



Crown Castle  
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[www.crowncastle.com](http://www.crowncastle.com)

March 21, 2014

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

**RE: Sprint PCS-Exempt Modification - Crown Site BU: 881536**  
**Sprint PCS Site ID: CT43XC820**  
**Located at: 120 Universal Drive, North Haven, CT 06473**

Dear Ms. Bachman:

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

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **120 Universal Drive, North Haven, CT 06473**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint’s operations at the site (Exhibit-3).

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint’s additional antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

Melanie A. Bachman

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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

Enclosurea

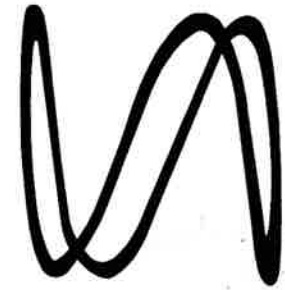
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

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

cc: Mr. Michael J. Freda, First Selectman  
Town of North Haven  
18 Church Street  
North Haven, CT 06473

# Sprint



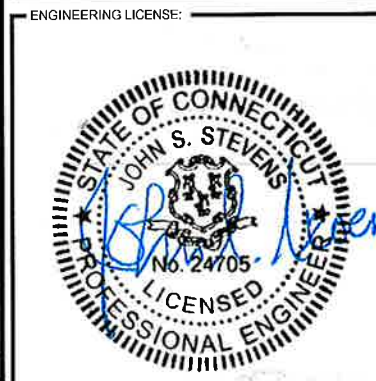
## CROWN CASTLE

PROJECT: 2.5 EQUIPMENT DEPLOYMENT  
 SITE NAME: NORTH HAVEN TOWER  
 SITE CASCADE: CT43XC820  
 SITE NUMBER: 881536  
 SITE ADDRESS: 120 UNIVERSAL DRIVE  
 NORTH HAVEN, CT 06473  
 SITE TYPE: MONOPOLE TOWER  
 MARKET: SOUTHERN CONNECTICUT

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**



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REVISIONS:	DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS		02/21/14	MJB	B
ISSUED FOR REVIEW		01/10/14	JLM	A

SITE NAME:  
**NORTH HAVEN TOWER**

SITE CASCADE:  
**CT43XC820**

SITE ADDRESS:  
 120 UNIVERSAL DRIVE  
 NORTH HAVEN, CT 06473

SHEET DESCRIPTION:  
**TITLE SHEET & PROJECT DATA**

SHEET NUMBER:  
**T-1**

SITE INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																										
<p><b>TOWER OWNER:</b>            CROWN ATLANTIC COMPANY LLC            2000 CORPORATE DRIVE            CANONSBURG, PA 15317            (704) 405-6555</p> <p><b>LATITUDE (NAD83):</b>            41° 20' 40.01" N            41.3444°</p> <p><b>LONGITUDE (NAD83):</b>            72° 52' 14.92" W            72.8708°</p> <p><b>COUNTY:</b>            NEW HAVEN</p> <p><b>ZONING JURISDICTION:</b>            TOWN OF NORTH HAVEN</p> <p><b>ZONING DISTRICT:</b>            TBD</p> <p><b>POWER COMPANY:</b>            CONNECTICUT LIGHT &amp; POWER            (860) 947-2000</p> <p><b>AAV PROVIDER:</b>            VERIZON            (855) 277-5195</p> <p><b>SPRINT CM:</b>            GARY WOOD            GARY.WOOD@SPRINT.COM</p> <p><b>CROWN CASTLE CM:</b>            HARRY ATHAN            (518) 380-0041            HTAMANAGEMENT@NYCAP.RR.COM</p>		<p>SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.</p> <ul style="list-style-type: none"> <li>INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS</li> <li>INSTALL (8) BATTERIES IN EXISTING BBU CABINET</li> <li>INSTALL (3) PANEL ANTENNAS</li> <li>INSTALL (3) RRU'S TO TOWER</li> <li>INSTALL (1) HYBRID CABLE</li> <li>INSTALL (27) JUMPER CABLES</li> </ul> <p>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.</p>	<table border="1"> <thead> <tr> <th>SHEET NO:</th> <th>SHEET TITLE</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td>T-1</td> <td>TITLE SHEET &amp; PROJECT DATA</td> <td>B</td> </tr> <tr> <td>SP-1</td> <td>SPRINT SPECIFICATIONS</td> <td>B</td> </tr> <tr> <td>SP-2</td> <td>SPRINT SPECIFICATIONS</td> <td>B</td> </tr> <tr> <td>SP-3</td> <td>SPRINT SPECIFICATIONS</td> <td>B</td> </tr> <tr> <td>A-1</td> <td>SITE PLAN</td> <td>B</td> </tr> <tr> <td>A-2</td> <td>TOWER ELEVATION &amp; CABLE PLAN</td> <td>B</td> </tr> <tr> <td>A-3</td> <td>ANTENNA LAYOUT &amp; MOUNTING DETAILS</td> <td>B</td> </tr> <tr> <td>A-4</td> <td>COLOR CODING &amp; NOTES</td> <td>B</td> </tr> <tr> <td>A-5</td> <td>EQUIPMENT &amp; MOUNTING DETAILS</td> <td>B</td> </tr> <tr> <td>A-6</td> <td>CIVIL DETAILS</td> <td>B</td> </tr> <tr> <td>A-7</td> <td>PLUMBING DIAGRAM</td> <td>B</td> </tr> <tr> <td>E-1</td> <td>ELECTRICAL &amp; GROUNDING PLAN</td> <td>B</td> </tr> <tr> <td>E-2</td> <td>ELECTRICAL &amp; GROUNDING DETAILS</td> <td>B</td> </tr> </tbody> </table>	SHEET NO:	SHEET TITLE	REV	T-1	TITLE SHEET & PROJECT DATA	B	SP-1	SPRINT SPECIFICATIONS	B	SP-2	SPRINT SPECIFICATIONS	B	SP-3	SPRINT SPECIFICATIONS	B	A-1	SITE PLAN	B	A-2	TOWER ELEVATION & CABLE PLAN	B	A-3	ANTENNA LAYOUT & MOUNTING DETAILS	B	A-4	COLOR CODING & NOTES	B	A-5	EQUIPMENT & MOUNTING DETAILS	B	A-6	CIVIL DETAILS	B	A-7	PLUMBING DIAGRAM	B	E-1	ELECTRICAL & GROUNDING PLAN	B	E-2	ELECTRICAL & GROUNDING DETAILS	B
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		<p><b>APPLICABLE CODES</b></p> <p>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.</p> <ol style="list-style-type: none"> <li>INTERNATIONAL BUILDING CODE (2012 IBC)</li> <li>TIA-EIA-222-F OR LATEST EDITION</li> <li>NFPA 780 - LIGHTNING PROTECTION CODE</li> <li>2011 NATIONAL ELECTRIC CODE OR LATEST EDITION</li> <li>ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS</li> <li>CT BUILDING CODE</li> <li>LOCAL BUILDING CODE</li> <li>CITY/COUNTY ORDINANCES</li> </ol>																																											



**CONTINUE FROM SP-1**

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

**3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:**

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
  1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
  2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
- E. CONDUCT TESTING AS REQUIRED HEREIN.

**3.3 DELIVERABLES:**

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
  1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
  2. PROJECT PROGRESS REPORTS.
  3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
  4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

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

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 SUBMITTALS:
  - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
  - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL
    1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
    2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
    3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
    4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
    5. CHEMICAL GROUNDING DESIGN
  - D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

**1.4 TESTS AND INSPECTIONS:**

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
  2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
  3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
  1. AZIMUTH, DOWNTILT, AGL -- UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
  2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  3. ALL AVAILABLE JURISDICTIONAL INFORMATION
  4. PDF SCAN OF REDLINES PRODUCED IN FIELD

5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).
- 1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs
- 1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

**PART 2 - PRODUCTS (NOT USED)**


**PART 3 - EXECUTION**

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




6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:




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

MLA PARTNER:



ENGINEERING LICENSE:



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ISSUED FOR REVIEW		01/10/14	JLM	A

SITE NAME:

**NORTH HAVEN TOWER**

SITE CASCADE:

**CT43XC820**

SITE ADDRESS:

120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-2**

**CONTINUE FROM SP-2**

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
  8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
  9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
  10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  11. ALL AVAILABLE JURISDICTIONAL INFORMATION
  12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.
- 3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.
- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
  2. STRUCTURAL BACKFILL COMPACTION REPORTS.
  3. SITE RESISTANCE TO EARTH TEST.
  4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
  5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
  6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;
1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
  2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
  3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
  4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
  5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
  6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
  7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
  8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
  9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

- 3.1 WEEKLY REPORTS:
  - A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
  - B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
- 3.2 PROJECT CONFERENCE CALLS:
  - A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
  - A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

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

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

1. SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
  25. ALL BTS GROUND CONNECTIONS.
  26. ALL GROUND TEST WELLS.
  27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
  28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
  29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
  30. GPS ANTENNAS.
  31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
  32. DOGHOUSE/CABLE EXIT FROM ROOF.
  33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
  34. MASTER BUS BAR.
  35. TELCO BOARD AND NIU.
  36. ELECTRICAL DISTRIBUTION WALL.
  37. CABLE ENTRY WITH SURGE SUPPRESSION.
  38. ENTRANCE TO EQUIPMENT ROOM.
  39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
  40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
  41. ANTENNA AND MAST GROUNDING.
  42. LANDSCAPING - WHERE APPLICABLE.
- 3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:



6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:




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

MLA PARTNER:



ENGINEERING LICENSE:



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REVISIONS:	DESCRIPTION	DATE	BY	REV
REVISED PER COMMENTS		02/21/14	MMB	B
ISSUED FOR REVIEW		01/10/14	JJM	A

SITE NAME:

**NORTH HAVEN TOWER**

SITE CASCADE:

**CT43XC820**

SITE ADDRESS:

120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-3**

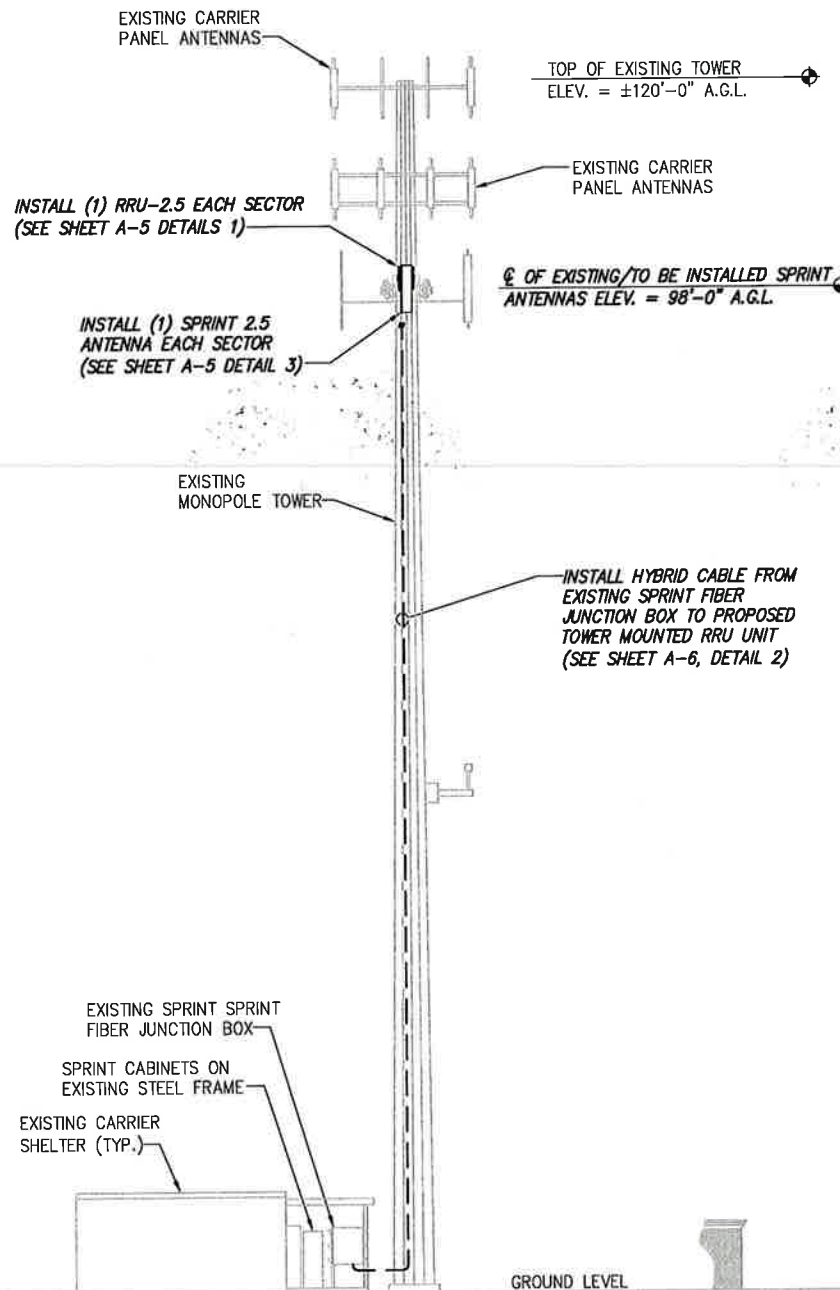


**NOTE:**  
BASED ON THE ANALYSIS PROVIDED BY CROWN CASTLE, DATED 1/03/14. THE TOWER AND ITS FOUNDATION HAVE SUFFICIENT CAPACITY TO CARRY THE EXISTING AND PROPOSED LOADS.

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

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

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



DETAIL NOT USED      NO SCALE      2

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**NORTH HAVEN TOWER**

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**CT43XC820**

SITE ADDRESS:  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:  
**TOWER ELEVATION & CABLE PLAN**

SHEET NUMBER:  
**A-2**

TOWER ELEVATION      NO SCALE      1

DETAIL NOT USED      NO SCALE      3

DETAIL NOT USED      NO SCALE      4



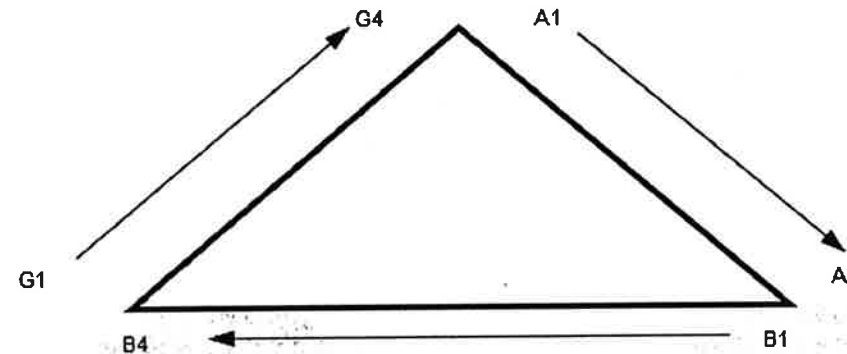


NV CABLES				
BAND	INDICATOR		PORT	COLOR
800-1	YEL	GRN	NV-1	GRN
1900-1	YEL	RED	NV-2	BLU
1900-2	YEL	BRN	NV-3	BRN
1900-3	YEL	BLU	NV-4	WHT
1900-4	YEL	SLT	NV-5	RED
800-2	YEL	ORG	NV-6	SLT
SPARE	YEL	WHT	NV-7	PPL
2500	YEL	PPL	NV-8	ORG

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

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

Figure 1: Antenna Orientation



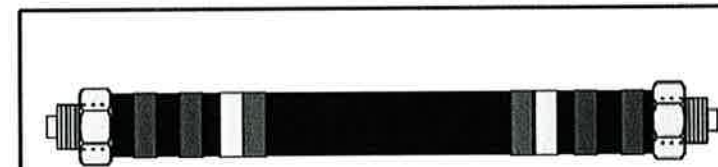
NOTES:

- ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.
- A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
- SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.
- HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
- HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
- INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

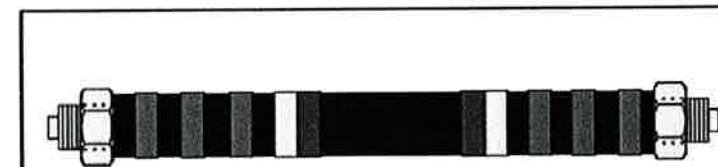
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	No Tape	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	No Tape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

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SITE CASCADE:

**CT43XC820**

SITE ADDRESS:

120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:

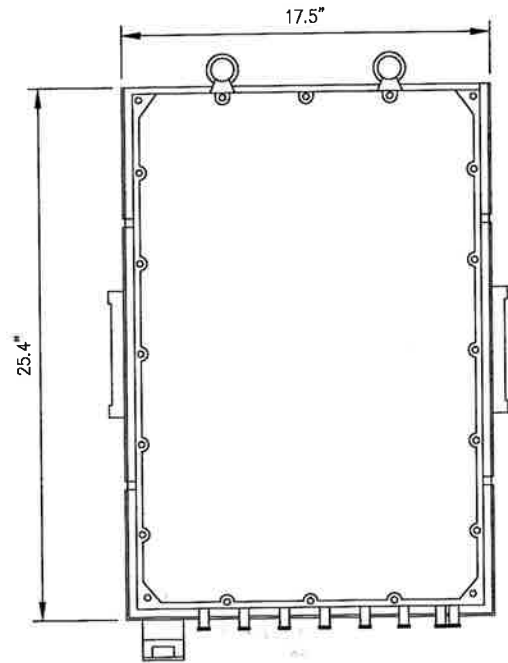
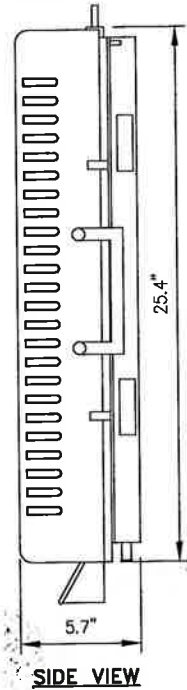
**COLOR CODING AND NOTES**

SHEET NUMBER:

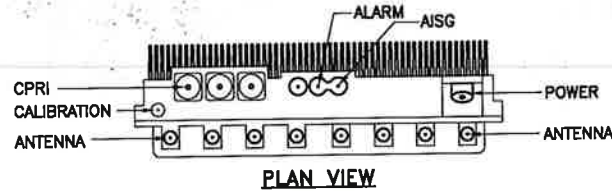
**A-4**

RRU: ALCATEL LUCENT TD-RRH8X20

COLOR: LIGHT GREY  
WEIGHT: 70 LBS.



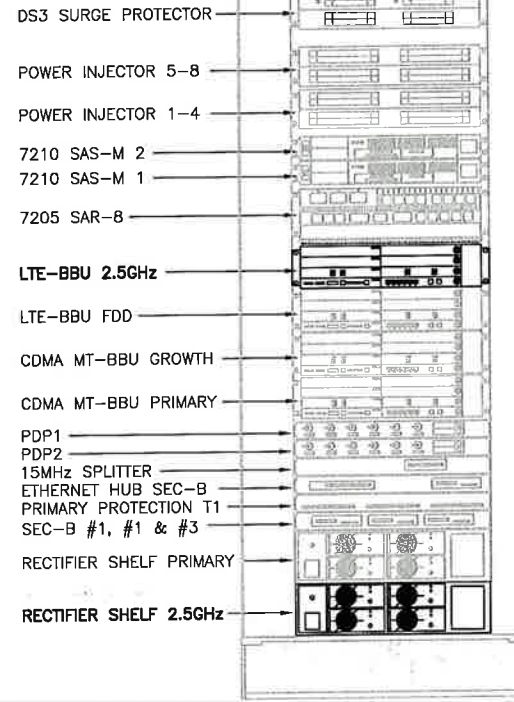
FRONT VIEW



PLAN VIEW

**NOTES**

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



FRONT VIEW

2.5 RRU'S

NO SCALE

1

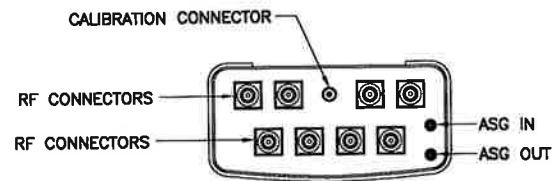
2.5 EQUIPMENT IN EXISTING CABINET

NO SCALE

2

**ANTENNA RFS APXVTM14-C-I20**

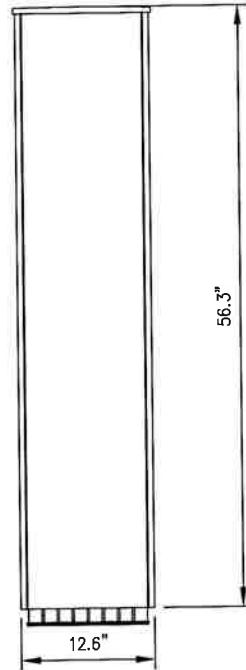
RADOME MATERIAL: ASA  
 RADOME COLOR: LIGHT GREY  
 DIMENSIONS, HxWxD.in.(mim): 56.3"x12.6"x6.3" (1430x320x160mm)  
 WEIGHT: 52.9 lbs  
 CONNECTORS: (8) 4.1/9.5 DIN FEMALE  
 (1) NF - CALIBRATION CONNECTOR



PLAN VIEW



SIDE VIEW



FRONT VIEW

2.5 ANTENNA

NO SCALE

3

DETAIL NOT USED

NO SCALE

4

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



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SITE NAME:

NORTH HAVEN TOWER

SITE CASCADE:

CT43XC820

SITE ADDRESS:

120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5



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DESCRIPTION	DATE	BY	REV

**NORTH HAVEN TOWER**

**CT43XC820**

**120 UNIVERSAL DRIVE  
 NORTH HAVEN, CT 06473**

**CIVIL DETAILS**

**A-6**

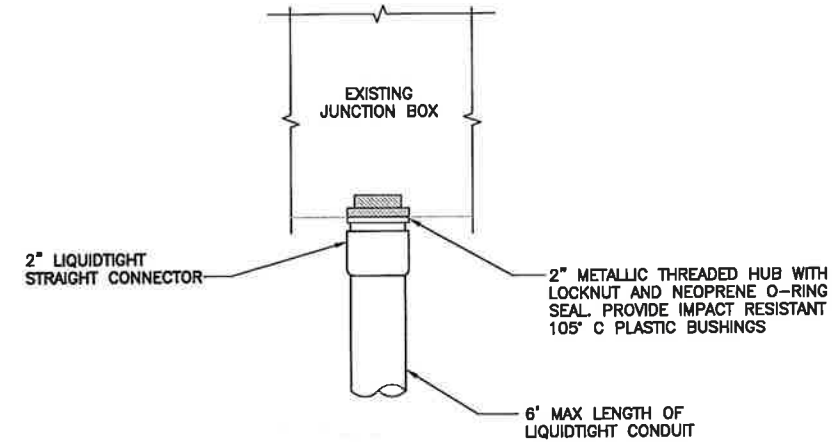
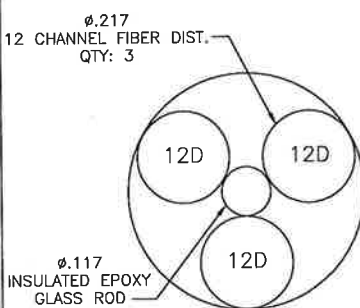
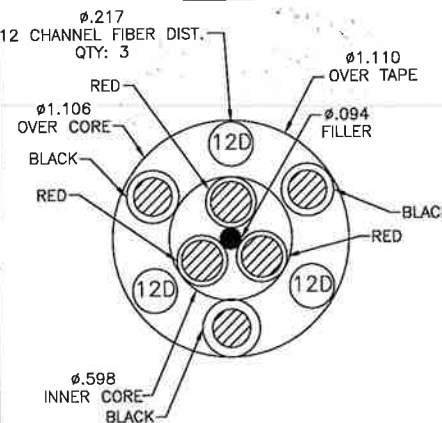
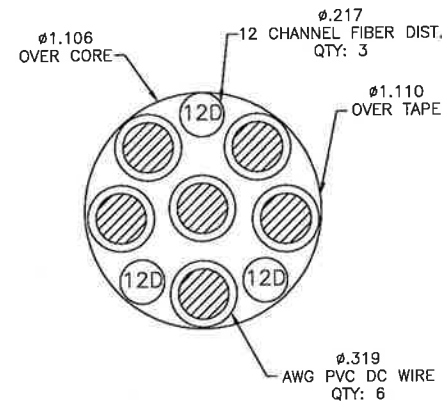
**RFS HYBRIFLEX RISER CABLE SCHEDULE**

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 MN: HB058-M12-200F	175 ft 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 MN: HB114-08U3M12-200F	175 ft 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.





PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:				
DESCRIPTION	DATE	BY	REV	

REVISED PER COMMENTS	02/21/14	MJB	B	
ISSUED FOR REVIEW	01/10/14	JJM	A	

SITE NAME:  
**NORTH HAVEN TOWER**

SITE CASCADE:  
**CT43XC820**

SITE ADDRESS:  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET DESCRIPTION:  
**ELECTRICAL & GROUNDING PLAN**

SHEET NUMBER:  
**E-1**

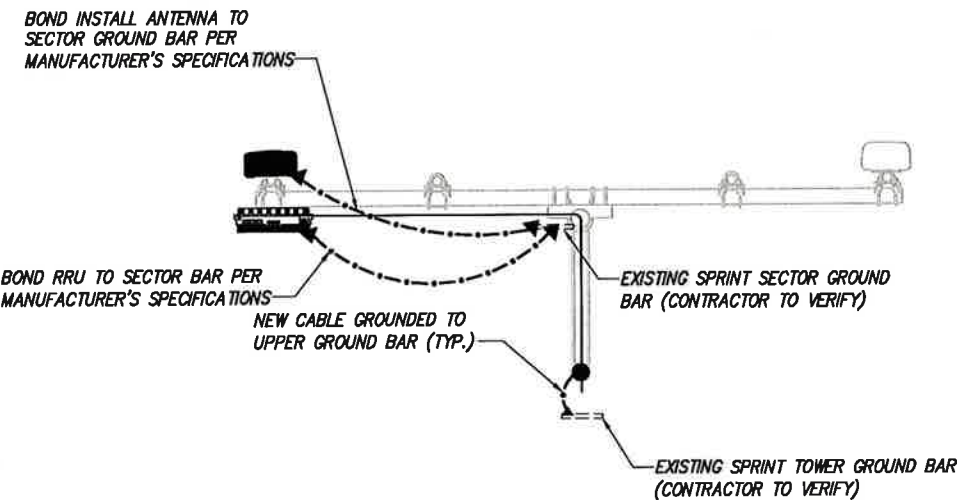
PLAN NOT USED

NO SCALE

1

**LEGEND:**

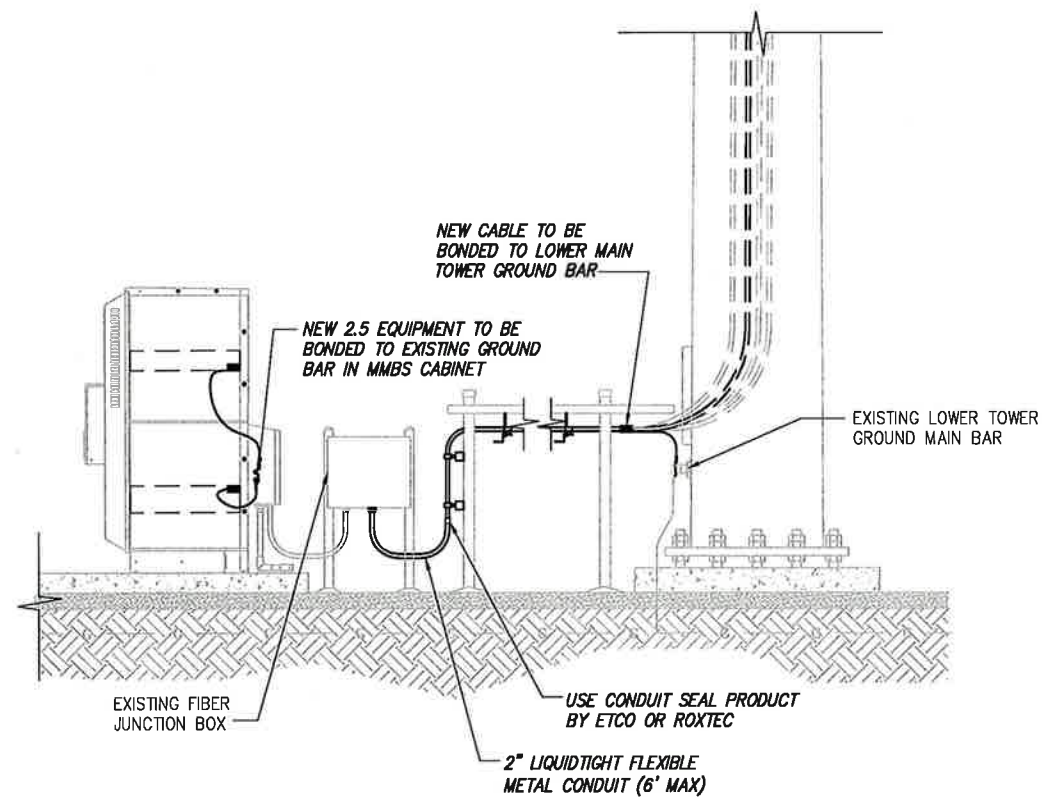
- G — EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2

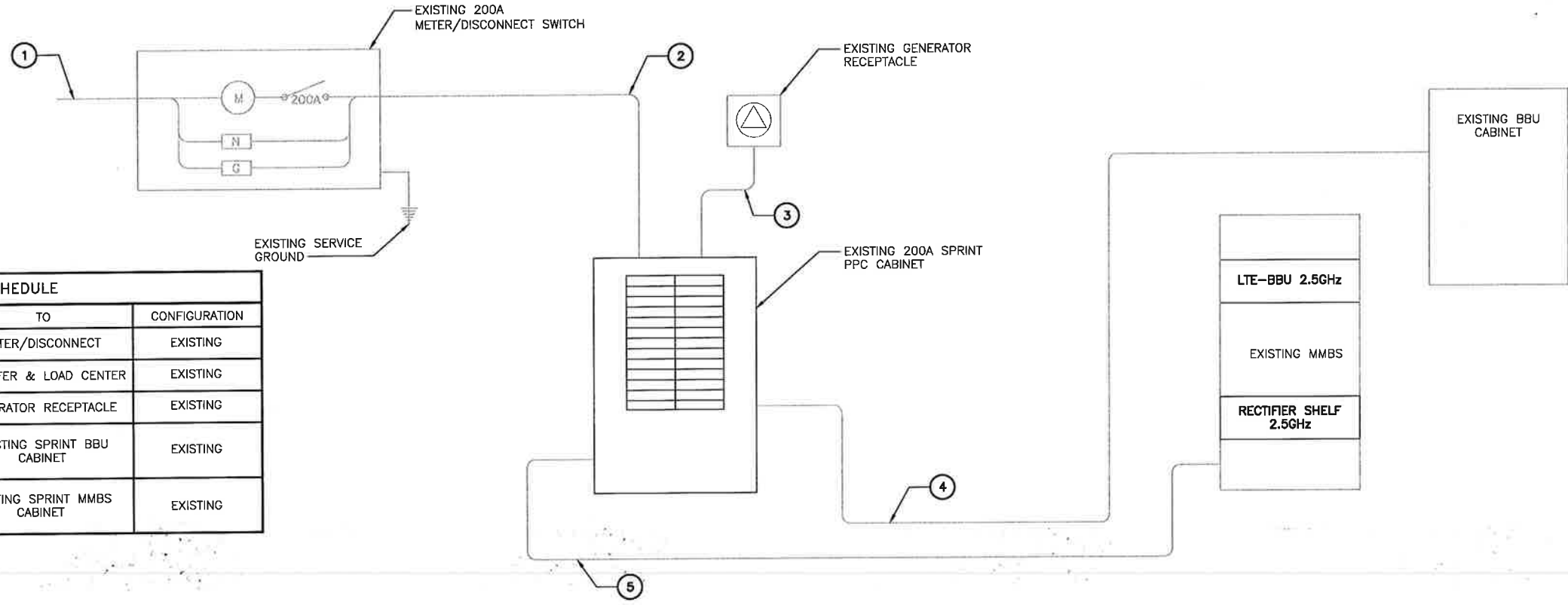


TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE

3

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



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

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

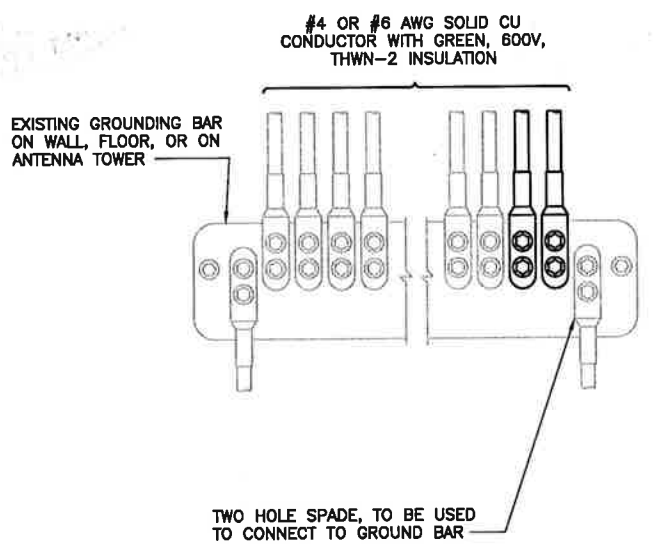
PLANS PREPARED BY:  
**INFINIGY** Design. Build. Deliver.  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 690-0790  
 Fax # (518) 690-0793  
 JOB NUMBER 353-000

MLA PARTNER:  
**CROWN CASTLE**

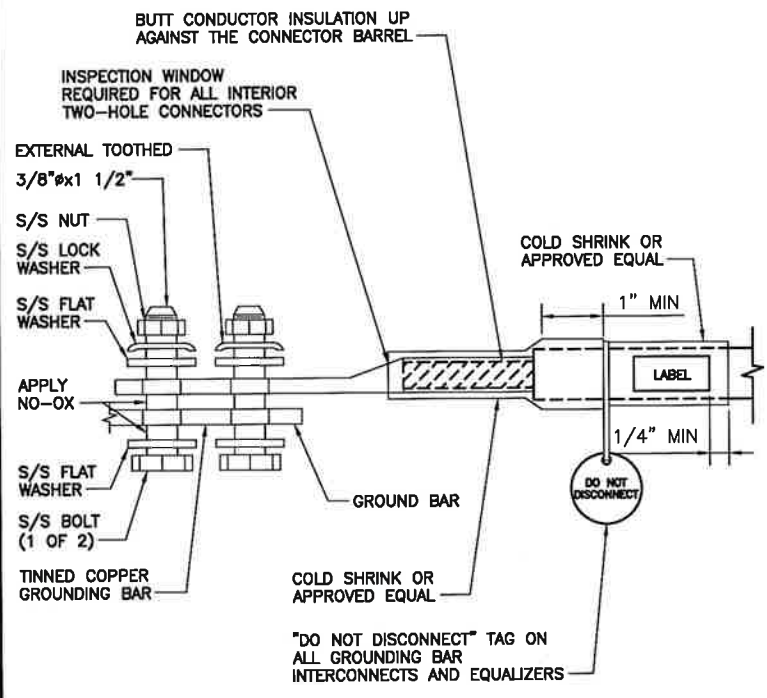
ENGINEERING LICENSE:

**ELECTRICAL ONE-LINE DIAGRAM**

NO SCALE 1



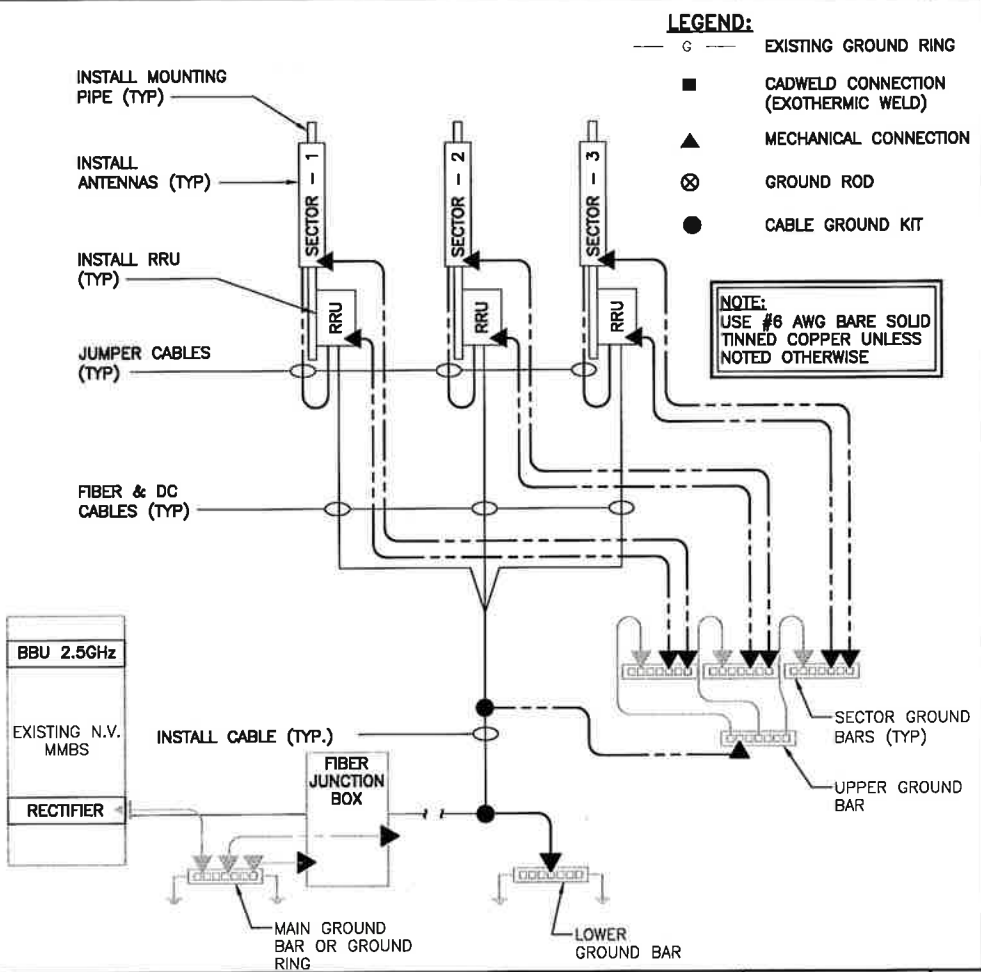
**NOTES**  
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.  
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.



"DO NOT DISCONNECT" TAG ON ALL GROUNDING BAR INTERCONNECTS AND EQUALIZERS

**TWO HOLE LUG**

NO SCALE 3



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

**NOTE:**  
 USE #6 AWG BARE SOLID TINNED COPPER UNLESS NOTED OTHERWISE

**GROUNDING RISER DIAGRAM**

NO SCALE 4

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**REVISIONS:**

DESCRIPTION	DATE	BY	REV

REVISED PER COMMENTS 02/21/14 MJB B  
 ISSUED FOR REVIEW 01/10/14 JLM A

**SITE NAME:**  
 NORTH HAVEN TOWER

**SITE CASCADE:**  
 CT43XC820

**SITE ADDRESS:**  
 120 UNIVERSAL DRIVE  
 NORTH HAVEN, CT 06473

**SHEET DESCRIPTION:**  
 ELECTRICAL & GROUNDING DETAILS

**SHEET NUMBER:**  
 E-2

**INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**

NO SCALE 2

Date: January 03, 2014

Amber Puckett  
Crown Castle  
5350 North 48th Street, Suite 305  
Chandler, AZ 85226



Crown Castle  
2000 Corporate Drive  
Canonsburg, PA 15317  
(724) 416-2000

**Subject: Structural Analysis Report**

<b>Carrier Designation:</b>	<b>Sprint PCS Co-Locate</b>	Scenario 2.5B
	<b>Carrier Site Number:</b>	CT43XC820
	<b>Carrier Site Name:</b>	NEW HAVEN-CANDID
<b>Crown Castle Designation:</b>	<b>Crown Castle BU Number:</b>	881536
	<b>Crown Castle Site Name:</b>	NORTH HAVEN TOWER
	<b>Crown Castle JDE Job Number:</b>	252028
	<b>Crown Castle Work Order Number:</b>	693026
	<b>Crown Castle Application Number:</b>	205888 Rev. 1
<b>Engineering Firm Designation:</b>	<b>Crown Castle Project Number:</b>	693026
<b>Site Data:</b>	<b>120 Universal Drive, North Haven, New Haven County, CT</b> <b>Latitude 41° 20' 40.01", Longitude -72° 52' 14.92"</b> <b>120 Foot - Monopole Tower</b>	

Dear Amber Puckett,

Crown Castle 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 693026, in accordance with application 205888, 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:

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

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

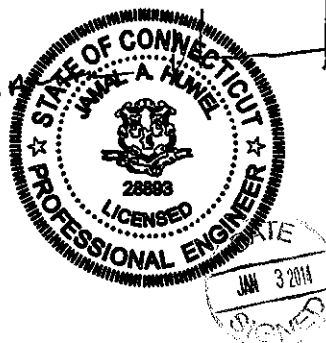
All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: David Chippi, E.I.T. / TS

Respectfully submitted by:

Jamal A. Huwel, P.E.  
Manager Engineering





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### 7) APPENDIX C

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## 1) INTRODUCTION

This tower is a 120ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in February of 2001. 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 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
97.0	98.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118.0	120.0	3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	1 2 12	3/8 3/4 1-5/8	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP2140X			
	118.0	1	tower mounts	Platform Mount [LP 712-1]			
116.0	117.0	6	ericsson	RRUS 11	-	-	1
		1	raycap	DC6-48-60-18-8F			
	116.0	1	tower mounts	Side Arm Mount [SO 102-3]			
108.0	110.0	9	decibel	844G65VTZASX w/ Mount Pipe	12	1-1/4	1
		3	kmw communications	AM-X-WM-17-65-00T w/ Mount Pipe	6	1-5/8	2
		3	kmw communications	KMDAPS2050000			
	108.0	1	tower mounts	Platform Mount [LP 303-1]	-	-	1
100.0	100.0	3	alcatel lucent	1900MHz RRH (65MHz) w/Mount pipe	-	-	1
		3	alcatel lucent	TME-800MHZ RRH			
		1	tower mounts	Side Arm Mount [SO 102-3]			
97.0	98.0	2	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe	3	1/2	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	97.0	1	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		9	rfs celwave	ACU-A20-N			
		1	tower mounts	Platform Mount [LP 601-1]			
83.0	84.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
	83.0	1	tower mounts	Platform Mount [LP 303-1]	12	1-5/8	1
51.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118	118	1	-	12' Low Profile Platform	-	-
		12	allgon	7120.16 Panel Antenna		

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C.	1405753	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineering Endeavors Inc.	1405795	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineering Endeavors Inc.	1405788	CCISITES

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.

- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 84.7161	Pole	TP32.5458x24.09x0.375	1	-10.09	1922.92	25.5	Pass
L2	84.7161 - 41.6224	Pole	TP42.0347x30.7011x0.4375	2	-21.55	2904.13	49.1	Pass
L3	41.6224 - 0	Pole	TP51x39.7912x0.5	3	-36.49	4166.42	54.9	Pass
							Summary	
						Pole (L3)	54.9	Pass
						Rating =	54.9	Pass

**Table 6 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	37.6	Pass
1	Base Plate	0	45.6	Pass
1	Base Foundation	0	48.8	Pass

<b>Structure Rating (max from all components) =</b>	<b>54.9%</b>
---	--------------

Notes:

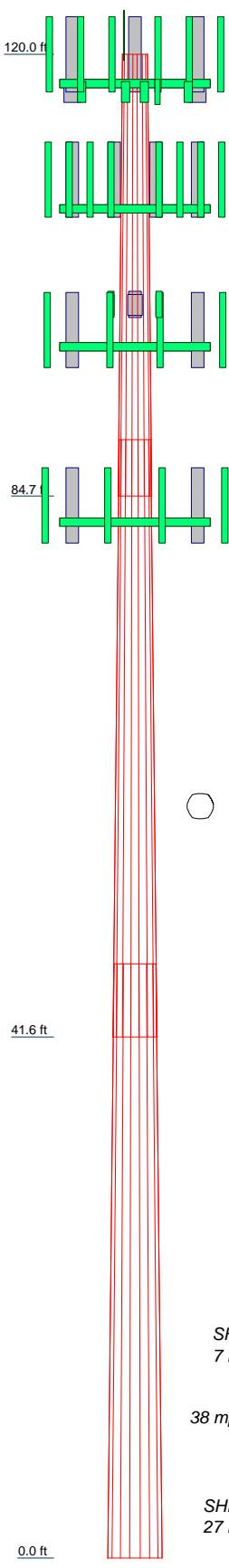
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	1	2	3
Length (ft)	35'3-3/8"	477'-29/32"	474'-9/16"
Number of Sides	18	18	18
Thickness (in)	0.3750	0.4375	0.5000
Socket Length (ft)	4'6-27/32"	59'-1/8"	39'-79/12"
Top Dia (in)	24.0900	30.7011	39.7912
Bot Dia (in)	32.5458	42.0347	51.0000
Grade		A572-65	
Weight (K)	4.0	8.1	11.5



### DESIGNED APPURTENANCE LOADING

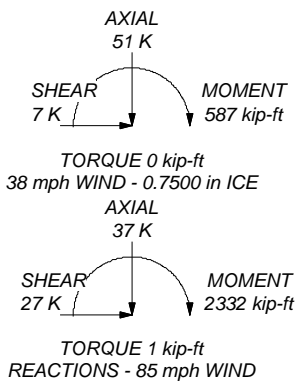
TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 3/4" x 3'	120	Side Arm Mount [SO 102-3]	100
(2) 7770.00 w/ Mount Pipe	118	P40-16-XLPP-RR-A w/ Mount Pipe	97
(2) 7770.00 w/ Mount Pipe	118	APXVSP18-C-A20 w/ Mount Pipe	97
(2) 7770.00 w/ Mount Pipe	118	P40-16-XLPP-RR-A w/ Mount Pipe	97
AM-X-CD-16-65-00T-RET w/ Mount Pipe	118	(3) ACU-A20-N	97
AM-X-CD-16-65-00T-RET w/ Mount Pipe	118	(3) ACU-A20-N	97
AM-X-CD-16-65-00T-RET w/ Mount Pipe	118	(3) ACU-A20-N	97
(4) LGP2140X	118	800 EXTERNAL NOTCH FILTER	97
(4) LGP2140X	118	800 EXTERNAL NOTCH FILTER	97
(4) LGP2140X	118	800 EXTERNAL NOTCH FILTER	97
8'x2" Antenna Mount Pipe	118	Platform Mount [LP 601-1]	97
8'x2" Antenna Mount Pipe	118	APXVTM14-C-120 w/ Mount Pipe	97
8'x2" Antenna Mount Pipe	118	APXVTM14-C-120 w/ Mount Pipe	97
Platform Mount [LP 712-1]	118	APXVTM14-C-120 w/ Mount Pipe	97
(2) RRUS 11	116	TD-RRH8x20-25	97
(2) RRUS 11	116	TD-RRH8x20-25	97
(2) RRUS 11	116	TD-RRH8x20-25	97
DC6-48-60-18-8F	116	(2) 8'x2" Antenna Mount Pipe	83
Side Arm Mount [SO 102-3]	116	(2) 8'x2" Antenna Mount Pipe	83
(3) 844G65VTZASX w/ Mount Pipe	108	(2) 8'x2" Antenna Mount Pipe	83
(3) 844G65VTZASX w/ Mount Pipe	108	Platform Mount [LP 303-1]	83
(3) 844G65VTZASX w/ Mount Pipe	108	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	83
Platform Mount [LP 303-1]	108	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	83
AM-X-WM-17-65-00T w/ Mount Pipe	108	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	83
AM-X-WM-17-65-00T w/ Mount Pipe	108	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	83
AM-X-WM-17-65-00T w/ Mount Pipe	108	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	83
KMDAPS2050000	108	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	83
KMDAPS2050000	108	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	83
KMDAPS2050000	108	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	83
TME-800MHZ RRH	100	ATMAA1412D-1A20	83
TME-800MHZ RRH	100	ATMAA1412D-1A20	83
TME-800MHZ RRH	100	ATMAA1412D-1A20	83
1900MHz RRH (65MHz) w/Mount pipe	100	KS24019-L112A	51
1900MHz RRH (65MHz) w/Mount pipe	100	Side Arm Mount [SO 701-1]	51
1900MHz RRH (65MHz) w/Mount pipe	100		

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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: 54.9%



<p><b>Crown Castle</b> 2000 Corporate Drive Canonsburg, PA 15317 We Are Solutions Phone: (724) 416-2000 FAX: (724) 416-2254</p>	Job: <b>BU# 881536</b>		
	Project: <b>WO# 693026</b>		
	Client: Crown Castle	Drawn by: David Chippi	App'd:
	Code: TIA/EIA-222-F	Date: 01/02/14	Scale: NTS
	Path: R:\SA Models - Letters\Work Area\DChippi\881536\881536.eri	Dwg No. E-1	

## Tower Input Data

There is a pole section.

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

The following design criteria apply:

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

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

## Tapered Pole Section Geometry

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
L1	120'-84'-5/8"	35'-3-3/8"	4'-6-27/32"	18	24.0900	32.5458	0.3750	1.5000	A572-65 (65 ksi)
L2	84'-8-5/8"-41'-7-7/16"	47'-7-29/32"	5'-9-1/8"	18	30.7011	42.0347	0.4375	1.7500	A572-65 (65 ksi)
L3	41'-7-7/16"-0'	47'-4-9/16"		18	39.7912	51.0000	0.5000	2.0000	A572-65 (65 ksi)

## Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	24.4616 33.0479	28.2268 38.2913	2005.6033 5006.8113	8.4188 11.4206	12.2377 16.5333	163.8870 302.8326	4013.8455 10020.210	14.1161 19.1493	3.5798 5.0681	9.546 13.515

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L2	32.2777	42.0249	4862.7972	10.7436	15.5962	311.7941	9731.9929	21.0164	4.6334	10.591
	42.6832	57.7629	12627.422	14.7670	21.3536	591.3479	25271.461	28.8869	6.6281	15.15
L3	41.7876	62.3551	12161.823	13.9484	20.2139	601.6563	24339.649	31.1835	6.1232	12.246
	51.7868	80.1435	25821.918	17.9275	25.9080	996.6774	51677.814	40.0794	8.0960	16.192

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 120'-84'8-5/8"				1	1	1		
L2 84'8-5/8"-41'7-7/16"				1	1	1		
L3 41'7-7/16"-0'				1	1	1		

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
FB-L98B-002-75000(3/8")	C	No	Inside Pole	118' - 0'	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	118' - 0'	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
LDF7-50A(1-5/8")	C	No	Inside Pole	118' - 0'	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
2" Rigid Conduit	C	No	Inside Pole	118' - 0'	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
*** LDF6-50A(1-1/4")	B	No	Inside Pole	108' - 0'	12	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
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	108' - 0'	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	108' - 0'	4	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
*** HYBRIFLEX RRH 1-SECTOR(1/2")	A	No	CaAa (Out Of Face)	97' - 0'	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.83
						1" Ice	0.00	2.13



Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub>		Weight
						ft <sup>2</sup> /ft	plf	
HB114-13U3M12-XXXF(1-1/4")	A	No	CaAa (Out Of Face)	97' - 0'	1	2" Ice	0.00	6.55
						4" Ice	0.00	22.73
						No Ice	0.15	0.99
						1/2" Ice	0.25	2.24
						1" Ice	0.35	4.10
						2" Ice	0.55	9.64
4" Ice	0.95	28.07						
***								
HCC 158-50J(1-5/8")	A	No	Inside Pole	83' - 0'	12	No Ice	0.00	0.86
						1/2" Ice	0.00	0.86
						1" Ice	0.00	0.86
						2" Ice	0.00	0.86
						4" Ice	0.00	0.86
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	A	No	Inside Pole	83' - 0'	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
						2" Ice	0.00	1.07
						4" Ice	0.00	1.07
***								
LDF4-50A(1/2")	A	No	Inside Pole	51' - 0'	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
***								
Climbing Ladder ( Flat)	C	No	CaAa (Out Of Face)	108' - 100'	1	No Ice	0.58	4.81
						1/2" Ice	1.03	7.12
						1" Ice	1.48	10.35
						2" Ice	2.37	19.55
						4" Ice	4.15	48.96
Climbing Ladder ( Flat)	C	No	CaAa (Out Of Face)	118' - 110'	1	No Ice	0.58	4.81
						1/2" Ice	1.03	7.12
						1" Ice	1.48	10.35
						2" Ice	2.37	19.55
						4" Ice	4.15	48.96

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	120'-84'8-5/8"	A	0.000	0.000	0.000	1.892	0.02
		B	0.000	0.000	0.000	9.220	0.30
		C	0.000	0.000	0.000	9.350	0.54
L2	84'8-5/8"-41'7-7/16"	A	0.000	0.000	0.000	6.636	0.53
		B	0.000	0.000	0.000	17.065	0.55
		C	0.000	0.000	0.000	0.000	0.60
L3	41'7-7/16"-0'	A	0.000	0.000	0.000	6.410	0.54
		B	0.000	0.000	0.000	16.482	0.53
		C	0.000	0.000	0.000	0.000	0.58

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	120'-84'8-5/8"	A	0.858	0.000	0.000	0.000	4.001	0.11
		B		0.000	0.000	0.000	17.216	0.72
		C		0.000	0.000	0.000	21.596	0.61
L2	84'8-5/8"-41'7-7/16"	A	0.810	0.000	0.000	0.000	14.035	0.85
		B		0.000	0.000	0.000	31.863	1.34
		C		0.000	0.000	0.000	0.000	0.60
L3	41'7-7/16"-0'	A	0.750	0.000	0.000	0.000	13.153	0.83

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
		B		0.000	0.000	0.000	29.969	1.24
		C		0.000	0.000	0.000	0.000	0.58

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	120'-84'8"-5/8"	0.0255	0.2451	-0.0536	0.4008
L2	84'8"-5/8"-41'7-7/16"	0.4364	0.0560	0.6896	0.0474
L3	41'7-7/16"-0'	0.4500	0.0577	0.7167	0.0506

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
Lighting Rod 3/4" x 3'	C	From Leg	0.00 0' 1'6"	0.0000	120'	No Ice	0.23	0.23	0.03
						1/2" Ice	0.50	0.50	0.03
						1" Ice	0.69	0.69	0.04
						2" Ice	1.10	1.10	0.05
						4" Ice	2.14	2.14	0.12
*** (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	118'	No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	118'	No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	118'	No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	118'	No Ice	8.50	6.30	0.07
						1/2" Ice	9.15	7.48	0.14
						1" Ice	9.77	8.37	0.21
						2" Ice	11.03	10.18	0.38
						4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	118'	No Ice	8.50	6.30	0.07
						1/2" Ice	9.15	7.48	0.14
						1" Ice	9.77	8.37	0.21
						2" Ice	11.03	10.18	0.38
						4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	118'	No Ice	8.50	6.30	0.07
						1/2" Ice	9.15	7.48	0.14

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
			Vert		°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
			ft						
			ft						
			2'						
						Ice	9.77	8.37	0.21
						1" Ice	11.03	10.18	0.38
						2" Ice	13.68	14.02	0.87
						4" Ice			
(4) LGP2140X	A	From Leg	4.00	0.0000	118'	No Ice	1.26	0.38	0.02
			0'			1/2"	1.42	0.49	0.03
			2'			Ice	1.58	0.62	0.04
						1" Ice	1.94	0.89	0.06
						2" Ice	2.75	1.54	0.14
						4" Ice			
(4) LGP2140X	B	From Leg	4.00	0.0000	118'	No Ice	1.26	0.38	0.02
			0'			1/2"	1.42	0.49	0.03
			2'			Ice	1.58	0.62	0.04
						1" Ice	1.94	0.89	0.06
						2" Ice	2.75	1.54	0.14
						4" Ice			
(4) LGP2140X	C	From Leg	4.00	0.0000	118'	No Ice	1.26	0.38	0.02
			0'			1/2"	1.42	0.49	0.03
			2'			Ice	1.58	0.62	0.04
						1" Ice	1.94	0.89	0.06
						2" Ice	2.75	1.54	0.14
						4" Ice			
8'x2" Antenna Mount Pipe	A	From Leg	4.00	0.0000	118'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
8'x2" Antenna Mount Pipe	B	From Leg	4.00	0.0000	118'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
8'x2" Antenna Mount Pipe	C	From Leg	4.00	0.0000	118'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	118'	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			
***									
(2) RRUS 11	A	From Leg	1.00	0.0000	116'	No Ice	3.25	1.37	0.05
			0'			1/2"	3.49	1.55	0.07
			1'			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS 11	B	From Leg	1.00	0.0000	116'	No Ice	3.25	1.37	0.05
			0'			1/2"	3.49	1.55	0.07
			1'			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS 11	C	From Leg	1.00	0.0000	116'	No Ice	3.25	1.37	0.05
			0'			1/2"	3.49	1.55	0.07
			1'			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
DC6-48-60-18-8F	B	From Leg	1.00 0' 1'	0.0000	116'	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
Side Arm Mount [SO 102-3]	C	None		0.0000	116'	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
						4" Ice	6.84	6.84	0.32
*** (3) 844G65VTZASX w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	108'	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.09
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
(3) 844G65VTZASX w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	108'	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.09
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
(3) 844G65VTZASX w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	108'	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.09
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
Platform Mount [LP 303-1]	C	None		0.0000	108'	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
AM-X-WM-17-65-00T w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	108'	No Ice	3.31	2.73	0.03
						1/2" Ice	3.71	3.33	0.06
						1" Ice	4.14	3.94	0.10
						2" Ice	5.03	5.21	0.19
						4" Ice	6.94	8.03	0.47
AM-X-WM-17-65-00T w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	108'	No Ice	3.31	2.73	0.03
						1/2" Ice	3.71	3.33	0.06
						1" Ice	4.14	3.94	0.10
						2" Ice	5.03	5.21	0.19
						4" Ice	6.94	8.03	0.47
AM-X-WM-17-65-00T w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	108'	No Ice	3.31	2.73	0.03
						1/2" Ice	3.71	3.33	0.06
						1" Ice	4.14	3.94	0.10
						2" Ice	5.03	5.21	0.19
						4" Ice	6.94	8.03	0.47
KMDAPS2050000	A	From Leg	4.00 0' 2'	0.0000	108'	No Ice	0.85	0.38	0.02
						1/2" Ice	0.98	0.48	0.02
						1" Ice	1.11	0.60	0.03
						2" Ice	1.41	0.84	0.05
						4" Ice	2.12	1.45	0.12
KMDAPS2050000	B	From Leg	4.00 0' 2'	0.0000	108'	No Ice	0.85	0.38	0.02
						1/2" Ice	0.98	0.48	0.02
						1" Ice	1.11	0.60	0.03
						2" Ice	1.41	0.84	0.05
						4" Ice	2.12	1.45	0.12

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
KMDAPS2050000	C	From Leg	4.00	0'	0.0000	108'	2" Ice	2.12	1.45	0.12
							4" Ice			
							No Ice	0.85	0.38	0.02
							1/2" Ice	0.98	0.48	0.02
							1" Ice	1.11	0.60	0.03
							2" Ice	1.41	0.84	0.05
***	A	From Leg	1.00	0'	0.0000	100'	2" Ice	2.12	1.45	0.12
							4" Ice			
							No Ice	2.49	2.07	0.05
							1/2" Ice	2.71	2.27	0.07
							1" Ice	2.93	2.48	0.10
							2" Ice	3.41	2.93	0.16
TME-800MHZ RRH	B	From Leg	1.00	0'	0.0000	100'	4" Ice	4.46	3.93	0.32
							No Ice	2.49	2.07	0.05
							1/2" Ice	2.71	2.27	0.07
							1" Ice	2.93	2.48	0.10
							2" Ice	3.41	2.93	0.16
							4" Ice	4.46	3.93	0.32
TME-800MHZ RRH	C	From Leg	1.00	0'	0.0000	100'	No Ice	2.49	2.07	0.05
							1/2" Ice	2.71	2.27	0.07
							1" Ice	2.93	2.48	0.10
							2" Ice	3.41	2.93	0.16
							4" Ice	4.46	3.93	0.32
							No Ice	2.49	2.07	0.05
1900MHz RRH (65MHz) w/Mount pipe	A	From Leg	1.00	0'	0.0000	100'	No Ice	2.70	2.93	0.06
							1/2" Ice	2.94	3.25	0.09
							1" Ice	3.18	3.60	0.12
							2" Ice	3.70	4.35	0.20
							4" Ice	4.85	6.09	0.41
							No Ice	2.70	2.93	0.06
1900MHz RRH (65MHz) w/Mount pipe	B	From Leg	1.00	0'	0.0000	100'	1/2" Ice	2.94	3.25	0.09
							1" Ice	3.18	3.60	0.12
							2" Ice	3.70	4.35	0.20
							4" Ice	4.85	6.09	0.41
							No Ice	2.70	2.93	0.06
							1/2" Ice	2.94	3.25	0.09
1900MHz RRH (65MHz) w/Mount pipe	C	From Leg	1.00	0'	0.0000	100'	Ice	3.18	3.60	0.12
							1" Ice	3.70	4.35	0.20
							2" Ice	4.85	6.09	0.41
							4" Ice	4.85	6.09	0.41
							No Ice	2.70	2.93	0.06
							1/2" Ice	2.94	3.25	0.09
Side Arm Mount [SO 102-3]	C	None			0.0000	100'	Ice	3.18	3.60	0.12
							1" Ice	3.70	4.35	0.20
							2" Ice	4.85	6.09	0.41
							4" Ice	4.85	6.09	0.41
							No Ice	3.00	3.00	0.08
							1/2" Ice	3.48	3.48	0.11
***	A	From Leg	4.00	0'	0.0000	97'	Ice	3.96	3.96	0.14
							1" Ice	4.92	4.92	0.20
							2" Ice	6.84	6.84	0.32
							4" Ice	6.84	6.84	0.32
							No Ice	10.74	4.83	0.07
							1/2" Ice	11.29	5.57	0.14
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	97'	Ice	11.85	6.27	0.22
							1" Ice	12.99	7.80	0.39
							2" Ice	15.39	11.11	0.86
							4" Ice	15.39	11.11	0.86
							No Ice	8.50	6.95	0.08
							1/2" Ice	9.15	8.13	0.15
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	97'	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	13.68	14.85	0.91
							No Ice	10.74	4.83	0.07
							1/2" Ice	11.29	5.57	0.14
P40-16-XLPP-RR-A w/	C	From Leg	4.00	0'	0.0000	97'	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	13.68	14.85	0.91
							No Ice	10.74	4.83	0.07
							1/2" Ice	11.29	5.57	0.14

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
Mount Pipe				0'		1/2"	11.29	5.57	0.14
				1'		Ice	11.85	6.27	0.22
						1" Ice	12.99	7.80	0.39
						2" Ice	15.39	11.11	0.86
						4" Ice			
(3) ACU-A20-N	A	From Leg	4.00	0.0000	97'	No Ice	0.08	0.14	0.00
						1/2"	0.12	0.19	0.00
						Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						2" Ice	0.67	0.80	0.04
(3) ACU-A20-N	B	From Leg	4.00	0.0000	97'	No Ice	0.08	0.14	0.00
						1/2"	0.12	0.19	0.00
						Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						2" Ice	0.67	0.80	0.04
(3) ACU-A20-N	C	From Leg	4.00	0.0000	97'	No Ice	0.08	0.14	0.00
						1/2"	0.12	0.19	0.00
						Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						2" Ice	0.67	0.80	0.04
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	97'	No Ice	0.77	0.37	0.01
						1/2"	0.89	0.46	0.02
						Ice	1.02	0.56	0.02
						1" Ice	1.30	0.79	0.04
						2" Ice	1.97	1.34	0.11
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	97'	No Ice	0.77	0.37	0.01
						1/2"	0.89	0.46	0.02
						Ice	1.02	0.56	0.02
						1" Ice	1.30	0.79	0.04
						2" Ice	1.97	1.34	0.11
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	97'	No Ice	0.77	0.37	0.01
						1/2"	0.89	0.46	0.02
						Ice	1.02	0.56	0.02
						1" Ice	1.30	0.79	0.04
						2" Ice	1.97	1.34	0.11
Platform Mount [LP 601-1]	C	None		0.0000	97'	No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice	48.95	48.95	2.69
						2" Ice	69.43	69.43	4.26
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	97'	No Ice	7.13	4.96	0.07
						1/2"	7.66	5.75	0.13
						Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	97'	No Ice	7.13	4.96	0.07
						1/2"	7.66	5.75	0.13
						Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	97'	No Ice	7.13	4.96	0.07
						1/2"	7.66	5.75	0.13
						Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
TD-RRH8x20-25	A	From Leg	4.00	0.0000	97'	No Ice	4.72	1.70	0.07
			0'			1/2"	5.01	1.92	0.10
			1'			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
TD-RRH8x20-25	B	From Leg	4.00	0.0000	97'	No Ice	4.72	1.70	0.07
			0'			1/2"	5.01	1.92	0.10
			1'			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
TD-RRH8x20-25	C	From Leg	4.00	0.0000	97'	No Ice	4.72	1.70	0.07
			0'			1/2"	5.01	1.92	0.10
			1'			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
*** (2) 8'x2" Antenna Mount Pipe	A	From Leg	4.00	0.0000	83'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
(2) 8'x2" Antenna Mount Pipe	B	From Leg	4.00	0.0000	83'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
(2) 8'x2" Antenna Mount Pipe	C	From Leg	4.00	0.0000	83'	No Ice	1.90	1.90	0.03
			0'			1/2"	2.73	2.73	0.04
			0'			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
Platform Mount [LP 303-1]	C	None		0.0000	83'	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice	31.50	31.50	2.18
						2" Ice	48.34	48.34	3.10
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	83'	No Ice	6.83	5.64	0.11
			0'			1/2"	7.35	6.48	0.17
			1'			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	83'	No Ice	6.83	5.64	0.11
			0'			1/2"	7.35	6.48	0.17
			1'			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	83'	No Ice	6.83	5.64	0.11
			0'			1/2"	7.35	6.48	0.17
			1'			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.0000	83'	No Ice	6.83	5.64	0.11
			0'			1/2"	7.35	6.48	0.17
			1'			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						1" Ice	8.93	8.86	0.38

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			Horz Lateral ft	Vert ft					
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0' 1'	0.0000	83'	2" Ice	11.18	12.29	0.81
						4" Ice			
						No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0' 1'	0.0000	83'	2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
						No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
ATMAA1412D-1A20	A	From Leg	4.00 0' 1'	0.0000	83'	2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
						No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
ATMAA1412D-1A20	B	From Leg	4.00 0' 1'	0.0000	83'	2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
						No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
ATMAA1412D-1A20	C	From Leg	4.00 0' 1'	0.0000	83'	2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
						No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
*** KS24019-L112A	A	From Leg	3.00 0' 0'	0.0000	51'	No Ice	0.10	0.10	0.01
Side Arm Mount [SO 701-1]	A	None			51'	1/2" Ice	0.18	0.18	0.01
						1" Ice	0.26	0.26	0.01
						2" Ice	0.42	0.42	0.01
						4" Ice	0.74	0.74	0.02
						No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18

### 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



Comb. No.	Description
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	120 - 84.7161	Pole	Max Tension	24	0.00	-0.00	0.00			
			Max. Compression	14	-17.49	-0.48	-0.34			
			Max. Mx	5	-10.10	-303.66	0.59			
			Max. My	8	-10.09	0.64	-304.54			
			Max. Vy	5	15.81	-303.66	0.59			
			Max. Vx	8	15.90	0.64	-304.54			
			Max. Torque	3			-0.62			
			Max Tension	1	0.00	0.00	0.00			
			L2	84.7161 - 41.6224	Pole	Max. Compression	14	-32.82	-1.69	-0.49
						Max. Mx	5	-21.55	-1150.59	3.99
Max. My	8	-21.55				3.82	-1155.25			
Max. Vy	5	22.60				-1150.59	3.99			
Max. Vx	8	22.69				3.82	-1155.25			
Max. Torque	3						-0.73			
Max Tension	1	0.00				0.00	0.00			
L3	41.6224 - 0	Pole				Max. Compression	14	-50.71	-3.38	-0.73
						Max. Mx	5	-36.49	-2318.95	7.76
						Max. My	8	-36.49	7.30	-2327.78
			Max. Vy	5	26.70	-2318.95	7.76			
			Max. Vx	8	26.79	7.30	-2327.78			
			Max. Torque	3			-0.89			

**Maximum Reactions**

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	17	50.71	-5.71	3.32
	Max. H <sub>x</sub>	11	36.50	26.68	-0.08
	Max. H <sub>z</sub>	2	36.50	-0.08	26.77
	Max. M <sub>x</sub>	2	2327.21	-0.08	26.77
	Max. M <sub>z</sub>	5	2318.95	-26.68	0.08
	Max. Torsion	9	0.89	13.41	-23.23
	Min. Vert	1	36.50	0.00	0.00
	Min. H <sub>x</sub>	5	36.50	-26.68	0.08
	Min. H <sub>z</sub>	8	36.50	0.08	-26.77
	Min. M <sub>x</sub>	8	-2327.78	0.08	-26.77
	Min. M <sub>z</sub>	11	-2317.48	26.68	-0.08
	Min. Torsion	3	-0.89	-13.41	23.23

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	36.50	0.00	0.00	0.28	-0.73	0.00
Dead+Wind 0 deg - No Ice	36.50	0.08	-26.77	-2327.21	-8.78	0.80
Dead+Wind 30 deg - No Ice	36.50	13.41	-23.23	-2019.40	-1166.81	0.89
Dead+Wind 60 deg - No Ice	36.50	23.14	-13.46	-1170.43	-2012.39	0.74
Dead+Wind 90 deg - No Ice	36.50	26.68	-0.08	-7.76	-2318.95	0.39
Dead+Wind 120 deg - No Ice	36.50	23.06	13.32	1157.07	-2004.35	-0.07
Dead+Wind 150 deg - No Ice	36.50	13.27	23.14	2011.94	-1152.88	-0.50
Dead+Wind 180 deg - No Ice	36.50	-0.08	26.77	2327.78	7.30	-0.80
Dead+Wind 210 deg - No Ice	36.50	-13.41	23.23	2019.97	1165.33	-0.89
Dead+Wind 240 deg - No Ice	36.50	-23.14	13.46	1171.00	2010.91	-0.74
Dead+Wind 270 deg - No Ice	36.50	-26.68	0.08	8.33	2317.48	-0.39
Dead+Wind 300 deg - No Ice	36.50	-23.06	-13.32	-1156.50	2002.88	0.07
Dead+Wind 330 deg - No Ice	36.50	-13.27	-23.14	-2011.37	1151.40	0.50
Dead+Ice+Temp	50.71	0.00	0.00	0.73	-3.38	0.00
Dead+Wind 0 deg+Ice+Temp	50.71	0.02	-6.60	-583.84	-5.23	0.23
Dead+Wind 30 deg+Ice+Temp	50.71	3.31	-5.73	-506.39	-296.29	0.25
Dead+Wind 60 deg+Ice+Temp	50.71	5.71	-3.32	-293.06	-508.88	0.21
Dead+Wind 90 deg+Ice+Temp	50.71	6.58	-0.02	-0.99	-586.06	0.10
Dead+Wind 120 deg+Ice+Temp	50.71	5.69	3.29	291.54	-507.13	-0.02
Dead+Wind 150 deg+Ice+Temp	50.71	3.28	5.71	506.16	-293.26	-0.15
Dead+Wind 180 deg+Ice+Temp	50.71	-0.02	6.60	585.36	-1.73	-0.23
Dead+Wind 210 deg+Ice+Temp	50.71	-3.31	5.73	507.91	289.32	-0.25
Dead+Wind 240 deg+Ice+Temp	50.71	-5.71	3.32	294.57	501.92	-0.21
Dead+Wind 270 deg+Ice+Temp	50.71	-6.58	0.02	2.51	579.10	-0.10
Dead+Wind 300 deg+Ice+Temp	50.71	-5.69	-3.29	-290.03	500.17	0.02
Dead+Wind 330 deg+Ice+Temp	50.71	-3.28	-5.71	-504.64	286.29	0.15
Dead+Wind 0 deg - Service	36.50	0.03	-9.26	-805.31	-3.52	0.28
Dead+Wind 30 deg - Service	36.50	4.64	-8.04	-698.77	-404.34	0.31
Dead+Wind 60 deg - Service	36.50	8.01	-4.66	-404.92	-697.01	0.26
Dead+Wind 90 deg - Service	36.50	9.23	-0.03	-2.50	-803.12	0.13
Dead+Wind 120 deg - Service	36.50	7.98	4.61	400.67	-694.23	-0.02
Dead+Wind 150 deg - Service	36.50	4.59	8.01	696.56	-399.52	-0.17
Dead+Wind 180 deg - Service	36.50	-0.03	9.26	805.88	2.04	-0.28

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Service						
Dead+Wind 210 deg - Service	36.50	-4.64	8.04	699.34	402.86	-0.31
Dead+Wind 240 deg - Service	36.50	-8.01	4.66	405.49	695.53	-0.26
Dead+Wind 270 deg - Service	36.50	-9.23	0.03	3.07	801.64	-0.13
Dead+Wind 300 deg - Service	36.50	-7.98	-4.61	-400.10	692.75	0.02
Dead+Wind 330 deg - Service	36.50	-4.59	-8.01	-695.99	398.04	0.17

### Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-36.50	0.00	0.00	36.50	0.00	0.000%
2	0.08	-36.50	-26.77	-0.08	36.50	26.77	0.000%
3	13.41	-36.50	-23.23	-13.41	36.50	23.23	0.000%
4	23.14	-36.50	-13.46	-23.14	36.50	13.46	0.000%
5	26.68	-36.50	-0.08	-26.68	36.50	0.08	0.000%
6	23.06	-36.50	13.32	-23.06	36.50	-13.32	0.000%
7	13.27	-36.50	23.14	-13.27	36.50	-23.14	0.000%
8	-0.08	-36.50	26.77	0.08	36.50	-26.77	0.000%
9	-13.41	-36.50	23.23	13.41	36.50	-23.23	0.000%
10	-23.14	-36.50	13.46	23.14	36.50	-13.46	0.000%
11	-26.68	-36.50	0.08	26.68	36.50	-0.08	0.000%
12	-23.06	-36.50	-13.32	23.06	36.50	13.32	0.000%
13	-13.27	-36.50	-23.14	13.27	36.50	23.14	0.000%
14	0.00	-50.71	0.00	0.00	50.71	0.00	0.000%
15	0.02	-50.71	-6.60	-0.02	50.71	6.60	0.000%
16	3.31	-50.71	-5.73	-3.31	50.71	5.73	0.000%
17	5.71	-50.71	-3.32	-5.71	50.71	3.32	0.000%
18	6.58	-50.71	-0.02	-6.58	50.71	0.02	0.000%
19	5.69	-50.71	3.29	-5.69	50.71	-3.29	0.000%
20	3.28	-50.71	5.71	-3.28	50.71	-5.71	0.000%
21	-0.02	-50.71	6.60	0.02	50.71	-6.60	0.000%
22	-3.31	-50.71	5.73	3.31	50.71	-5.73	0.000%
23	-5.71	-50.71	3.32	5.71	50.71	-3.32	0.000%
24	-6.58	-50.71	0.02	6.58	50.71	-0.02	0.000%
25	-5.69	-50.71	-3.29	5.69	50.71	3.29	0.000%
26	-3.28	-50.71	-5.71	3.28	50.71	5.71	0.000%
27	0.03	-36.50	-9.26	-0.03	36.50	9.26	0.000%
28	4.64	-36.50	-8.04	-4.64	36.50	8.04	0.000%
29	8.01	-36.50	-4.66	-8.01	36.50	4.66	0.000%
30	9.23	-36.50	-0.03	-9.23	36.50	0.03	0.000%
31	7.98	-36.50	4.61	-7.98	36.50	-4.61	0.000%
32	4.59	-36.50	8.01	-4.59	36.50	-8.01	0.000%
33	-0.03	-36.50	9.26	0.03	36.50	-9.26	0.000%
34	-4.64	-36.50	8.04	4.64	36.50	-8.04	0.000%
35	-8.01	-36.50	4.66	8.01	36.50	-4.66	0.000%
36	-9.23	-36.50	0.03	9.23	36.50	-0.03	0.000%
37	-7.98	-36.50	-4.61	7.98	36.50	4.61	0.000%
38	-4.59	-36.50	-8.01	4.59	36.50	8.01	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00006347

3	Yes	5	0.00000001	0.00002354
4	Yes	5	0.00000001	0.00002219
5	Yes	4	0.00000001	0.00002861
6	Yes	5	0.00000001	0.00002244
7	Yes	5	0.00000001	0.00002278
8	Yes	4	0.00000001	0.00004687
9	Yes	5	0.00000001	0.00002211
10	Yes	5	0.00000001	0.00002342
11	Yes	4	0.00000001	0.00004411
12	Yes	5	0.00000001	0.00002235
13	Yes	5	0.00000001	0.00002206
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00037964
16	Yes	4	0.00000001	0.00041328
17	Yes	4	0.00000001	0.00041244
18	Yes	4	0.00000001	0.00038126
19	Yes	4	0.00000001	0.00041130
20	Yes	4	0.00000001	0.00041174
21	Yes	4	0.00000001	0.00038101
22	Yes	4	0.00000001	0.00041022
23	Yes	4	0.00000001	0.00040981
24	Yes	4	0.00000001	0.00037669
25	Yes	4	0.00000001	0.00040559
26	Yes	4	0.00000001	0.00040640
27	Yes	4	0.00000001	0.00001159
28	Yes	4	0.00000001	0.00006999
29	Yes	4	0.00000001	0.00006105
30	Yes	4	0.00000001	0.00000862
31	Yes	4	0.00000001	0.00006364
32	Yes	4	0.00000001	0.00006595
33	Yes	4	0.00000001	0.00001084
34	Yes	4	0.00000001	0.00006059
35	Yes	4	0.00000001	0.00006908
36	Yes	4	0.00000001	0.00000919
37	Yes	4	0.00000001	0.00006296
38	Yes	4	0.00000001	0.00006110

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 84.7161	12.808	34	0.8604	0.0009
L2	89.2839 - 41.6224	7.475	28	0.7625	0.0007
L3	47.3776 - 0	2.144	28	0.4132	0.0003

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120'	Lighting Rod 3/4" x 3'	34	12.808	0.8604	0.0009	61155
118'	(2) 7770.00 w/ Mount Pipe	34	12.448	0.8563	0.0009	61155
116'	(2) RRUS 11	34	12.089	0.8522	0.0009	61155
108'	(3) 844G65VTZASX w/ Mount Pipe	28	10.661	0.8338	0.0009	25481
100'	TME-800MHZ RRH	28	9.264	0.8098	0.0008	15288
97'	P40-16-XLPP-RR-A w/ Mount Pipe	28	8.752	0.7987	0.0008	13294
83'	(2) 8'x2" Antenna Mount Pipe	28	6.486	0.7238	0.0006	8601
51'	KS24019-L112A	28	2.465	0.4473	0.0003	5085

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 84.7161	36.985	9	2.4849	0.0027
L2	89.2839 - 41.6224	21.588	3	2.2024	0.0020
L3	47.3776 - 0	6.193	3	1.1937	0.0007

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120'	Lighting Rod 3/4" x 3'	9	36.985	2.4849	0.0027	21273
118'	(2) 7770.00 w/ Mount Pipe	9	35.947	2.4731	0.0027	21273
116'	(2) RRUS 11	9	34.910	2.4611	0.0026	21273
108'	(3) 844G65VTZASX w/ Mount Pipe	3	30.789	2.4082	0.0025	8863
100'	TME-800MHZ RRH	3	26.755	2.3391	0.0023	5317
97'	P40-16-XLPP-RR-A w/ Mount Pipe	3	25.276	2.3068	0.0022	4623
83'	(2) 8'x2" Antenna Mount Pipe	3	18.734	2.0909	0.0018	2988
51'	KS24019-L112A	3	7.121	1.2921	0.0008	1762

### Compression Checks

#### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L1	120 - 84.7161	TP32.5458x24.09x0.375	35'3-3/8"	0'	0.0	39.000	36.9884	-10.09	1442.55	0.007
L2	84.7161 - 41.6224 (2)	TP42.0347x30.7011x0.437 5	47'7- 29/32"	0'	0.0	39.000	55.8625	-21.55	2178.64	0.010
L3	41.6224 - 0 (3)	TP51x39.7912x0.5	47'4- 9/16"	0'	0.0	39.000	80.1435	-36.49	3125.60	0.012

#### Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> F <sub>by</sub>
L1	120 - 84.7161 (1)	TP32.5458x24.09x0.375	304.89	12.953	39.000	0.332	0.00	0.000	39.000	0.000
L2	84.7161 - 41.6224 (2)	TP42.0347x30.7011x0.43 75	1157.4 7	25.122	39.000	0.644	0.00	0.000	39.000	0.000
L3	41.6224 - 0 (3)	TP51x39.7912x0.5	2332.2 6	28.080	39.000	0.720	0.00	0.000	39.000	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	120 - 84.7161 (1)	TP32.5458x24.09x0.375	15.95	0.431	26.000	0.033	0.62	0.013	26.000	0.000
L2	84.7161 - 41.6224 (2)	TP42.0347x30.7011x0.43 75	22.74	0.407	26.000	0.031	0.73	0.008	26.000	0.000
L3	41.6224 - 0 (3)	TP51x39.7912x0.5	26.84	0.335	26.000	0.026	0.89	0.005	26.000	0.000

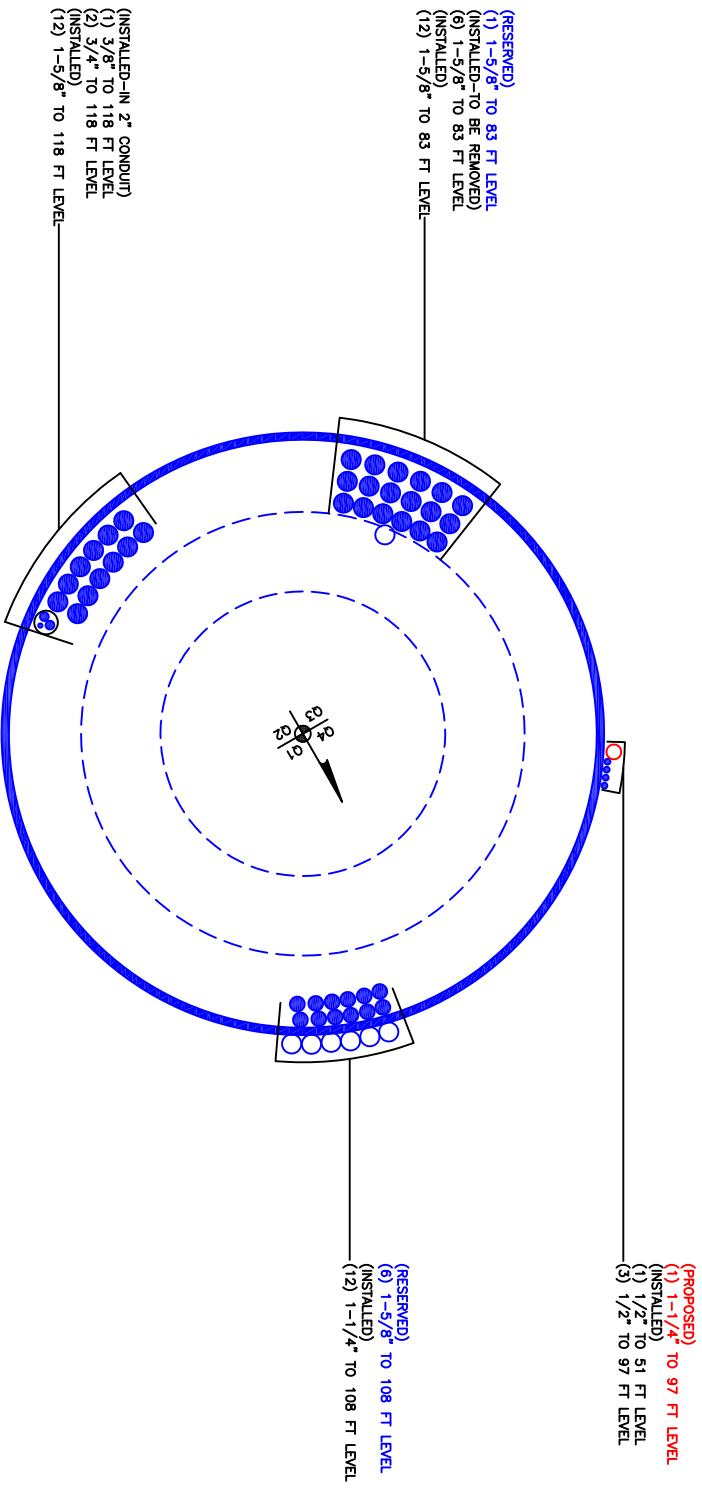
### Pole Interaction Design Data

Section No.	Elevation ft	Ratio P $\frac{P}{P_a}$	Ratio $f_{bx}$ $\frac{f_{bx}}{F_{bx}}$	Ratio $f_{by}$ $\frac{f_{by}}{F_{by}}$	Ratio $f_v$ $\frac{f_v}{F_v}$	Ratio $f_{vt}$ $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 84.7161 (1)	0.007	0.332	0.000	0.033	0.000	0.339	1.333	H1-3+VT ✓
L2	84.7161 - 41.6224 (2)	0.010	0.644	0.000	0.031	0.000	0.654	1.333	H1-3+VT ✓
L3	41.6224 - 0 (3)	0.012	0.720	0.000	0.026	0.000	0.732	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	120 - 84.7161	Pole	TP32.5458x24.09x0.375	1	-10.09	1922.92	25.5	Pass	
L2	84.7161 - 41.6224	Pole	TP42.0347x30.7011x0.4375	2	-21.55	2904.13	49.1	Pass	
L3	41.6224 - 0	Pole	TP51x39.7912x0.5	3	-36.49	4166.42	54.9	Pass	
							Summary		
							Pole (L3)	54.9	Pass
							<b>RATING =</b>	<b>54.9</b>	<b>Pass</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



BUSINESS UNIT: 881536 TOWER ID: C\_BASLEVEL



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# Stiffened or Unstiffened, UngROUTED, Circular Base Plate - Any Rod Material

**TIA Rev G**

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

Site Data	
BU#:	881536
Site Name:	NORTH HAVEN TOWER
App #:	205888 Rev. 1
Pole Manufacturer:	Other

Reactions		
Mu:	2332	ft-kips
Axial, Pu:	37	kips
Shear, Vu:	27	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	60	in

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

**Anchor Rod Results**  
 Max Rod (Cu+ Vu/η): 97.8 Kips  
 Allowable Axial, Φ\*Fu\*Anet: 260.0 Kips  
 Anchor Rod Stress Ratio: 37.6% **Pass**

Rigid
AISC LRFD
φ*Tn

Plate Data		
Diam:	66	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.09	in

**Base Plate Results**  
 Base Plate Stress: 24.6 ksi  
 Allowable Plate Stress: 54.0 ksi  
 Base Plate Stress Ratio: 45.6% **Pass**

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
31.61

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

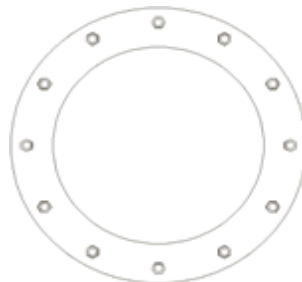
**n/a**

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

**Pole Results**

Pole Punching Shear Check: n/a

Pole Data		
Diam:	51	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

BU: 881536  
 Site Name: NORTH HAVEN TOWER  
 App Number: 205888 Rev. 1  
 Work Order: 693026



Monopole Drilled Pier

Input

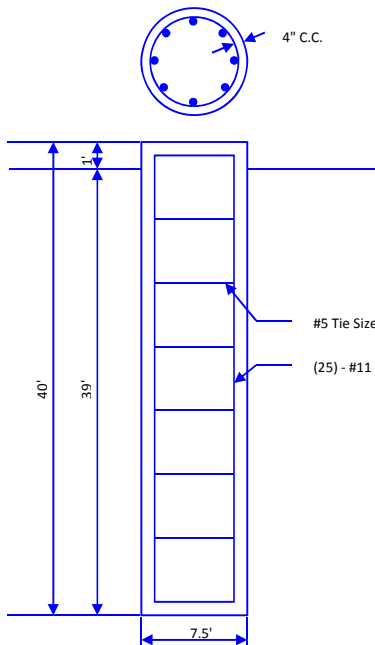
Criteria  
 TIA Revision: F  
 ACI 318 Revision: 2002  
 Seismic Category: B

Forces  
 Compression: 37 kips  
 Shear: 27 kips  
 Moment: 2332 k-ft  
 Swelling Force: 0 kips

Foundation Dimensions  
 Pier Diameter: 7.5 ft  
 Ext. above grade: 1 ft  
 Depth below grade: 39 ft

Material Properties  
 Number of Rebar: 25  
 Rebar Size: 11  
 Tie Size: 5  
 Rebar tensile strength: 60 ksi  
 Concrete Strength: 4000 psi  
 Ultimate Concrete Strain: 0.003 in/in  
 Clear Cover to Ties: 4 in

Soil Profile: 1



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.75	0	3.75	120	0	0	0	0	0	
2	1.25	3.75	5	120	0	32	0	0	0	
3	2	5	7	120	0	32	1.4	1.4	0	
4	32	7	39	60	0	32	1.4	1.4	16	

Analysis Results

Soil Lateral Capacity  
 Depth to Zero Shear: 8.98 ft  
 Max Moment, Mu: 2529.22 k-ft  
 Soil Safety Factor: 11.63  
 Safety Factor Req'd: 2  
 RATING: 17.2%

Soil Axial Capacity  
 Skin Friction (k): 560.77 kips  
 End Bearing (k): 353.43 kips  
 Comp. Capacity (k), φCn: 914.20 kips  
 Comp. (k), Cu: 37.00 kips  
 RATING: 4.0%

Concrete/Steel Check  
 Mu (from soil analysis) 3287.99 k-ft  
 φMn 6738.24 k-ft  
 RATING: 48.8%

rho provided 0.61  
 rho required 0.33 OK

Rebar Spacing 8.56  
 Spacing required 22.56 OK

Dev. Length required 29.69  
 Dev. Length provided 53.51 OK

**Overall Foundation Rating: 48.8%**

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

Sprint Existing Facility

Site ID: CT43XC820

North Haven Tower

120 Universal Drive  
North Haven, CT 06473

**March 13, 2014**

**EBI Project Number: 62140954**

March 13, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:  
**CT43XC820 - North Haven Tower**

**Site Total: 90.762% - MPE % in full compliance**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 120 Universal Drive, North Haven, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the cellular band (850 MHz Band) is approximately  $567 \mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the 1900 MHz and 2500 MHz bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 120 Universal Drive, North Haven, 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) 4 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 Powerwave P40-16-XLPP-RRA, 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 Powerwave P40-16-XLPP-RRA has a 15.6 dBd gain value at its main lobe at 1900 MHz and 4.2 dBd at its main lobe for 850 MHz. 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 **98 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	CT43XC820 - North Haven Tower
Site Address	120 Universal Drive, North Haven, CT 06473
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	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	98	92	28.04194	1/2 "	0.5	3	17.378008	1390.2407	59.05006	5.90501%
1a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	98	92	28.04194	1/2 "	0.5	3	9.7723722	195.44744	8.301572	1.46412%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	98	92	28.04194	1/2 "	0.5	3	9.7723722	390.89489	16.60314	2.92824%
Sector total Power Density Value:																		10.297%	

**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	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	98	92	28.04194	1/2 "	0.5	3	17.378008	1390.2407	59.05006	5.90501%
2a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	98	92	28.04194	1/2 "	0.5	3	9.7723722	195.44744	8.301572	1.46412%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	98	92	28.04194	1/2 "	0.5	3	9.7723722	390.89489	16.60314	2.92824%
Sector total Power Density Value:																		10.297%	

**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	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
3a	Powerwave	P40-16-XLPP-RRR	RRH	1900 MHz	CDMA / LTE	20	4	80	15.6	98	92	28.04194	1/2 "	0.5	3	16.218101	1297.4481	55.10872	5.51087%
3a	Powerwave	P40-16-XLPP-RRR	RRH	850 MHz	CDMA / LTE	20	1	20	14.2	98	92	28.04194	1/2 "	0.5	3	11.748976	234.97951	9.980684	1.76026%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	98	92	28.04194	1/2 "	0.5	3	9.7723722	390.89489	16.60314	2.92824%
Sector total Power Density Value:																		10.199%	

Site Composite MPE %	
Carrier	MPE %
Sprint	30.794%
Metro PCS	24.200%
AT&T	1.550%
Nextel	6.290%
Sprint WiMax	5.010%
T-Mobile	0.490%
AT&T	22.330%
<b>Total Site MPE %</b>	<b>90.664%</b>



## 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 **30.794% (10.297% from sectors 1&2 and 10.199 from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **90.664%** 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.



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