.03	1	1	1	12.911			
			C	1	1.03	1	1	1	12.911			
L3 98.50-95.00	0.13	0.54	A	1	1.03	1	1	1	6.543	0.11	30.35	C
			B	1	1.03	1	1	1	6.543			
			C	1	1.03	1	1	1	6.543			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L4 95.00-89.25	0.23	0.98	A	1	1.03	1	1	1	11.097	0.17	30.38	C
			B	1	1.03	1	1	1	11.097			
			C	1	1.03	1	1	1	11.097			
L5 89.25-88.25	0.05	0.20	A	1	1.03	1	1	1	1.970	0.03	30.36	C
			B	1	1.03	1	1	1	1.970			
			C	1	1.03	1	1	1	1.970			
L6 88.25-79.50	0.41	1.45	A	1	1.03	1	1	1	17.939	0.27	30.47	C
			B	1	1.03	1	1	1	17.939			
			C	1	1.03	1	1	1	17.939			
L7 79.50-62.00	0.81	3.55	A	1	1.03	1	1	1	39.651	0.53	30.53	C
			B	1	1.03	1	1	1	39.651			
			C	1	1.03	1	1	1	39.651			
L8 62.00-59.50	0.12	0.54	A	1	1.03	1	1	1	6.074	0.08	30.35	C
			B	1	1.03	1	1	1	6.074			
			C	1	1.03	1	1	1	6.074			
L9 59.50-45.25	0.65	3.36	A	1	1.03	1	1	1	36.577	0.43	29.93	C
			B	1	1.03	1	1	1	36.577			
			C	1	1.03	1	1	1	36.577			
L10 45.25-39.50	0.26	2.52	A	1	1.03	1	1	1	15.371	0.17	28.91	C
			B	1	1.03	1	1	1	15.371			
			C	1	1.03	1	1	1	15.371			
L11 39.50-34.50	0.22	1.33	A	1	1.03	1	1	1	13.881	0.14	28.23	C
			B	1	1.03	1	1	1	13.881			
			C	1	1.03	1	1	1	13.881			
L12 34.50-29.75	0.21	1.22	A	1	1.03	1	1	1	13.565	0.13	27.75	C
			B	1	1.03	1	1	1	13.565			
			C	1	1.03	1	1	1	13.565			
L13 29.75-12.92	0.75	4.46	A	1	1.03	1	1	1	51.101	0.49	28.88	C
			B	1	1.03	1	1	1	51.101			
			C	1	1.03	1	1	1	51.101			
L14 12.92-12.00	0.04	0.28	A	1	1.03	1	1	1	2.920	0.03	29.81	C
			B	1	1.03	1	1	1	2.920			
			C	1	1.03	1	1	1	2.920			
L15 12.00-0.00	0.53	3.42	A	1	1.03	1	1	1	39.499	0.35	29.00	C
			B	1	1.03	1	1	1	39.499			
			C	1	1.03	1	1	1	39.499			
Sum Weight:	5.26	25.94						OTM	240.78 kip-ft	3.75		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.60	1.41	A	1	1.061	1	1	1	40.767	0.63	23.29	C
			B	1	1.061	1	1	1	40.767			
			C	1	1.061	1	1	1	40.767			
L2 105.75-98.50	0.24	0.69	A	1	1.03	1	1	1	12.911	0.20	27.43	C
			B	1	1.03	1	1	1	12.911			
			C	1	1.03	1	1	1	12.911			
L3 98.50-95.00	0.13	0.54	A	1	1.03	1	1	1	6.543	0.11	30.35	C
			B	1	1.03	1	1	1	6.543			
			C	1	1.03	1	1	1	6.543			
L4 95.00-89.25	0.23	0.98	A	1	1.03	1	1	1	11.097	0.17	30.38	C
			B	1	1.03	1	1	1	11.097			
			C	1	1.03	1	1	1	11.097			
L5 89.25-88.25	0.05	0.20	A	1	1.03	1	1	1	1.970	0.03	30.36	C
			B	1	1.03	1	1	1	1.970			
			C	1	1.03	1	1	1	1.970			
L6 88.25-79.50	0.41	1.45	A	1	1.03	1	1	1	17.939	0.27	30.47	C
			B	1	1.03	1	1	1	17.939			
			C	1	1.03	1	1	1	17.939			
L7 79.50-	0.81	3.55	A	1	1.03	1	1	1	39.651	0.53	30.53	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
62.00			B	1	1.03	1	1	1	39.651			
			C	1	1.03	1	1	1	39.651			
L8 62.00-59.50	0.12	0.54	A	1	1.03	1	1	1	6.074	0.08	30.35	C
			B	1	1.03	1	1	1	6.074			
			C	1	1.03	1	1	1	6.074			
L9 59.50-45.25	0.65	3.36	A	1	1.03	1	1	1	36.577	0.43	29.93	C
			B	1	1.03	1	1	1	36.577			
			C	1	1.03	1	1	1	36.577			
L10 45.25-39.50	0.26	2.52	A	1	1.03	1	1	1	15.371	0.17	28.91	C
			B	1	1.03	1	1	1	15.371			
			C	1	1.03	1	1	1	15.371			
L11 39.50-34.50	0.22	1.33	A	1	1.03	1	1	1	13.881	0.14	28.23	C
			B	1	1.03	1	1	1	13.881			
			C	1	1.03	1	1	1	13.881			
L12 34.50-29.75	0.21	1.22	A	1	1.03	1	1	1	13.565	0.13	27.75	C
			B	1	1.03	1	1	1	13.565			
			C	1	1.03	1	1	1	13.565			
L13 29.75-12.92	0.75	4.46	A	1	1.03	1	1	1	51.101	0.49	28.88	C
			B	1	1.03	1	1	1	51.101			
			C	1	1.03	1	1	1	51.101			
L14 12.92-12.00	0.04	0.28	A	1	1.03	1	1	1	2.920	0.03	29.81	C
			B	1	1.03	1	1	1	2.920			
			C	1	1.03	1	1	1	2.920			
L15 12.00-0.00	0.53	3.42	A	1	1.03	1	1	1	39.499	0.35	29.00	C
			B	1	1.03	1	1	1	39.499			
			C	1	1.03	1	1	1	39.499			
Sum Weight:	5.26	25.94						OTM	240.78 kip-ft	3.75		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	0.73	26.96	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.24	32.60	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.13	35.89	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.21	36.31	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.04	36.52	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.32	37.11	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	0.67	38.35	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.10	38.96	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	0.56	39.09	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.22	38.08	C
			B	1	1.03	1	1	1	14.611			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.19	37.88	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.18	37.58	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	0.67	39.58	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.04	41.23	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-0.00	0.32	2.99	A	1	1.03	1	1	1	37.999	0.50	41.30	C
			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	295.02 kip-ft	4.78		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	0.73	26.96	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.24	32.60	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.13	35.89	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.21	36.31	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.04	36.52	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.32	37.11	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	0.67	38.35	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.10	38.96	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	0.56	39.09	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.22	38.08	C
			B	1	1.03	1	1	1	14.611			
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.19	37.88	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.18	37.58	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	0.67	39.58	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.04	41.23	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-0.00	0.32	2.99	A	1	1.03	1	1	1	37.999	0.50	41.30	C
			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	295.02 kip-ft	4.78		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 133.00-105.75	0.19	0.90	A	1	1.03	1	1	1	36.796	0.73	26.96	C
			B	1	1.03	1	1	1	36.796			
			C	1	1.03	1	1	1	36.796			
L2 105.75-98.50	0.13	0.53	A	1	1.03	1	1	1	11.873	0.24	32.60	C
			B	1	1.03	1	1	1	11.873			
			C	1	1.03	1	1	1	11.873			
L3 98.50-95.00	0.08	0.45	A	1	1.03	1	1	1	6.045	0.13	35.89	C
			B	1	1.03	1	1	1	6.045			
			C	1	1.03	1	1	1	6.045			
L4 95.00-89.25	0.14	0.84	A	1	1.03	1	1	1	10.284	0.21	36.31	C
			B	1	1.03	1	1	1	10.284			
			C	1	1.03	1	1	1	10.284			
L5 89.25-88.25	0.03	0.18	A	1	1.03	1	1	1	1.829	0.04	36.52	C
			B	1	1.03	1	1	1	1.829			
			C	1	1.03	1	1	1	1.829			
L6 88.25-79.50	0.23	1.23	A	1	1.03	1	1	1	16.715	0.32	37.11	C
			B	1	1.03	1	1	1	16.715			
			C	1	1.03	1	1	1	16.715			
L7 79.50-62.00	0.46	3.08	A	1	1.03	1	1	1	37.254	0.67	38.35	C
			B	1	1.03	1	1	1	37.254			
			C	1	1.03	1	1	1	37.254			
L8 62.00-59.50	0.07	0.47	A	1	1.03	1	1	1	5.738	0.10	38.96	C
			B	1	1.03	1	1	1	5.738			
			C	1	1.03	1	1	1	5.738			
L9 59.50-45.25	0.38	2.94	A	1	1.03	1	1	1	34.695	0.56	39.09	C
			B	1	1.03	1	1	1	34.695			
			C	1	1.03	1	1	1	34.695			
L10 45.25-39.50	0.15	2.35	A	1	1.03	1	1	1	14.611	0.22	38.08	C
			B	1	1.03	1	1	1	14.611			
			C	1	1.03	1	1	1	14.611			
L11 39.50-34.50	0.13	1.17	A	1	1.03	1	1	1	13.247	0.19	37.88	C
			B	1	1.03	1	1	1	13.247			
			C	1	1.03	1	1	1	13.247			
L12 34.50-29.75	0.13	1.07	A	1	1.03	1	1	1	12.971	0.18	37.58	C
			B	1	1.03	1	1	1	12.971			
			C	1	1.03	1	1	1	12.971			
L13 29.75-12.92	0.45	3.89	A	1	1.03	1	1	1	48.997	0.67	39.58	C
			B	1	1.03	1	1	1	48.997			
			C	1	1.03	1	1	1	48.997			
L14 12.92-12.00	0.02	0.25	A	1	1.03	1	1	1	2.805	0.04	41.23	C
			B	1	1.03	1	1	1	2.805			
			C	1	1.03	1	1	1	2.805			
L15 12.00-0.00	0.32	2.99	A	1	1.03	1	1	1	37.999	0.50	41.30	C
			B	1	1.03	1	1	1	37.999			
			C	1	1.03	1	1	1	37.999			
Sum Weight:	2.91	22.33						OTM	295.02 kip-ft	4.78		

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	133 - 105.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-10.96	-0.97	3.96
			Max. Mx	5	-4.49	-208.97	5.09
			Max. My	2	-4.42	0.06	218.13
			Max. Vy	5	12.89	-208.97	5.09
			Max. Vx	2	-13.30	0.06	218.13
			Max. Torque	6			4.85
L2	105.75 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-12.77	-0.89	3.92
			Max. Mx	5	-5.53	-306.69	5.84
			Max. My	2	-5.47	0.39	318.71
			Max. Vy	5	14.82	-306.69	5.84
			Max. Vx	2	-15.12	0.39	318.71
			Max. Torque	11			-4.86
L3	98.5 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-13.44	-0.84	3.91
			Max. Mx	5	-6.08	-359.20	5.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-6.03	0.81	372.29
			Max. Vy	5	15.21	-359.20	5.93
			Max. Vx	2	-15.51	0.81	372.29
			Max. Torque	11			-4.85
L4	95 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-15.31	-0.75	3.87
			Max. Mx	5	-7.36	-449.08	6.08
			Max. My	2	-7.31	1.50	463.94
			Max. Vy	5	16.69	-449.08	6.08
			Max. Vx	2	-17.00	1.50	463.94
			Max. Torque	11			-4.84
L5	89.25 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-15.56	-0.72	3.86
			Max. Mx	5	-7.57	-465.82	6.10
			Max. My	2	-7.52	1.63	480.99
			Max. Vy	5	16.81	-465.82	6.10
			Max. Vx	2	-17.11	1.63	480.99
			Max. Torque	11			-4.82
L6	88.25 - 79.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17.42	-0.53	3.78
			Max. Mx	5	-9.11	-617.04	6.31
			Max. My	2	-9.06	2.70	634.89
			Max. Vy	5	17.78	-617.04	6.31
			Max. Vx	2	-18.09	2.70	634.89
			Max. Torque	11			-4.82
L7	79.5 - 62	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.78	-0.10	3.57
			Max. Mx	5	-12.84	-944.99	6.69
			Max. My	2	-12.80	4.87	968.24
			Max. Vy	5	19.75	-944.99	6.69
			Max. Vx	2	-20.06	4.87	968.24
			Max. Torque	11			-4.78
L8	62 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.44	-0.03	3.54
			Max. Mx	5	-13.40	-994.69	6.74
			Max. My	2	-13.37	5.19	1018.70
			Max. Vy	5	20.03	-994.69	6.74
			Max. Vx	2	-20.34	5.19	1018.70
			Max. Torque	11			-4.71
L9	59.5 - 45.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.08	0.22	3.39
			Max. Mx	5	-15.71	-1189.71	6.93
			Max. My	2	-15.68	6.38	1216.64
			Max. Vy	5	21.06	-1189.71	6.93
			Max. Vx	2	-21.37	6.38	1216.64
			Max. Torque	11			-4.70
L10	45.25 - 39.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.48	0.79	3.05
			Max. Mx	5	-19.53	-1417.58	6.88
			Max. My	2	-19.50	8.03	1447.99
			Max. Vy	11	-22.31	1417.44	23.06
			Max. Vx	2	-22.63	8.03	1447.99
			Max. Torque	11			-4.53
L11	39.5 - 34.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.03	0.93	2.97
			Max. Mx	5	-20.91	-1530.28	6.90
			Max. My	2	-20.89	8.72	1562.29
			Max. Vy	11	-22.81	1530.20	24.40
			Max. Vx	2	-23.13	8.72	1562.29
			Max. Torque	11			-4.51
L12	34.5 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.46	1.06	2.89
			Max. Mx	5	-22.19	-1639.62	6.92
			Max. My	2	-22.17	9.38	1673.15
			Max. Vy	11	-23.27	1639.61	25.67
			Max. Vx	2	-23.58	9.38	1673.15
			Max. Torque	11			-4.49
L13	29.75 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	12.917						
			Max. Compression	14	-37.66	1.57	2.58
			Max. Mx	11	-26.86	2044.83	30.11
			Max. My	2	-26.85	11.70	2083.46
			Max. Vy	11	-24.90	2044.83	30.11
			Max. Vx	2	-25.21	11.70	2083.46
			Max. Torque	11			-4.47
L14	12.917 - 12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.99	1.60	2.56
			Max. Mx	11	-27.15	2067.71	30.35
			Max. My	2	-27.15	11.83	2106.61
			Max. Vy	11	-24.99	2067.71	30.35
			Max. Vx	2	-25.31	11.83	2106.61
			Max. Torque	11			-4.41
L15	12 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41.94	1.99	2.32
			Max. Mx	11	-30.71	2374.51	33.45
			Max. My	2	-30.71	13.48	2416.96
			Max. Vy	11	-26.15	2374.51	33.45
			Max. Vx	2	-26.46	13.48	2416.96
			Max. Torque	11			-4.40

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	41.94	0.00	-0.00
	Max. H_x	11	30.72	26.14	0.26
	Max. H_z	2	30.72	0.13	26.45
	Max. M_x	2	2416.96	0.13	26.45
	Max. M_z	5	2374.04	-26.14	0.01
	Max. Torsion	5	4.35	-26.14	0.01
	Min. Vert	2	30.72	0.13	26.45
	Min. H_x	5	30.72	-26.14	0.01
	Min. H_z	8	30.72	-0.13	-26.39
	Min. M_x	8	-2406.22	-0.13	-26.39
	Min. M_z	11	-2374.51	26.14	0.26
	Min. Torsion	11	-4.36	26.14	0.26

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	30.72	-0.00	0.00	-1.41	0.26	0.00
Dead+Wind 0 deg - No Ice	30.72	-0.13	-26.45	-2416.96	13.48	0.49
Dead+Wind 30 deg - No Ice	30.72	13.07	-22.69	-2065.52	-1191.61	-1.67
Dead+Wind 60 deg - No Ice	30.72	22.61	-13.09	-1194.10	-2054.82	-3.47
Dead+Wind 90 deg - No Ice	30.72	26.14	-0.01	-6.97	-2374.04	-4.35
Dead+Wind 120 deg - No Ice	30.72	22.79	13.34	1217.84	-2074.75	-3.97
Dead+Wind 150 deg - No Ice	30.72	13.07	22.95	2094.29	-1182.12	-2.52
Dead+Wind 180 deg - No Ice	30.72	0.13	26.39	2406.22	-13.00	-0.49
Dead+Wind 210 deg - No Ice	30.72	-12.84	22.82	2081.11	1159.70	1.67
Dead+Wind 240 deg - No Ice	30.72	-22.66	13.11	1194.95	2062.05	3.48
Dead+Wind 270 deg - No Ice	30.72	-26.14	-0.26	-33.45	2374.51	4.36
Dead+Wind 300 deg - No Ice	30.72	-22.74	-13.31	-1216.98	2068.46	3.96
Dead+Wind 330 deg - No Ice	30.72	-13.30	-22.81	-2078.69	1214.98	2.51
Dead+Ice+Temp	41.94	-0.00	0.00	-2.32	1.99	0.00
Dead+Wind 0 deg+Ice+Temp	41.94	-0.03	-6.83	-637.30	4.85	-0.06

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 30 deg+Ice+Temp	41.94	3.38	-5.86	-545.88	-312.56	-0.55
Dead+Wind 60 deg+Ice+Temp	41.94	5.85	-3.38	-316.53	-540.51	-0.89
Dead+Wind 90 deg+Ice+Temp	41.94	6.77	-0.00	-3.92	-624.62	-1.00
Dead+Wind 120 deg+Ice+Temp	41.94	5.89	3.44	317.40	-544.90	-0.83
Dead+Wind 150 deg+Ice+Temp	41.94	3.38	5.92	548.05	-310.05	-0.43
Dead+Wind 180 deg+Ice+Temp	41.94	0.03	6.81	630.55	-0.82	0.07
Dead+Wind 210 deg+Ice+Temp	41.94	-3.33	5.89	545.21	309.16	0.55
Dead+Wind 240 deg+Ice+Temp	41.94	-5.86	3.39	312.49	546.09	0.89
Dead+Wind 270 deg+Ice+Temp	41.94	-6.77	-0.06	-9.59	628.65	1.00
Dead+Wind 300 deg+Ice+Temp	41.94	-5.88	-3.43	-321.44	547.37	0.83
Dead+Wind 330 deg+Ice+Temp	41.94	-3.43	-5.89	-548.71	321.50	0.44
Dead+Wind 0 deg - Service	30.72	-0.04	-9.15	-838.67	4.82	0.18
Dead+Wind 30 deg - Service	30.72	4.52	-7.85	-716.79	-412.78	-0.60
Dead+Wind 60 deg - Service	30.72	7.82	-4.53	-414.82	-711.89	-1.22
Dead+Wind 90 deg - Service	30.72	9.04	-0.00	-3.46	-822.44	-1.52
Dead+Wind 120 deg - Service	30.72	7.89	4.61	421.00	-718.83	-1.40
Dead+Wind 150 deg - Service	30.72	4.52	7.94	724.72	-409.50	-0.90
Dead+Wind 180 deg - Service	30.72	0.04	9.13	832.81	-4.36	-0.18
Dead+Wind 210 deg - Service	30.72	-4.44	7.90	720.14	402.02	0.59
Dead+Wind 240 deg - Service	30.72	-7.84	4.54	413.05	714.71	1.22
Dead+Wind 270 deg - Service	30.72	-9.04	-0.09	-12.63	822.91	1.53
Dead+Wind 300 deg - Service	30.72	-7.87	-4.60	-422.76	716.94	1.40
Dead+Wind 330 deg - Service	30.72	-4.60	-7.89	-721.38	421.18	0.90

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	-30.72	0.00	0.00	30.72	-0.00	0.004%
2	-0.13	-30.72	-26.45	0.13	30.72	26.45	0.008%
3	13.07	-30.72	-22.69	-13.07	30.72	22.69	0.000%
4	22.61	-30.72	-13.09	-22.61	30.72	13.09	0.000%
5	26.14	-30.72	-0.01	-26.14	30.72	0.01	0.001%
6	22.79	-30.72	13.34	-22.79	30.72	-13.34	0.000%
7	13.07	-30.72	22.95	-13.07	30.72	-22.95	0.000%
8	0.13	-30.72	26.39	-0.13	30.72	-26.39	0.004%
9	-12.84	-30.72	22.82	12.84	30.72	-22.82	0.000%
10	-22.66	-30.72	13.11	22.66	30.72	-13.11	0.000%
11	-26.14	-30.72	-0.26	26.14	30.72	0.26	0.001%
12	-22.74	-30.72	-13.31	22.74	30.72	13.31	0.000%
13	-13.30	-30.72	-22.81	13.30	30.72	22.81	0.000%
14	0.00	-41.94	0.00	0.00	41.94	-0.00	0.002%
15	-0.03	-41.94	-6.83	0.03	41.94	6.83	0.001%
16	3.38	-41.94	-5.86	-3.38	41.94	5.86	0.001%
17	5.85	-41.94	-3.38	-5.85	41.94	3.38	0.001%
18	6.77	-41.94	-0.00	-6.77	41.94	0.00	0.001%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
19	5.89	-41.94	3.44	-5.89	41.94	-3.44	0.001%
20	3.38	-41.94	5.92	-3.38	41.94	-5.92	0.001%
21	0.03	-41.94	6.81	-0.03	41.94	-6.81	0.001%
22	-3.33	-41.94	5.89	3.33	41.94	-5.89	0.001%
23	-5.86	-41.94	3.39	5.86	41.94	-3.39	0.001%
24	-6.77	-41.94	-0.06	6.77	41.94	0.06	0.001%
25	-5.88	-41.94	-3.43	5.88	41.94	3.43	0.001%
26	-3.43	-41.94	-5.89	3.43	41.94	5.89	0.001%
27	-0.04	-30.72	-9.15	0.04	30.72	9.15	0.004%
28	4.52	-30.72	-7.85	-4.52	30.72	7.85	0.002%
29	7.82	-30.72	-4.53	-7.82	30.72	4.53	0.002%
30	9.04	-30.72	-0.00	-9.04	30.72	0.00	0.004%
31	7.89	-30.72	4.61	-7.89	30.72	-4.61	0.002%
32	4.52	-30.72	7.94	-4.52	30.72	-7.94	0.002%
33	0.04	-30.72	9.13	-0.04	30.72	-9.13	0.004%
34	-4.44	-30.72	7.90	4.44	30.72	-7.90	0.002%
35	-7.84	-30.72	4.54	7.84	30.72	-4.54	0.002%
36	-9.04	-30.72	-0.09	9.04	30.72	0.09	0.004%
37	-7.87	-30.72	-4.60	7.87	30.72	4.60	0.002%
38	-4.60	-30.72	-7.89	4.60	30.72	7.89	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000979
2	Yes	15	0.00007551	0.00013405
3	Yes	20	0.00000001	0.00009343
4	Yes	20	0.00000001	0.00010290
5	Yes	18	0.00000001	0.00008339
6	Yes	20	0.00000001	0.00009136
7	Yes	20	0.00000001	0.00010289
8	Yes	16	0.00003593	0.00010501
9	Yes	20	0.00000001	0.00009646
10	Yes	20	0.00000001	0.00008974
11	Yes	18	0.00000001	0.00009487
12	Yes	20	0.00000001	0.00010746
13	Yes	20	0.00000001	0.00009339
14	Yes	10	0.00000001	0.00004308
15	Yes	17	0.00000001	0.00011144
16	Yes	17	0.00000001	0.00013773
17	Yes	17	0.00000001	0.00014160
18	Yes	17	0.00000001	0.00011038
19	Yes	17	0.00000001	0.00013511
20	Yes	17	0.00000001	0.00013718
21	Yes	17	0.00000001	0.00010725
22	Yes	17	0.00000001	0.00013451
23	Yes	17	0.00000001	0.00013323
24	Yes	17	0.00000001	0.00011034
25	Yes	17	0.00000001	0.00014381
26	Yes	17	0.00000001	0.00013911
27	Yes	15	0.00008147	0.00005535
28	Yes	16	0.00000001	0.00009658
29	Yes	16	0.00000001	0.00013407
30	Yes	15	0.00008139	0.00012707
31	Yes	16	0.00000001	0.00008990
32	Yes	16	0.00000001	0.00013137
33	Yes	15	0.00008125	0.00005693
34	Yes	16	0.00000001	0.00011233
35	Yes	16	0.00000001	0.00008657
36	Yes	15	0.00008130	0.00013202
37	Yes	16	0.00000001	0.00014615
38	Yes	16	0.00000001	0.00009340

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 105.75	34.443	27	2.6775	0.0656
L2	105.75 - 98.5	20.712	27	1.9595	0.0155
L3	98.5 - 95	17.878	27	1.7689	0.0112
L4	95 - 89.25	16.604	27	1.7078	0.0102
L5	89.25 - 88.25	14.607	27	1.6071	0.0087
L6	88.25 - 79.5	14.272	27	1.5916	0.0085
L7	79.5 - 62	11.523	27	1.4078	0.0065
L8	62 - 59.5	6.983	27	1.0700	0.0040
L9	59.5 - 45.25	6.435	27	1.0217	0.0037
L10	50 - 39.5	4.577	27	0.8466	0.0028
L11	39.5 - 34.5	2.853	27	0.6993	0.0021
L12	34.5 - 29.75	2.167	27	0.6117	0.0018
L13	29.75 - 12.917	1.602	27	0.5248	0.0015
L14	12.917 - 12	0.296	27	0.2195	0.0006
L15	12 - 0	0.256	27	0.2052	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.00	VHLP2-23	27	34.443	2.6775	0.0659	6948
133.00	(2) APXVSPP18-C-A20 w/ Mount Pipe	27	34.443	2.6775	0.0659	6948
110.00	MG D3-800Tx w/ Mount Pipe	27	22.570	2.0800	0.0201	1510
100.00	TMZXX-6516-R2M w/ Mount Pipe	27	18.439	1.8018	0.0118	2353
90.00	APXV18-206517S-C w/ Mount Pipe	27	14.861	1.6192	0.0089	3152
50.00	KS24019-L112A	27	4.577	0.8466	0.0028	4116

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 105.75	98.579	2	7.5886	0.1872
L2	105.75 - 98.5	59.504	2	5.6172	0.0440
L3	98.5 - 95	51.386	2	5.0770	0.0319
L4	95 - 89.25	47.732	2	4.9032	0.0289
L5	89.25 - 88.25	42.003	2	4.6163	0.0248
L6	88.25 - 79.5	41.042	2	4.5721	0.0242
L7	79.5 - 62	33.149	2	4.0467	0.0186
L8	62 - 59.5	20.099	2	3.0787	0.0113
L9	59.5 - 45.25	18.524	2	2.9398	0.0105
L10	50 - 39.5	13.179	2	2.4370	0.0079
L11	39.5 - 34.5	8.217	2	2.0134	0.0061
L12	34.5 - 29.75	6.241	2	1.7615	0.0051
L13	29.75 - 12.917	4.613	2	1.5114	0.0042
L14	12.917 - 12	0.854	2	0.6324	0.0016
L15	12 - 0	0.736	2	0.5913	0.0015

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.00	VHLP2-23	2	98.579	7.5886	0.1892	2557
133.00	(2) APXVSPP18-C-A20 w/ Mount Pipe	2	98.579	7.5886	0.1892	2557
110.00	MG D3-800Tx w/ Mount Pipe	2	64.811	5.9547	0.0575	552
100.00	TMZXX-6516-R2M w/ Mount Pipe	2	52.993	5.1706	0.0336	842
90.00	APXV18-206517S-C w/ Mount Pipe	2	42.731	4.6508	0.0253	1118
50.00	KS24019-L112A	2	13.179	2.4370	0.0079	1437

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	133 - 105.75 (1)	TP18.9274x13.48x0.1875	27.25	0.00	0.0	39.000	11.3142	-4.42	441.25	0.010
L2	105.75 - 98.5 (2)	TP20.3767x18.9274x0.3436	7.25	0.00	0.0	37.332	22.1638	-5.47	827.42	0.007
L3	98.5 - 95 (3)	TP21.0764x20.3767x0.5891	3.50	0.00	0.0	25.200	38.8591	-6.03	979.25	0.006
L4	95 - 89.25 (4)	TP21.8501x21.0764x0.6408	5.75	0.00	0.0	25.314	43.7634	-7.31	1107.83	0.007
L5	89.25 - 88.25 (5)	TP22.0499x21.8501x0.768	1.00	0.00	0.0	30.036	52.6292	-7.52	1580.77	0.005
L6	88.25 - 79.5 (6)	TP23.7979x22.0499x0.5741	8.75	0.00	0.0	30.180	42.9300	-9.06	1295.63	0.007
L7	79.5 - 62 (7)	TP27.2938x23.7979x0.6442	17.50	0.00	0.0	30.366	55.2766	-12.80	1678.53	0.008
L8	62 - 59.5 (8)	TP27.7933x27.2938x0.6355	2.50	0.00	0.0	30.384	55.5707	-13.37	1688.46	0.008
L9	59.5 - 45.25 (9)	TP30.64x27.7933x0.6592	14.25	0.00	0.0	32.046	61.6192	-15.68	1974.65	0.008
L10	45.25 - 39.5 (10)	TP31.293x28.3728x0.7014	10.50	0.00	0.0	32.112	65.4805	-17.96	2102.71	0.009
L11	39.5 - 34.5 (11)	TP32.2939x31.293x0.6869	5.00	0.00	0.0	32.178	69.9059	-20.89	2249.43	0.009
L12	34.5 - 29.75 (12)	TP33.2447x32.2939x0.6413	4.75	0.00	0.0	32.646	67.3266	-22.17	2197.94	0.010
L13	29.75 - 12.917 (13)	TP36.6143x33.2447x0.6152	16.83	0.00	0.0	33.000	71.3088	-26.85	2353.19	0.011
L14	12.917 - 12 (14)	TP36.7979x36.6143x0.687	0.92	0.00	0.0	31.788	79.8823	-27.15	2539.30	0.011
L15	12 - 0 (15)	TP39.2x36.7979x0.6075	12.00	0.00	0.0	31.560	75.4891	-30.71	2382.43	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	133 - 105.75 (1)	TP18.9274x13.48x0.1875	218.13	50.603	39.000	1.298	0.00	0.000	39.000	0.000
L2	105.75 - 98.5	TP20.3767x18.9274x0.34	318.71	35.556	37.332	0.952	0.00	0.000	37.332	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	(2)	36								
L3	98.5 - 95 (3)	TP21.0764x20.3767x0.5891	372.29	23.429	25.200	0.930	0.00	0.000	25.200	0.000
L4	95 - 89.25 (4)	TP21.8501x21.0764x0.6408	463.94	25.077	25.314	0.991	0.00	0.000	25.314	0.000
L5	89.25 - 88.25 (5)	TP22.0499x21.8501x0.768	480.99	21.668	30.036	0.721	0.00	0.000	30.036	0.000
L6	88.25 - 79.5 (6)	TP23.7979x22.0499x0.5741	634.89	31.779	30.180	1.053	0.00	0.000	30.180	0.000
L7	79.5 - 62 (7)	TP27.2938x23.7979x0.6442	968.25	32.783	30.366	1.080	0.00	0.000	30.366	0.000
L8	62 - 59.5 (8)	TP27.7933x27.2938x0.6355	1018.72	33.642	30.384	1.107	0.00	0.000	30.384	0.000
L9	59.5 - 45.25 (9)	TP30.64x27.7933x0.6592	1216.66	33.873	32.046	1.057	0.00	0.000	32.046	0.000
L10	45.25 - 39.5 (10)	TP31.293x28.3728x0.7014	1319.71	34.673	32.112	1.080	0.00	0.000	32.112	0.000
L11	39.5 - 34.5 (11)	TP32.2939x31.293x0.6869	1562.32	35.183	32.178	1.093	0.00	0.000	32.178	0.000
L12	34.5 - 29.75 (12)	TP33.2447x32.2939x0.6413	1673.18	37.851	32.646	1.159	0.00	0.000	32.646	0.000
L13	29.75 - 12.917 (13)	TP36.6143x33.2447x0.6152	2083.49	40.201	33.000	1.218	0.00	0.000	33.000	0.000
L14	12.917 - 12 (14)	TP36.7979x36.6143x0.687	2106.64	36.242	31.788	1.140	0.00	0.000	31.788	0.000
L15	12 - 0 (15)	TP39.2x36.7979x0.6075	2416.99	41.039	31.560	1.300	0.00	0.000	31.560	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	133 - 105.75 (1)	TP18.9274x13.48x0.1875	13.30	1.176	26.000	0.092	1.41	0.154	26.000	0.006
L2	105.75 - 98.5 (2)	TP20.3767x18.9274x0.3436	15.12	0.682	24.888	0.056	1.30	0.068	24.888	0.003
L3	98.5 - 95 (3)	TP21.0764x20.3767x0.5891	15.51	0.399	16.800	0.048	1.28	0.037	16.800	0.002
L4	95 - 89.25 (4)	TP21.8501x21.0764x0.6408	17.00	0.388	16.876	0.047	1.25	0.031	16.876	0.002
L5	89.25 - 88.25 (5)	TP22.0499x21.8501x0.768	17.11	0.325	20.024	0.033	1.25	0.026	20.024	0.001
L6	88.25 - 79.5 (6)	TP23.7979x22.0499x0.5741	18.09	0.421	20.120	0.043	1.20	0.028	20.120	0.001
L7	79.5 - 62 (7)	TP27.2938x23.7979x0.6442	20.06	0.363	20.244	0.036	1.09	0.017	20.244	0.001
L8	62 - 59.5 (8)	TP27.7933x27.2938x0.6355	20.34	0.366	20.256	0.037	1.07	0.017	20.256	0.001
L9	59.5 - 45.25 (9)	TP30.64x27.7933x0.6592	21.37	0.347	21.364	0.033	1.01	0.013	21.364	0.001
L10	45.25 - 39.5 (10)	TP31.293x28.3728x0.7014	22.15	0.338	21.408	0.032	0.78	0.009	21.408	0.000
L11	39.5 - 34.5 (11)	TP32.2939x31.293x0.6869	23.13	0.331	21.452	0.031	0.72	0.008	21.452	0.000
L12	34.5 - 29.75 (12)	TP33.2447x32.2939x0.6413	23.58	0.350	21.764	0.033	0.69	0.007	21.764	0.000
L13	29.75 - 12.917 (13)	TP36.6143x33.2447x0.6152	25.22	0.354	22.000	0.033	0.57	0.005	22.000	0.000
L14	12.917 - 12 (14)	TP36.7979x36.6143x0.687	25.31	0.317	21.192	0.030	0.57	0.005	21.192	0.000
L15	12 - 0 (15)	TP39.2x36.7979x0.6075	26.46	0.350	21.040	0.034	0.49	0.004	21.040	0.000

Pole Interaction Design Data

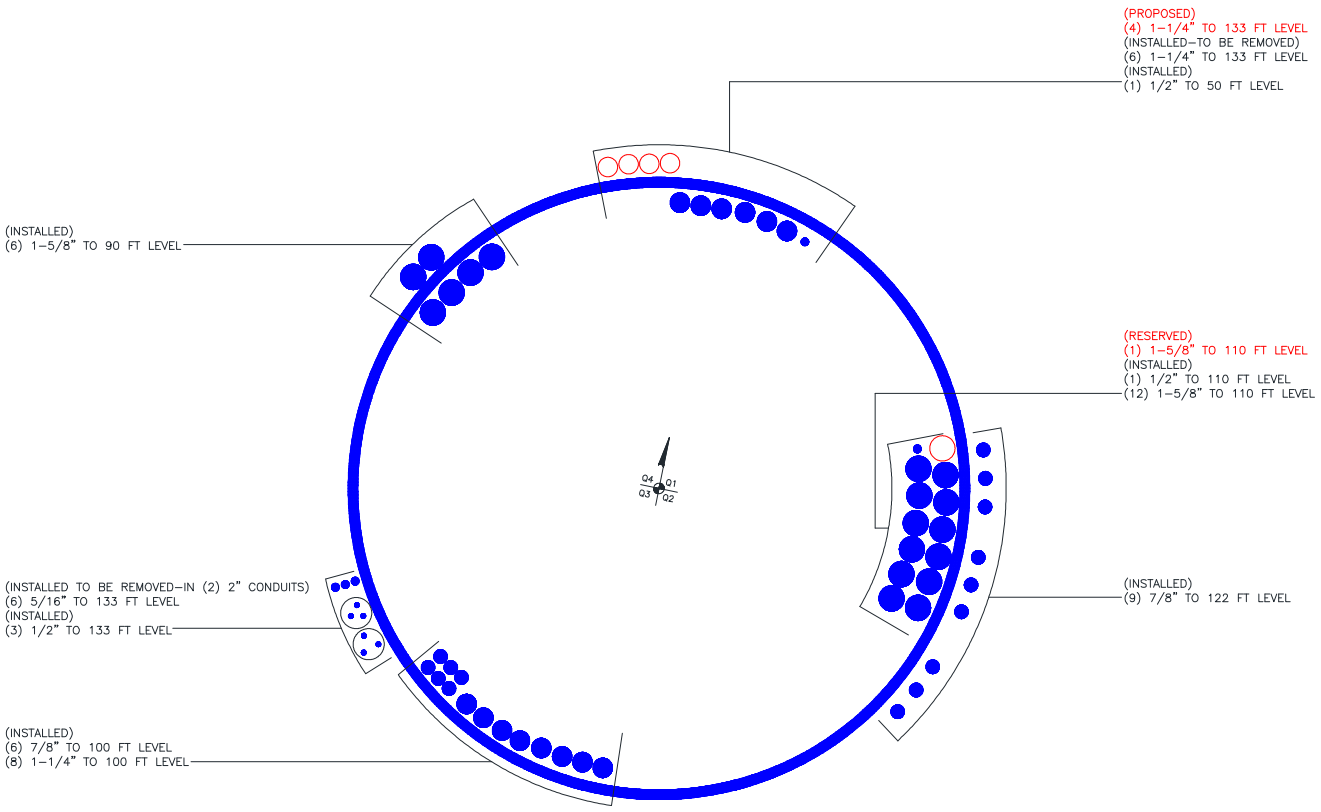
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	133 - 105.75 (1)	0.010	1.298	0.000	0.092	0.006	1.310 ✔	1.333	H1-3+VT ✔
L2	105.75 - 98.5 (2)	0.007	0.952	0.000	0.056	0.003	0.960 ✔	1.333	H1-3+VT ✔
L3	98.5 - 95 (3)	0.006	0.930	0.000	0.048	0.002	0.937 ✔	1.333	H1-3+VT ✔
L4	95 - 89.25 (4)	0.007	0.991	0.000	0.047	0.002	0.998 ✔	1.333	H1-3+VT ✔
L5	89.25 - 88.25 (5)	0.005	0.721	0.000	0.033	0.001	0.726 ✔	1.333	H1-3+VT ✔
L6	88.25 - 79.5 (6)	0.007	1.053	0.000	0.043	0.001	1.060 ✔	1.333	H1-3+VT ✔
L7	79.5 - 62 (7)	0.008	1.080	0.000	0.036	0.001	1.088 ✔	1.333	H1-3+VT ✔
L8	62 - 59.5 (8)	0.008	1.107	0.000	0.037	0.001	1.115 ✔	1.333	H1-3+VT ✔
L9	59.5 - 45.25 (9)	0.008	1.057	0.000	0.033	0.001	1.065 ✔	1.333	H1-3+VT ✔
L10	45.25 - 39.5 (10)	0.009	1.080	0.000	0.032	0.000	1.089 ✔	1.333	H1-3+VT ✔
L11	39.5 - 34.5 (11)	0.009	1.093	0.000	0.031	0.000	1.103 ✔	1.333	H1-3+VT ✔
L12	34.5 - 29.75 (12)	0.010	1.159	0.000	0.033	0.000	1.170 ✔	1.333	H1-3+VT ✔
L13	29.75 - 12.917 (13)	0.011	1.218	0.000	0.033	0.000	1.230 ✔	1.333	H1-3+VT ✔
L14	12.917 - 12 (14)	0.011	1.140	0.000	0.030	0.000	1.151 ✔	1.333	H1-3+VT ✔
L15	12 - 0 (15)	0.013	1.300	0.000	0.034	0.000	1.314 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	133 - 105.75	Pole	TP18.9274x13.48x0.1875	1	-4.42	588.19	98.3	Pass
L2	105.75 - 98.5	Pole	TP20.3767x18.9274x0.3436	2	-5.47	1102.95	72.0	Pass
L3	98.5 - 95	Pole	TP21.0764x20.3767x0.5891	3	-6.03	1305.34	70.3	Pass
L4	95 - 89.25	Pole	TP21.8501x21.0764x0.6408	4	-7.31	1476.74	74.9	Pass
L5	89.25 - 88.25	Pole	TP22.0499x21.8501x0.768	5	-7.52	2107.17	54.5	Pass
L6	88.25 - 79.5	Pole	TP23.7979x22.0499x0.5741	6	-9.06	1727.07	79.6	Pass
L7	79.5 - 62	Pole	TP27.2938x23.7979x0.6442	7	-12.80	2237.48	81.6	Pass
L8	62 - 59.5	Pole	TP27.7933x27.2938x0.6355	8	-13.37	2250.72	83.7	Pass
L9	59.5 - 45.25	Pole	TP30.64x27.7933x0.6592	9	-15.68	2632.21	79.9	Pass
L10	45.25 - 39.5	Pole	TP31.293x28.3728x0.7014	10	-17.96	2802.91	81.7	Pass
L11	39.5 - 34.5	Pole	TP32.2939x31.293x0.6869	11	-20.89	2998.49	82.7	Pass
L12	34.5 - 29.75	Pole	TP33.2447x32.2939x0.6413	12	-22.17	2929.85	87.8	Pass
L13	29.75 - 12.917	Pole	TP36.6143x33.2447x0.6152	13	-26.85	3136.80	92.3	Pass
L14	12.917 - 12	Pole	TP36.7979x36.6143x0.687	14	-27.15	3384.89	86.3	Pass
L15	12 - 0	Pole	TP39.2x36.7979x0.6075	15	-30.71	3175.78	98.5	Pass
							Summary	
						Pole (L15)	98.5	Pass
						RATING =	**98.5**	**Pass**

APPENDIX B

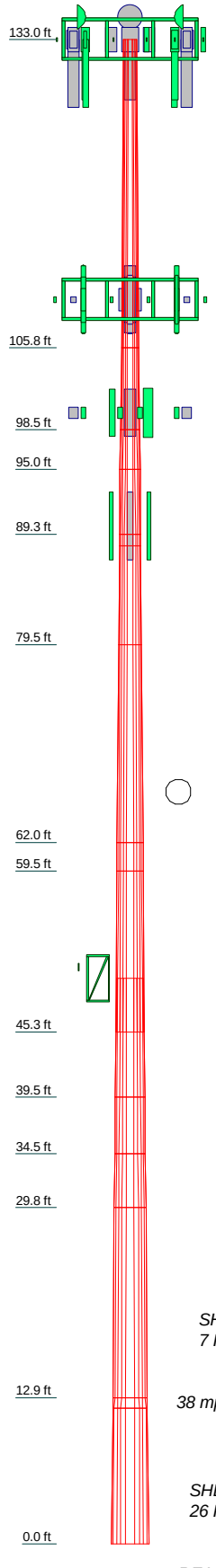
BASE LEVEL DRAWING

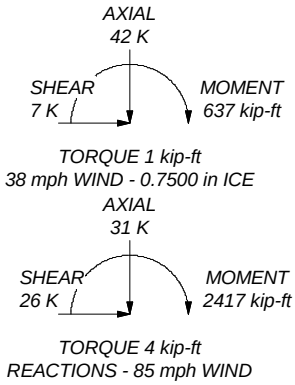

(PROPOSED)
(4) 1-1/4" TO 133 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-1/4" TO 133 FT LEVEL
(INSTALLED)
(1) 1/2" TO 50 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 90 FT LEVEL
(RESERVED)
(1) 1-5/8" TO 110 FT LEVEL
(INSTALLED)
(1) 1/2" TO 110 FT LEVEL
(12) 1-5/8" TO 110 FT LEVEL
Q4
Q1
Q3
Q2
(INSTALLED TO BE REMOVED-IN (2) 2" CONDUITS)
(6) 5/16" TO 133 FT LEVEL
(INSTALLED)
(3) 1/2" TO 133 FT LEVEL
(INSTALLED)
(9) 7/8" TO 122 FT LEVEL
(INSTALLED)
(6) 7/8" TO 100 FT LEVEL
(8) 1-1/4" TO 100 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Length (ft)	27.25	7.25	3.50	5.75	1.00	8.75	17.50	2.50	14.25	10.50	5.00	4.75	16.83	0.92	12.00
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.1875	0.3436	0.5890	0.6408	0.7680	0.5741	0.6442	0.6355	0.6592	0.7014	0.6869	0.6413	0.6152	0.6870	0.6075
Socket Length (ft)									4.75						
Top Dia (in)	13.4800	18.9274	20.3767	21.0764	21.8501	22.0498	23.7979	27.2938	27.7933	28.3728	31.2930	32.2939	33.2447	36.6143	36.7979
Bot Dia (in)	18.9274	20.3767	21.0764	21.8501	22.0498	23.7979	27.2938	27.7933	30.6400	31.2930	32.2939	33.2447	36.6143	36.7979	39.2000
Grade	A572-65	A572-65	A572-65	A572-65	A572-65	Reinf 50.06 ksi	Reinf 50.30 ksi	Reinf 50.61 ksi	Reinf 50.64 ksi	Reinf 53.41 ksi	Reinf 53.52 ksi	Reinf 53.63 ksi	Reinf 54.41 ksi	Reinf 55.00 ksi	Reinf 52.98 ksi
Weight (K)	0.9	0.5	0.5	0.8	0.2	1.2	3.1	0.5	2.9	2.4	1.2	1.1	3.9	0.2	3.0





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) APXVSPP18-C-A20 w/ Mount Pipe	133	BXA-171063/12CF w/ Mount Pipe	110
APXVSPP18-C-A20 w/ Mount Pipe	133	BXA-171063/12CF w/ Mount Pipe	110
APXVSPP18-C-A20 w/ Mount Pipe	133	BXA-171063/12CF w/ Mount Pipe	110
(2) IBC1900HB-2	133	BXA-70063/6CF-2 w/ Mount Pipe	110
IBC1900HB-2	133	BXA-70063/6CF-2 w/ Mount Pipe	110
IBC1900HB-2	133	BXA-70063/6CF-2 w/ Mount Pipe	110
(4) 1900MHz RRH (65MHz)	133	BXA-80063/4CF w/ Mount Pipe	110
(2) 1900MHz RRH (65MHz)	133	BXA-80063/4CF w/ Mount Pipe	110
(2) 800 EXTERNAL NOTCH FILTER	133	BXA-80063/4CF w/ Mount Pipe	110
800 EXTERNAL NOTCH FILTER	133	RRH2x40-AWS	110
(2) 800MHZ RRH	133	RRH2x40-AWS	110
800MHZ RRH	133	RRH2x40-AWS	110
(6) ACU-A20-N	133	DB-T1-6Z-8AB-0Z	110
(3) ACU-A20-N	133	Platform Mount [LP 602-1]	110
(3) ACU-A20-N	133	MG D3-800Tx w/ Mount Pipe	110
PD2DE-700/2700	133	MG D3-800Tx w/ Mount Pipe	110
PD2DE-700/2700	133	MG D3-800Tx w/ Mount Pipe	110
Platform Mount [LP 601-1]	133	(2) ATMAA1412D-1A20	100
APXVTM14-C-120 w/ Mount Pipe	133	(2) ATMAA1412D-1A20	100
APXVTM14-C-120 w/ Mount Pipe	133	(2) ATMAA1412D-1A20	100
APXVTM14-C-120 w/ Mount Pipe	133	Pipe Mount [PM 601-3]	100
TD-RRH8x20-25	133	TMZXX-6516-R2M w/ Mount Pipe	100
TD-RRH8x20-25	133	TMZXXX-6516-R2M w/ Mount Pipe	100
TD-RRH8x20-25	133	TMZXX-6516-R2M w/ Mount Pipe	100
VHLP2-23	133	Pipe Mount [PM 601-3]	90
VHLP2-23	133	APXV18-206517S-C w/ Mount Pipe	90
VHLP2-18	133	APXV18-206517S-C w/ Mount Pipe	90
BULLET III	110	APXV18-206517S-C w/ Mount Pipe	90
(2) FD9R6004/2C-3L	110	Side Arm Mount [SO 701-1]	50
(2) FD9R6004/2C-3L	110	KS24019-L112A	50
(2) FD9R6004/2C-3L	110		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 53.41 ksi	53 ksi	67 ksi
Reinf 62.22 ksi	62 ksi	78 ksi	Reinf 53.52 ksi	54 ksi	67 ksi
Reinf 42.12 ksi	42 ksi	53 ksi	Reinf 53.63 ksi	54 ksi	68 ksi
Reinf 42.19 ksi	42 ksi	53 ksi	Reinf 54.41 ksi	54 ksi	69 ksi
Reinf 50.06 ksi	50 ksi	63 ksi	Reinf 55.00 ksi	55 ksi	69 ksi
Reinf 50.30 ksi	50 ksi	63 ksi	Reinf 52.98 ksi	53 ksi	67 ksi
Reinf 50.61 ksi	51 ksi	64 ksi	Reinf 52.60 ksi	53 ksi	66 ksi
Reinf 50.64 ksi	51 ksi	64 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.5%

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.44105

Job:	***133 ft Monopole / Waterbury***		
Project:	***PJF 37513-0028 / BU 876317***		
Client: CCI	Drawn by: Robert Koors		App'd:
Code: TIA/EIA-222-F	Date: 06/18/14		Scale: NTS
Path: T:\375_Crown_Castle\2013\37513-0028 BU 876317\WO 776772 BU 876317 - SA 002\37513-0028.002.7805_Reinforced.eri			Dwg No. E-1

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

TIA Rev F

Site Data

BU#:	*875317*
Site Name:	*Waterbury*
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	2417	ft-kips
Axial:	31	kips
Shear:	26	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55.16	in

Plate Data		
Diam:	61.16	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	10.50	in

Stiffener Data (Welding at both sides)		
Config:	3	*
Weld Type:	Both	
Groove Depth:	0.3125	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	11	in
Height:	21.5	in
Thick:	0.625	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi
Clear Space between Stiffeners (b):	7.5	in

Pole Data		
Diam:	39.2	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	172.7 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	88.6% **Pass**	

Base Plate Results — Flexural Check

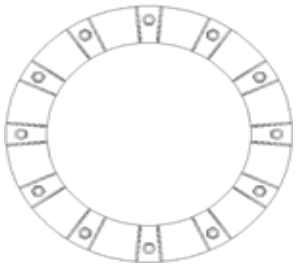
		Stiffened
Base Plate Stress:	23.2 ksi	Service, ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	38.7% **Pass**	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	35.8% **Pass**
Vertical Weld:	40.9% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	18.2% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	36.2% **Pass**
Plate Comp. (AISC Bracket):	53.2% **Pass**

Pole Results

Pole Punching Shear Check:	14.5% **Pass**



* 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:

Pole weight or tower leg compression =	**31**	(kips)
Horizontal load at top of pier =	**26**	(kips)
Overturning moment at top of pier=	**2417**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	

Soil Properties:

Soil density =	**110**	(pcf)
Allowable soil bearing =	**4**	(ksf)
Depth to water table =	**6**	(ft)

Dimensions:

Pier shape (round or square)	**R**	("R" or "S")
Pier width =	**6.5**	(ft)
Pier height above grade =	**1**	(ft)
depth to bottom of footing =	**6.75**	(ft)
Footing thickness =	**6.75**	(ft)
Footing width =	**20**	(ft)
Footing length =	**20**	(ft)

Concrete:

Concrete strength =	**4**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

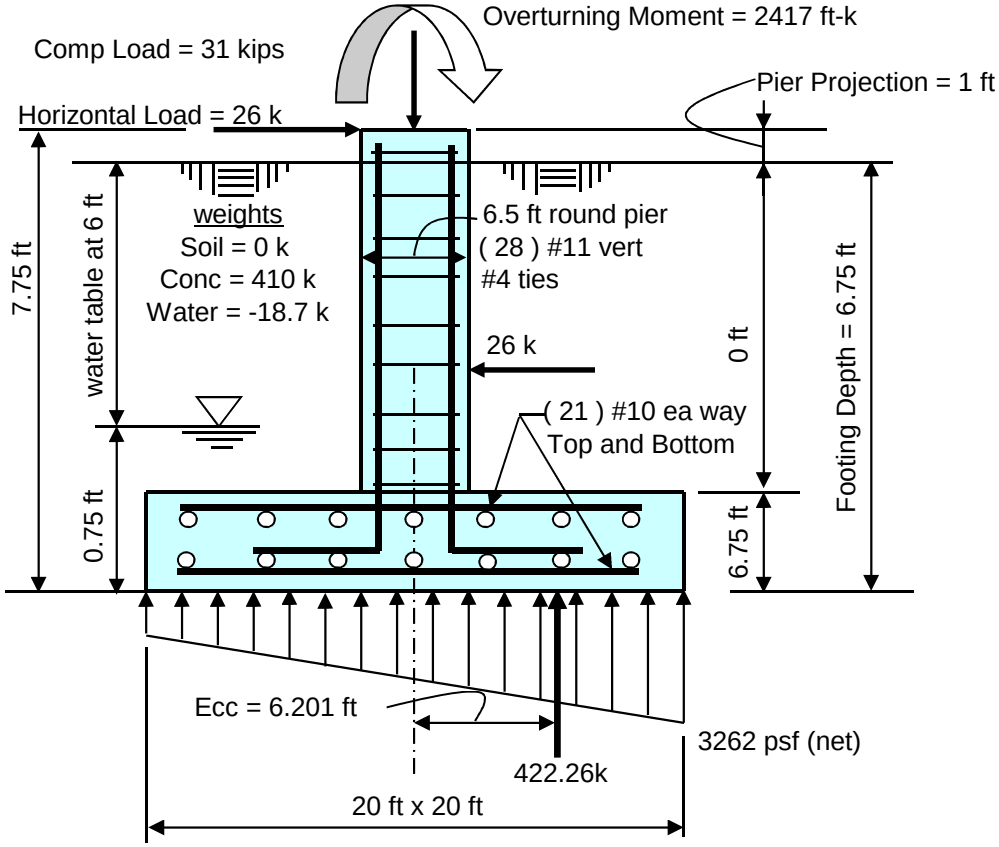
Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#10**	bar
quantity of pad rebar =	**21**	(ea direction)

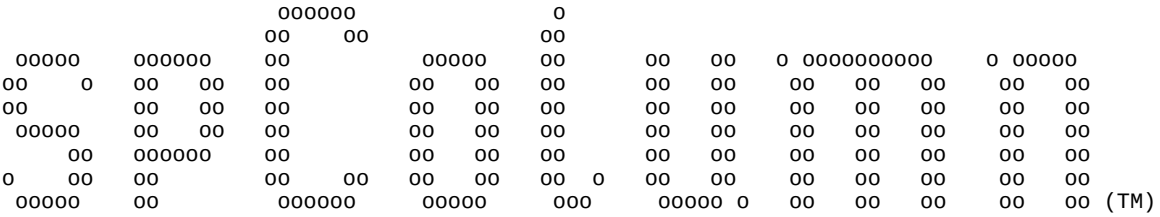
Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#11**	bar
vertical rebar quantity =	**28**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 101.2 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 3.262 ksf Allowable Net Soil Bearing = 4 ksf **Soil Bearing Stress Ratio = 0.82 Okay**	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 13 psi **Bending Shear Stress Ratio = 0.1 Okay**
Ftg Overturning Resistance = 4223 ft-kips Overturning Moment = 2619 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 1.613 **Ratio = 0.93 Okay**	Pad Bending Moment Capacity= 9018 ft-k Pad Bending Moment = 1189 ft-k **Bending Moment Stress Ratio = 0.13 OK**



spColumn v4.80 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
==========
File Name: T:\375_Crown_Castle\2013\37513-0028 BU 876317\WO 776772 BU 876...\37513-0028.002.7805.col
Project: 37513-0028 R2
Column: Engineer: JWM
Code: ACI 318-08 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.85

Section:
========
Circular: Diameter = 66 in

Gross section area, Ag = 3421.19 in^2
Ix = 931420 in^4 Iy = 931420 in^4
rx = 16.5 in ry = 16.5 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 43.68 in^2 at rho = 1.28%
Minimum clear spacing = 5.04 in

28 #11 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	31.00	3175.90	4918.24	1.549	15.39	61.79	0.00905	0.900

*** End of output ***

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

Sprint Existing Facility

Site ID: CT03XC027

Waterbury

150 Mattatuck Heights
Waterbury, CT 06705

March 20, 2014

EBI Project Number: 62141418

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

EBI Consulting
environmental | engineering | due diligence

March 20, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC027 - Waterbury

Site Total: 81.755% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 150 Mattatuck Heights, Waterbury, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 150 Mattatuck Heights, Waterbury, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTMM-C-120 has a 15.9 dBd gain value at its main lobe at 2500 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.
7) The antenna mounting height centerline for the proposed antennas is **130 feet** above ground level (AGL).
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT03XC027 - Waterbury
Site Addresss	150 Mattatuck Heights, Waterbury, CT 06705
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	5	100	15.9	135	129	1/2 "	0.5	3	1737.8008	3.75428%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	135	129	1/2 "	0.5	3	195.44744	0.74469%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		5.988%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	5	100	15.9	135	129	1/2 "	0.5	3	1737.8008	3.75428%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	135	129	1/2 "	0.5	3	195.44744	0.74469%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		5.988%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	5	100	15.9	135	129	1/2 "	0.5	3	1737.8008	3.75428%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	135	129	1/2 "	0.5	3	195.44744	0.74469%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	135	129	1/2 "	0.5	3	390.89489	1.48937%
														Sector total Power Density Value:		5.988%

Site Composite MPE %	
Carrier	MPE %
Sprint	17.965%
Verizon Wireless	34.020%
MetroPCS	15.010%
T-Mobile	9.720%
Clearwire	1.080%
Nextel	3.960%
Total Site MPE %	**81.755%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **17.965% (5.988% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **81.755%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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Burlington, MA 01803