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

June 26, 2014

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 876337**
Sprint PCS Site ID: CT03XC104
Located at: 30 Short Hills Road, Old Lyme, CT 06371

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 Bonnie Reemsnyder, First Selectwoman, Town of Old Lyme.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **30 Short Hills Road, Old Lyme, CT 06371**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

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

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

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

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

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

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

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

Sincerely,

Jeff Barbadora
Real Estate Specialist

Enclosures

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

cc: Bonnie Reemsnyder, First Selectwoman
Town of Old Lyme
Old Lyme Memorial Town Hall
52 Lyme Street
Old Lyme, CT 06371

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	SHORELINE SANITATION
SITE CASCADE:	CT03XC104
SITE NUMBER:	876337
SITE ADDRESS:	30 SHORT HILLS RD OLD LYME, CT 06371
SITE TYPE:	MONOPOLE TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 19' 7.6" N
41.31878°

LONGITUDE (NAD83):
72° 16' 14.6" W
-72.27072°

COUNTY:
NEW LONDON

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
LIGHT INDUSTRY LI-80 DISTRICT

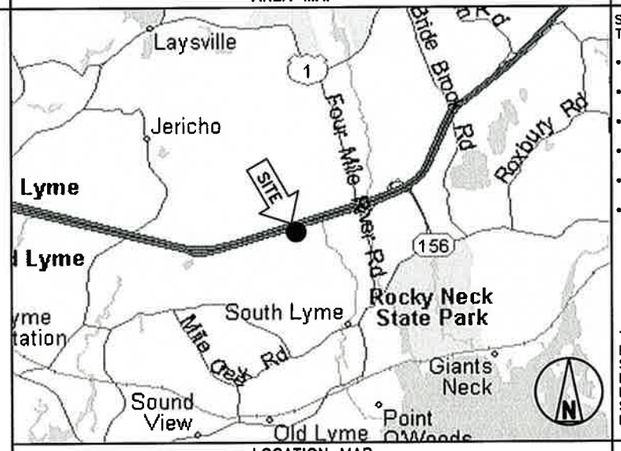
POWER COMPANY:
CONNECTICUT LIGHT & POWER
(860) 947-2000

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

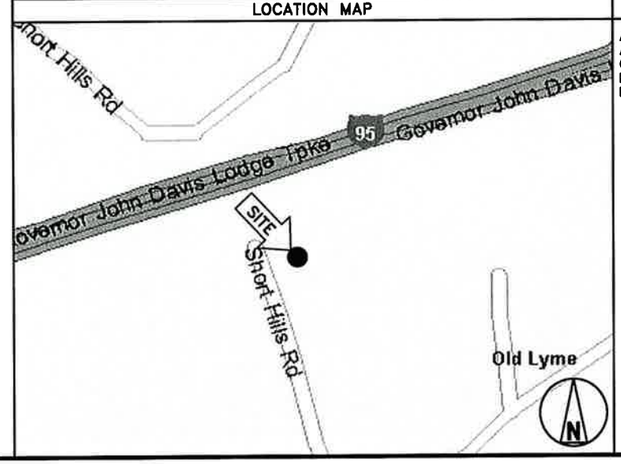
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

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

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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

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

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

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:
SHORELINE SANITATION

SITE CASCADE:
CT03XC104

SITE ADDRESS:
30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

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

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

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

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

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

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

1.4 TESTS AND INSPECTIONS:

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

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

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

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

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

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

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

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

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

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

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

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

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

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

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:
SHORELINE SANITATION

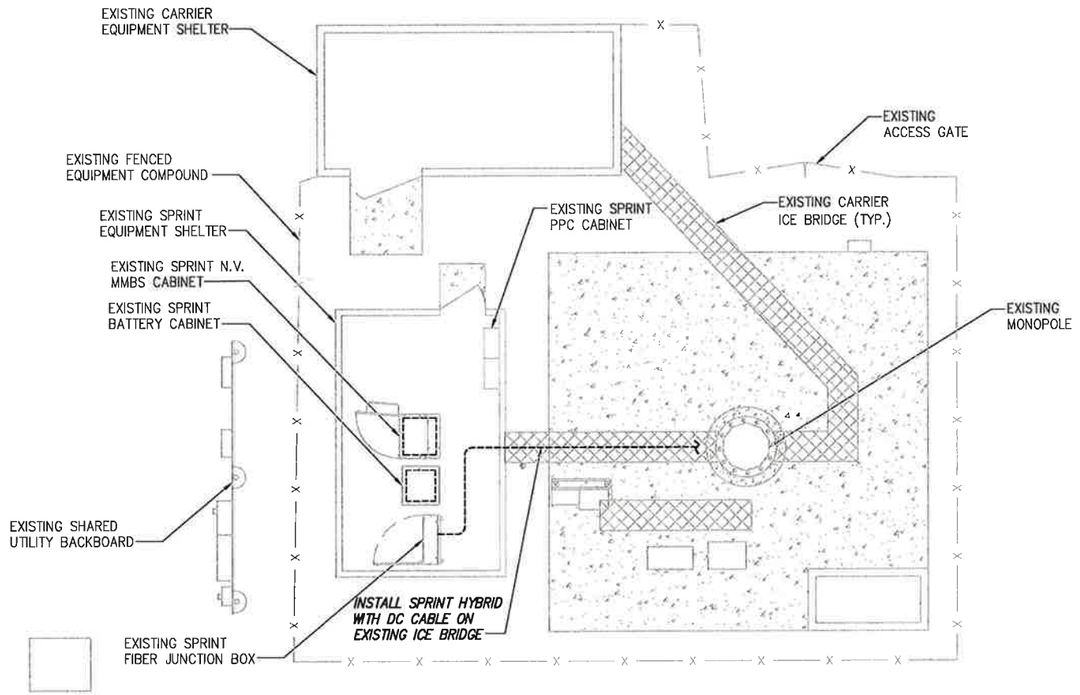
SITE CASCADE:
CT03XC104

SITE ADDRESS:
30 SHORT HILLS RD
OLD LYME, CT 06371

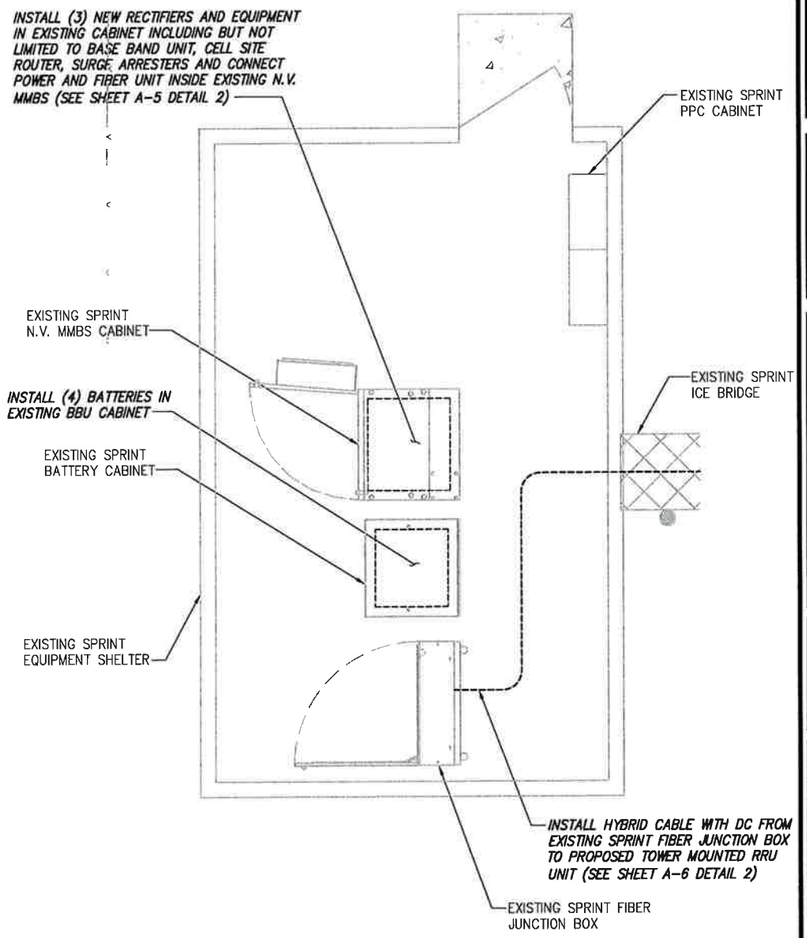
SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-3

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



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

SITE PLAN

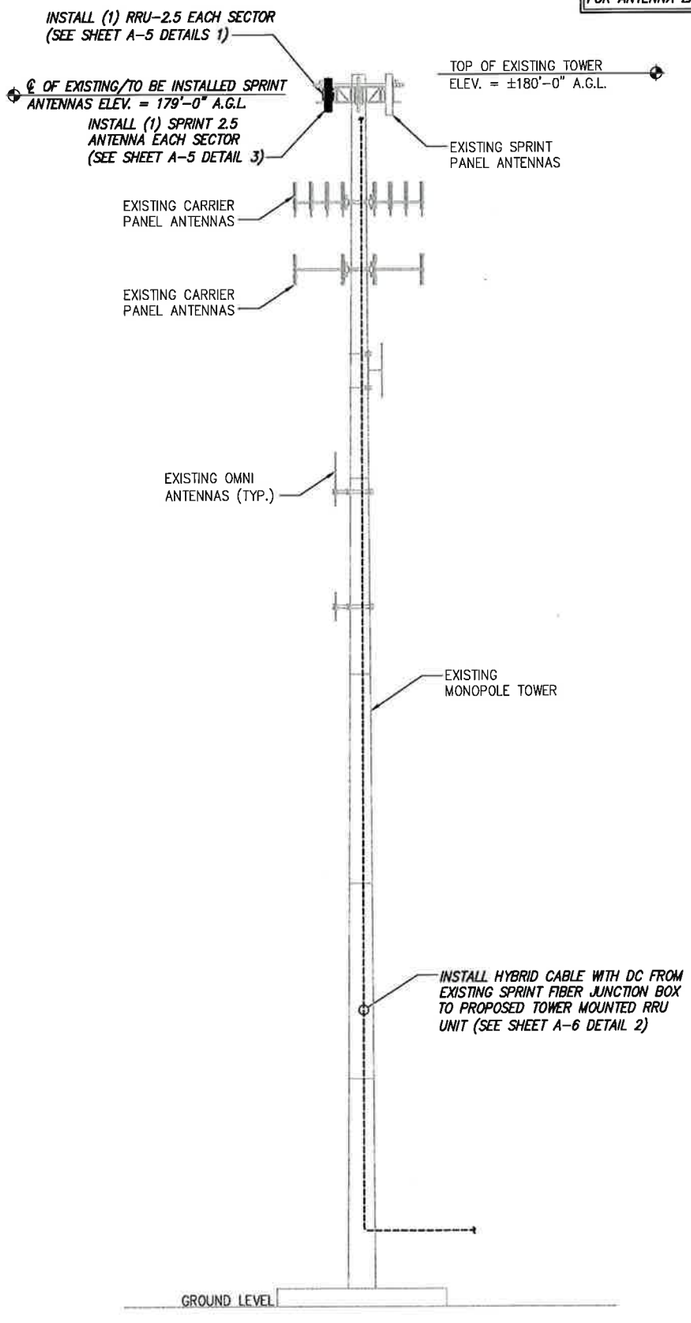
SHEET NUMBER:

A-1

NOTE:
FOR ADDITIONAL STRUCTURAL INFORMATION, REFER TO STRUCTURAL ANALYSIS COMPLETED BY B&T GROUP DATED 5/12/14

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



TOWER ELEVATION | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

DETAIL NOT USED | NO SCALE | 2

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

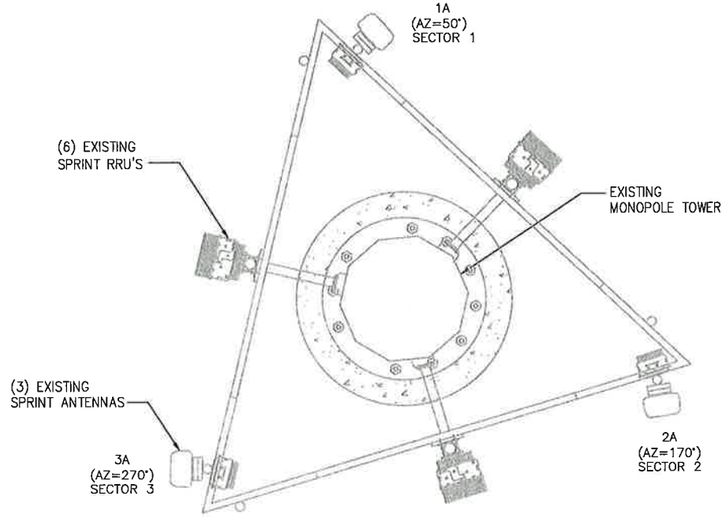
30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

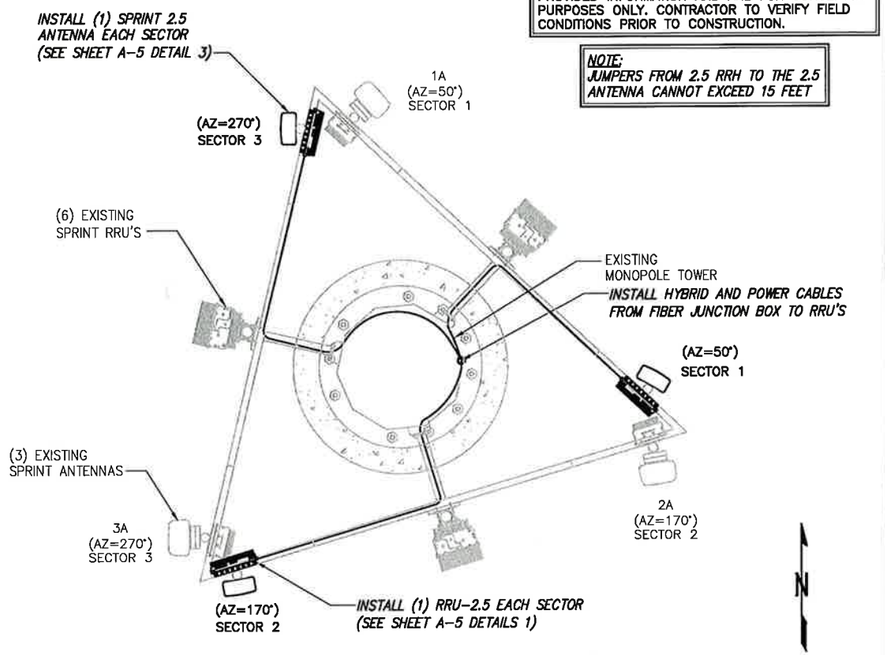
TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:

A-2



EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

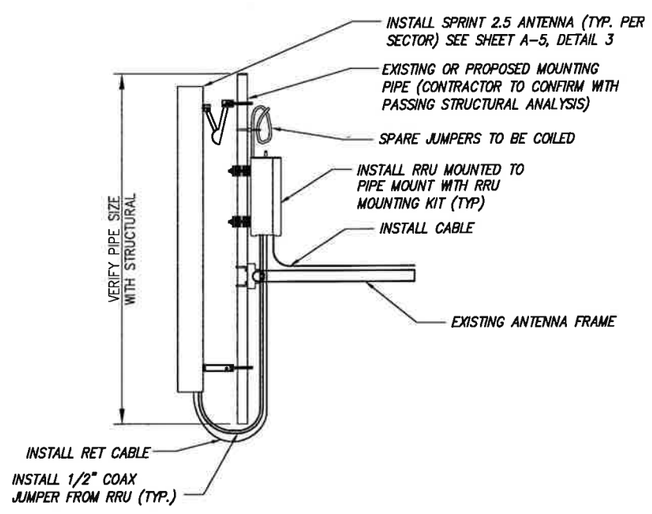


THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

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

FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

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

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

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

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

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

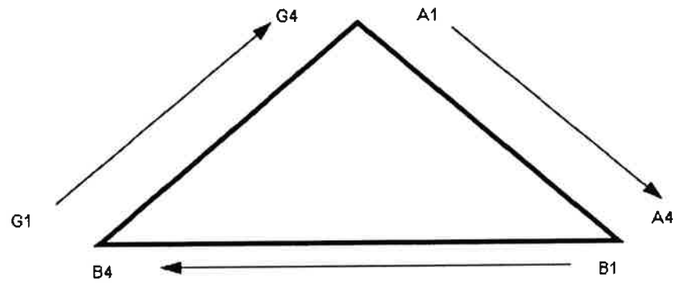
A-3

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

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

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

Figure 1: Antenna Orientation



NOTES:

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

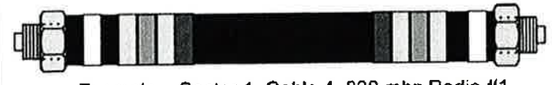
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3		No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape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

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

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

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

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



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

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

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

MLA PARTNER:
CROWN CASTLE

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:
SHORELINE SANITATION

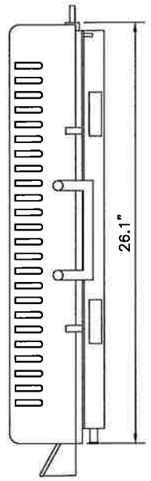
SITE CASCADE:
CT03XC104

SITE ADDRESS:
30 SHORT HILLS RD
OLD LYME, CT 06371

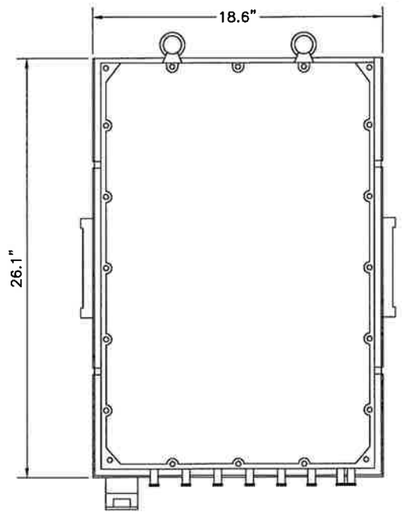
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

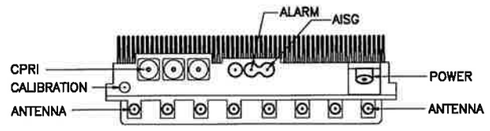
RRU: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

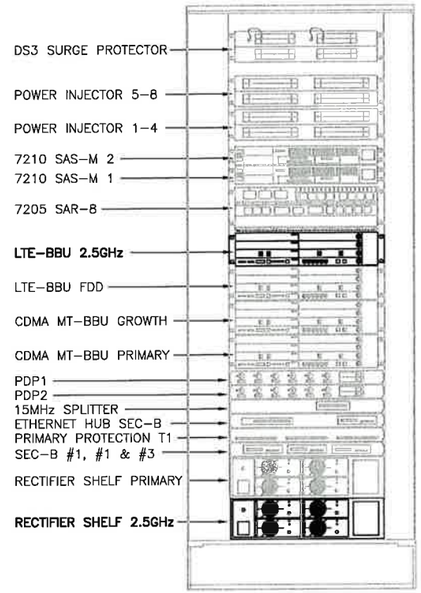


PLAN VIEW

NOTES

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

2.5 RRU	NO SCALE	1

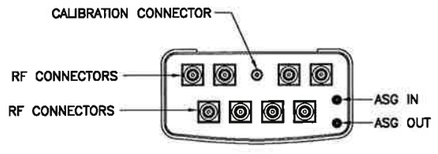


FRONT VIEW

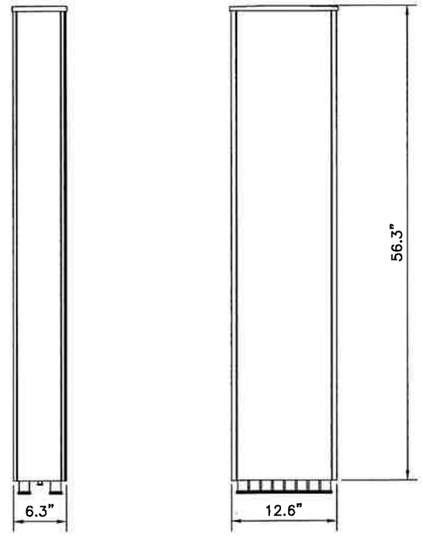
NEW EQUIPMENT IN EXISTING CABINET	NO SCALE	2

ANTENNA: RFS APXVTM14-C-I20

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



PLAN VIEW



2.5 ANTENNA	NO SCALE	3

DETAIL NOT USED	NO SCALE	4

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

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

JOB NUMBER 353-000

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:
SHORELINE SANITATION

SITE CASCADE:
CT03XC104

SITE ADDRESS:
30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

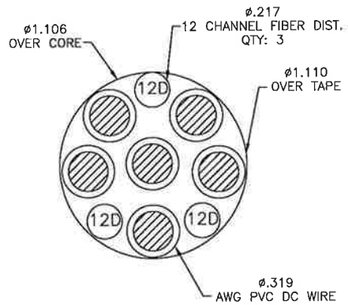
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

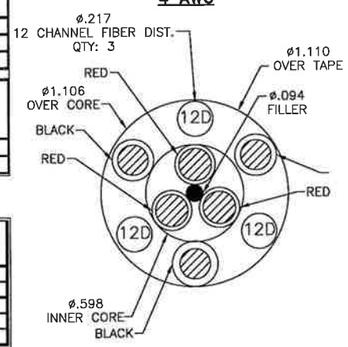
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

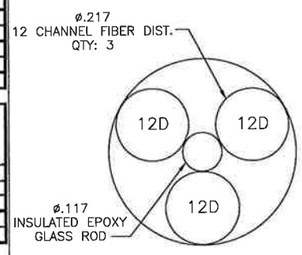
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG



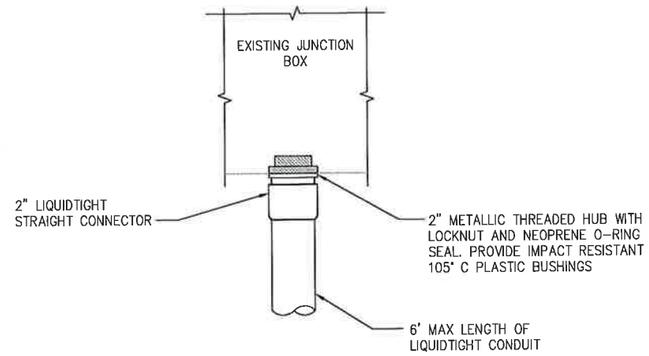
8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA

NO SCALE | 1



FIBER JUNCTION BOX PENETRATION

NO SCALE | 2

DETAIL NOT USED

NO SCALE | 3

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

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

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

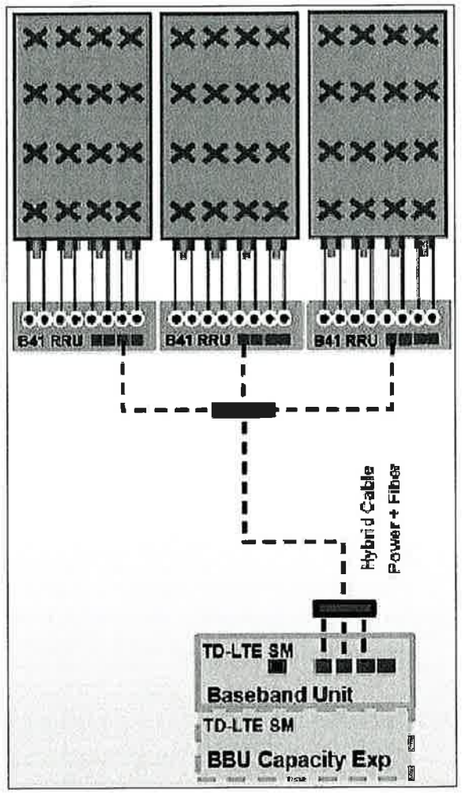
SITE NAME:
SHORELINE SANITATION

SITE CASCADE:
CT03XC104

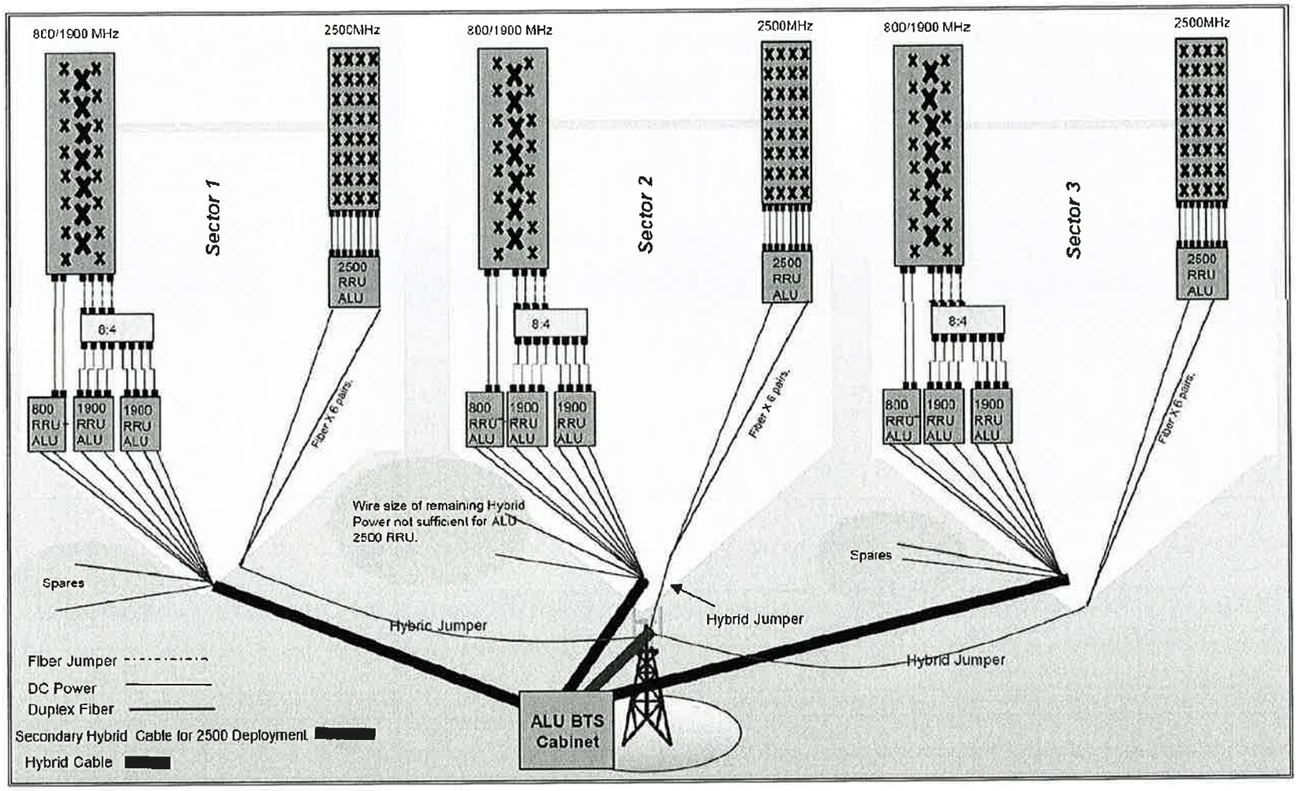
SITE ADDRESS:
30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:
CIVIL DETAILS

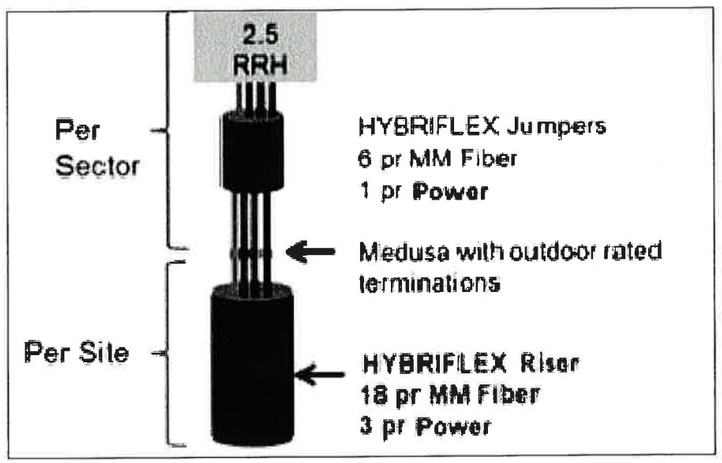
SHEET NUMBER:
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

NO SCALE

1

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

CIVIL DETAILS

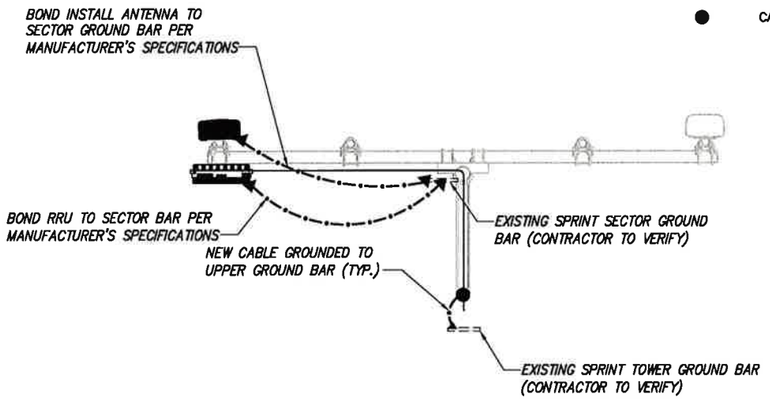
SHEET NUMBER:

A-7

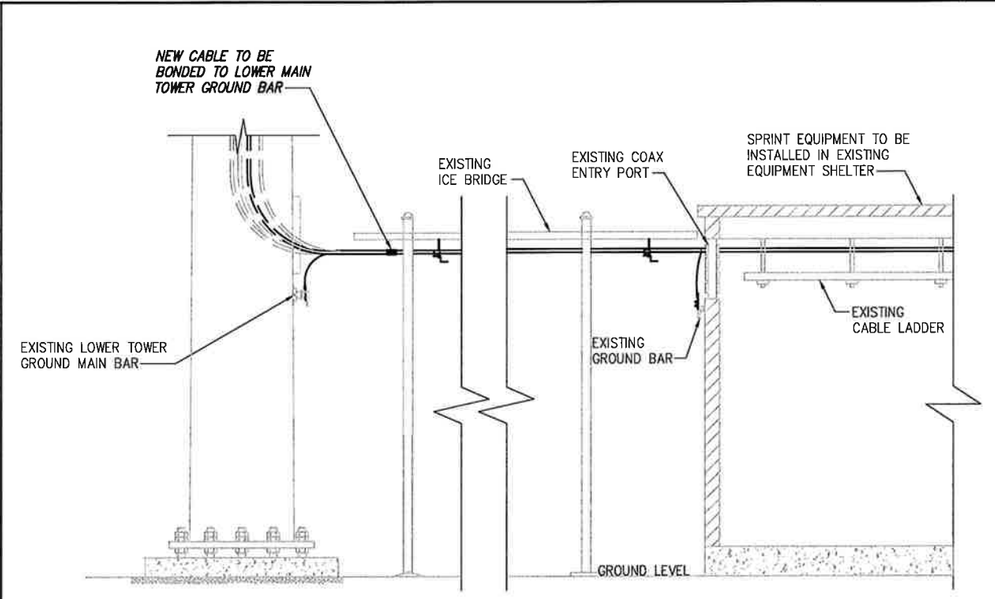
PLAN NOT USED | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

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

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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

JOB NUMBER 353-000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

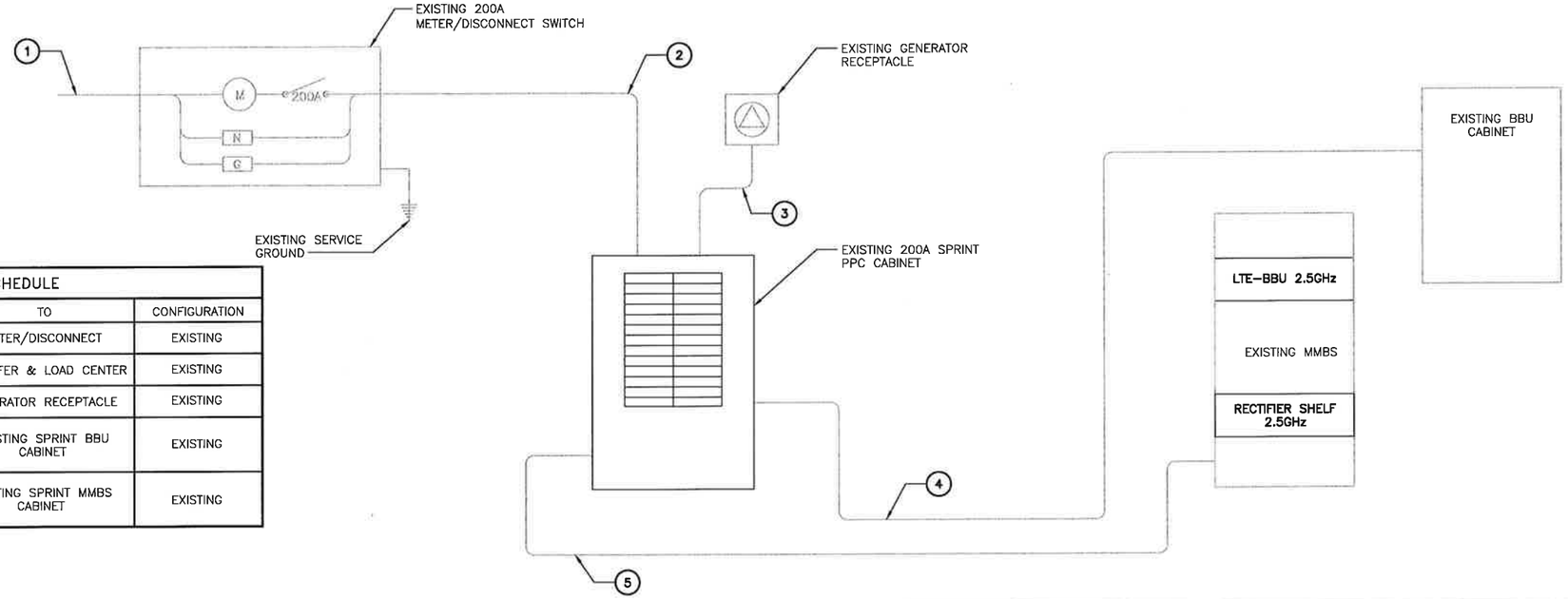
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

NOTES

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

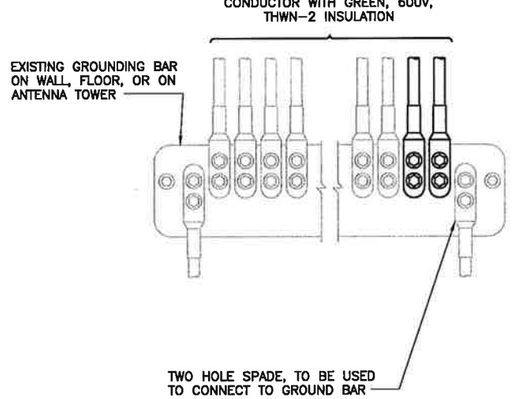


CIRCUIT SCHEDULE

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

ELECTRICAL ONE–LINE DIAGRAM

NO SCALE | 1

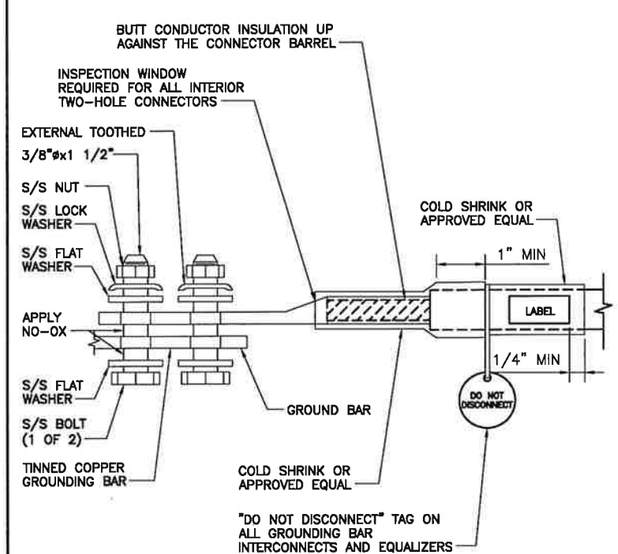


NOTES

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

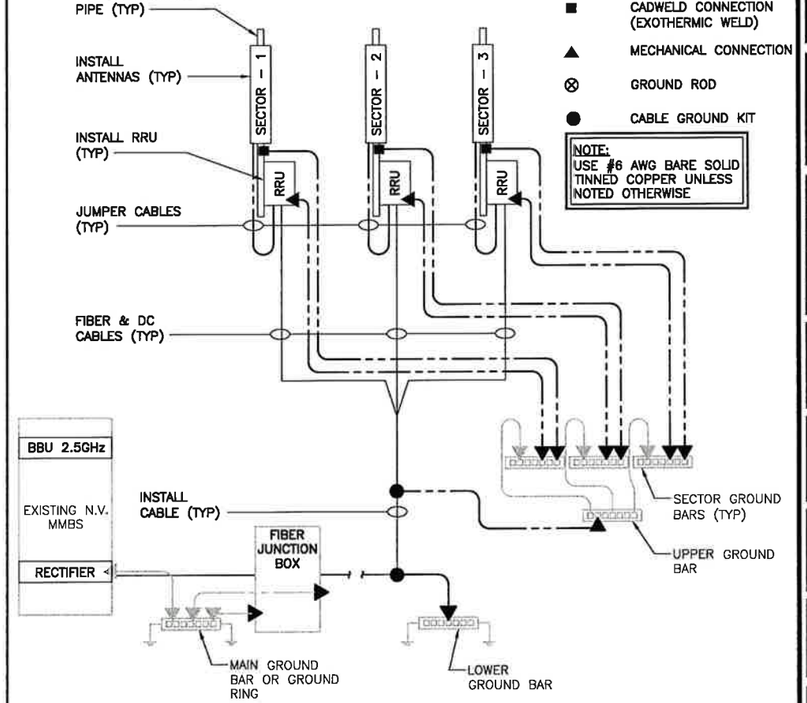
INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE | 2



TWO HOLE LUG

NO SCALE | 3



LEGEND:

- 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

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

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

JOB NUMBER 353–000

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

SHORELINE SANITATION

SITE CASCADE:

CT03XC104

SITE ADDRESS:

30 SHORT HILLS RD
OLD LYME, CT 06371

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

May 12, 2014

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

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate-**	**Scenario 2.5A**
	Carrier Site Number:	CT03XC104
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	876337
	Crown Castle Site Name:	Shoreline Sanitation
	Crown Castle JDE Job Number:	286433
	Crown Castle Work Order Number:	757913
	Crown Castle Application Number:	245409 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	85773.002.01
Site Data:	**30 Short Hills Road, Old Lyme, New London County, CT** **Latitude *41° 19' 7.6"*, Longitude *-72° 16' 14.6"*** **180 Foot - Monopole Tower**	

Dear Patrick Byrum,

B+T Group 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 645278, in accordance with application 245409, revision 0.

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

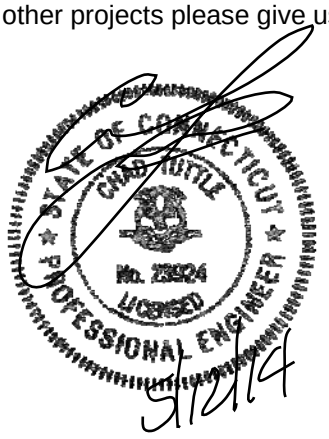
LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and State Building Code, 2005 CT supplement 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 *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.



Venu Ambati
Project Engineer

Chad E. Tuttle, P.E.
President

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 – Tower Components vs. Capacity
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 180 ft Monopole tower designed by Rohn in January of 1997. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E. This tower was modified by B+T Engineering in 2009 to accommodate additional Loading.

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
177.0	179.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1 1/4	--
		3	Rfs Celwave	APXVTM14-C-120			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	179.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	3	1 1/4	1
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
		3	Rfs Celwave	APXVSPP18-C-A20			
	177.0	1	--	Platform Mount [LP 502-1]			
161.0	162.0	12	Decibel	DB844H90E-SX	12	1 1/4	1
	161.0	1	--	T-Arm Mount [TA 602-3]			
151.0	151.0	3	Kathrein	800 10504	6	1 5/8	1
		1	--	T-Arm Mount [TA 602-3]			
136.0	136.0	1	Shively Labs	6812B-1	1	1/2	1
		1	--	Side Arm Mount [SO 701-1]			
118.0	121.0	1	Decibel	DB806-XT	1	1/2	1
	118.0	1	--	Side Arm Mount [SO 701-1]			
101.0	101.0	1	Lucent	KS24019-L112A	1	1/2	1
		1	--	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180	180	12	Allgon	ALP 9212	12	15/8
		1	Generic	Cellular Platform		
160	160	12	Allgon	ALP 9212	12	15/8
		1	Generic	Cellular Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint Co-Locate Rev# 0	245409	CCI Sites
Tower Manufacturer Drawings	Rohn Eng. File No-347385W	2172538	CCI Sites
Tower Mapping	Tower Engineering Professionals, Project No. 072115	2172538	CCI Sites
Tower Modification Drawings	B+T Engineering & Aero Solutions, Project No:79934	2434695	CCI Sites
Post Modification Inspection	B+T Engineering & Aero Solutions, Project No:79934	2434695	CCI Sites
Foundation Drawings	Vertical Solutions, Project No:070986	2259251	CCI Sites
Geotech Report	CHA, Project No.5835.07.19	1531891	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 05/05/2014	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.
6) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group 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	180 - 150	Pole	P24x1/4	1	-5.565	589.190	77.7	Pass
L2	150 - 120	Pole	P30x3/8	2	-9.638	1166.570	87.3	Pass
L3	120 - 107.583	Pole	P36x3/8	3	-11.695	1325.678	83.2	Pass
L4	107.583 - 90	Pole	P36x3/8 [0.553356]	4	-15.583	1769.451	78.3	Pass
L5	90 - 60	Pole	P42x3/8 [0.655757]	5	-24.253	2344.094	77.5	Pass
L6	60 - 46.583	Pole	P48x1/2	6	-27.928	2356.757	85.6	Pass
L7	46.583 - 30	Pole	P48x1/2 [0.697878]	7	-33.903	2977.962	74.4	Pass
L8	30 - 0	Pole	P48x1/2 [0.742965]	8	-45.374	3167.341	92.4	Pass
							Summary	
						Pole (L8)	92.4	Pass
						RATING =	**92.4**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	83.3	Pass
1	Base Plate	Base	82.8	Pass
1	Bridge Stiffener	30	88.9	Pass
1	Flange Connection	30	64.7	Pass
1	Bridge Stiffener	60	48.9	Pass
1	Flange Connection	60	55.2	Pass
1	Bridge Stiffener	90	51.7	Pass
1	Flange Connection	90	56.8	Pass
1	Bridge Stiffener	120	35.9	Pass
1	Flange Connection	120	38.5	Pass
1	Flange Connection	150	37.2	Pass
1	Base Foundation (Soil Interaction)	Base	68.7	Pass

Structure Rating (max from all components) =	**92.4%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Capacities up to 105% are considered acceptable based on analysis methods used.

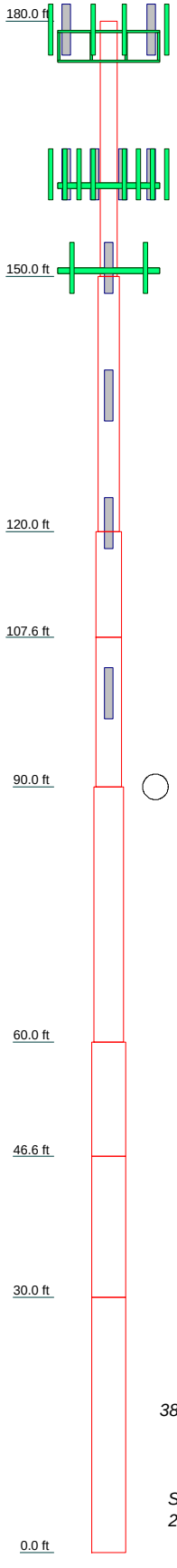
4.1) Recommendations

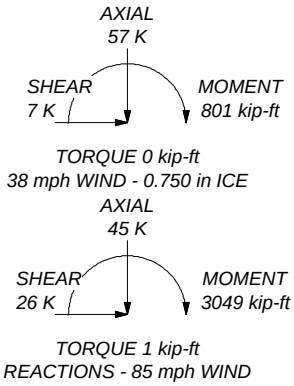
The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Size	Length (ft)	Grade	Weight (K)
1	P24x1/4	30.000	A53-B-42	1.9
2	P30x3/8	30.000		3.6
3	P36x3/8	12.417		1.8
4	P36x3/8 [0.553356]	17.583	35.902778ksi	3.5
5	P42x3/8 [0.655757]	30.000	34.410173ksi	8.2
6	P48x1/2	13.417	A53-B-42	3.4
7	P48x1/2 [0.697878]	16.583	35.902778ksi	5.6
8	P48x1/2 [0.742965]	30.000		10.8
				38.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	(2) 5' x 2" Pipe Mount (E)	177
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	(4) DB844H90E-SX w/ Mount Pipe (E)	161
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	(4) DB844H90E-SX w/ Mount Pipe (E)	161
800MHz 2X50W RRH W/FILTER (E)	177	(4) DB844H90E-SX w/ Mount Pipe (E)	161
800MHz 2X50W RRH W/FILTER (E)	177	T-Arm Mount [TA 602-3] (E)	161
800MHz 2X50W RRH W/FILTER (E)	177	800 10504 w/ Mount Pipe (E)	151
PCS 1900MHz 4x45W-65MHz (E)	177	800 10504 w/ Mount Pipe (E)	151
PCS 1900MHz 4x45W-65MHz (E)	177	800 10504 w/ Mount Pipe (E)	151
PCS 1900MHz 4x45W-65MHz (E)	177	6' x 2" Mount Pipe (E)	151
APXVTM14-C-120 w/ Mount Pipe (P)	177	6' x 2" Mount Pipe (E)	151
APXVTM14-C-120 w/ Mount Pipe (P)	177	6' x 2" Mount Pipe (E)	151
APXVTM14-C-120 w/ Mount Pipe (P)	177	T-Arm Mount [TA 602-3] (E)	151
TD-RRH8x20-25 (P)	177	6812B-1 (E)	136
TD-RRH8x20-25 (P)	177	Side Arm Mount [SO 701-1] (E)	136
TD-RRH8x20-25 (P)	177	DB806-XT (E)	118
Platform Mount [LP 502-1] (E)	177	Side Arm Mount [SO 701-1] (E)	118
(2) 5' x 2" Pipe Mount (E)	177	KS24019-L112A (E)	101
(2) 5' x 2" Pipe Mount (E)	177	Side Arm Mount [SO 701-1] (E)	101

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	34.410173ksi	34 ksi	49 ksi
35.902778ksi	36 ksi	51 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London 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: 92.4%

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 85773.001.01 - Shoreline Sanitation, CT (BU#876337			
Project:			
Client: Crown Castle	Drawn by: VenuAmbati	App'd:	
Code: TIA/EIA-222-F	Date: 05/12/14	Scale: NTS	
Path: S:\Projects\Crown Castle\85773_876337_Shoreline Sanitation\Engineering\tnxTower\85773_002_01_Shoreline Sanitation.eri		Dwg No. E-1	

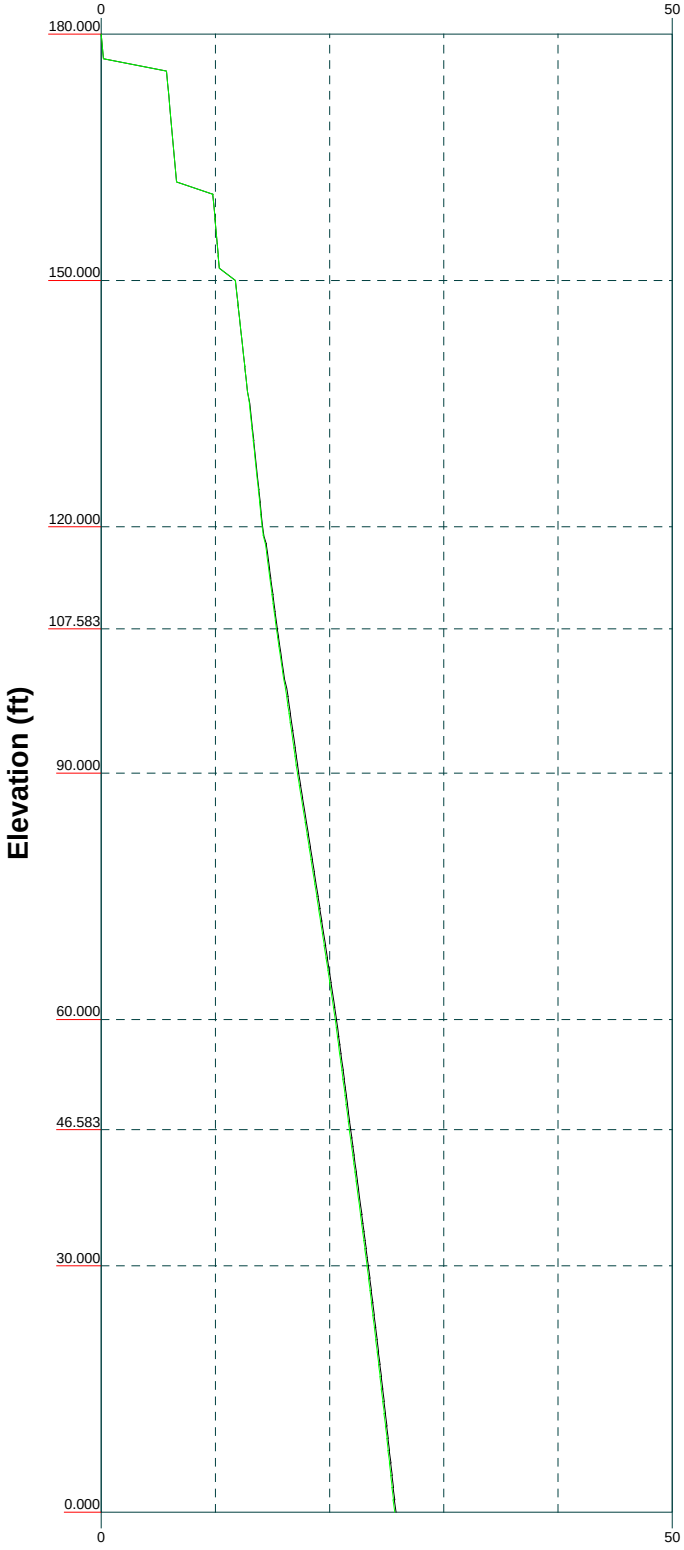
TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Vx Vz

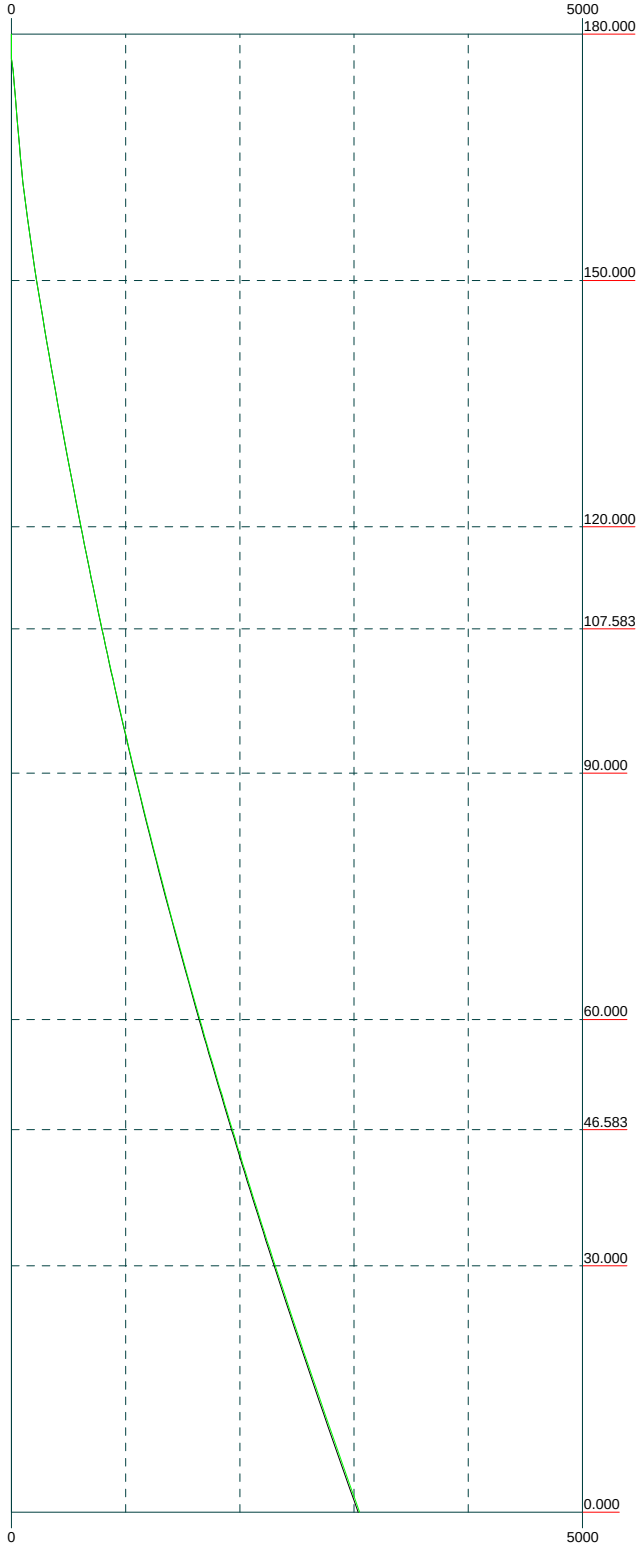
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)

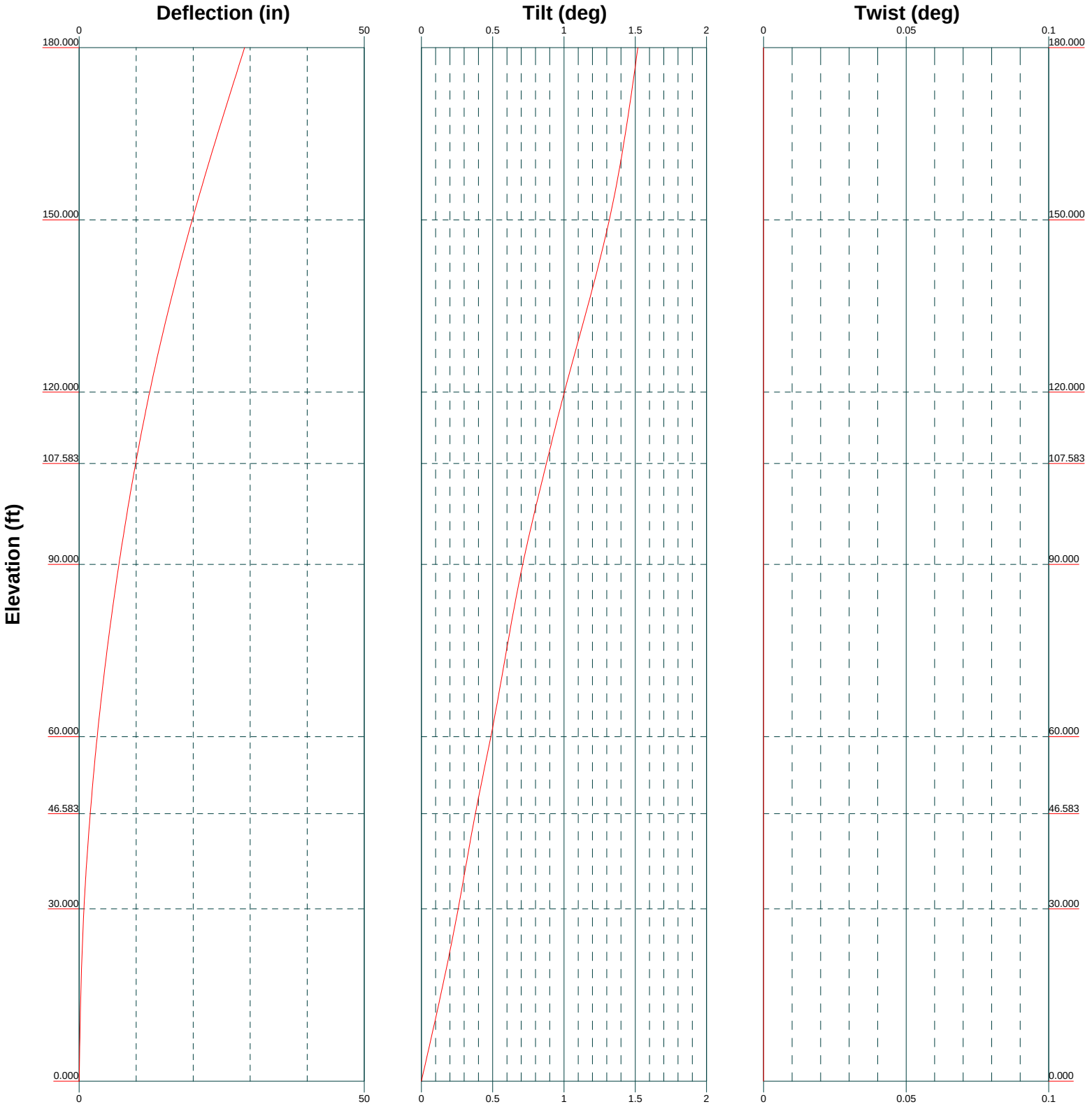


B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***85773.001.01 - Shoreline Sanitation, CT (BU#876331***		
Project:		
Client: Crown Castle	Drawn by: VenuAmbati	App'd:
Code: TIA/EIA-222-F	Date: 05/12/14	Scale: NTS
Path: S:\Projects\Crown Castle\85773_876337_Shoreline Sanitation\Engineering\tnxTower\85773_002_01_Shoreline Sanitation.eri		Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values



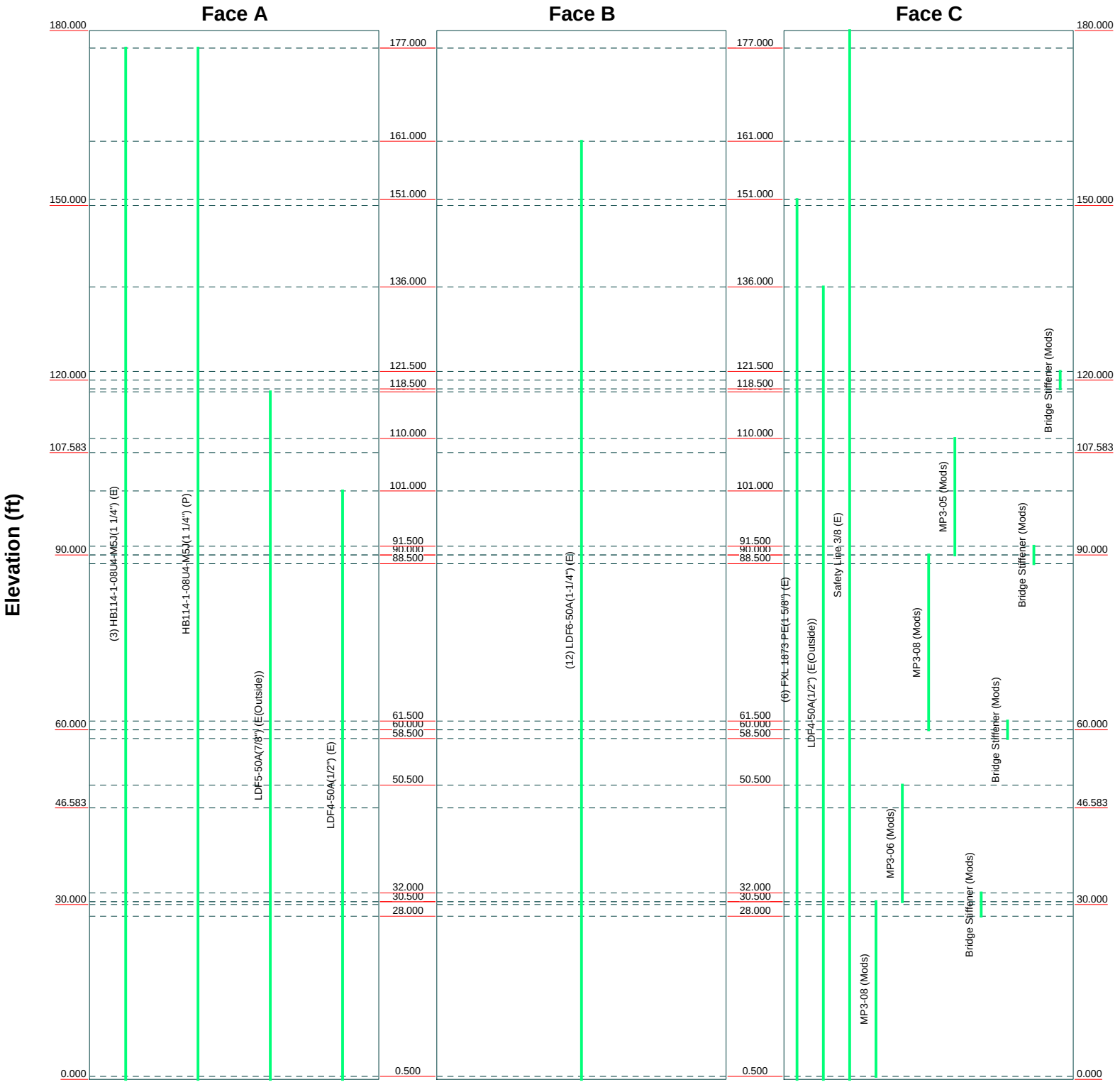
B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***85773.001.01 - Shoreline Sanitation, CT (BU#876337***			
Project:			
Client: Crown Castle	Drawn by: VenuAmbati	App'd:	
Code: TIA/EIA-222-F	Date: 05/12/14	Scale: NTS	
Path: S:\Projects\Crown Castle\85773_876337_Shoreline Sanitation\Engineering\tnxTower\85773_002_01_Shoreline Sanitation.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***85773.001.01 - Shoreline Sanitation, CT (BU#876337***		
Project:			
Client: Crown Castle	Drawn by: VenuAmbati	App'd:	
Code: TIA/EIA-222-F	Date: 05/12/14	Scale: NTS	
Path: S:\Projects\Crown Castle\85773_876337_Shoreline Sanitation\Engineering\tnxTower\85773_002_01_Shoreline Sanitation.eri		Dwg No. E-7	

Tower Input Data

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

Tower is located in New London County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
TOWER RATING: 92.4%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	180.000-150.000	30.000	P24x1/4	A53-B-42 (42 ksi)	
L2	150.000-120.000	30.000	P30x3/8	A53-B-42 (42 ksi)	
L3	120.000-107.583	12.417	P36x3/8	A53-B-42 (42 ksi)	
L4	107.583-90.000	17.583	P36x3/8 [0.553356]	35.902778ksi (36 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L5	90.000-60.000	30.000	P42x3/8 [0.655757]	34.410173ksi (34 ksi)	
L6	60.000-46.583	13.417	P48x1/2	A53-B-42 (42 ksi)	
L7	46.583-30.000	16.583	P48x1/2 [0.697878]	35.902778ksi (36 ksi)	
L8	30.000-0.000	30.000	P48x1/2 [0.742965]	35.902778ksi (36 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 180.000-150.000				1	1	1		
L2 150.000-120.000				1	1	1		
L3 120.000-107.583				1	1	1		
L4 107.583-90.000				1	1	0.956646		
L5 90.000-60.000				1	1	0.939708		
L6 60.000-46.583				1	1	1		
L7 46.583-30.000				1	1	0.96496		
L8 30.000-0.000				1	1	0.957608		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-08U4-M5J(1 1/4") (E)	A	No	Inside Pole	177.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-08U4-M5J(1 1/4") (P)	A	No	Inside Pole	177.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
$$$								
LDF6-50A(1-1/4") (E)	B	No	Inside Pole	161.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
$$$								
FXL 1873 PE(1 5/8") (E)	C	No	Inside Pole	151.000 - 0.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
$$$								
LDF4-50A(1/2") (E(Outside))	C	No	CaAa (Out Of Face)	136.000 - 0.000	1	No Ice	0.063	0.000
						1/2" Ice	0.163	0.001
						1" Ice	0.263	0.002
						2" Ice	0.463	0.007
						4" Ice	0.863	0.023
$$$								
LDF5-50A(7/8") (E(Outside))	A	No	CaAa (Out Of Face)	118.000 - 0.000	1	No Ice	0.109	0.000
						1/2" Ice	0.209	0.001
						1" Ice	0.309	0.003
						2" Ice	0.509	0.008
						4" Ice	0.909	0.025
$$$								
LDF4-50A(1/2") (E)	A	No	Inside Pole	101.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
$$$								
Safety Line 3/8 (E)	C	No	CaAa (Out Of Face)	180.000 - 0.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
$$$								
MP3-08 (Mods)	C	No	CaAa (Out Of Face)	30.500 - 0.500	1	No Ice	0.467	0.000
						1/2" Ice	0.551	0.000
						1" Ice	0.634	0.000
						2" Ice	0.800	0.000
						4" Ice	1.134	0.000
MP3-06 (Mods)	C	No	CaAa (Out Of Face)	50.500 - 30.500	1	No Ice	0.434	0.000
						1/2" Ice	0.518	0.000
						1" Ice	0.601	0.000
						2" Ice	0.768	0.000
						4" Ice	1.101	0.000
MP3-08 (Mods)	C	No	CaAa (Out Of Face)	90.000 - 60.000	1	No Ice	0.467	0.000
						1/2" Ice	0.551	0.000
						1" Ice	0.634	0.000
						2" Ice	0.800	0.000
						4" Ice	1.134	0.000
MP3-05 (Mods)	C	No	CaAa (Out Of Face)	110.000 - 90.000	1	No Ice	0.348	0.000
						1/2" Ice	0.432	0.000
						1" Ice	0.515	0.000
						2" Ice	0.682	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						4" Ice	1.015	0.000
//								
Bridge Stiffener (Mods)	C	No	CaAa (Out Of Face)	32.000 - 28.000	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Bridge Stiffener (Mods)	C	No	CaAa (Out Of Face)	61.500 - 58.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Bridge Stiffener (Mods)	C	No	CaAa (Out Of Face)	91.500 - 88.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Bridge Stiffener (Mods)	C	No	CaAa (Out Of Face)	121.500 - 118.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
$$$								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	180.000-150.000	A	0.000	0.000	0.000	0.000	0.117
		B	0.000	0.000	0.000	0.000	0.087
		C	0.000	0.000	0.000	1.125	0.007
L2	150.000-120.000	A	0.000	0.000	0.000	0.000	0.130
		B	0.000	0.000	0.000	0.000	0.238
		C	0.000	0.000	0.000	2.445	0.010
L3	120.000-107.583	A	0.000	0.000	0.000	1.135	0.057
		B	0.000	0.000	0.000	0.000	0.098
		C	0.000	0.000	0.000	2.402	0.005
L4	107.583-90.000	A	0.000	0.000	0.000	1.917	0.083
		B	0.000	0.000	0.000	0.000	0.139
		C	0.000	0.000	0.000	8.204	0.007
L5	90.000-60.000	A	0.000	0.000	0.000	3.270	0.144
		B	0.000	0.000	0.000	0.000	0.238
		C	0.000	0.000	0.000	17.655	0.012
L6	60.000-46.583	A	0.000	0.000	0.000	1.462	0.064
		B	0.000	0.000	0.000	0.000	0.106
		C	0.000	0.000	0.000	3.362	0.006
L7	46.583-30.000	A	0.000	0.000	0.000	1.808	0.080
		B	0.000	0.000	0.000	0.000	0.131
		C	0.000	0.000	0.000	9.302	0.007
L8	30.000-0.000	A	0.000	0.000	0.000	3.270	0.144
		B	0.000	0.000	0.000	0.000	0.238
		C	0.000	0.000	0.000	17.213	0.012

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	180.000-150.000	A	0.910	0.000	0.000	0.000	0.000	0.117
		B		0.000	0.000	0.000	0.000	0.087
		C		0.000	0.000	0.000	6.584	0.036
L2	150.000-120.000	A	0.888	0.000	0.000	0.000	0.000	0.130
		B		0.000	0.000	0.000	0.000	0.238
		C		0.000	0.000	0.000	10.838	0.066
L3	120.000-107.583	A	0.870	0.000	0.000	0.000	2.948	0.079
		B		0.000	0.000	0.000	0.000	0.098
		C		0.000	0.000	0.000	7.292	0.037
L4	107.583-90.000	A	0.855	0.000	0.000	0.000	4.925	0.120
		B		0.000	0.000	0.000	0.000	0.139
		C		0.000	0.000	0.000	16.942	0.052
L5	90.000-60.000	A	0.828	0.000	0.000	0.000	8.236	0.204
		B		0.000	0.000	0.000	0.000	0.238
		C		0.000	0.000	0.000	32.139	0.085
L6	60.000-46.583	A	0.794	0.000	0.000	0.000	3.594	0.090
		B		0.000	0.000	0.000	0.000	0.106
		C		0.000	0.000	0.000	8.343	0.036
L7	46.583-30.000	A	0.764	0.000	0.000	0.000	4.340	0.110
		B		0.000	0.000	0.000	0.000	0.131
		C		0.000	0.000	0.000	16.731	0.043
L8	30.000-0.000	A	0.750	0.000	0.000	0.000	7.770	0.197
		B		0.000	0.000	0.000	0.000	0.238
		C		0.000	0.000	0.000	30.151	0.076

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	180.000-150.000	-0.048	0.028	-0.240	0.139
L2	150.000-120.000	-0.103	0.059	-0.390	0.225
L3	120.000-107.583	-0.230	0.007	-0.577	0.064
L4	107.583-90.000	-0.509	0.156	-0.856	0.207
L5	90.000-60.000	-0.637	0.232	-0.977	0.275
L6	60.000-46.583	-0.299	0.022	-0.643	0.051
L7	46.583-30.000	-0.624	0.220	-0.971	0.270
L8	30.000-0.000	-0.637	0.228	-0.969	0.271

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.498 9.149 9.767	6.946 8.127 9.021	0.083 0.151 0.227

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	8.498	6.946	0.083
						1/2" Ice	9.149	8.127	0.151
						1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	8.498	6.946	0.083
						1/2" Ice	9.149	8.127	0.151
						1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
800MHz 2X50W RRH W/FILTER (E)	A	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.401	2.254	0.064
						1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER (E)	B	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.401	2.254	0.064
						1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER (E)	C	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.401	2.254	0.064
						1/2" Ice	2.613	2.460	0.086
						1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
PCS 1900MHz 4x45W-65MHz (E)	A	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.709	2.611	0.060
						1/2" Ice	2.948	2.847	0.083
						1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173
						4" Ice	4.862	4.744	0.347
PCS 1900MHz 4x45W-65MHz (E)	B	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.709	2.611	0.060
						1/2" Ice	2.948	2.847	0.083
						1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173
						4" Ice	4.862	4.744	0.347
PCS 1900MHz 4x45W-65MHz (E)	C	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	2.709	2.611	0.060
						1/2" Ice	2.948	2.847	0.083
						1" Ice	3.195	3.092	0.110
						2" Ice	3.716	3.608	0.173
						4" Ice	4.862	4.744	0.347
APXVTM14-C-120 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	7.134	4.959	0.077
						1/2" Ice	7.662	5.754	0.131
						1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
APXVTM14-C-120 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	7.134	4.959	0.077
						1/2" Ice	7.662	5.754	0.131
						1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
APXVTM14-C-120 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 2.000	0.000	177.000	No Ice	7.134	4.959	0.077
						1/2" Ice	7.662	5.754	0.131
						1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8x20-25	A	From Leg	4.000	0.000	177.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			2.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	B	From Leg	4.000	0.000	177.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			2.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	C	From Leg	4.000	0.000	177.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			2.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
Platform Mount [LP 502-1]	C	None		0.000	177.000	No Ice	32.347	32.347	0.925
(E)						1/2" Ice	45.668	45.668	1.193
						1" Ice	58.988	58.988	1.460
						2" Ice	85.629	85.629	1.995
						4" Ice	138.911	138.911	3.066
(2) 5' x 2" Pipe Mount	A	From Leg	4.000	0.000	177.000	No Ice	1.000	1.000	0.029
(E)			0.000			1/2" Ice	1.393	1.393	0.037
			0.000			1" Ice	1.703	1.703	0.048
						2" Ice	2.351	2.351	0.082
						4" Ice	3.778	3.778	0.196
(2) 5' x 2" Pipe Mount	B	From Leg	4.000	0.000	177.000	No Ice	1.000	1.000	0.029
(E)			0.000			1/2" Ice	1.393	1.393	0.037
			0.000			1" Ice	1.703	1.703	0.048
						2" Ice	2.351	2.351	0.082
						4" Ice	3.778	3.778	0.196
(2) 5' x 2" Pipe Mount	C	From Leg	4.000	0.000	177.000	No Ice	1.000	1.000	0.029
(E)			0.000			1/2" Ice	1.393	1.393	0.037
			0.000			1" Ice	1.703	1.703	0.048
						2" Ice	2.351	2.351	0.082
						4" Ice	3.778	3.778	0.196
$$$									
(4) DB844H90E-SX w/ Mount Pipe	A	From Leg	4.000	0.000	161.000	No Ice	3.104	5.154	0.028
(E)			0.000			1/2" Ice	3.476	5.833	0.068
			1.000			1" Ice	3.879	6.523	0.113
						2" Ice	4.761	7.959	0.224
						4" Ice	6.660	11.092	0.552
(4) DB844H90E-SX w/ Mount Pipe	B	From Leg	4.000	0.000	161.000	No Ice	3.104	5.154	0.028
(E)			0.000			1/2" Ice	3.476	5.833	0.068
			1.000			1" Ice	3.879	6.523	0.113
						2" Ice	4.761	7.959	0.224
						4" Ice	6.660	11.092	0.552
(4) DB844H90E-SX w/ Mount Pipe	C	From Leg	4.000	0.000	161.000	No Ice	3.104	5.154	0.028
(E)			0.000			1/2" Ice	3.476	5.833	0.068
			1.000			1" Ice	3.879	6.523	0.113
						2" Ice	4.761	7.959	0.224
						4" Ice	6.660	11.092	0.552
T-Arm Mount [TA 602-3]	C	None		0.000	161.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
						2" Ice	26.990	26.990	1.639
						4" Ice	42.390	42.390	2.503
$$$									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800 10504 w/ Mount Pipe	A	From Leg	4.000	0.000	151.000	No Ice	3.589	3.178	0.038
(E)			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109
						2" Ice	5.339	5.982	0.207
						4" Ice	7.385	8.983	0.514
800 10504 w/ Mount Pipe	B	From Leg	4.000	0.000	151.000	No Ice	3.589	3.178	0.038
(E)			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109
						2" Ice	5.339	5.982	0.207
						4" Ice	7.385	8.983	0.514
800 10504 w/ Mount Pipe	C	From Leg	4.000	0.000	151.000	No Ice	3.589	3.178	0.038
(E)			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109
						2" Ice	5.339	5.982	0.207
						4" Ice	7.385	8.983	0.514
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	151.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	151.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	151.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
T-Arm Mount [TA 602-3]	C	None		0.000	151.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
						2" Ice	26.990	26.990	1.639
						4" Ice	42.390	42.390	2.503
$$$									
6812B-1	A	From Leg	1.000	0.000	136.000	No Ice	0.200	0.200	0.003
(E)			0.000			1/2" Ice	0.220	0.220	0.006
			0.000			1" Ice	0.240	0.240	0.010
						2" Ice	0.280	0.280	0.017
						4" Ice	0.360	0.360	0.030
Side Arm Mount [SO 701-1]	A	From Leg	0.500	0.000	136.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
$$$									
DB806-XT	A	From Leg	1.000	0.000	118.000	No Ice	1.140	1.140	0.021
(E)			0.000			1/2" Ice	1.675	1.675	0.030
			3.000			1" Ice	2.025	2.025	0.043
						2" Ice	2.753	2.753	0.080
						4" Ice	4.320	4.320	0.208
Side Arm Mount [SO 701-1]	A	From Leg	0.500	0.000	118.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
$$$									
KS24019-L112A	A	From Leg	1.000	0.000	101.000	No Ice	0.156	0.156	0.005
(E)			0.000			1/2" Ice	0.225	0.225	0.007
			0.000			1" Ice	0.302	0.302	0.009
						2" Ice	0.484	0.484	0.018
						4" Ice	0.951	0.951	0.056
Side Arm Mount [SO 701-1]	A	From Leg	0.500	0.000	101.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
$$$									

Load Combinations

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

Comb. No.	Description
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	180 - 150	Pole	Max Tension	5	0.000	0.000	-0.000
			Max. Compression	14	-10.886	0.031	-0.018
			Max. Mx	11	-5.565	220.008	0.004
			Max. My	8	-5.567	0.008	-219.987
			Max. Vy	11	-11.750	220.008	0.004
			Max. Vx	2	-11.749	0.008	219.984
			Max. Torque	20			-0.010
L2	150 - 120	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-15.986	0.101	0.120
			Max. Mx	11	-9.638	608.818	0.123
			Max. My	2	-9.642	0.020	608.247
			Max. Vy	11	-14.133	608.818	0.123
			Max. Vx	2	-14.093	0.020	608.247
			Max. Torque	5			0.146
L3	120 - 107.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-18.590	0.148	0.408
			Max. Mx	11	-11.695	792.988	0.298
			Max. My	2	-11.700	0.027	791.713
			Max. Vy	11	-15.419	792.988	0.298
			Max. Vx	2	-15.342	0.027	791.713
			Max. Torque	11			-0.425
L4	107.583 - 90	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-23.203	0.214	0.633
			Max. Mx	11	-15.583	1080.879	0.444
			Max. My	2	-15.589	0.035	1077.995
			Max. Vy	11	-17.298	1080.879	0.444
			Max. Vx	2	-17.185	0.035	1077.995
			Max. Torque	5			0.572
L5	90 - 60	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.199	0.341	0.683
			Max. Mx	11	-24.253	1650.073	0.461
			Max. My	2	-24.258	0.050	1643.791
			Max. Vy	11	-20.613	1650.073	0.461
			Max. Vx	2	-20.500	0.050	1643.791
			Max. Torque	4			0.577
L6	60 - 46.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-37.474	0.403	0.707
			Max. Mx	11	-27.928	1934.908	0.467
			Max. My	2	-27.932	0.059	1927.106
			Max. Vy	11	-21.849	1934.908	0.467
			Max. Vx	2	-21.736	0.059	1927.106
			Max. Torque	4			0.591
L7	46.583 - 30	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-44.159	0.476	0.735
			Max. Mx	11	-33.903	2310.090	0.475
			Max. My	2	-33.906	0.069	2300.414
			Max. Vy	11	-23.395	2310.090	0.475
			Max. Vx	2	-23.283	0.069	2300.414
			Max. Torque	4			0.608

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L8	30 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-56.793	0.607	0.786
			Max. Mx	11	-45.374	3049.035	0.484
			Max. My	2	-45.374	0.087	3035.999
			Max. Vy	11	-25.818	3049.035	0.484
			Max. Vx	2	-25.707	0.087	3035.999
			Max. Torque	3			0.693

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	56.793	0.000	0.000
	Max. H_x	11	45.384	25.801	0.000
	Max. H_z	2	45.384	0.000	25.691
	Max. M_x	2	3035.999	0.000	25.691
	Max. M_z	5	3048.861	-25.801	0.000
	Max. Torsion	3	0.693	-12.901	22.249
	Min. Vert	1	45.384	0.000	0.000
	Min. H_x	5	45.384	-25.801	0.000
	Min. H_z	8	45.384	0.000	-25.691
	Min. M_x	8	-3035.029	0.000	-25.691
	Min. M_z	11	-3049.035	25.801	0.000
	Min. Torsion	9	-0.692	12.901	-22.249

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	45.384	0.000	0.000	-0.467	0.085	0.000
Dead+Wind 0 deg - No Ice	45.384	-0.000	-25.691	-3035.999	0.087	-0.564
Dead+Wind 30 deg - No Ice	45.384	12.901	-22.249	-2629.315	-1524.394	-0.693
Dead+Wind 60 deg - No Ice	45.384	22.344	-12.845	-1518.237	-2640.384	-0.636
Dead+Wind 90 deg - No Ice	45.384	25.801	-0.000	-0.484	-3048.861	-0.408
Dead+Wind 120 deg - No Ice	45.384	22.344	12.845	1517.268	-2640.384	-0.070
Dead+Wind 150 deg - No Ice	45.384	12.901	22.249	2628.346	-1524.393	0.286
Dead+Wind 180 deg - No Ice	45.384	-0.000	25.691	3035.029	0.087	0.564
Dead+Wind 210 deg - No Ice	45.384	-12.901	22.249	2628.347	1524.567	0.692
Dead+Wind 240 deg - No Ice	45.384	-22.344	12.845	1517.269	2640.558	0.635
Dead+Wind 270 deg - No Ice	45.384	-25.801	-0.000	-0.484	3049.035	0.408
Dead+Wind 300 deg - No Ice	45.384	-22.344	-12.845	-1518.237	2640.559	0.072
Dead+Wind 330 deg - No Ice	45.384	-12.901	-22.249	-2629.316	1524.567	-0.284
Dead+Ice+Temp	56.793	0.000	0.000	-0.786	0.607	0.000
Dead+Wind 0 deg+Ice+Temp	56.793	0.000	-6.521	-796.378	0.631	-0.242
Dead+Wind 30 deg+Ice+Temp	56.793	3.280	-5.648	-689.795	-399.553	-0.274
Dead+Wind 60 deg+Ice+Temp	56.793	5.682	-3.261	-398.604	-692.507	-0.233
Dead+Wind 90 deg+Ice+Temp	56.793	6.560	0.000	-0.829	-799.736	-0.129
Dead+Wind 120 deg+Ice+Temp	56.793	5.682	3.261	396.945	-692.507	0.009
Dead+Wind 150 deg+Ice+Temp	56.793	3.280	5.648	688.136	-399.553	0.145
Dead+Wind 180 deg+Ice+Temp	56.793	0.000	6.521	794.719	0.631	0.242
Dead+Wind 210 deg+Ice+Temp	56.793	-3.280	5.648	688.136	400.815	0.274

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg+Ice+Temp	56.793	-5.682	3.261	396.945	693.770	0.233
Dead+Wind 270 deg+Ice+Temp	56.793	-6.560	0.000	-0.829	800.999	0.129
Dead+Wind 300 deg+Ice+Temp	56.793	-5.682	-3.261	-398.604	693.770	-0.009
Dead+Wind 330 deg+Ice+Temp	56.793	-3.280	-5.648	-689.795	400.815	-0.145
Dead+Wind 0 deg - Service	45.384	0.000	-8.889	-1051.485	0.087	-0.196
Dead+Wind 30 deg - Service	45.384	4.464	-7.698	-910.677	-527.739	-0.240
Dead+Wind 60 deg - Service	45.384	7.732	-4.445	-525.985	-914.135	-0.221
Dead+Wind 90 deg - Service	45.384	8.928	0.000	-0.486	-1055.566	-0.142
Dead+Wind 120 deg - Service	45.384	7.732	4.445	525.013	-914.135	-0.025
Dead+Wind 150 deg - Service	45.384	4.464	7.698	909.705	-527.739	0.099
Dead+Wind 180 deg - Service	45.384	0.000	8.889	1050.512	0.087	0.196
Dead+Wind 210 deg - Service	45.384	-4.464	7.698	909.705	527.914	0.240
Dead+Wind 240 deg - Service	45.384	-7.732	4.445	525.013	914.310	0.221
Dead+Wind 270 deg - Service	45.384	-8.928	0.000	-0.486	1055.741	0.142
Dead+Wind 300 deg - Service	45.384	-7.732	-4.445	-525.985	914.310	0.025
Dead+Wind 330 deg - Service	45.384	-4.464	-7.698	-910.678	527.914	-0.098

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-45.384	0.000	0.000	45.384	0.000	0.000%
2	0.000	-45.384	-25.691	0.000	45.384	25.691	0.000%
3	12.901	-45.384	-22.249	-12.901	45.384	22.249	0.000%
4	22.344	-45.384	-12.845	-22.344	45.384	12.845	0.000%
5	25.801	-45.384	0.000	-25.801	45.384	0.000	0.000%
6	22.344	-45.384	12.845	-22.344	45.384	-12.845	0.000%
7	12.901	-45.384	22.249	-12.901	45.384	-22.249	0.000%
8	0.000	-45.384	25.691	0.000	45.384	-25.691	0.000%
9	-12.901	-45.384	22.249	12.901	45.384	-22.249	0.000%
10	-22.344	-45.384	12.845	22.344	45.384	-12.845	0.000%
11	-25.801	-45.384	0.000	25.801	45.384	0.000	0.000%
12	-22.344	-45.384	-12.845	22.344	45.384	12.845	0.000%
13	-12.901	-45.384	-22.249	12.901	45.384	22.249	0.000%
14	0.000	-56.793	0.000	0.000	56.793	0.000	0.000%
15	0.000	-56.793	-6.521	0.000	56.793	6.521	0.000%
16	3.280	-56.793	-5.648	-3.280	56.793	5.648	0.000%
17	5.682	-56.793	-3.261	-5.682	56.793	3.261	0.000%
18	6.560	-56.793	0.000	-6.560	56.793	0.000	0.000%
19	5.682	-56.793	3.261	-5.682	56.793	-3.261	0.000%
20	3.280	-56.793	5.648	-3.280	56.793	-5.648	0.000%
21	0.000	-56.793	6.521	0.000	56.793	-6.521	0.000%
22	-3.280	-56.793	5.648	3.280	56.793	-5.648	0.000%
23	-5.682	-56.793	3.261	5.682	56.793	-3.261	0.000%
24	-6.560	-56.793	0.000	6.560	56.793	0.000	0.000%
25	-5.682	-56.793	-3.261	5.682	56.793	3.261	0.000%
26	-3.280	-56.793	-5.648	3.280	56.793	5.648	0.000%
27	0.000	-45.384	-8.889	0.000	45.384	8.889	0.000%
28	4.464	-45.384	-7.698	-4.464	45.384	7.698	0.000%
29	7.732	-45.384	-4.445	-7.732	45.384	4.445	0.000%
30	8.928	-45.384	0.000	-8.928	45.384	0.000	0.000%
31	7.732	-45.384	4.445	-7.732	45.384	-4.445	0.000%
32	4.464	-45.384	7.698	-4.464	45.384	-7.698	0.000%
33	0.000	-45.384	8.889	0.000	45.384	-8.889	0.000%
34	-4.464	-45.384	7.698	4.464	45.384	-7.698	0.000%
35	-7.732	-45.384	4.445	7.732	45.384	-4.445	0.000%
36	-8.928	-45.384	0.000	8.928	45.384	0.000	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
37	-7.732	-45.384	-4.445	7.732	45.384	4.445	0.000%
38	-4.464	-45.384	-7.698	4.464	45.384	7.698	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	0.00023470
3	Yes	5	0.00000001	0.00035395
4	Yes	5	0.00000001	0.00036244
5	Yes	4	0.00000001	0.00031928
6	Yes	5	0.00000001	0.00035498
7	Yes	5	0.00000001	0.00035756
8	Yes	4	0.00000001	0.00023460
9	Yes	5	0.00000001	0.00036128
10	Yes	5	0.00000001	0.00035297
11	Yes	4	0.00000001	0.00031930
12	Yes	5	0.00000001	0.00036030
13	Yes	5	0.00000001	0.00035754
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00020730
16	Yes	5	0.00000001	0.00022570
17	Yes	5	0.00000001	0.00022637
18	Yes	5	0.00000001	0.00020778
19	Yes	5	0.00000001	0.00022564
20	Yes	5	0.00000001	0.00022521
21	Yes	5	0.00000001	0.00020670
22	Yes	5	0.00000001	0.00022568
23	Yes	5	0.00000001	0.00022587
24	Yes	5	0.00000001	0.00020810
25	Yes	5	0.00000001	0.00022657
26	Yes	5	0.00000001	0.00022613
27	Yes	4	0.00000001	0.00008862
28	Yes	4	0.00000001	0.00070522
29	Yes	4	0.00000001	0.00074401
30	Yes	4	0.00000001	0.00009517
31	Yes	4	0.00000001	0.00070916
32	Yes	4	0.00000001	0.00072031
33	Yes	4	0.00000001	0.00008849
34	Yes	4	0.00000001	0.00073753
35	Yes	4	0.00000001	0.00070076
36	Yes	4	0.00000001	0.00009519
37	Yes	4	0.00000001	0.00073403
38	Yes	4	0.00000001	0.00072089

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	180 - 150	29.014	36	1.520	0.001
L2	150 - 120	19.827	36	1.321	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	120 - 107.583	12.365	36	1.005	0.000
L4	107.583 - 90	9.911	36	0.876	0.000
L5	90 - 60	6.977	36	0.709	0.000
L6	60 - 46.583	3.166	36	0.489	0.000
L7	46.583 - 30	1.948	36	0.376	0.000
L8	30 - 0	0.843	36	0.257	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSPP18-C-A20 w/ Mount Pipe	36	28.062	1.504	0.001	32122
161.000	(4) DB844H90E-SX w/ Mount Pipe	36	23.068	1.406	0.001	8453
151.000	800 10504 w/ Mount Pipe	36	20.112	1.329	0.001	5610
136.000	6812B-1	36	16.078	1.181	0.001	5061
118.000	DB806-XT	36	11.945	0.984	0.000	4916
101.000	KS24019-L112A	36	8.746	0.810	0.000	6332

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	180 - 150	83.708	11	4.387	0.002
L2	150 - 120	57.219	11	3.811	0.002
L3	120 - 107.583	35.693	11	2.901	0.001
L4	107.583 - 90	28.613	11	2.530	0.001
L5	90 - 60	20.143	11	2.047	0.001
L6	60 - 46.583	9.143	11	1.411	0.000
L7	46.583 - 30	5.624	11	1.086	0.000
L8	30 - 0	2.435	11	0.741	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSPP18-C-A20 w/ Mount Pipe	11	80.963	4.339	0.002	11250
161.000	(4) DB844H90E-SX w/ Mount Pipe	11	66.565	4.057	0.002	2959
151.000	800 10504 w/ Mount Pipe	11	58.041	3.836	0.002	1962
136.000	6812B-1	11	46.407	3.408	0.002	1766
118.000	DB806-XT	11	34.482	2.839	0.001	1712
101.000	KS24019-L112A	11	25.249	2.339	0.001	2201

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	180 - 150 (1)	P24x1/4	30.000	0.000	0.0	23.696	18.653	-5.565	442.003	0.013
L2	150 - 120 (2)	P30x3/8	30.000	0.000	0.0	25.075	34.901	-9.638	875.146	0.011
L3	120 - 107.583 (3)	P36x3/8	12.417	0.000	0.0	23.696	41.970	-11.695	994.507	0.012
L4	107.583 - 90 (4)	P36x3/8 [0.553356]	17.583	0.000	0.0	21.542	61.621	-15.583	1327.420	0.012
L5	90 - 60 (5)	P42x3/8 [0.655757]	30.000	0.000	0.0	20.646	85.174	-24.253	1758.510	0.014
L6	60 - 46.583 (6)	P48x1/2	13.417	0.000	0.0	23.696	74.613	-27.928	1768.010	0.016
L7	46.583 - 30 (7)	P48x1/2 [0.697878]	16.583	0.000	0.0	21.542	103.707	-33.903	2234.030	0.015
L8	30 - 0 (8)	P48x1/2 [0.742965]	30.000	0.000	0.0	21.542	110.302	-45.374	2376.100	0.019

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	180 - 150 (1)	P24x1/4	220.008	24.086	23.696	1.016	0.000	0.000	23.696	0.000
L2	150 - 120 (2)	P30x3/8	608.818	28.617	25.075	1.141	0.000	0.000	25.075	0.000
L3	120 - 107.583 (3)	P36x3/8	792.987	25.723	23.696	1.086	0.000	0.000	23.696	0.000
L4	107.583 - 90 (4)	P36x3/8 [0.553356]	1080.875	24.118	23.696	1.018	0.000	0.000	23.696	0.000
L5	90 - 60 (5)	P42x3/8 [0.655757]	1650.075	22.843	22.711	1.006	0.000	0.000	22.711	0.000
L6	60 - 46.583 (6)	P48x1/2	1934.908	26.479	23.696	1.117	0.000	0.000	23.696	0.000
L7	46.583 - 30 (7)	P48x1/2 [0.697878]	2310.092	22.932	23.696	0.968	0.000	0.000	23.696	0.000
L8	30 - 0 (8)	P48x1/2 [0.742965]	3049.033	28.512	23.696	1.203	0.000	0.000	23.696	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	180 - 150 (1)	P24x1/4	11.750	1.260	16.800	0.075	0.004	0.000	11.901	0.000
L2	150 - 120 (2)	P30x3/8	14.133	0.810	16.800	0.048	0.140	0.003	15.644	0.000
L3	120 - 107.583 (3)	P36x3/8	15.419	0.735	16.800	0.044	0.424	0.007	11.901	0.001
L4	107.583 - 90 (4)	P36x3/8 [0.553356]	17.298	0.561	14.361	0.039	0.560	0.006	14.361	0.000
L5	90 - 60 (5)	P42x3/8 [0.655757]	20.613	0.484	13.764	0.035	0.498	0.003	13.764	0.000
L6	60 - 46.583 (6)	P48x1/2	21.849	0.586	16.800	0.035	0.493	0.003	11.901	0.000
L7	46.583 - 30 (7)	P48x1/2 [0.697878]	23.395	0.451	14.361	0.031	0.464	0.002	14.361	0.000
L8	30 - 0 (8)	P48x1/2 [0.742965]	25.818	0.468	14.361	0.033	0.411	0.002	14.361	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	180 - 150 (1)	0.013	1.016	0.000	0.075	0.000	1.035 ✔	1.333	H1-3+VT ✔
L2	150 - 120 (2)	0.011	1.141	0.000	0.048	0.000	1.155 ✔	1.333	H1-3+VT ✔
L3	120 - 107.583 (3)	0.012	1.086	0.000	0.044	0.001	1.099 ✔	1.333	H1-3+VT ✔
L4	107.583 - 90 (4)	0.012	1.018	0.000	0.039	0.000	1.031 ✔	1.333	H1-3+VT ✔
L5	90 - 60 (5)	0.014	1.006	0.000	0.035	0.000	1.021 ✔	1.333	H1-3+VT ✔
L6	60 - 46.583 (6)	0.016	1.117	0.000	0.035	0.000	1.134 ✔	1.333	H1-3+VT ✔
L7	46.583 - 30 (7)	0.015	0.968	0.000	0.031	0.000	0.984 ✔	1.333	H1-3+VT ✔
L8	30 - 0 (8)	0.019	1.203	0.000	0.033	0.000	1.223 ✔	1.333	H1-3+VT ✔

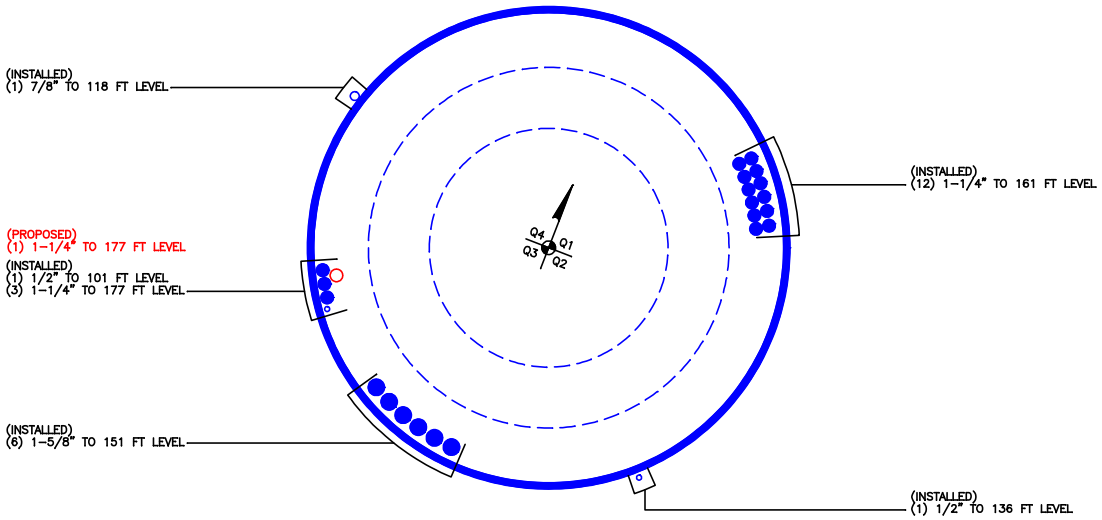
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	180 - 150	Pole	P24x1/4	1	-5.565	589.190		Pass
L2	150 - 120	Pole	P30x3/8	2	-9.638	1166.570		Pass
L3	120 - 107.583	Pole	P36x3/8	3	-11.695	1325.678		Pass
L4	107.583 - 90	Pole	P36x3/8 [0.553356]	4	-15.583	1769.451		Pass
L5	90 - 60	Pole	P42x3/8 [0.655757]	5	-24.253	2344.094		Pass
L6	60 - 46.583	Pole	P48x1/2	6	-27.928	2356.757		Pass
L7	46.583 - 30	Pole	P48x1/2 [0.697878]	7	-33.903	2977.962		Pass
L8	30 - 0	Pole	P48x1/2 [0.742965]	8	-45.374	3167.341		Pass
							Summary	
						Pole (L8)	92.4	Pass
						RATING =	**92.4**	**Pass**

Program Version 6.1.4.1 - 12/17/2013

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876337 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	30	3	MP308	C	0	T&C
30	46.583	3	MP306	C	0	T&C
60	90	3	MP308	C	0	T&C
90	107.583	3	MP305	C	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

	Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.
1	150.0000	180.0000	0.2500	42	57	77.7%										**77.7%**	180.0000	30.0000	0.0000	Round	24.0000	24.0000	0.2500	42.0	1.00
2	120.0000	150.0000	0.3750	42	57	87.3%										**87.3%**	150.0000	30.0000	0.0000	Round	30.0000	30.0000	0.3750	42.0	1.00
3	107.5830	120.0000	0.3750	42	57	83.2%										**83.2%**	120.0000	12.4170	0.0000	Round	36.0000	36.0000	0.3750	42.0	1.00
4	90.0000	107.5830	0.3750	42	57	78.3%	3	MP305	55.6%							**78.3%**	107.5830	17.5830	0.0000	Round	36.0000	36.0000	0.5534	35.9	0.96
5	60.0000	90.0000	0.3750	42	57	77.5%	3	MP308	51.1%							**77.5%**	90.0000	30.0000	0.0000	Round	42.0000	42.0000	0.6558	34.4	0.94
6	46.5830	60.0000	0.5000	42	57	85.6%										**85.6%**	60.0000	13.4170	0.0000	Round	48.0000	48.0000	0.5000	42.0	1.00
7	30.0000	46.5830	0.5000	42	57	74.4%	3	MP306	51.2%							**74.4%**	46.5830	16.5830	0.0000	Round	48.0000	48.0000	0.6979	35.9	0.96
8	0.0000	30.0000	0.5000	42	57	92.4%	3	MP308	63.2%							**92.4%**	30.0000	30.0000	0.0000	Round	48.0000	48.0000	0.7430	35.9	0.96
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									
17																									
18																									
19																									
20																									
21																									
22																									
23																									
24																									
25																									
26																									
27																									
28																									
29																									
30																									

	Top Elevation Failure	Bottom Elevation Failure	Section Failure %
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

Reinforced Pole Stress and Effective Thickness Check

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Section		Loads				Pole														Unreinforced Pole - Rev. F					Reinforced Pole					Rev. F	Reinforcement 1								Composite							
Section	Elevation (ft)	Moment (ft-kip)	Compression (kip)	Shear (kip)	Torsion (kip-ft)	Number of Sides	OD (in)	Thickness (in)	Yield Strength (ksi)	Flat Width (in)	Area (in^2)	Moment of Inertia (in^4)	Percent of Composite Moment of Inertia	Angle Offset to Pole Flat	Distance to Extreme Fiber (in)	Section Modulus (in^3)	Torsion Constant (in^4)	Polygonal Compact Criterion	Allowable Bending Stress (ksi)	Allowable Bending Moment Strength (ft-kip)	Allowable Axial Stress (ksi)	Allowable Shear Stress (ksi)	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Torsion Shear Stress (ksi)	Stress Ratio	Moment in Pole when Reinforced	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Torsion Shear Stress (ksi)	Reinforced Pole Stress Ratio	Qty	Model	Position (F-Flat, C-Corner)	Gap Between Pole and Back of Rein. (in)	Tension only or Tension & Comp.	Total Moment of Inertia (in^4)	Axial Force (kip)	Stress Ratio	Centroid Offset (in)	Area (in^2)	Moment of Inertia (in^4)	Controlling Stress Ratio	Thickness (in)	Weight Multiplier	Derated Yield Stress (ksi)	% Error in Derated Yield Stress
1	180	0.0	0.0	0.0	0.0	Round	24.0000	0.5000	42	0.00	36.9	2549	100%	TRUE	12.00	212	5099	0	37.0	654.2	33.6	22.4	0.0	0.00	0.00	0.00	0.000	0.0	0.0	0.00	0.00	0.00	0.000									0.000	36.9	2549	0.000	0.5000	1.00	42.0	168.3%
2	150	221.8	5.3	11.9	0.0	Round	24.0000	0.2500	42	0.00	18.7	1315	100%	TRUE	12.00	110	2631	0	31.6	288.5	33.6	22.4	24.3	0.29	0.00	0.00	0.777	221.8	24.3	0.29	0.00	0.00	0.777									0.000	18.7	1315	0.777	0.2500	1.00	42.0	0.5%
3	120	615.3	9.3	14.3	0.1	Round	30.0000	0.3750	42	0.00	34.9	3829	100%	TRUE	15.00	255	7659	0	33.4	711.1	33.6	22.4	28.9	0.27	0.00	0.00	0.873	615.3	28.9	0.27	0.00	0.00	0.873									0.000	34.9	3829	0.873	0.3750	1.00	42.0	0.1%
4	107.583	802.6	11.4	15.7	0.4	Round	36.0000	0.3750	42	0.00	42.0	6659	100%	TRUE	18.00	370	13318	0	31.6	973.8	33.6	22.4	26.0	0.27	0.00	0.01	0.832	802.6	26.0	0.27	0.00	0.00	0.832									0.000	42.0	6659	0.832	0.3750	1.00	42.0	0.2%
5	90	1095.0	14.3	17.5	0.5	Round	36.0000	0.3750	42	0.00	42.0	6659	69%	TRUE	18.00	370	13318	0	31.6	973.8	33.6	22.4	35.5	0.34	0.00	0.01	1.135	752.9	24.4	0.34	0.00	0.00	0.783	3	MP305	C	0	T&C	3027	144.2	0.556	0.000	58.9	9686	0.783	0.5534	0.96	35.9	0.2%
6	60	1668.7	19.9	20.7	0.5	Round	42.0000	0.3750	42	0.00	49.0	10622	58%	TRUE	21.00	506	21243	0	30.3	1276.0	33.6	22.4	39.6	0.41	0.00	0.01	1.320	973.1	23.1	0.41	0.00	0.00	0.775	3	MP308	C	0	T&C	7591	249.4	0.511	0.000	80.0	18213	0.775	0.6558	0.94	34.4	0.4%
7	46.583	1955.0	23.6	22.0	0.5	Round	48.0000	0.5000	42	0.00	74.6	21045	100%	TRUE	24.00	877	42091	0	31.6	2308.2	33.6	22.4	26.8	0.32	0.00	0.00	0.856	1955.0	26.8	0.32	0.00	0.00	0.856									0.000	74.6	21045	0.856	0.5000	1.00	42.0	0.1%
8	30	2132.4	28.1	23.5	0.4	Round	48.0000	0.5000	42	0.00	74.6	21045	73%	TRUE	24.00	877	42091	0	31.6	2308.2	33.6	22.4	31.9	0.38	0.00	0.00	1.021	1691.0	23.1	0.38	0.00	0.00	0.744	3	MP306	C	0	T&C	7982	203.8	0.512	0.000	100.0	29028	0.744	0.6979	0.96	35.9	0.2%
9	0	3073.6	36.6	25.8	0.4	Round	48.0000	0.5000	42	0.00	74.6	21045	68%	TRUE	24.00	877	42091	0	31.6	2308.2	33.6	22.4	42.1	0.49	0.00	0.00	1.346	2099.1	28.7	0.49	0.00	0.00	0.924	3	MP308	C	0	T&C	9769	308.5	0.632	0.000	105.6	30815	0.924	0.7430	0.96	35.9	0.4%
																											1.346						0.924						0.632				0.924				

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	30	3	MP308	C	T&C
30	46.583	3	MP306	C	T&C
60	90	3	MP308	C	T&C
90	107.583	3	MP305	C	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1	1															
1	1	1															
1	1	1															
1	1	1															

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
MP305	19.2	5.65	2.15	20.79	0.79	0	0.5	5.33	2.09	0.91	1.21875	65	80	0.80	18	1.00	18	194.5	259.3	Rupture	**291.8**	Rupture
MP308	35.1	10.32	6.48	82.29	0.95	0	0.76	7.93	2.8	1.01	1.21875	65	80	0.80	24	1.00	24	366.0	487.9	Rupture	**548.9**	Rupture

PROJECT	**85773.001 - Shoreline Sanitation, CT - BU# 876337**				
SUBJECT	**Modified Anchor Rod Calcs**				
DATE	**05/13/14**	PAGE	1	OF	1

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SS

LOADS AND GEOMETRY:

M = 3049 k-ft = 36588 k-in (….tnx Output)

Check New Anchor Rods:

(11) 1.75" Fu= 150ksi rods on 55.5" BC:

I_{BC} = 20802.45 in^4

$\check{y}$ = 27.75 in

$$S_{BC} = \frac{I_{BC}}{\check{y}} = \frac{20802.45 \text{ ksi}}{27.75 \text{ in}^3}$$

$$= 749.64 \text{ in}^3$$

$T_b = f_t \times Ag$ = 48.8 x 2.41 = 117.38 k **Unity % = 74.0%**

Determine Equivalent Moment taken by New Anchor Rods:

I original / I total = 12650.0/20802.45 = 60.80%

M_{REMAIN} = 3049 * .608 = **1853.8 k-ft** **<= Enter This moment into Base Plate Tool**

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

TIA Rev F

Site Data

BU#:	*876337*
Site Name:	*SHORELINE SANITATION*
App #:	*245409 Rev# 0*
Pole Manufacturer:	*Other*

Reactions		
Moment:	1853.8	ft-kips
Axial:	45	kips
Shear:	26	kips

Anchor Rod Data		
Qty:	20	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	53.5	in

Plate Data		
Diam:	59	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.54	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.3125	in
Width:	8	in
Height:	18	in
Thick:	1.25	in
Notch:	0.75	in
Grade:	65	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	48	in
Thick:	0.5	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	80.9	Kips	Rigid
Allowable Tension:	97.2	Kips	Service, ASD
Anchor Rod Stress Ratio:	83.3%	**Pass**	Fty*ASIF

Base Plate Results — Flexural Check

Base Plate Stress:	29.8	ksi	Rigid
Allowable Plate Stress:	36.0	ksi	Service ASD
Base Plate Stress Ratio:	82.8%	**Pass**	0.75*Fy*ASIF
			Y.L. Length: 23.63

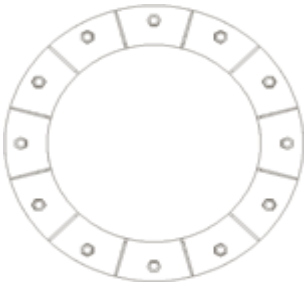
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a



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

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

PROJECT	**876337 - SHORELINE SANITATION, CT**				
SUBJECT	**Foundation Analysis**				
DATE	**05/13/14**	PAGE	1	OF	1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Monopole Pad & Pier Foundation Analysis

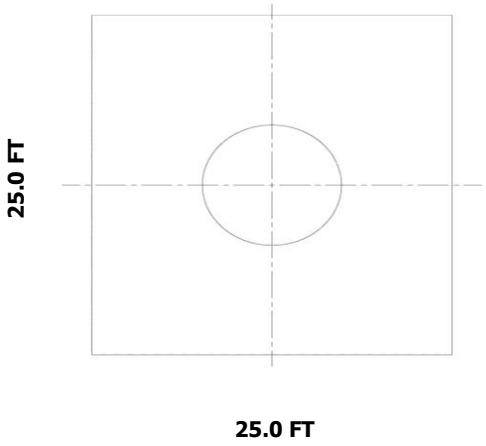
Rev. Type: F

Design Loads:

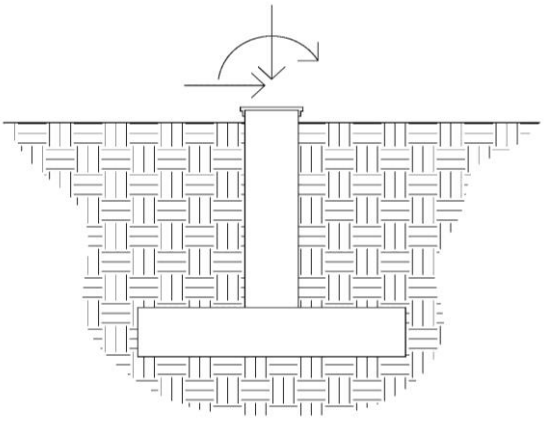
	Input unfactored loads	
Shear:	26.0	kips
Moment:	3,049.0	ft-kips
Tower Height:	180.0	ft
Tower Weight:	45.0	kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	48.00	in
Bearing Depth:	4.7	ft
Pad Width:	25.0	ft
Neglected Depth:	3.3	ft
Thickness:	7.3	ft
Pier Diameter:	0.0	ft
Pier Height Above Grade:	2.7	ft
BP Dist. Above Pier:	0.0	in
Clear Cover:	3.0	in
Pad Rebar Size:	11	
Pad Rebar Quanity:	23	
Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	0.15	kcf



Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	0.115	kcf
Ult. Bearing Capacity:	120.000	ksf
Angle of Friction:	30.000	deg
Cohesion:	0.000	ksf
Passive Pressure:	0.000	ksf
Base Friction:	0.300	

** Notes:

Summary of Results

Overturning	68.7%
Shear Capacity	30.8%
Bearing	3.0%
Pad Shear - 1-way	16.5%
Pad Shear - 2-way	1.6%
Pad Moment Capacity	17.8%

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Global Stiffener:

Flange:

Ix = 21954.3 in^4
C = 34.25 in

$$Sx = \frac{Ix}{C} = \frac{21954.3}{34.25} = 641.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} = \frac{2310.08}{641.00} \times 12 = 43.25 \text{ ksi}$$

M = 2310.08 k-ft
Cb = 1
Fy = 65 ksi
lu = 18.00 in
b = 4.75 in
t = 1.25 in
/ = 48.00 in
I = 0.77 in^3
A = 5.94 in^2
rt = 0.36
Stress Increase Factor = 1.333

From Steel Construction Manual (ASD); Part 5, Chapter F:

If:

$$\sqrt{\frac{102\text{x}10^3 \times Cb}{Fy}} \le \frac{lu}{Rt} \le \sqrt{\frac{510\text{x}10^3 \times Cb}{Fy}}$$

$$\sqrt{\frac{102\text{x}10^3 \times 1}{65}} \le \frac{18}{0.36} \le \sqrt{\frac{510\text{x}10^3 \times 1}{65}}$$

$$39.61 < 50 < 88.58$$

$$\left\{ \begin{array}{l} lu = 18 \\ rt = \sqrt{I/A} \\ \quad = \sqrt{0.98/7.50} \\ rt = 0.36 \\ \frac{lu}{Rt} = 50 \end{array} \right\}$$

Then:

$$Fb = \left[\frac{2}{3} - \frac{Fy \times (l/rt)^2}{1530\text{x}10^3 \times Cb}\right] X\ Fy \le 0.6\ Fy$$

$$= \left[\frac{2}{3} - \frac{65 \times 50^2}{1530\text{x}10^2 \times 1}\right] X\ 65 \le 0.6 \times 65$$

= 36.46 ksi < 39.00 ksi OK

= 48.60 ksi with 1.333 increase UNITY% = 88.98 %

Bolts:

20 , 1.500 "ϕ, A325 Grade ; Ab = 1.767 in^2 Bolt Circle Diameter = 54.000 in

C = 1/2 x Bolt Circle Dia. = 27.00 in

$$S = \frac{Ix}{C} = \frac{21954.3}{27.00} = 813.12 \text{ in}^3$$

$$ft = \frac{M}{S} = \frac{2310.08}{813.12} \times 12 = 34.09 \text{ ksi}$$

$$\text{No. of Bolts Acting} = \frac{20}{4} = 5$$

T = C = ft x No. of bolts acting x Ab = 34.09 x 5 x 1.767 = 301.23 kips

$$Meq = \frac{T \times \text{Bolt Circle Dia.}}{12} = \frac{301.23 \times 54.000}{12} = 1355.52 \text{ k-ft}$$

B&T Engineering, Inc.

B&T ENGINEERING
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Local Stiffener:

$$Sx = \frac{Ix}{C} = \frac{(txd\text{^}3)/12}{D/2} = \frac{(1.25x60\text{^}3)/12}{60/2}$$

$$= 480.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} \quad ; \quad M = P \times e$$

Now,

$P = fb \times b \times t$ ..... (fb = From Sheet 1)

$= 43.25 \times 4.75 \times 1.25$

$= 256.78$ kips

$$e = \left[\frac{3 + 3 + 3}{2}\right]$$

$= 4.50$ in

$M = 256.78 \times 4.5$

$= 1155.49$ k-in

$$fb = \frac{1155.49}{480}$$

$= 2.41$ ksi

Check 1) ***Shear To Weld***

fa = fb = 43.25 ksi ; P = 256.78 kips

$$l_{REQD} = \frac{P}{(0.928 \text{ k/in/16}^{th}) \times (\#16^{ths}) \times (\text{\# of welds}) \times (1\ 1/3)}$$

$$= \frac{256.78}{\left[0.928 \times 6 \times 2 \times 1\ 1/3\right]}$$

$= 17.29$ in < 24.00 in Provided OK

B&T ENGINEERING
B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120

Tulsa, OK 74120
(918) 587-4630

SSC

Check 2) ***Moment To Weld***

t_{WELD} = Throat = (0.707)x 3/8
= 0.265 in

$$S_{WELD} = \frac{I_{WELD}}{y} = \frac{(t_{WELD} \text{ x } d\text{^}3)/12}{d/2}$$

$$= \frac{(0.265 \text{ x } 60\text{^}3)/12}{60/2}$$

= 101.81 in^3

S_{WELD} = 101.81 x 2 = 203.62 in^3 (Weld on 2 Sides)

$$fb_{WELD} = \frac{M}{S_{WELD}} = \frac{1155.49}{203.62} = 5.67 \text{ ksi}$$

Fb_{WELD} = 0.5 x Fu x $1^{1/3}$ = 0.5 x 70 x 1 1/3 = 46.67 ksi

Shear:

T = P = 256.78 kips

$/_{WELD}$ = 24.00 in

Area of Weld = A = ($/_{WELD}$ x t_{WELD}) x 2 = 24 x 0.265 x 2 ..... (Weld on 2 Sides)
= 12.73 in^2

$$fv = T/A = \frac{256.78}{12.73} = 20.18 \text{ ksi}$$

Fv = 0.3 x Fu x $1^{1/3}$ = 0.3 x 70 x 1 1/3 = 28.00 ksi

Check:

$$\frac{fb}{Fb} + \frac{fv}{Fv} \leq 1 \quad ; \quad \frac{5.67}{46.67} + \frac{20.18}{28.00} \leq 1$$

0.84 < 1 OK

Existing Bridge Stiffeners Are Effective

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

Site Data

BU#: *876337*
Site Name: *SHORELINE SANITATIOI*
App #: *245409 Rev# 0*

Pole Manufacturer:	Other

Bolt Data			
Qty:	20		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	105	<-- Disregard	Bolt Fty:
N/A:	125	<-- Disregard	44.00
Circle (in.):	54		

Plate Data		
Diam:	59	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	7.54	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Groove	
Groove Depth:	0.625	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.375	<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	18	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	48	in
Thick:	0.5	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	1355.52	ft-kips
Axial:	33.9	kips
Shear:	23.3	kips
Elevation:	30	feet

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

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	103.65	kips	Service, ASD
Max Bolt directly applied T:	58.55	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	2.271	in	
Min PL "treq" for actual **T w/ Pry**:	1.275	in	
Min PL "t1" for actual **T w/o Pry**:	1.707	in	
T allowable with Prying:	94.14	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	58.55	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	56.5%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	23.3	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	64.7%	**Pass**	Comp. Y.L. Length:
No Prying			24.74
Tension Side Stress Ratio, (treq/t)^2:	40.6%	**Pass**	

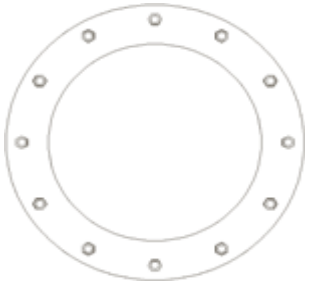
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Global Stiffener:

Flange:

Ix = 27409.1 in^4
C = 34.25 in

$$Sx = \frac{Ix}{C} = \frac{27409.1}{34.25} = 800.27 \text{ in}^3$$

$$fb = \frac{M}{Sx} = \frac{1650.07}{800.27} \times 12 = 24.74 \text{ ksi}$$

M = 1650.07 k-ft
Cb = 1
Fy = 65 ksi
lu = 16.00 in
b = 4.75 in
t = 1.25 in
/ = 36.00 in
I = 0.77 in^3
A = 5.94 in^2
rt = 0.36
Stress Increase Factor = 1.333

From Steel Construction Manual (ASD); Part 5, Chapter F:

If:

$$\sqrt{\frac{102\text{x}10^3 \times Cb}{Fy}} \le \frac{lu}{Rt} \le \sqrt{\frac{510\text{x}10^3 \times Cb}{Fy}}$$

$$\sqrt{\frac{102\text{x}10^3 \times 1}{65}} \le \frac{16}{0.36} \le \sqrt{\frac{510\text{x}10^3 \times 1}{65}}$$

$$39.61 < 44 < 88.58$$

$$\left\{ \begin{array}{l} lu = 16 \\ rt = \sqrt{I/A} \\ \quad = \sqrt{0.98/7.50} \\ rt = 0.36 \\ \frac{lu}{Rt} = 44 \end{array} \right\}$$

Then:

$$Fb = \left[\frac{2}{3} - \frac{Fy \times (l/rt)^2}{1530\text{x}10^3 \times Cb}\right] X\ Fy \le 0.6\ Fy$$

$$= \left[\frac{2}{3} - \frac{65 \times 44^2}{1530\text{x}10^2 \times 1}\right] X\ 65 \le 0.6 \times 65$$

= 37.90 ksi < 39.00 ksi OK

= 50.53 ksi with 1.333 increase UNITY% = 48.97 %

Bolts:

20 , 1.500 "ϕ, A325 Grade ; Ab = 1.767 in^2 Bolt Circle Diameter = 51.000 in

C = 1/2 x Bolt Circle Dia. = 25.50 in

$$S = \frac{Ix}{C} = \frac{27409.1}{25.50} = 1074.87 \text{ in}^3$$

$$ft = \frac{M}{S} = \frac{1650.07}{1074.87} \times 12 = 18.42 \text{ ksi}$$

$$\text{No. of Bolts Acting} = \frac{20}{4} = 5$$

T = C = ft x No. of bolts acting x Ab = 18.42 x 5 x 1.767 = 162.77 kips

$$Meq = \frac{T \times \text{Bolt Circle Dia.}}{12} = \frac{162.77 \times 51.000}{12} = 691.77 \text{ k-ft}$$

B&T Engineering, Inc.

B&T ENGINEERING
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Local Stiffener:

$$Sx = \frac{Ix}{C} = \frac{(txd\text{^}3)/12}{D/2} = \frac{(1.25x60\text{^}3)/12}{60/2}$$

$$= 270.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} \quad ; \quad M = P \times e$$

Now,

$P = fb \times b \times t$ ..... (fb = From Sheet 1)

$= 24.74 \times 4.75 \times 1.25$

$= 146.91$ kips

$$e = \left[\frac{3 + 3 + 3}{2}\right]$$

$= 4.50$ in

$M = 146.91 \times 4.5$

$= 661.10$ k-in

$$fb = \frac{661.10}{270}$$

$= 2.45$ ksi

Check 1) ***Shear To Weld***

fa = fb = 24.74 ksi ; P = 146.91 kips

$$I_{REQD} = \frac{P}{(0.928 \text{ k/in/16}^{th}) \times (\#16^{ths}) \times (\text{\# of welds}) \times (1\ 1/3)}$$

$$= \frac{146.91}{\left[0.928 \times 6 \times 2 \times 1\ 1/3\right]}$$

$= 9.89$ in < 18.00 in Provided OK

B&T ENGINEERING
B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120

Tulsa, OK 74120
(918) 587-4630

SSC

Check 2) ***Moment To Weld***

t_{WELD} = Throat = (0.707)x 3/8
= 0.265 in

$$S_{WELD} = \frac{I_{WELD}}{y} = \frac{(t_{WELD} \text{ x } d\text{^}3)/12}{d/2}$$

$$= \frac{(0.265 \text{ x } 60\text{^}3)/12}{60/2}$$

= 57.27 in^3

S_{WELD} = 57.27 x 2 = 114.53 in^3 (Weld on 2 Sides)

$$fb_{WELD} = \frac{M}{S_{WELD}} = \frac{661.10}{114.53} = 5.77 \text{ ksi}$$

Fb_{WELD} = 0.5 x Fu x $1^{1/3}$ = 0.5 x 70 x 1 1/3 = 46.67 ksi

Shear:

T = P = 146.91 kips

$/_{WELD}$ = 18.00 in

Area of Weld = A = ($/_{WELD}$ x t_{WELD}) x 2 = 18 x 0.265 x 2 ..... (Weld on 2 Sides)
= 9.54 in^2

$$fv = T/A = \frac{146.91}{9.54} = 15.39 \text{ ksi}$$

Fv = 0.3 x Fu x $1^{1/3}$ = 0.3 x 70 x 1 1/3 = 28.00 ksi

Check:

$$\frac{fb}{Fb} + \frac{fv}{Fv} \leq 1 \quad ; \quad \frac{5.77}{46.67} + \frac{15.39}{28.00} \leq 1$$

0.67 < 1 OK

Existing Bridge Stiffeners Are Effective

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

Site Data

BU#: *876337*
Site Name: *SHORELINE SANITATIOI*
App #: *245409 Rev# 0*

Pole Manufacturer:	Other

Bolt Data			
Qty:	20		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	125	<-- Disregard	Bolt Fty: 44.00
N/A:	105	<-- Disregard	
Circle (in.):	51		

Plate Data		
Diam:	59	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	6.60	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Groove	
Groove Depth:	0.625	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.375	<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	18	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333

Reactions		
Moment:	691.77	ft-kips
Axial:	24.25	kips
Shear:	20.6	kips
Elevation:	60	feet

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

Flange Bolt Results — Rigid

Bolt Tension Capacity, **B**:	103.65	kips	Service, ASD
Max Bolt directly applied T:	31.34	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	3.134	in	
Min PL "treq" for actual **T w/ Pry**:	1.298	in	
Min PL "t1" for actual **T w/o Pry**:	1.723	in	
T allowable with Prying:	74.43	kips	α'>1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	31.34	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	30.2%	**Pass**	

Exterior Flange Plate Results — Flexural Check — Rigid

Compression Side Plate Stress:	19.9	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	55.2%	**Pass**	Comp. Y.L. Length:
No Prying			28.93
Tension Side Stress Ratio, (treq/t)^2:	42.1%	**Pass**	

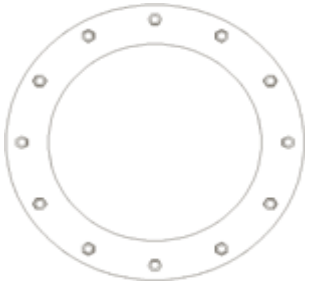
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Global Stiffener:

Flange:

Ix = 15500.0 in^4
C = 31.25 in

M = 1080.80 k-ft
Cb = 1
Fy = 65 ksi
lu = 16.00 in
b = 4.75 in
t = 1.25 in
/ = 36.00 in
I = 0.77 in^3
A = 5.94 in^2
rt = 0.36
Stress Increase Factor = 1.333

$$Sx = \frac{Ix}{C} = \frac{15500}{31.25} = 496.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} = \frac{1080.8}{496.00} \times 12 = 26.15 \text{ ksi}$$

From Steel Construction Manual (ASD); Part 5, Chapter F:

If:

$$\sqrt{\frac{102\text{x}10^3 \times Cb}{Fy}} \le \frac{lu}{Rt} \le \sqrt{\frac{510\text{x}10^3 \times Cb}{Fy}}$$

$$\sqrt{\frac{102\text{x}10^3 \times 1}{65}} \le \frac{16}{0.36} \le \sqrt{\frac{510\text{x}10^3 \times 1}{65}}$$

$$39.61 < 44 < 88.58$$

$$\left\{ \begin{array}{l} lu = 16 \\ rt = \sqrt{I/A} \\ \quad = \sqrt{0.98/7.50} \\ rt = 0.36 \\ \frac{lu}{Rt} = 44 \end{array} \right\}$$

Then:

$$Fb = \left[\frac{2}{3} - \frac{Fy \times (l/rt)^2}{1530\text{x}10^3 \times Cb}\right] X\ Fy \le 0.6\ Fy$$

$$= \left[\frac{2}{3} - \frac{65 \times 44^2}{1530\text{x}10^2 \times 1}\right] X\ 65 \le 0.6 \times 65$$

= 37.90 ksi < 39.00 ksi OK

= 50.53 ksi with 1.333 increase UNITY% = 51.75 %

Bolts:

18 , 1.500 "ϕ, A325 Grade ; Ab = 1.767 in^2 Bolt Circle Diameter = 45.000 in

C = 1/2 x Bolt Circle Dia. = 22.50 in

$$S = \frac{Ix}{C} = \frac{15500}{22.50} = 688.89 \text{ in}^3$$

$$ft = \frac{M}{S} = \frac{1080.8}{688.89} \times 12 = 18.83 \text{ ksi}$$

$$\text{No. of Bolts Acting} = \frac{18}{4} = 5$$

T = C = ft x No. of bolts acting x Ab = 18.83 x 5 x 1.767 = 149.71 kips

$$Meq = \frac{T \times \text{Bolt Circle Dia.}}{12} = \frac{149.71 \times 45.000}{12} = 561.43 \text{ k-ft}$$

B&T Engineering, Inc.

B&T ENGINEERING
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Local Stiffener:

$$Sx = \frac{Ix}{C} = \frac{(txd\text{^}3)/12}{D/2} = \frac{(1.25x60\text{^}3)/12}{60/2}$$

$$= 270.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} \quad ; \quad M = P \times e$$

Now,

$P = fb \times b \times t$ ..... (fb = From Sheet 1)

$= 26.15 \times 4.75 \times 1.25$

$= 155.26$ kips

$$e = \left[\frac{3 + 3 + 3}{2}\right]$$

$= 4.50$ in

$M = 155.26 \times 4.5$

$= 698.65$ k-in

$$fb = \frac{698.65}{270}$$

$= 2.59$ ksi

Check 1) ***Shear To Weld***

fa = fb = 26.15 ksi ; P = 155.26 kips

$$I_{REQD} = \frac{P}{(0.928 \text{ k/in/16}^{th}) \times (\#16^{ths}) \times (\text{\# of welds}) \times (1\ 1/3)}$$

$$= \frac{155.26}{\left[0.928 \times 6 \times 2 \times 1\ 1/3\right]}$$

= 10.46 in < 18.00 in Provided OK

B&T ENGINEERING

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120

Tulsa, OK 74120
(918) 587-4630

SSC

Check 2) ***Moment To Weld***

t_{WELD} = Throat = (0.707)x 3/8
= 0.265 in

$$S_{WELD} = \frac{I_{WELD}}{y} = \frac{(t_{WELD} \text{ x } d\text{^}3)/12}{d/2}$$

$$= \frac{(0.265 \text{ x } 60\text{^}3)/12}{60/2}$$

= 57.27 in^3

S_{WELD} = 57.27 x 2 = 114.53 in^3 (Weld on 2 Sides)

$$fb_{WELD} = \frac{M}{S_{WELD}} = \frac{698.65}{114.53} = 6.10 \text{ ksi}$$

Fb_{WELD} = 0.5 x Fu x $1^{1/3}$ = 0.5 x 70 x 1 1/3 = 46.67 ksi

Shear:

T = P = 155.26 kips

$/_{WELD}$ = 18.00 in

Area of Weld = A = ($/_{WELD}$ x t_{WELD}) x 2 = 18 x 0.265 x 2 ..... (Weld on 2 Sides)
= 9.54 in^2

$$fv = T/A = \frac{155.26}{9.54} = 16.27 \text{ ksi}$$

Fv = 0.3 x Fu x $1^{1/3}$ = 0.3 x 70 x 1 1/3 = 28.00 ksi

Check:

$$\frac{fb}{Fb} + \frac{fv}{Fv} \leq 1 \quad ; \quad \frac{6.1}{46.67} + \frac{16.27}{28.00} \leq 1$$

0.71 < 1 OK

Existing Bridge Stiffeners Are Effective

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

Site Data

BU#: *876337*
Site Name: *SHORELINE SANITATIOI*
App #: *245409 Rev# 0*

Pole Manufacturer:	Other

Reactions		
Moment:	561.43	ft-kips
Axial:	15.5	kips
Shear:	17.2	kips
Elevation:	90	feet

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

Bolt Data			
Qty:	18		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	105	<-- Disregard	Bolt Fty:
N/A:	125	<-- Disregard	44.00
Circle (in.):	45		

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

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Groove	
Groove Depth:	0.625	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.375	<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	18	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	103.65	kips	Service, ASD
Max Bolt directly applied T:	32.41	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	3.211	in	
Min PL "treq" for actual **T w/ Pry**:	1.357	in	
Min PL "t1" for actual **T w/o Pry**:	1.796	in	
T allowable with Prying:	70.41	kips	α'>1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	32.41	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	31.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	20.4	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	56.8%	**Pass**	Comp. Y.L. Length:
No Prying			27.00
Tension Side Stress Ratio, (treq/t)^2:	46.0%	**Pass**	

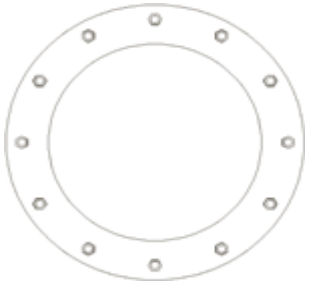
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

Global Stiffener:

Flange:

Ix = 11360.4 in^4
C = 28.25 in

$$Sx = \frac{Ix}{C} = \frac{11360.4}{28.25} = 402.14 \text{ in}^3$$

$$fb = \frac{M}{Sx} = \frac{608.8}{402.14} \times 12 = 18.17 \text{ ksi}$$

M = 608.80 k-ft
Cb = 1
Fy = 65 ksi
lu = 16.00 in
b = 4.75 in
t = 1.25 in
/ = 36.00 in
I = 0.77 in^3
A = 5.94 in^2
rt = 0.36
Stress Increase Factor = 1.333

From Steel Construction Manual (ASD); Part 5, Chapter F:

If:

$$\sqrt{\frac{102\text{x}10^3 \times Cb}{Fy}} \le \frac{lu}{Rt} \le \sqrt{\frac{510\text{x}10^3 \times Cb}{Fy}}$$

$$\sqrt{\frac{102\text{x}10^3 \times 1}{65}} \le \frac{16}{0.36} \le \sqrt{\frac{510\text{x}10^3 \times 1}{65}}$$

$$39.61 < 44 < 88.58$$

$$\left\{ \begin{array}{l} lu = 16 \\ rt = \sqrt{I/A} \\ \quad = \sqrt{0.98/7.50} \\ rt = 0.36 \\ \frac{lu}{Rt} = 44 \end{array} \right\}$$

Then:

$$Fb = \left[\frac{2}{3} - \frac{Fy \times (l/rt)^2}{1530\text{x}10^3 \times Cb}\right] X\ Fy \le 0.6\ Fy$$

$$= \left[\frac{2}{3} - \frac{65 \times 44^2}{1530\text{x}10^2 \times 1}\right] X\ 65 \le 0.6 \times 65$$

= 37.90 ksi < 39.00 ksi OK

= 50.53 ksi with 1.333 increase UNITY% = 35.96 %

Bolts:

16 , 1.500 "ϕ, A325 Grade ; Ab = 1.767 in^2 Bolt Circle Diameter = 39.000 in

C = 1/2 x Bolt Circle Dia. = 19.50 in

$$S = \frac{Ix}{C} = \frac{11360.4}{19.50} = 582.58 \text{ in}^3$$

$$ft = \frac{M}{S} = \frac{608.8}{582.58} \times 12 = 12.54 \text{ ksi}$$

$$\text{No. of Bolts Acting} = \frac{16}{4} = 4$$

T = C = ft x No. of bolts acting x Ab = 12.54 x 4 x 1.767 = 88.64 kips

$$Meq = \frac{T \times \text{Bolt Circle Dia.}}{12} = \frac{88.64 \times 39.000}{12} = 288.08 \text{ k-ft}$$

B&T Engineering, Inc.

B&T ENGINEERING
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630
SSC

Local Stiffener:

$$Sx = \frac{Ix}{C} = \frac{(txd^3)/12}{D/2} = \frac{(1.25x60^3)/12}{60/2}$$

$$= 270.00 \text{ in}^3$$

$$fb = \frac{M}{Sx} \quad ; \quad M = P \times e$$

Now,

$P = fb \times b \times t$ ..... (fb = From Sheet 1)

$= 18.17 \times 4.75 \times 1.25$

$= 107.87$ kips

$$e = \left[\frac{3 + 3 + 3}{2}\right]$$

$= 4.50$ in

$M = 107.87 \times 4.5$

$= 485.40$ k-in

$$fb = \frac{485.40}{270}$$

$= 1.80$ ksi

Check 1) ***Shear To Weld***

fa = fb = 18.17 ksi ; P = 107.87 kips

$$l_{REQD} = \frac{P}{(0.928 \text{ k/in/16}^{th}) \times (\#16^{ths}) \times (\text{\# of welds}) \times (1\ 1/3)}$$

$$= \frac{107.87}{\left[0.928 \times 6 \times 2 \times 1\ 1/3\right]}$$

$= 7.26$ in < 18.00 in Provided OK

B&T ENGINEERING

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120

Tulsa, OK 74120
(918) 587-4630

SSC

Check 2) ***Moment To Weld***

t_{WELD} = Throat = (0.707)x 3/8
= 0.265 in

$$S_{WELD} = \frac{I_{WELD}}{y} = \frac{(t_{WELD} \text{ x } d\text{^}3)/12}{d/2}$$

$$= \frac{(0.265 \text{ x } 60\text{^}3)/12}{60/2}$$

= 57.27 in^3

S_{WELD} = 57.27 x 2 = 114.53 in^3 (Weld on 2 Sides)

$$fb_{WELD} = \frac{M}{S_{WELD}} = \frac{485.40}{114.53} = 4.24 \text{ ksi}$$

Fb_{WELD} = 0.5 x Fu x $1^{1/3}$ = 0.5 x 70 x 1 1/3 = 46.67 ksi

Shear:

T = P = 107.87 kips

$/_{WELD}$ = 18.00 in

Area of Weld = A = ($/_{WELD}$ x t_{WELD}) x 2 = 18 x 0.265 x 2 ..... (Weld on 2 Sides)
= 9.54 in^2

$$fv = T/A = \frac{107.87}{9.54} = 11.30 \text{ ksi}$$

Fv = 0.3 x Fu x $1^{1/3}$ = 0.3 x 70 x 1 1/3 = 28.00 ksi

Check:

$$\frac{fb}{Fb} + \frac{fv}{Fv} \leq 1 \quad ; \quad \frac{4.24}{46.67} + \frac{11.30}{28.00} \leq 1$$

0.49 < 1 OK

Existing Bridge Stiffeners Are Effective

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

Site Data

BU#: *876337*
Site Name: *SHORELINE SANITATIOI*
App #: *245409 Rev# 0*

Pole Manufacturer:	Other

Bolt Data			
Qty:	16		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	105	<-- Disregard	Bolt Fty:
N/A:	125	<-- Disregard	44.00
Circle (in.):	39		

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

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Groove	
Groove Depth:	0.625	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.375	<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	18	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	30	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	288.08	ft-kips
Axial:	9.6	kips
Shear:	14.1	kips
Elevation:	120	feet

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

Flange Bolt Results

Bolt Tension Capacity, **B**:	103.65	kips	Rigid
Max Bolt directly applied T:	21.56	Kips	Service, ASD
Min. PL "tc" for **B** cap. **w/o** Pry:	3.317	in	Fty*ASIF
Min PL "treq" for actual **T w/ Pry**:	1.148	in	
Min PL "t1" for actual **T w/o Pry**:	1.513	in	
T allowable with Prying:	65.38	kips	α'>1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	21.56	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	20.8%	**Pass**	

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	13.9	ksi	Rigid
Allowable Plate Stress:	36.0	ksi	Service ASD
Compression Plate Stress Ratio:	38.5%	**Pass**	0.75*Fy*ASIF
No Prying			Comp. Y.L. Length: 24.92
Tension Side Stress Ratio, (treq/t)^2:	33.0%	**Pass**	

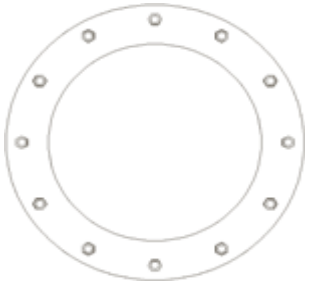
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

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

Site Data

BU#: *876337*
Site Name: *SHORELINE SANITATIOI*
App #: *245409 Rev# 0*

Pole Manufacturer:	Rohn

Bolt Data			
Qty:	12		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	105	<-- Disregard	Bolt Fty:
N/A:	125	<-- Disregard	44.00
Circle (in.):	33		

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

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Groove	
Groove Depth:	0.625	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.375	<-- Disregard
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	18	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	24	in
Thick:	0.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	220	ft-kips
Axial:	5.5	kips
Shear:	11.7	kips
Elevation:	150	feet

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

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	103.65	kips	Service, ASD
Max Bolt directly applied T:	26.21	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	3.211	in	
Min PL "treq" for actual **T w/ Pry**:	1.220	in	
Min PL "t1" for actual **T w/o Pry**:	1.615	in	
T allowable with Prying:	70.41	kips	α'>1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	26.21	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	25.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			22.65
Tension Side Stress Ratio, (treq/t)^2:	37.2%	**Pass**	

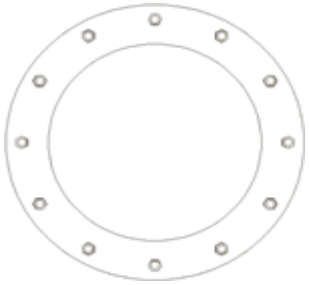
n/a

Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A



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

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

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT03XC104

Shoreline Sanitation

30 Short Hills Road
Old Lyme, CT 06371

June 13, 2014

EBI Project Number: 62143377

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

EBI Consulting
environmental | engineering | due diligence

June 13, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC104 - Shoreline Sanitation

Site Total: 6.49% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 30 Short Hills Road, Old Lyme, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 30 Short Hills Road, Old Lyme, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **179 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	CT03XC104 - Shoreline Sanitation
Site Addresss	30 Short Hills Road, Old Lyme, CT, 06371
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 (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.08%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	179	173	1/2 "	0.5	3	19.54	0.04%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.15%
														Sector total Power Density Value:		0.27%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.08%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	179	173	1/2 "	0.5	3	19.54	0.04%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.15%
														Sector total Power Density Value:		0.27%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.08%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	179	173	1/2 "	0.5	3	19.54	0.04%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	179	173	1/2 "	0.5	3	69.51	0.15%
														Sector total Power Density Value:		0.27%

Site Composite MPE %	
Carrier	MPE %
Sprint	0.82%
Nextel	2.23%
MetroPCS	3.44%
Total Site MPE %	**6.49%**

EBI Consulting
environmental | engineering | due diligence

Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **0.82% (0.27% from sector 1, 0.27% from sector 2 and 0.27% 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 **6.49%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803