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

June 30, 2015

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 876319**
Sprint PCS Site ID: CT03XC035
Located at: 280 Elm Street, Naugatuck, CT 06770

Dear Ms. Bachman:

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

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **280 Elm Street, Naugatuck, CT 06770**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2), a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3), and structural analysis evaluation letter (Exhibit-4).

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: Heather Helton.

Sincerely,

Susan Vale
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)
Tab 4: Exhibit-4: Structural Analysis Evaluation Letter

cc: The Honorable Robert A. Mezzo, Mayor
229 Church Street, 4th Floor
Naugatuck, CT 06770

Chemtura Corporation
199 Benson Rd
Middlebury, CT 06749

Sprint

2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:

CT03XC035

SITE NAME:

NAUGATUCK 2 UNIROYAL

SITE ADDRESS:

280 ELM ST
NAUGATUCK, CT 06770

CROWN ID#: 876319

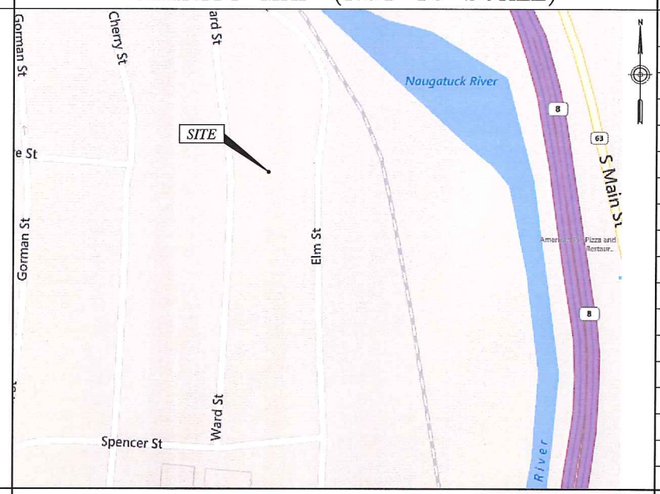
CROWN SITE NAME: NAUGATUCK 2 UNIROYAL

SHEET INFORMATION

SITE NUMBER:	CT03XC035
SITE NAME:	NAUGATUCK 2 UNIROYAL
SITE ADDRESS:	280 ELM ST NAUGATUCK, CT 06770
COUNTY:	NEW HAVEN
COORDINATES: (NAD 83)	41° 28' 52.72"N 73° 03' 13.47"W
GROUND ELEV:	239'± AMSL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	150'-0"± AGL
ANTENNA RAD CENTER:	150'-0"± AGL
ZONING CLASSIFICATION:	I-VACANT IND
PARCEL ID:	5.5-20W20

LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 286-2000
APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251
ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 JQuicksell@tectonicengineering.com
SPRINT CM:	PETER CULBERT (603) 203-6446 Peter.Culbert@sprint.com
CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico@crowncastle.com

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

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A-3	ENLARGED EQUIPMENT LAYOUT PLANS
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GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
   FACILITY HAS NO PLUMBING OR REFRIGERANTS.
   THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
3. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE OF CONNECTICUT, LATEST EDITION.
   - ANSI/TIA/EIA-222-F-1996.
   - NATIONAL ELECTRICAL CODE, LATEST EDITION.

PROJECT DESCRIPTION

1. (1) NEW 2.5 EQUIPMENT RACK INSIDE EXIST MMBTS CABINET.
2. (3) NEW RFS APXVTM14-C-120 ANTENNAS.
3. (3) NEW TD-RRH8x20-25 RRH.
4. (1) NEW 5/8" FIBER CABLE.
5. (1) REPLACEMENT COMMSCOPE MC-PA12L-12-72 ANTENNA MOUNT.
6. REMOVE ALL EXIST CLEARWIRE RRH AND PANEL ANTENNAS.

AERIAL VIEW (NOT TO SCALE)

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CONSTRUCTION: _____ DATE: _____

LEASING/
SITE ACQUISITION: _____ DATE: _____

LANDLORD/
PROPERTY OWNER: _____ DATE: _____

R.F. ENGINEER: _____ DATE: _____

Sprint
2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

TECTONIC
• PLANNING
• ENGINEERING
• SURVEYING
• CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/11/15	JMQ

STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22039
LICENSED PROFESSIONAL ENGINEER
SEAL

SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1

DIVISION 01000–GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. 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 TO CALL 1–800–788–7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATION OF ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER.
14. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
16. THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
17. THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS–BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
18. REFER TO: CONSTRUCTION STANDARDS–SPRINT DOCUMENT EXHIBIT A–STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0– 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A–WIHRPRF–STD CONSTR SPECS._15720111042185549 2.DOCM.
20. REFER TO: COLOR CODING–SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09–08–11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000–CONCRETE

1.03 APPLICABLE STANDARDS (USE LATEST EDITIONS)

A. AC1–301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
B. ACI–347 GUIDE TO FORM WORK FOR CONCRETE.
C. ASTM C33– CONCRETE AGGREGATE
D. ASTM C94 – READY MIXED CONCRETE e. ASTM C150 – PORTLAND CEMENT.
E. ASTM C260 – AIR–ENTRAINING ADMIXTURES FOR CONCRETE
F. ASTM C309– LIQUID MEMBRANE FORMING COMPOUNDS FOR CURING CONCRETE.
H. ASTM C494 – CHEMICAL ADMIXTURES FOR CONCRETE
I. ASTM A615– DEFORMED AND PLAIN BILLET–STEEL BARS FOR CONCRETE REINFORCEMENT
J. ASTM A185– STEEL WELDED WIRE FABRIC (PLAIN) FOR CONCRETE REINFORCEMENT

1.04 QUALITY ASSURANCE

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.

3.04 SURFACE FINISHES

A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.

B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINS AND THE FILLING HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.

C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSED TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OR SURFACES SUCH AS STAIR TREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 1/4" PER FOOT.

D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.

E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREENED, FLOATED, AND STEEL TROWELED. HAND OR POWER–DRIVEN EQUIPMENT MAY BE USED FOR FLOATING. FLOATING SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. OPERATIONS. ALL EDGES MUST HAVE A 3/4" CHAMFER.

1.04 QUALITY ASSURANCE CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.

3.05 PATCHING

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON REMOVAL OF THE FORMS TO OBSERVE CONCRETE SURFACE CONDITIONS. IMPERFECTIONS SHALL BE PATCHED ACCORDING TO THE ENGINEER'S DIRECTION.

3.06 DEFECTIVE CONCRETE

THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.

3.07 PROTECTION

A. IMMEDIATELY AFTER PLACEMENT. THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.

B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.

C. ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE (LATEST EDITION)

DIVISION 05000 – METALS

PART 1 – GENERAL

1.01 WORK INCLUDED

A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED. AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDING ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK AND ALL ITEMS INCIDENTAL AS SPECIFIED AND AS SHOWN ON THE DRAWINGS:

1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.
2. WELDING AND BOLTING OF ATTACHMENTS.

1.02 REFERENCE STANDARDS

A. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:

1. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES" OR LATEST EDITION.
2. AWS: AMERICAN WELDING SOCIETY CODE OR LATEST EDITION.
3. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).

PART 2 – PRODUCTS

2.01 MATERIALS

A. STRUCTURAL STEEL: SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A36 AND A992 FOR STRUCTURAL STEEL.

ALL PROPOSED STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC CODE AND ASTM SPECIFICATIONS (LATEST EDITION) ALL NEW STEEL SHALL CONFORM TO THE FOLLOWING.

1. STRUCTURAL WIDE FLANGE: ASTM A992 Fy=50KSI.
2. MISCELLANEOUS STEEL (PLATES), CHANNELS, ANGLES, ETC): ASTM A36 (Fy=36KSI).
3. STRUCTURAL TUBING: ASTM A500 Gr. B (Fy=46KSI).
4. STEEL PIPE: ASTM A53 Gr B (Fy=35KSI).

2.02 WELDING

A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.

B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM 1–233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.

C. FIELD WELDING SHALL BE DONE AS PER AWS D1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.

D. STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING CAPACITOR DISCHARGE STUD WELDER.

E. PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.

F. FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.

2.03 BOLTING

A. BOLTS SHALL BE CONFORMING TO ASTM A35 HIGH STRENGTH HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.

B. BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED, ASTM A153 NUTS SHALL BE HEAVY HEX TYPE.

C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

D. EXCEPT WHERE SHOWN, ALL BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS TO BE DOUBLE ANGLED CONNECTIONS WITH HIGH STRENGTH BOLTS (THREADS EXCLUDED FROM SHEAR PLANE) AND HARDENED WASHERS.

E. STANDARD, OVERSIZED OR HORIZONTAL SHORT SLOTTED HOLES.

F. SNUG–TIGHT STRENGTH BEARING BOLTS MAY BE USED IN STANDARD HOLES CONFORMING TO ACIS, USING THE TURN OF THE NUT METHOD.

H. FULLY–TENSIONED HIGH STRENGTH (SLIP CRITICAL) SHALL BE USED IN OVERSIZED SLOT HOLES (RESPECTIVE OF SLOT ORIENTATION).

I. ALL BRACED CONNECTION, MOMENT CONNECTION AND CONNECTIONS NOTED AS "SLIP CRITICAL" SHALL BE BE SLIP CRITICAL JOINTS WITH CLASS A SURFACE CONDITIONS, UNLESS OTHERWISE NOTED.

J. EPOXY ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

BASE MATERIAL	ANCHOR SYSTEM
CONCRETE	HILTI HIT–HY 200
HOLLOW & GROUTED CMU OR BRICK	HILTI HIT–HY 70

2.04 FABRICATION

A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS

2.05 FINISH

A. STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. (LATEST EDITION) UNLESS OTHERWISE NOTED.

2.06 PROTECTION

A. UPON COMPLETION OF ERECTION, INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS OR GALVANIZED BREAKS WITH (2) COATS OF ZINC–RICH COLD GALVANIZING PAINT.

PART 3 – ERECTION

A. PROVIDE ALL ERECTION, EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION, BUT ARE NECESSARY FOR ITS PROPER ERECTION.

B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING

C. TEMPORARY BRACING, GUYING, AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SET AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.

Sprint

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

TECTONIC • PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550

Phone: (845) 567–6656
Fax: (845) 567–8703

www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMG

SEAL

SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
GENERAL NOTES

SHEET NO:
SP–1

DIVISION 13000–SPECIAL CONSTRUCTION ANTENNA INSTALLATION

PART 1 – GENERAL

1.01 WORK INCLUDED

A. ANTENNAS AND HYBRIFLEX CABLES ARE FURNISHED BY CLIENT'S REPRESENTATIVE UNDER SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPERTY.

B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.

C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT RESULT

F. INSTALL HYBRIFLEX CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.

G. ANTENNA AND HYBRIFLEX CABLE GROUNDING:

1. ALL EXTERIOR #6 GREEN GROUND WIRE DAISY CHAIN CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE 3221213 OR EQUIVALENT.

2. ALL HYBRIFLEX CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF HYBRIFLEX CABLE (NOT WITHIN BENDS). 1.02 RELATED WORK FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH QOTHER TRADES PRIOR TO BID:

   1. FLASHING OF OPENING INTO OUTSIDE WALLS.
   2. SEALING AND CAULKING ALL OPENINGS.
   3. PAINTING.
   4. CUTTING AND PATCHING.

1.03 REQUIREMENTS OF REGULATOR AGENCIES

A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. EIA – ELECTRONIC INDUSTRIES ASSOCIATION RS–22. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

2. FAA – FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7480–IH, CONSTRUCTION MARKING AND LIGHTING.

3. FCC – FEDERAL COMMUNICATION COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES

4. AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION FOR STRUCTURAL JOINTS USING ASTM 1325 OR A490 BOLTS.

5. NEC – NATIONAL ELECTRIC CODE – ON TOWER LIGHTING KITS.

6. UL – UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.

7. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

8. LIFE SAFETY CODE NFPA, LATEST EDITION.

DIVISION 13000–EARTHWORK

PART 1 GENERAL

1.01 WORK INCLUDED: REFER TO SURVEY AND SITE PLAN FOR WORK INCLUDED.

1.02 RELATED WORK

A. CONSTRUCTION OF EQUIPMENT FOUNDATIONS
B. INSTALLATION OF ANTENNA SYSTEM

PART 2 PRODUCTS

2.01 MATERIALS

A. ROAD AND SITE MATERIALS; FILL MATERIAL SHALL BE ACCEPTABLE, SELECT FILL SHALL BE IN ACCORDANCE WITH LOCAL DEPARTMENT OF HIGHWAY AND PUBLIC TRANSPORTATION STANDARD SPECIFICATIONS.

B. SOIL STERILIZER SHALL BE EPA REGISTERED OF LIQUID COMPOSITION AND OF PRE–EMERGENCE DESIGN.

C. SOIL STABILIZER FABRIC SHALL BE MIRAFI OR EQUAL – 600X AT ACCESS ROAD AND COMPOUND.

D. GRAVEL FILL; WELL GRADED, HARD, DURABLE, NATURAL SAND AND GRAVEL, FREE FROM ICE AND SNOW, ROOTS, SOD RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATTER.

MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS.

GRAVEL FILL TO BE PLACED IN LIFTS OF 9" MAXIMUM THICKNESS AND 90 % DENSITY. COMPACTED TO 95

E. NO FILL OR EMBANKMENT MATERIALS SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OF EMBANKMENT

2.02 EQUIPMENT

A. COMPACTION SHALL BE ACCOMPLISHED BY MECHANICAL MEANS. LARGER AREAS SHALL BE COMPACTED BY SHEEPS FOOT, VIBRATORY OR RUBBER TIED ROLLERS WEIGHING AT LEAST FIVE TONS. SMALLER AREAS SHALL BE COMPACTED BY POWER–DRIVER, HAND HELD TAMPERS.

B. PRIOR TO OTHER EXCAVATION AND CONSTRUCTION EFFORTS GRUB ORGANIC MATERIAL TO A MINIMUM OF 6" BELOW ORIGINAL GROUND LEVEL.

C. UNLESS OTHERWISE INSTRUCTED BY CLIENT'S REPRESENTATIVE. REMOVE TREES, BRUSH AND DEBRIS FROM THE PROPERTY TO AN AUTHORIZED DISPOSAL LOCATION.

D. PRIOR TO PLACEMENT OF FILL OR BASE MATERIALS, ROLL THE SOIL.

E. WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, LINE THE GRUBBED AREAS WITH STABILIZER MAT PRIOR TO PLACEMENT OF FILL OR BASE MATERIAL.

3.03 INSTALLATION

A. THE SITE AND TURNAROUND AREAS SHALL BE AT THE SUB–BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS. GRADE OR FILL THE SITE AND ACCESS ROAD AS REQUIRED TO PRODUCE EVEN DISTRIBUTION OF SPOILS RESULTING FROM FOUNDATION EXCAVATIONS. THE RESULTING GRADE SHALL CORRESPOND WITH SAID SUB–BASE COURSE, ELEVATIONS ARE TO BE CALCULATED FORM FINISHED GRADES OR SLOPES INDICATED.

B. THE ACCESS ROAD SHALL BE BROUGHT TO BASE COURSE ELEVATION PRIOR TO FOUNDATION CONSTRUCTION.

C. DO NOT CREATE DEPRESSIONS WHERE WATER MAY POND.

D. THE CONTRACT INCLUDES ALL NECESSARY GRADING, BANKING, DITCHING AND COMPLETE SURFACE COURSE FOR ACCESS ROAD. ALL ROADS OR ROUTES UTILIZED FOR ACCESS TO PUBLIC THOROUGHFARE IS INCLUDED IN SCOPE OF WORK UNLESS OTHERWISE INDICATED.

E. WHEN IMPROVING AN EXISTING ACCESS ROAD, GRADE THE EXISTING ROAD TO REMOVE ANY ORGANIC MATTER AND SMOOTH THE SURFACE BEFORE PLACING FILL OR STONE.

F. PLACE FILL OR STONE IN 3" MAXIMUM LIFTS AND COMPACT BEFORE PLACING NEXT LIFT.

G. THE FINISH GRADE, INCLUDING TOP SURFACE COURSE, SHALL EXTEND A MINIMUM OF 12" BEYOND THE SITE FENCE AND SHALL COVER THE AREA AS INDICATED.

H. RIPRAP SHALL BE APPLIED TO THE SIDE SLOPES OF ALL FENCED AREAS, PARKING AREAS AND TO ALL OTHER SLOPES GREATER THAN 2:1.

I. RIPRAP SHALL BE APPLIED TO THE SIDES OF DITCHES OR DRAINAGE SWALES AS INDICATED ON PLANS.

J. RIPRAP ENTIRE DITCH FOR 6'–0" IN ALL DIRECTIONS AT CULVERT OPENINGS.

K. SEED, FERTILIZER AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS AND DITCHES, DRAINAGE, SWALES, NOT OTHERWISE RIP–RAPPED.

L. UNDER NO CIRCUMSTANCES SHALL DITCHES, SWALES OR CULVERTS BE PLACED SO THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SITE. IF OWNER DESIGNS OR IF DESIGN ELEVATIONS CONFLICT WITH THIS GUIDANCE ADVISE THE OWNER IMMEDIATELY.

M. IF A DITCH LIES WITH SLOPE GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALL IN THE DITCH AT CULVERT ENTRANCES. RIP–RAP THE UPSTREAM SIDE OF THE HEADWALL AS WELL AS THE DITCH FOR 6'–0" ABOVE THE CULVERT.

N. IF A DITCH LIES WITH SLOPES GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALLS IN THE DITCH FOR 6'–0" ABOVE THE CULVERT ENTRANCE.

O. SEED AND FERTILIZER SHALL BE APPLIED TO SURFACE CONDITIONS WHICH WILL ENCOURAGE ROOTING. RAKE AREAS TO BE SEEDED TO EVEN THE SURFACE AND TO LOOSEN THE SOIL.

P. SOW SEED IN TWO DIRECTIONS IN TWICE THE QUANTITY RECOMMENDED BY THE SEED PRODUCER.

Q. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE GROWTH OF SEEDED AND LANDSCAPED AREAS BY WATERING UP TO THE POINT OF RELEASE FROM THE CONTRACT. CONTINUE TO REWORK BARE AREAS UNTIL COMPLETE COVERAGE IS OBTAINED.

3.04 FIELD QUALITY CONTROL

A. COMPACTION SHALL BE D–1557 FOR SITE WORK AND 95 % MAXIMUM DENSITY UNDER SLAB AREAS. AREAS OF SETTLEMENT WILL BE EXCAVATED AND REFILLED AT CONTRACTOR'S EXPENSE. REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET SHALL BE AN ACCEPTABLE ALTERNATIVE.

B. THE COMPACTION TEST RESULTS SHALL BE AVAILABLE PRIOR TO THE CONCRETE POUR.

3.05 PROTECTION

A. PROTECT SEEDED AREAS FORM EROSION BY SPREADING STRAW TO A UNIFORM LOOSE DEPTH OF 1"–2". STAKE AND TIE DOWN AS REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET SHALL BE AN ACCEPTABLE ALTERNATIVE.

B. ALL TREES PLACED IN CONJUNCTION WITH A LANDSCAPE CONTRACT SHALL BE WRAPPED, TIED WITH HOSE PROTECTED WIRE AND SECURED TO STAKES EXTENDING 2'–0" INTO THE GROUND ON FOUR SIDES OF THE TREE.

C. ALL EXPOSED AREAS SHALL BE PROTECTED AGAINST WASHOUTS AND SOIL EROSION. STRAW BALES SHALL BE PLACED AT THE INLET APPROACH TO ALL NEW OR EXISTING CULVERTS. REFER TO DETAILS ON DRAWINGS

SYMBOLS	ABBREVIATIONS
— — — G — — — G —	GROUND WIRE
— — — E — — — E —	ELECTRIC
— — — T — — — T —	TELEPHONE
OHW OHW OHW OHW OHW	OVERHEAD WIRE
	PROPERTY LINE
—X——X——X——	CHAIN LINK FENCE
A–1	ANTENNA MARK
(E)	EXISTING
(P)	PROPOSED DETAIL
DET # / SHT #	REFERENCE
	SURFACE ELEVATION

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2.5 EQUIPMENT DEPLOYMENT
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OVERLAND PARK, KANSAS 66251

CROWN CASTLE

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SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMQ

SEAL:
STATE OF CONNECTICUT
NANDKUMAR RAO
No. 22038
LICENSED
PROFESSIONAL ENGINEER

SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

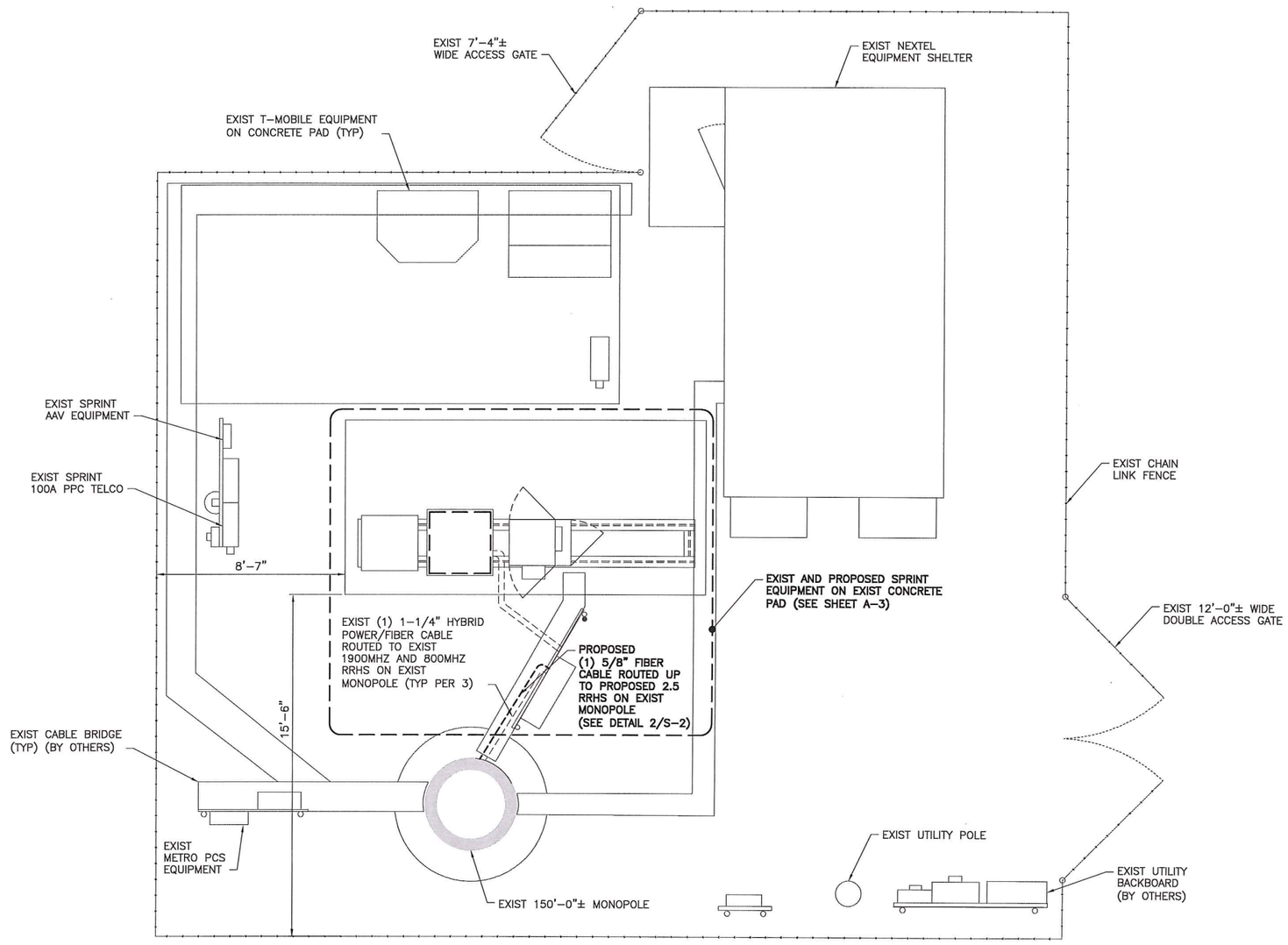
SHEET TITLE:
GENERAL NOTES

SHEET NO:
SP–2

NORTH NOTE:

NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

APPROX. N



1 A-2

1 A-1 SITE PLAN

SCALE: 3/8" = 1'-0"

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DATE	REVIEWED BY
5/1/15	JMQ

SEAL
STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22038
LICENSED PROFESSIONAL ENGINEER

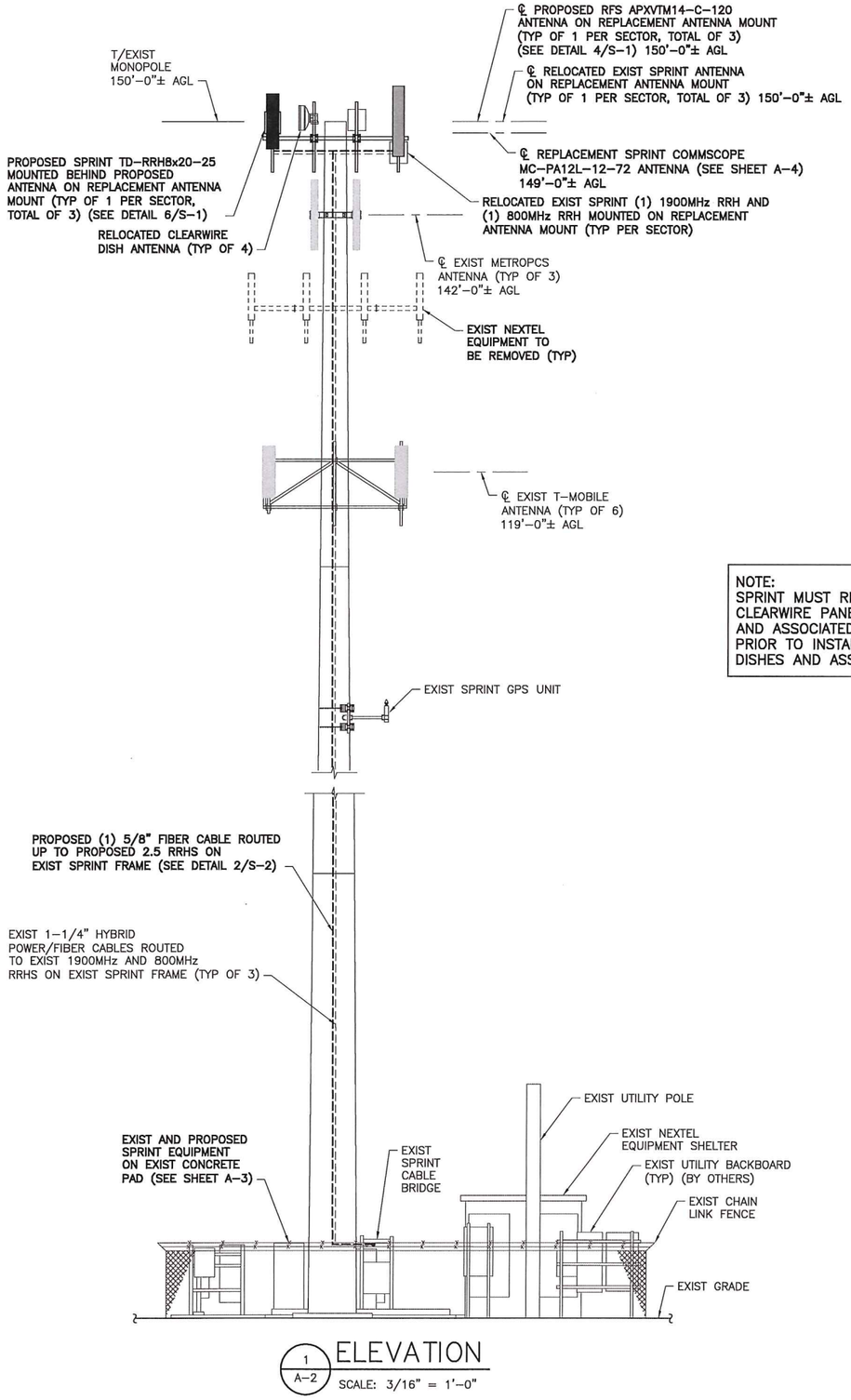
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
SITE PLAN

SHEET NO:
A-1



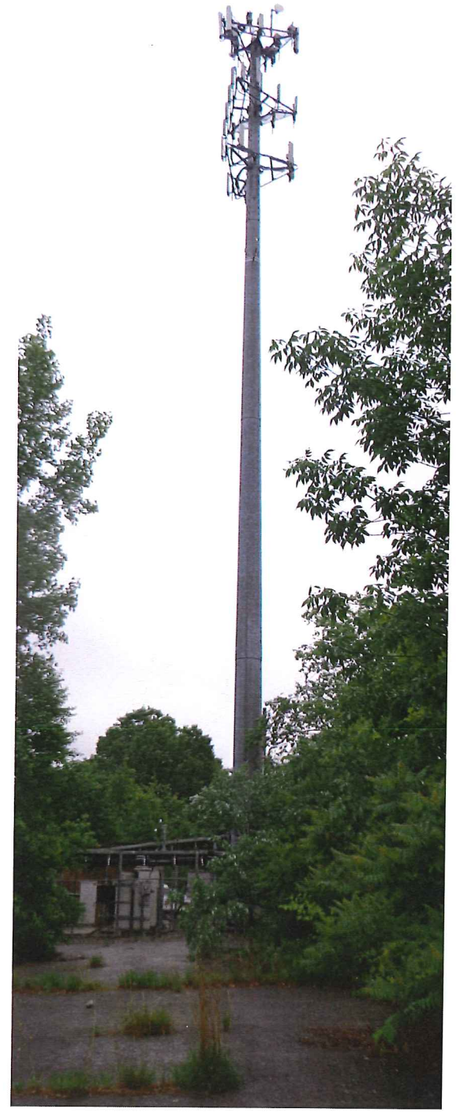
1 / A-2 ELEVATION

SCALE: 3/16" = 1'-0"

NOTE:
SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT, CLEARWIRE PANEL ANTENNAS, CLEARWIRE RRHS AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION. CLEARWIRE MICROWAVE DISHES AND ASSOCIATED CABLES TO REMAIN.

THE EXISTING MONOPOLE SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS)

THE PROPOSED REPLACEMENT MOUNT IS STRUCTURALLY ADEQUATE TO SUPPORT THE PROPOSED DESIGN BASED ON LOAD COMPARISON ONLY AS DETAILED IN THE MOUNT ASSESSMENT LETTER BY TECTONIC ENGINEERING, DATED 5/1/2015, REV 1. A FULL STRUCTURAL MOUNT ANALYSIS WAS NOT PERFORMED.



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DATE	REVIEWED BY
5/1/15	MJM

SEAL
STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22033
LICENSED
PROFESSIONAL ENGINEER

SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

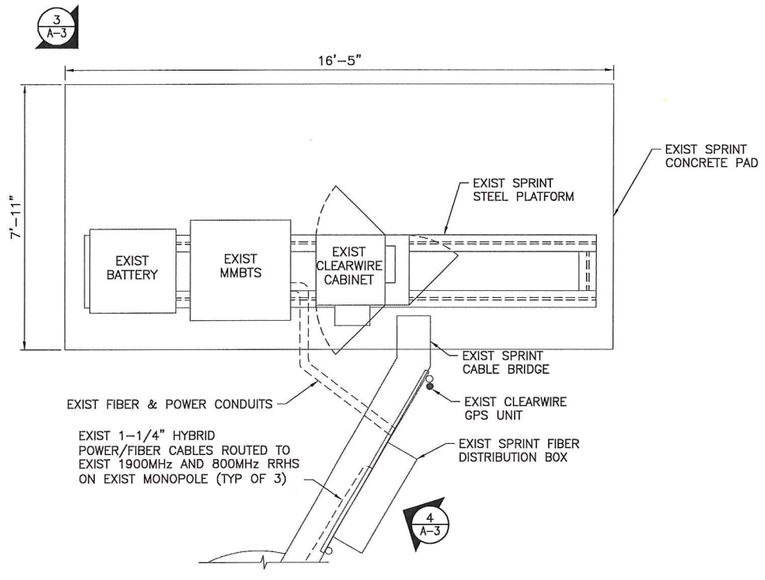
SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
ELEVATION

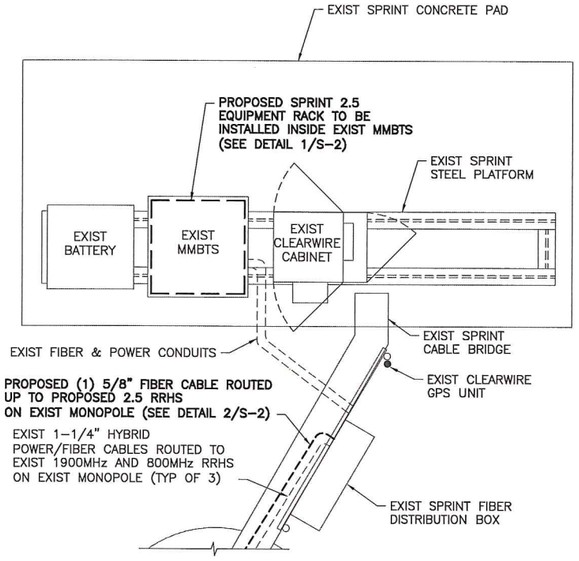
SHEET NO:
A-2

NORTH NOTE:
NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

APPROX. N



1 A-3 ENLARGED EQUIP. LAYOUT PLAN (EXIST)
SCALE: 1/2" = 1'-0"



2 A-3 ENLARGED EQUIP. LAYOUT PLAN (FINAL)
SCALE: 1/2" = 1'-0"

3 A-3 EXIST EQUIPMENT PAD
SCALE: N.T.S.

4 A-3 EXIST FIBER DISTRIBUTION BOX
SCALE: NTS

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5/1/15	JMC

SEAL
STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22038
LICENSED
PROFESSIONAL ENGINEER

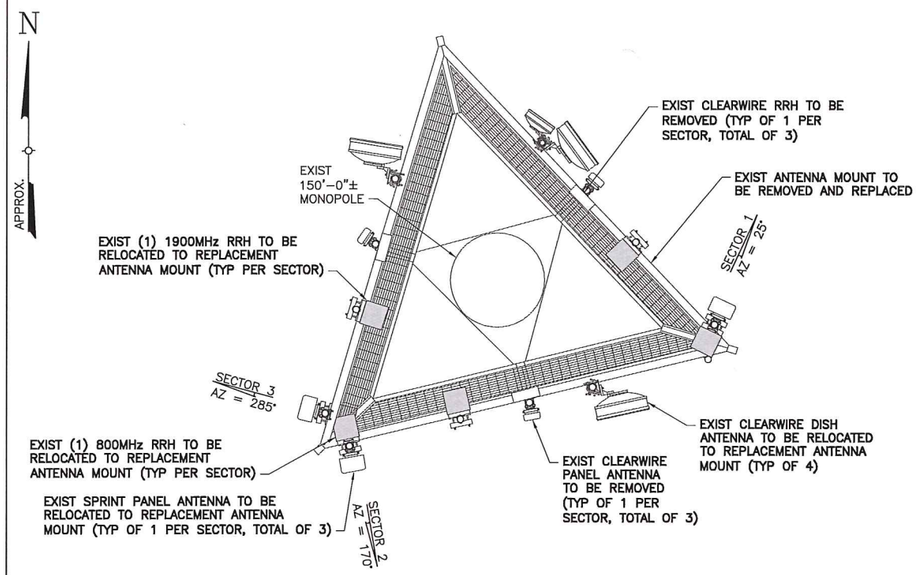
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
ENLARGED EQUIPMENT LAYOUT PLANS

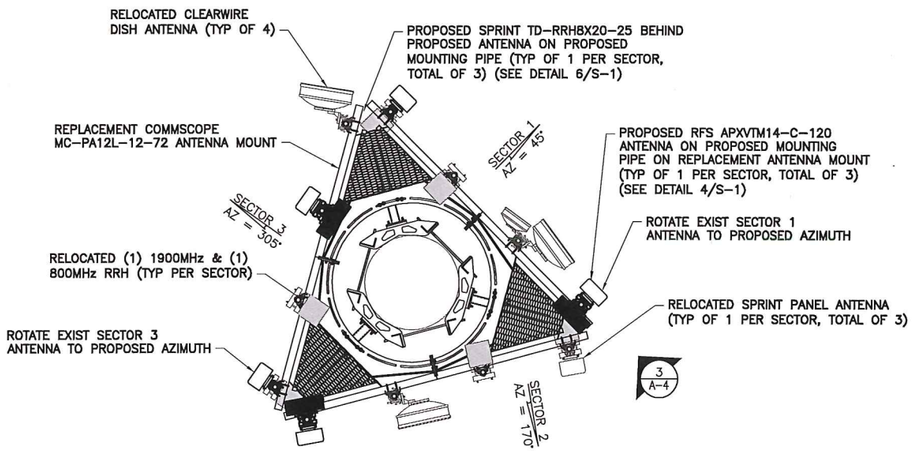
SHEET NO:
A-3



1 / A-4 ANTENNA LAYOUT PLAN (EXIST)

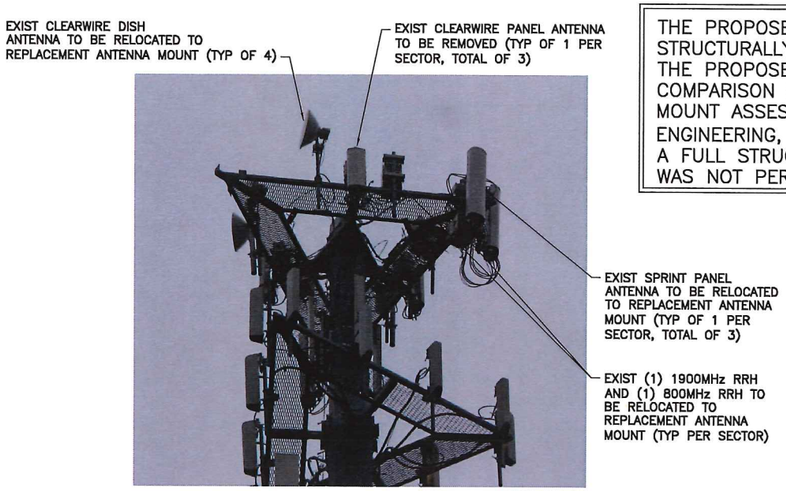
SCALE: 3/8" = 1'-0"

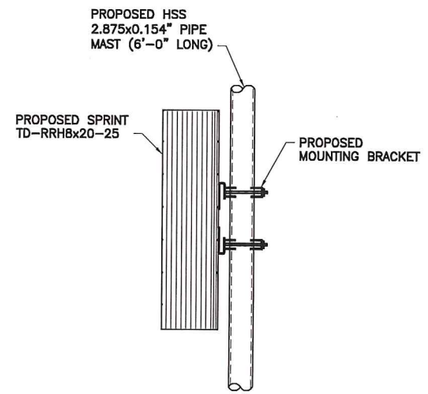
NOTE:
SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT, CLEARWIRE PANEL ANTENNAS, CLEARWIRE RRHS AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION. CLEARWIRE MICROWAVE DISHES AND ASSOCIATED CABLES TO REMAIN.



2 / A-4 ANTENNA LAYOUT PLAN (FINAL)

SCALE: 3/8" = 1'-0"





3 / A-4 RRH MOUNTING DETAIL

SCALE: 1 1/2" = 1'-0"

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ANTENNA DATA

Status	Exist **(Proposed)**	**Proposed**
Antenna Manufacturer	RFS-CELWAVE	**RFS-CELWAVE**
Antenna Model Number	APXVSPP18-C-A20	**APXVTM14-C-120**
Number of Antennas	3	**3**
Antenna RAD Center	150'	**150'**
Antenna Azimuth	25/170/285 **(45/170/305)**	**45/170/305**
Antenna RRH Model Number	800MHz/1900MHz	**TD-RRH8x20-25**
Number of RRH	6	**3**

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DATE	REVIEWED BY
5/1/15	JMG

SEAL:
STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22038
LICENSED PROFESSIONAL ENGINEER

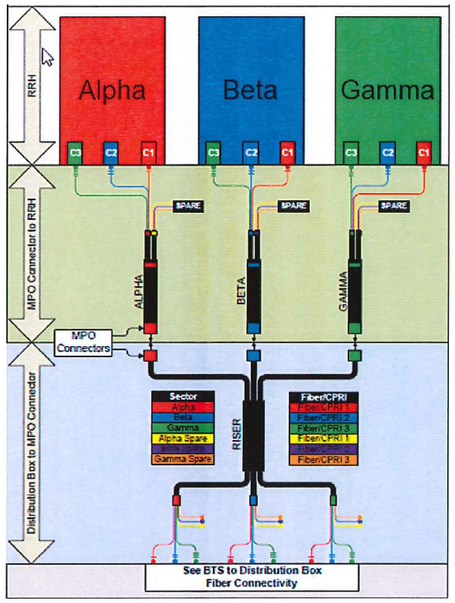
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

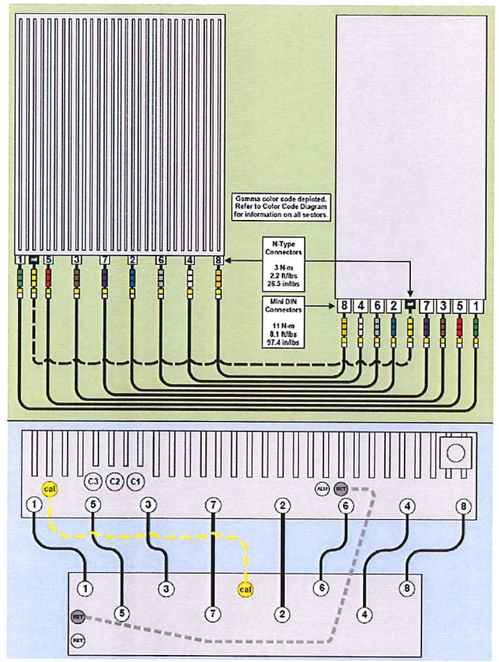
SHEET TITLE:
ANTENNA LAYOUT PLANS

SHEET NO:
A-4



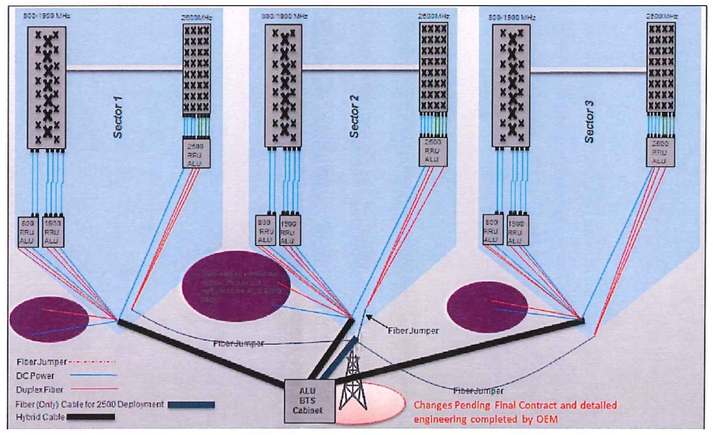
1 A–5 2.5 CABLE COLOR CODING

SCALE: N.T.S.



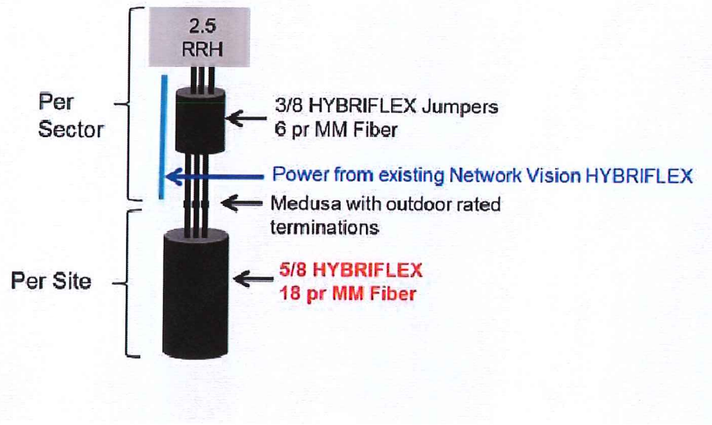
2 A–5 RRH CONNECTIVITY

SCALE: N.T.S.



3 A–5 RAN WIRING

SCALE: N.T.S.



4 A–5 CABLE SCENARIO

SCALE: N.T.S.

Sprint

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SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
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2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMQ

SEAL

STATE OF CONNECTICUT
MANOJKUMAR R. JOEL
No. 22038
LICENSED
PROFESSIONAL ENGINEER

SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
RAN WIRING DIAGRAM

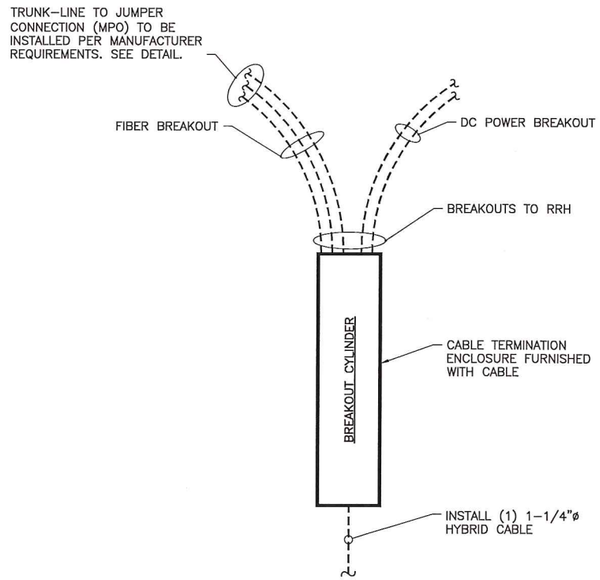
SHEET NO:
A–5

IMPORTANT!! LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAINST THE RED SEAL ON THE RISER CONNECTION

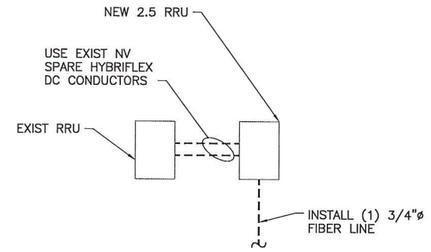
IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

1 / A-6 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS

SCALE: N.T.S.



2.5 HYBRID CABLE W/FIBER & DC FEEDERS



FIBER ONLY TRUNK LINES

2 / A-6 TRUNK LINE DETAILS (TYPICAL)

SCALE: N.T.S.

SPECIAL NOTES: CABLE MARKINGS AT RAD CENTER AND ALL WALL/BLDG. PENETRATIONS

- ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE.
- ALL COLOR BANDS INSTALLED AT THE TOWER TOP SHALL BE A MINIMUM OF 3" WIDE AND SHALL HAVE A MINIMUM OF 3/4" OF SPACING BETWEEN EACH COLOR.
- ALL COLOR BANDS INSTALLED AT OR NEAR THE GROUND MAY BE ONLY 3/4" WIDE. EACH TOP-JUMPER SHALL BE COLOR CORDED WITH (1) SET OF 3" WIDE BANDS.
- EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH 3/4" COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
- ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" BANDS ON EACH END OF THE BOTTOM JUMPER.
- ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
- EACH COLOR BAND SHALL HAVE A MINIMUM OF (3) WRAPS AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT AS TO AVOID UNRAVELING.
- X-POLE ANTENNAS SHOULD USE "XX-1" FOR THE "+45" PORT, "XX-2" FOR THE "-45" PORT.
- COLOR BAND #4 REFERS TO THE FREQUENCY BAND: ORANGE=850, VIOLET=1900. USED ON JUMPERS ONLY.
- RF FEEDLINE SHALL BE IDENTIFIED WITH A METAL TAG (STAINLESS OR BRASS) AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER.
- ANTENNAS MUST BE IDENTIFIED, USING THE SECTOR LETTER AND ANTENNA NUMBER, WITH A BLACK MARKER PRIOR TO INSTALLATION.

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SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
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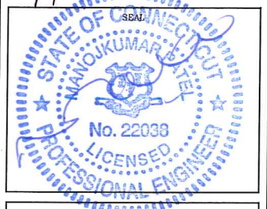
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	JMQ

SEAL:



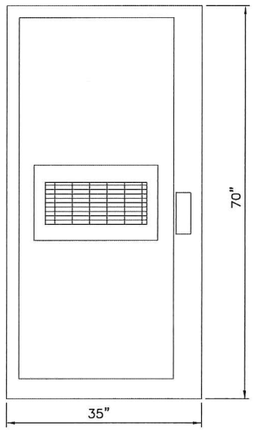
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
CABLE DETAILS

SHEET NO:
A-6

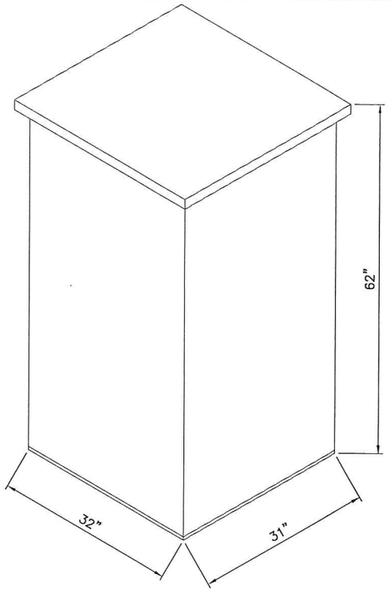


FRONT

CABINET FRONT 9928 MMBTS MODULAR CELL
SPECIFICATIONS:
HEIGHT: 70" WIDTH: 35" DEPTH: 37.8" WEIGHT: 1090 LBS.

1/S-1 (EXIST) MMBTS CABINET

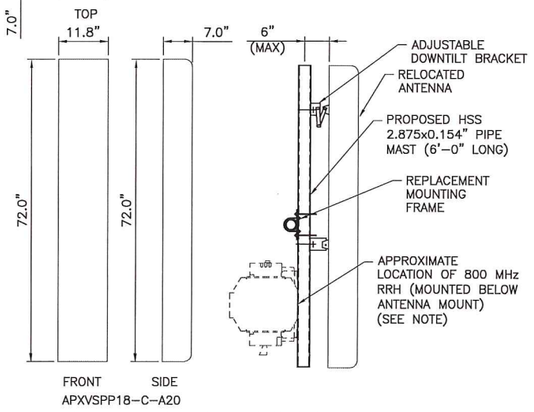
SCALE: 1" = 1'-0"



ANDREW 60ECv2
SPECIFICATIONS:
HEIGHT: 60" WIDTH: 31" DEPTH: 30" WEIGHT: 2430 LBS.

2/S-1 (EXIST) BATTERY CABINET

SCALE: 1" = 1'-0"

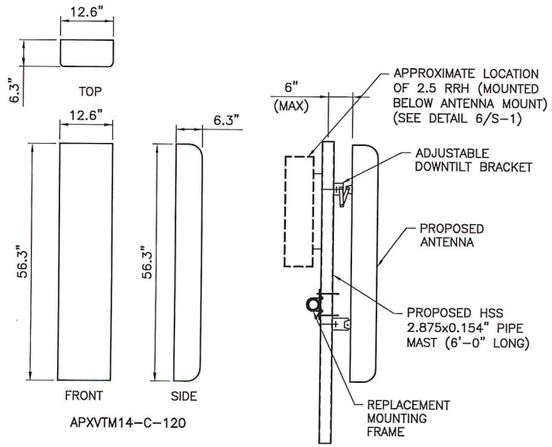


APXVSPP18-C-A20

NOTE: THE 1900MHz RRH MUST BE INSTALLED ON A SEPARATE MOUNTING PIPE AS PER THE FINAL CONFIGURATION ON 2/A-4.

3/S-1 (EXIST) ANTENNA DETAIL

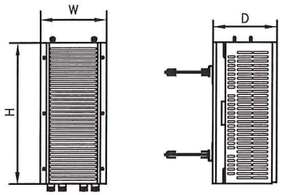
SCALE: 3/4"=1'-0"



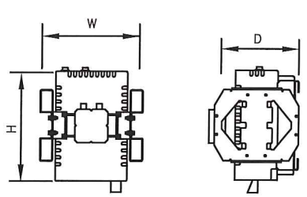
APXVTM14-C-120

4/S-1 (PROPOSED) ANTENNA DETAIL

SCALE: 3/4"=1'-0"



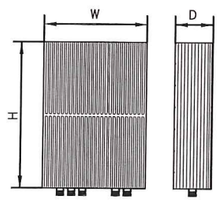
TYPE: 1900 MHz 4x45W MODEL #: RRH 1900 4X45 65MHz HEIGHT: 25.0" WIDTH: 11.1" DEPTH: 11.4" WEIGHT: ±60 LBS.



TYPE: 800 MHz 2x50W MODEL #: FD-RRH-2x50-800 HEIGHT: 19.7" WIDTH: 13" DEPTH: 10.8" WEIGHT: ±53 LBS

5/S-1 (EXIST) RRH DETAILS

SCALE: 1 1/2"=1'-0"



TYPE: 2.5 RRH MODEL #: TD-RRH8x20-25 HEIGHT: 26.1" WIDTH: 18.6" DEPTH: 6.71" WEIGHT: ±70 LBS

6/S-1 (PROPOSED) RRH DETAIL

SCALE: N.T.S.

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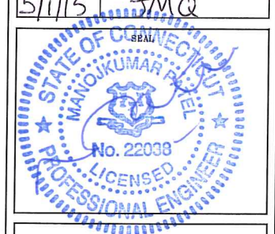


SITE NUMBER:
CT03XC035

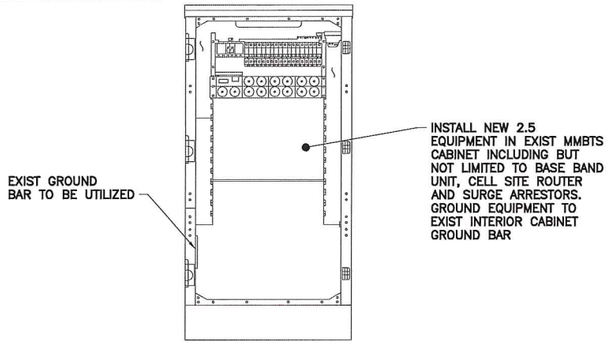
SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
EQUIPMENT DETAILS

SHEET NO:
S-1

NOTE:
LOCATIONS SHOWN FOR INSTALLATION OF NEW EQUIPMENT IN EXISTING CABINET ARE APPROXIMATE. ACTUAL SPACE AVAILABLE TO BE VERIFIED IN FIELD ON A SITE BY SITE BASIS.

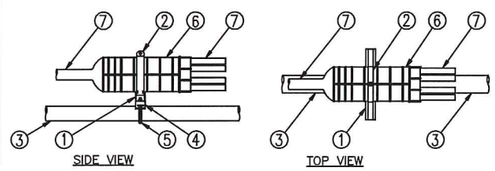


FRONT ELEVATION
(CABINET INTERIOR)

1 S-2 MMBTS INTERIOR DETAIL

SCALE: N.T.S.

LEGEND:
1. P1000T–HG UNISTRUT, 12" LONG.
2. 6" PIPE HANGER.
3. EXISTING SUPPORT PIPE.
4. NEW STANDOFF BRACKET, ANDREW PART# 30848–4.
5. NEW ROUND MEMBER ADAPTER SIZED FOR EXISTING PIPE SUPPORT.
6. BREAKOUT UNIT.
7. CABLE.



3 S-2 MEDUSA HEAD DETAIL

SCALE: NTS

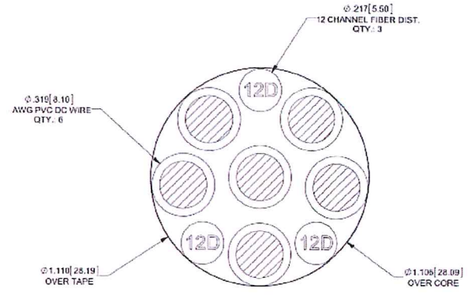
RFS HYBRIFLEX RISER CABLES SCHEDULE

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, 50ft	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, 50ft	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 pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable,225ft	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: HB114-21U3M12-225F 3x 6 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable,225ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

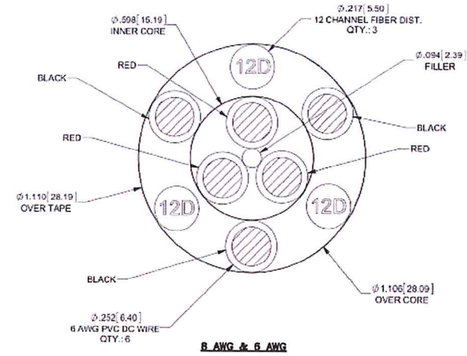
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

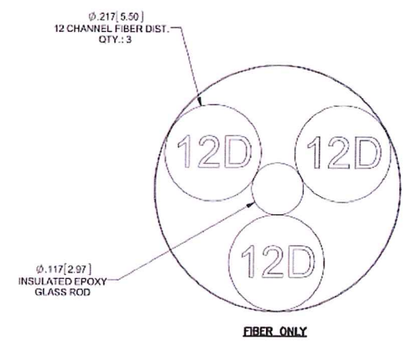
HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF:	RFS		
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"



4 AWG



8 AWG & 6 AWG



FIBER ONLY

2 S-2 2.5 HYBRID CABLE X–SECTION AND DATA

SCALE: NTS

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5/1/15	JMQ

SCALE:

STATE OF CONNECTICUT
MANOJKUMAR R. PATEL
No. 22036
LICENSED PROFESSIONAL ENGINEER

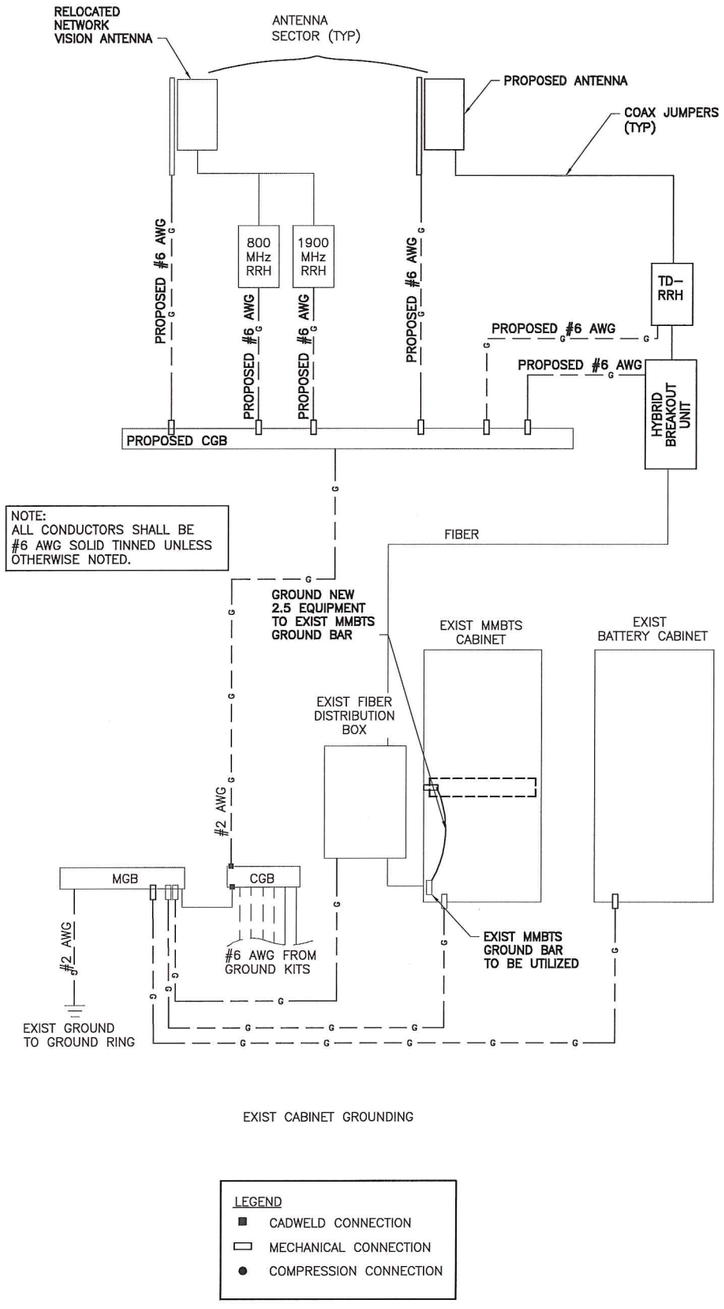
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

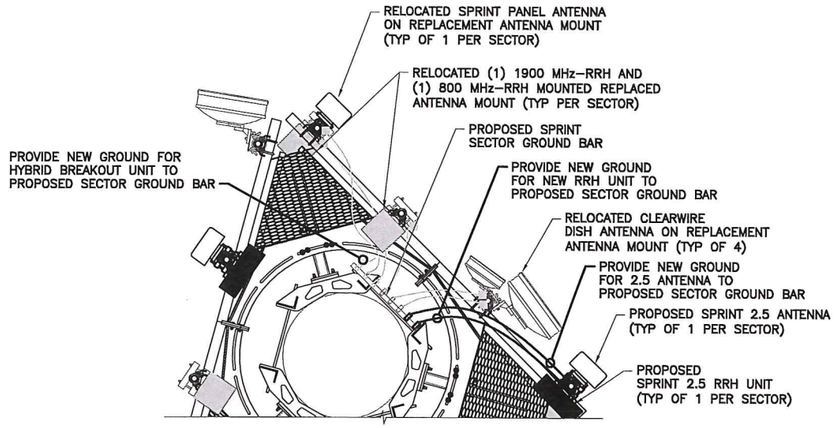
SHEET TITLE:
EQUIPMENT SCHEMATIC DETAILS

SHEET NO:
S–2



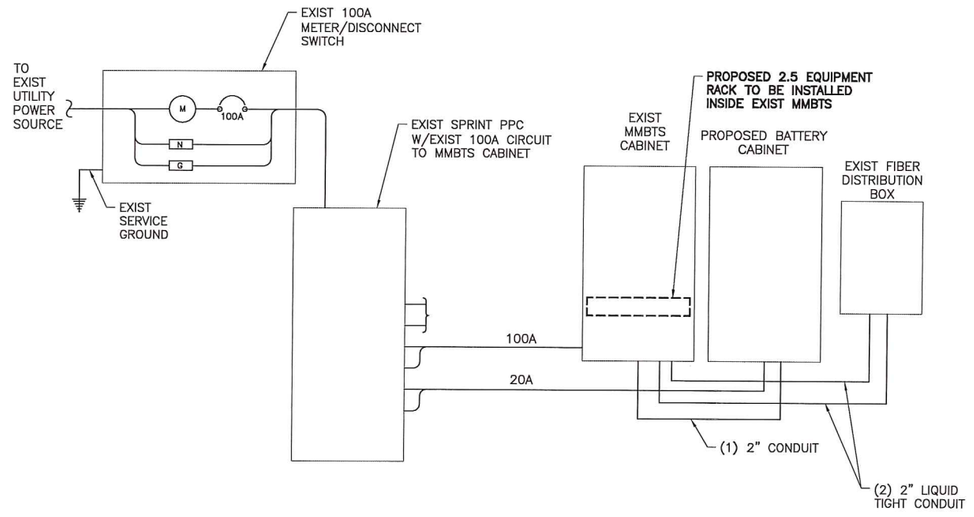
1 / E-1 TYPICAL GROUNDING ONE LINE DIAGRAM

SCALE: NTS



2 / E-1 TYPICAL ANTENNA GROUNDING PLAN

SCALE: NTS



3 / E-1 TYPICAL ELECTRICAL & TELCO PLAN

SCALE: NTS

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5/1/15	SMQ

SEAL: STATE OF CONNECTICUT · MANOJKUMAR PATEL · No. 22038 · LICENSED PROFESSIONAL ENGINEER

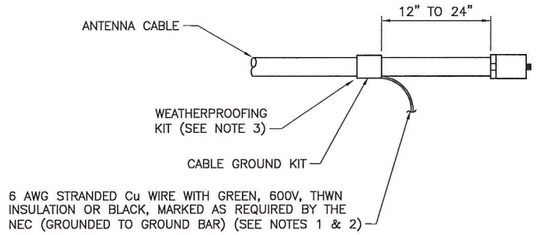
SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
ELECTRICAL & GROUNDING PLANS

SHEET NO:
E-1



CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

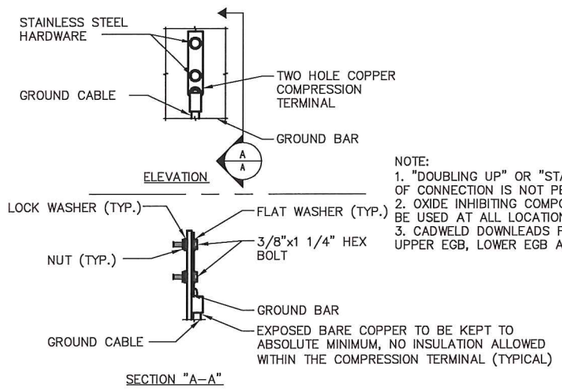
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

WEATHER PROOFING SHALL BE (TYPE AND PART NUMBER) AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER AND APPROVED BY CONTRACTOR.

1 E-2 CABLE GROUNDING KIT DETAIL

SCALE: N.T.S.

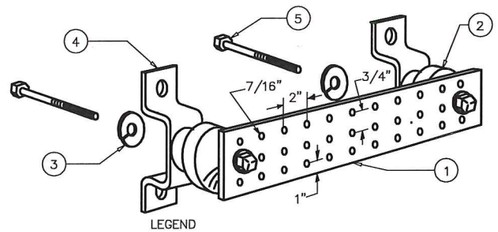


NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

SECTION "A–A"

2 E-2 GROUNDING BAR CONN. DETAIL

SCALE: NTS



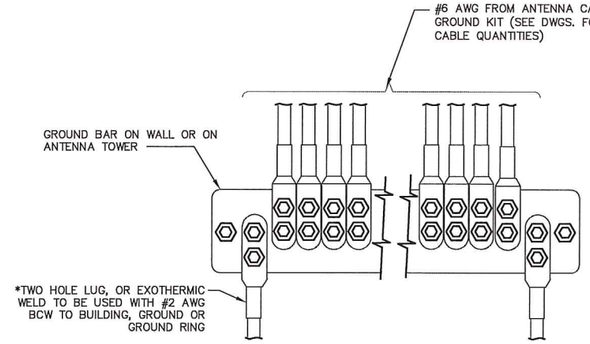
LEGEND

1– COPPER TINNED GROUND BAR, 1/4"X 4"X 20", OR OTHER LENGTH AS REQUIRED, HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2– INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4 OR EQUAL
3– 5/8" LOCKWASHERS OR EQUAL
4– WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056 OR EQUAL
5– 5/8–11 X 1" H.H.C.S.BOLTS

NOTE:
ALL BOLTS, NUTS, WASHERS AND LOCK WASHERS SHALL BE 18–8 STAINLESS STEEL.

3 E-2 GROUNDING BAR DETAIL

SCALE: NTS



* – GROUND BARS AT THE BOTTOM OF TOWERS/MONOPOLES SHALL ONLY USE EXOTHERMIC WELDS.

– ATTACH "DO NOT DISCONNECT" LABELS TO GROUND BARS. CAN USE BRASS TAG "DO NOT DISCONNECT" AT EACH HYBRID GROUND POINT OR BACK–A–LITE PLATE LABEL ON GROUND BAR.

– CONNECT SEQUENCE– BOLT/WASHER/NO–OX/GROUND BAR/NO–OX/WASHER/LOCK–WASHER/NUT. THIS IS REPEATED FOR EACH LUG CONNECTION POINT.

4 E-2 ANTENNA GROUND BAR DETAIL

SCALE: NTS

GROUNDING NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250–GROUNDING AND BONDING.

2. ALL GROUND WIRES SHALL BE #2 AWG UNLESS NOTED OTHERWISE.

3. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.

4. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.

5. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.

6. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.

7. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL AND SHALL BE PROVIDED WITH GROUNDING BUSHINGS.

8. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.

9. WHEN CABLE LENGTH IS OVER 20' THE MANUFACTURERS GROUND KIT MUST BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS.

10. REFER TO "ANTI–THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUNDING.

11. HOME RUN GROUNDS ARE NOT APPROVED BY CROWN CASTLE CONSTRUCTION STANDARDS AND THAT ANTENNA BUSS BARS SHOULD BE INSTALLED DIRECTLY TO TOWER STEEL WITHOUT INSULATORS OR DOWN CONDUCTORS.

PROTECTIVE GROUNDING SYSTEM GENERAL NOTES:

1. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF–TAPPING SCREWS.

2. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.

3. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI–CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH PROJECT MANAGER.

4. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.

5. INSTALL GROUND BUSHING ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.

6. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.

7. GROUND HYBRID CABLE SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
4. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
5. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THNN INSULATION.
6. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
7. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
8. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
9. GROUNDING SHALL COMPLY WITH NEC ART. 250.
10. GROUND HYBRID CABLE SHIELDS AT 3 LOCATIONS USING MANUFACTURER'S HYBRID CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
11. USE #2 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
12. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
13. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #2 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
14. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
15. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
16. BOND ANTENNA MOUNTING BRACKETS, HYBRID CABLE GROUND KITS, AND RRHs TO EGB PLACED NEAR THE ANTENNA LOCATION.
17. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
18. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULT FOR PROJECT CLOSE–OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
19. CONTRACTOR SHALL CONDUCT ANTENNA, HYBRID CABLES, GPS COAX AND RRH RETURN–LOSS AND DISTANCE– TO–FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
20. CONTRACTOR SHALL CHECK CAPACITY OF EXISTING SERVICE & PANEL ON SITE TO DETERMINE IF CAPACITY EXISTS TO ACCOMMODATE THE ADDED LOAD OF THIS PROJECT. ADVISE ENGINEER OF ANY DISCREPANCY.
21. LOCATION OF ALL OUTLET, BOXES, ETC, AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH–IN.
22. ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNERS REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH–IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT.

Sprint

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

TECTONIC
• PLANNING
• ENGINEERING
• SURVEYING
• CONSTRUCTION MANAGEMENT

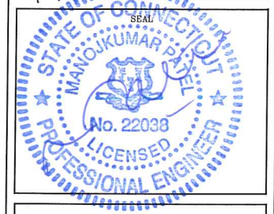
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 7225.CT03XC035

NO	DATE	DESCRIPTION	BY
0	6/25/14	FOR COMMENT	MP
1	4/8/15	ADDED NEW MOUNT	DC
2	5/1/15	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
5/1/15	SMQ



SITE NUMBER:
CT03XC035

SITE NAME:
NAUGATUCK 2 UNIROYAL

SITE ADDRESS:
280 ELM ST
NAUGATUCK, CT 06770

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E–2

Date: **May 28, 2015**

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430
(201) 236-9094

SSOE Group
320 Seven Springs Way, Suite 350
Brentwood, TN 37027
(615) 661-7585
kbihani@ssoe.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate** **Carrier Site Number:**	 CT03XC035
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	876319 Naugatuck 2 Uniroyal 288233 1065663 245820 Rev. 5
Engineering Firm Designation:	**SSOE Group Project Number:**	015-00428-00 BC 0760
Site Data:	**280 Elm Street, Naugatuck, CT 06770, New Haven County** **Latitude *41° 28' 52.72",* Longitude *-73° 3' 13.47"*** **150 Foot – Summit Monopole Tower**	

Dear Ms. Veronica Harris,

SSOE 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 790353, in accordance with application 245820, revision 5.

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

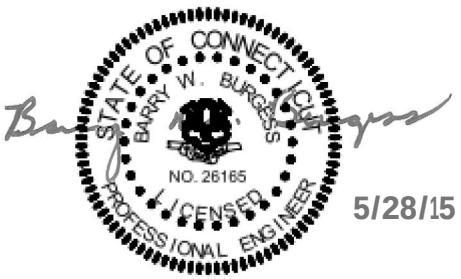
LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

We at *SSOE 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.

Structural analysis prepared by: Kshitij Bihani

Respectfully submitted by:



Barry W. Burgess, PE
Section Manager

TABLE OF CONTENTS

1) INTRODUCTION

The existing 150' monopole has twelve sides and is evenly tapered from 50.13" (flat-flat) at the base to 22.00" (flat-flat) at the top. It has four major sections, connected with slip joints. The structure is galvanized and has no tower lighting.

The tower was originally designed for Sprint Spectrum by Summit Manufacturing, Inc. of West Hazleton, PA for a 90 mph wind speed with 0.5" radial ice in accordance with TIA/EIA-222-F 1996.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 0.75" 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
150.0	150.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	1
		3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe			
		1	Commscope	MC-PA12L-B			

Notes:
1) See Appendix B for the proposed coax layout.

Table 2 – Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	153.0	1	Dragonwave	A-ANT-23G-1-C	3 3 3 3	1-1/4 1/4 5/16 1/2	
	152.0	3	Dragonwave	A-ANT-23G-2-C			
	150.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER			
		3	Alcatel Lucent	800MHZ RRH			
		3	Alcatel Lucent	TME-1900MHz RRH (65MHz)			
		9	RFS Celwave	ACU-A20-N			
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		1		Platform Mount [LP 1201-1]	1	1/2	1
	148.0	3	Argus Technologies	LLPX310R w/ Mount Pipe			
		3	Samsung Telecommunications	FDD_R6_RRH			
142.0	142.0	3	RFS Celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	
134.0	135.0	12	Decibel	844G90VTA-SX w/ Mount Pipe	12	1-1/4	
	134.0	1		Platform Mount [LP 1201-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
119.0	120.0	6	Ericsson	KRY 112 71	18	1 5/8	
		6	RFS Celwave	APX16DWV-16DWV-S-E-ACU w/ Mount Pipe			
	119.0	1		Platform Mount [LP 303-1]			
99.0	100.0	1	Lucent	KS24019-L112A	1	1/2	
	99.0	1		Side Arm Mount [SO 701-1]			

Notes:
1) Existing equipment to be removed; not considered in this analysis.

Table 3 – Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	12	Decibel	DB980H PCS	-	-
		1	Generic	14' Low Profile Platform		
130.0	130.0	12	Decibel	DB980H PCS	-	-
		1	Generic	14' Low Profile Platform		
110.0	110.0	12	Decibel	DB980H PCS	-	-
		1	Generic	14' Low Profile Platform		
100.0	100.0	1	Generic	GPS w/ Mount	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Original Tower Drawings	Summit Job #: 2249, dated 8/14/97	Doc ID#: 1446973	Crown DMZ
Foundation Drawings	Summit Job #: 2249, dated 8/14/97	Doc ID#: 1447037	Crown DMZ
Geotechnical Reports	Welti Site #: CT03XC035, dated 7/24/97	Doc ID#: 1529732	Crown DMZ

3.1) Analysis Method

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

3.2) Assumptions

1) The tower and foundation were constructed in accordance with their original design and maintained per the manufacturer's specifications, are in good condition, and the tower is twist free and plumb.
2) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
3) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package, dated 4/29/15 with any adjustments as noted below.

This analysis may be affected if any assumptions are not valid or have been made in error. SSOE 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	150 - 108	Pole	TP30.401x22x0.25	1	-8.95	1135.77	66.1	Pass
L2	108 - 69.75	Pole	TP37.553x29.1509x0.3125	2	-15.06	1752.38	91.6	Pass
L3	69.75 - 32.5	Pole	TP44.379x35.9778x0.375	3	-23.40	2693.26	88.4	Pass
L4	32.5 - 0	Pole	TP50.13x42.5288x0.4375	4	-34.53	3639.32	86.3	Pass
							Summary	
						Pole (L2)	91.6	Pass
						Rating =	**91.6**	**Pass**

Table 6 – Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Plate		89.1%	Pass
1	Anchor Rods		82.2%	Pass
1	Foundation (Structural)		62.5%	Pass
1	Foundation (Soil Interaction)		66.7%	Pass

Structure Rating (max from all components) =	**91.6%**

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

4.1) Recommendations

The existing tower and its foundations are sufficient for the proposed loads and do not require modifications.

5) DISCLAIMER OF WARRANTIES

SSOE Group has not performed a site visit to the tower to verify member sizes or antenna/coax loading. SSOE Group shall be contacted immediately if the existing conditions are not as represented on the tower elevation contained in this report in order to evaluate the significance of the discrepancy. SSOE Group has not performed a condition assessment of the tower foundation. This report does not replace a full tower inspection

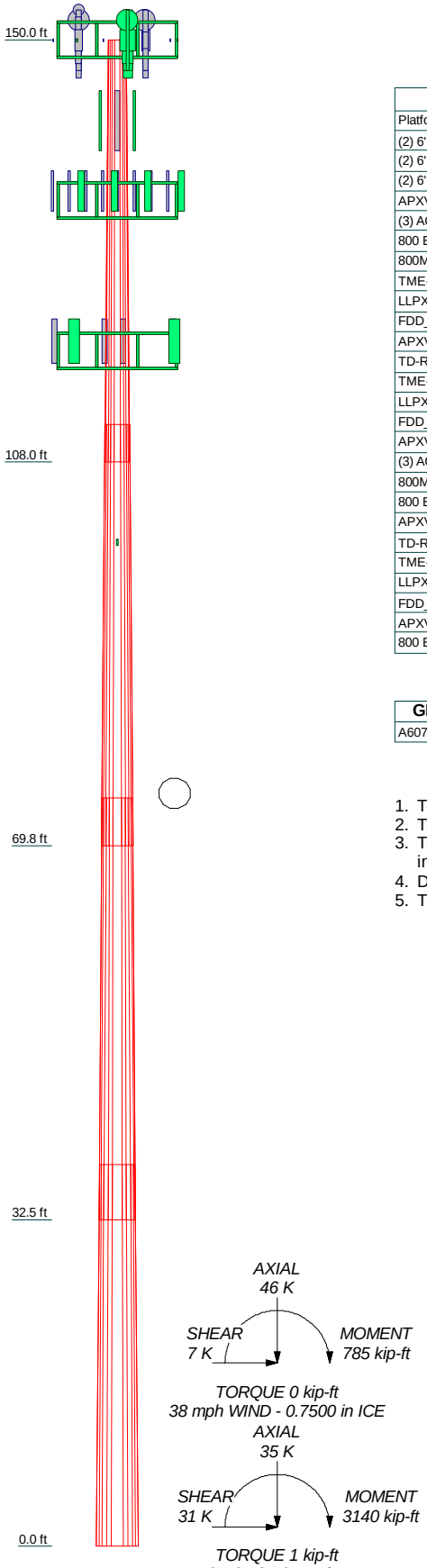
The engineering services rendered by SSOE Group in connection with this structural analysis are limited to an analysis of the tower structure and theoretical capacity of its main structural members. Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable tower manufacturer.

SSOE Group makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. SSOE Group will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data contained in this report. The maximum liability of SSOE Group pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	42.00	12	0.2500	3.75	22.0000	30.4010	A607-60	3.0
2	42.00	12	0.3125	4.75	29.1509	37.5530		4.8
3	42.00	12	0.3750	5.50	35.9778	44.3790	A607-65	6.9
4	38.00	12	0.4375		42.5288	50.1300		8.4
								23.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 305-1]	150	(3) ACU-A20-N	150
(2) 6' x 2" Mount Pipe	150	800MHZ RRH	150
(2) 6' x 2" Mount Pipe	150	APXVTM14-C-120 w/ Mount Pipe	150
(2) 6' x 2" Mount Pipe	150	TD-RRH8x20-25	150
APXVSPP18-C-A20 w/ Mount Pipe	150	A-ANT-23G-1-C	150
(3) ACU-A20-N	150	A-ANT-23G-2-C	150
800 EXTERNAL NOTCH FILTER	150	A-ANT-23G-2-C	150
800MHZ RRH	150	A-ANT-23G-2-C	150
TME-1900MHz RRH (65MHz)	150	APXV18-206517S-C w/ Mount Pipe	142
LLPX310R w/ Mount Pipe	150	APXV18-206517S-C w/ Mount Pipe	142
FDD_R6_RRH	150	APXV18-206517S-C w/ Mount Pipe	142
APXVTM14-C-120 w/ Mount Pipe	150	(4) 844G90VTA-SX w/ Mount Pipe	134
TD-RRH8x20-25	150	(4) 844G90VTA-SX w/ Mount Pipe	134
TME-1900MHz RRH (65MHz)	150	(4) 844G90VTA-SX w/ Mount Pipe	134
LLPX310R w/ Mount Pipe	150	Platform Mount [LP 1201-1]	134
FDD_R6_RRH	150	(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	119
APXVSPP18-C-A20 w/ Mount Pipe	150		
(3) ACU-A20-N	150	(2) KRY 112 71	119
800MHZ RRH	150	(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	119
800 EXTERNAL NOTCH FILTER	150		
APXVTM14-C-120 w/ Mount Pipe	150	Platform Mount [LP 303-1]	119
TD-RRH8x20-25	150	(2) KRY 112 71	119
TME-1900MHz RRH (65MHz)	150	(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	119
LLPX310R w/ Mount Pipe	150		
FDD_R6_RRH	150	(2) KRY 112 71	119
APXVSPP18-C-A20 w/ Mount Pipe	150	KS24019-L112A	99
800 EXTERNAL NOTCH FILTER	150	Side Arm Mount [SO 701-1]	99

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

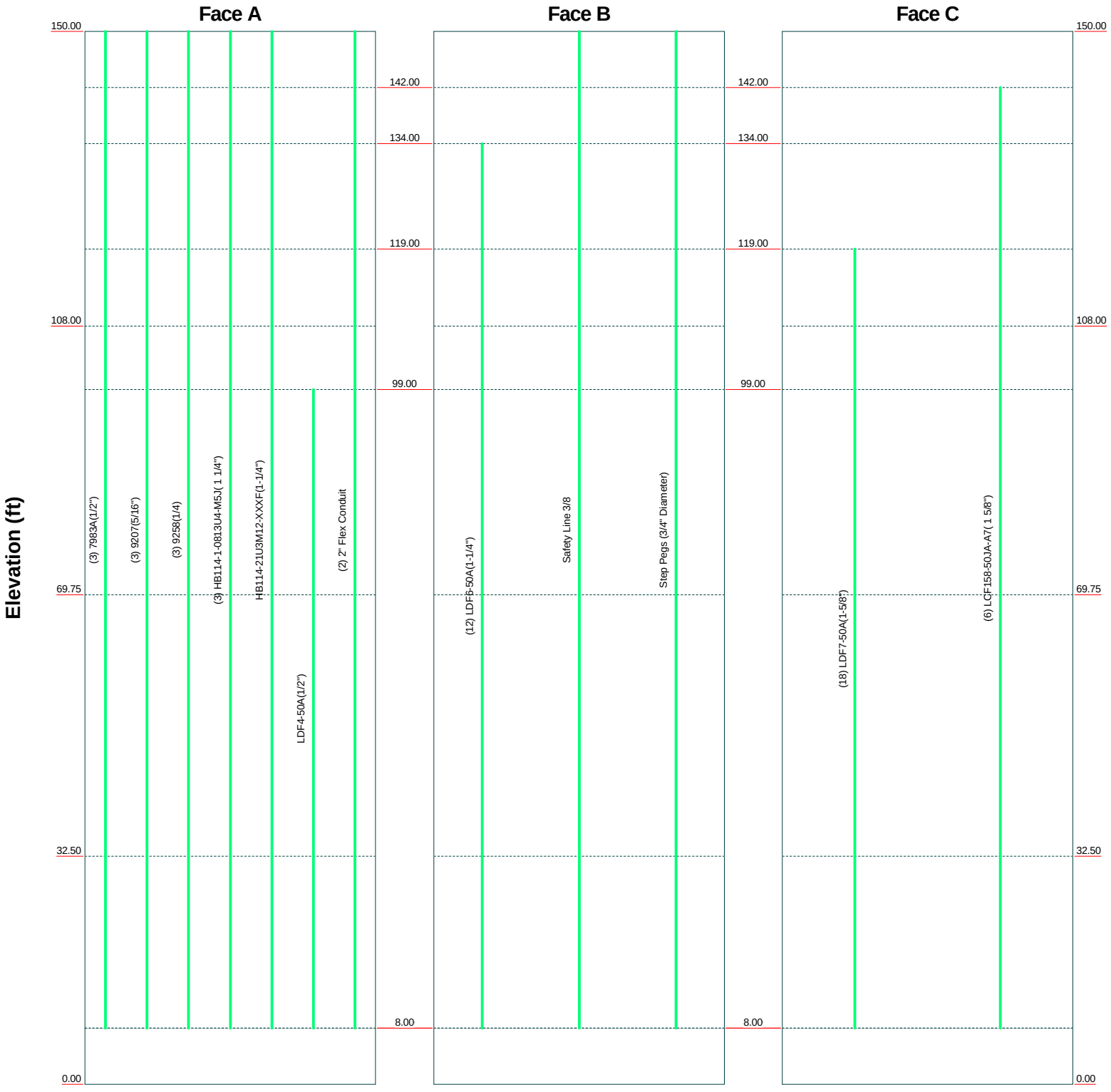
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 91.6%

SSOE Group
320 Seven Springs Way, Suite 350
Brentwood, TN 37027
Phone: (615) 661-7585
FAX: (615) 661-7569

Job: **BU 876319**			
Project: **015-00428-00**			
Client: CCI	Drawn by: 15430	App'd:	
Code: TIA/EIA-222-F	Date: 05/28/15	Scale: NTS	
Path: C:\Users\15430\Desktop\Towers\876319\Working\tnx\BU# 876319_WO1065663.eri		Dwg No. E-1	

Feed Line Distribution Chart
0' - 150'

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



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320 Seven Springs Way, Suite 350
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Project: ***015-00428-00***		
Client: CCI	Drawn by: 15430	App'd:
Code: TIA/EIA-222-F	Date: 05/28/15	Scale: NTS
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SSOE Group
320 Seven Springs Way, Suite 350
Brentwood, TN 37027
Phone: (615) 661-7585
FAX: (615) 661-7569

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

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	150.00-108.00	42.00	3.75	12	22.0000	30.4010	0.2500	1.0000	A607-60 (60 ksi)
L2	108.00-69.75	42.00	4.75	12	29.1509	37.5530	0.3125	1.2500	A607-60 (60 ksi)
L3	69.75-32.50	42.00	5.50	12	35.9778	44.3790	0.3750	1.5000	A607-65 (65 ksi)
L4	32.50-0.00	38.00		12	42.5288	50.1300	0.4375	1.7500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	31.4734	24.2716	2816.3524	10.7941	15.7477	178.8419	5706.6935	11.9457	7.4775	29.91
L2	30.9559	29.0187	3080.3908	10.3242	15.1002	203.9971	6241.7070	14.2821	6.9749	22.32
	38.8777	37.4733	6633.4331	13.3321	19.4525	341.0075	13441.1339	18.4432	9.2267	29.525
L3	38.2306	42.9903	6955.4340	12.7458	18.6365	373.2160	14093.5951	21.1585	8.6370	23.032
	45.9445	53.1348	13132.5650	15.7534	22.9883	571.2711	26610.1370	26.1513	10.8886	29.036
L4	45.1681	59.2962	13409.0519	15.0687	22.0299	608.6741	27170.3746	29.1838	10.2252	23.372
	51.8984	70.0043	22064.4151	17.7899	25.9673	849.6987	44708.4869	34.4540	12.2623	28.028

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 150.00-108.00				1	1	1		
L2 108.00-69.75				1	1	1		
L3 69.75-32.50				1	1	1		
L4 32.50-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
7983A(1/2")	A	No	Inside Pole	150.00 - 8.00	3	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
9207(5/16")	A	No	Inside Pole	150.00 - 8.00	3	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
9258(1/4)	A	No	Inside Pole	150.00 - 8.00	3	No Ice	0.00	0.04
						1/2" Ice	0.00	0.04
						1" Ice	0.00	0.04
						2" Ice	0.00	0.04
						4" Ice	0.00	0.04
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	150.00 - 8.00	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
						2" Ice	0.00	1.20
						4" Ice	0.00	1.20
HB114-21U3M12-XXX F(1-1/4")	A	No	Inside Pole	150.00 - 8.00	1	No Ice	0.00	1.22
						1/2" Ice	0.00	1.22
						1" Ice	0.00	1.22
						2" Ice	0.00	1.22
						4" Ice	0.00	1.22
LDF4-50A(1/2")	A	No	Inside Pole	99.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
2" Flex Conduit	A	No	Inside Pole	150.00 - 8.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
						2" Ice	0.00	0.32
						4" Ice	0.00	0.32
LDF6-50A(1-1/4")	B	No	Inside Pole	134.00 - 8.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF7-50A(1-5/8")	C	No	Inside Pole	119.00 - 8.00	18	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LCF158-50JA-A7(1 5/8")	C	No	Inside Pole	142.00 - 8.00	6	No Ice	0.00	0.80
						1/2" Ice	0.00	0.80
						1" Ice	0.00	0.80
						2" Ice	0.00	0.80
						4" Ice	0.00	0.80
Safety Line 3/8	B	No	CaAa (Out Of Face)	150.00 - 8.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
Step Pegs (3/4" Diameter)	B	No	CaAa (Out Of Face)	150.00 - 8.00	1	No Ice	0.08	1.50
						1/2" Ice	0.17	2.26
						1" Ice	0.28	3.64
						2" Ice	0.47	8.22
						4" Ice	0.88	24.71

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-108.00	A	0.000	0.000	0.000	0.000	0.32
		B	0.000	0.000	0.000	4.725	0.28
		C	0.000	0.000	0.000	0.000	0.33
L2	108.00-69.75	A	0.000	0.000	0.000	0.000	0.30
		B	0.000	0.000	0.000	4.303	0.37
		C	0.000	0.000	0.000	0.000	0.75
L3	69.75-32.50	A	0.000	0.000	0.000	0.000	0.29
		B	0.000	0.000	0.000	4.191	0.36
		C	0.000	0.000	0.000	0.000	0.73
L4	32.50-0.00	A	0.000	0.000	0.000	0.000	0.19
		B	0.000	0.000	0.000	2.756	0.24
		C	0.000	0.000	0.000	0.000	0.48

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-108.00	A	0.883	0.000	0.000	0.000	0.000	0.32
		B		0.000	0.000	0.000	19.553	0.39
		C		0.000	0.000	0.000	0.000	0.33
L2	108.00-69.75	A	0.844	0.000	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	17.807	0.47
		C		0.000	0.000	0.000	0.000	0.75
L3	69.75-32.50	A	0.790	0.000	0.000	0.000	0.000	0.29
		B		0.000	0.000	0.000	16.769	0.46
		C		0.000	0.000	0.000	0.000	0.73
L4	32.50-0.00	A	0.750	0.000	0.000	0.000	0.000	0.19
		B		0.000	0.000	0.000	10.501	0.29
		C		0.000	0.000	0.000	0.000	0.48

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-108.00	0.1390	0.0802	0.4722	0.2726
L2	108.00-69.75	0.1405	0.0811	0.4965	0.2867
L3	69.75-32.50	0.1414	0.0817	0.4980	0.2875
L4	32.50-0.00	0.1060	0.0612	0.3696	0.2134

Discrete Tower Loads

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
Platform Mount [LP 305-1]	C	None		0.0000	150.00	No Ice	18.01	18.01	1.12
						1/2" Ice	23.33	23.33	1.35
						1" Ice	28.65	28.65	1.58
						2" Ice	39.29	39.29	2.05
						4" Ice	60.57	60.57	2.97
(2) 6' x 2" Mount Pipe	A	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	C	From Centroid-Fa	3.86 -1.04	-15.0000	150.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03

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
		ce	0.00			1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	6.71 7.66 8.49 10.20 13.98	0.08 0.14 0.22 0.39 0.87
(3) ACU-A20-N	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
800 EXTERNAL NOTCH FILTER	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
800MHZ RRH	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.71 2.93 3.41 4.46	2.07 2.27 2.48 2.93 3.93	0.05 0.07 0.10 0.16 0.32
TME-1900MHz RRH (65MHz)	B	From Centroid-Face	3.86 -1.04 0.00	-35.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
LLPX310R w/ Mount Pipe	B	From Centroid-Face	3.86 -1.04 -2.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.07 5.48 5.91 6.79 8.70	2.98 3.53 4.09 5.31 8.13	0.05 0.08 0.13 0.23 0.54
FDD_R6_RRH	B	From Centroid-Face	3.86 -1.04 -2.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.79 1.97 2.16 2.57 3.49	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	B	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TME-1900MHz RRH (65MHz)	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
LLPX310R w/ Mount Pipe	C	From Centroid-Face	3.86 -1.04 -2.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.07 5.48 5.91 6.79	2.98 3.53 4.09 5.31	0.05 0.08 0.13 0.23

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
						4" Ice	8.70	8.13	0.54
FDD_R6_RRH	C	From Centroid-Face	3.86 -1.04 -2.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.79 1.97 2.16 2.57 3.49	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	6.71 7.66 8.49 10.20 13.98	0.08 0.14 0.22 0.39 0.87
(3) ACU-A20-N	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
800MHZ RRH	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.71 2.93 3.41 4.46	2.07 2.27 2.48 2.93 3.93	0.05 0.07 0.10 0.16 0.32
800 EXTERNAL NOTCH FILTER	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	C	From Centroid-Face	3.86 -1.04 0.00	-10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TME-1900MHz RRH (65MHz)	A	From Centroid-Face	3.86 -1.04 0.00	-15.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
LLPX310R w/ Mount Pipe	A	From Centroid-Face	3.86 -1.04 -2.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.07 5.48 5.91 6.79 8.70	2.98 3.53 4.09 5.31 8.13	0.05 0.08 0.13 0.23 0.54
FDD_R6_RRH	A	From Centroid-Face	3.86 -1.04 -2.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.79 1.97 2.16 2.57 3.49	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Face	3.86 -1.04 0.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	6.71 7.66 8.49 10.20 13.98	0.08 0.14 0.22 0.39 0.87
800 EXTERNAL NOTCH	A	From	3.86	5.0000	150.00	No Ice	0.77	0.37	0.01

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
FILTER		Centroid-Face	-1.04 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	0.89 1.02 1.30 1.97	0.46 0.56 0.79 1.34	0.02 0.02 0.04 0.11
(3) ACU-A20-N	A	From Centroid-Face	3.86 -1.04 0.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
800MHZ RRH	A	From Centroid-Face	3.86 -1.04 0.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.71 2.93 3.41 4.46	2.07 2.27 2.48 2.93 3.93	0.05 0.07 0.10 0.16 0.32
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Face	3.86 -1.04 0.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Centroid-Face	3.86 -1.04 0.00	5.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	20.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	60.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
Platform Mount [LP 1201-1]	C	None		0.0000	134.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30
(4) 844G90VTA-SX w/ Mount Pipe	A	From Centroid-Face	3.76 -1.37 1.00	-20.0000	134.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	0.03 0.07 0.11 0.23 0.55
(4) 844G90VTA-SX w/ Mount Pipe	B	From Centroid-Face	3.76 -1.37 1.00	-20.0000	134.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	0.03 0.07 0.11 0.23 0.55
(4) 844G90VTA-SX w/ Mount Pipe	C	From Centroid-Face	3.76 -1.37 1.00	-20.0000	134.00	No Ice 1/2" Ice 1" Ice	3.30 3.69 4.12	4.92 5.60 6.28	0.03 0.07 0.11

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	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.55
Platform Mount [LP 303-1]	C	None		0.0000	119.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
(2) KRY 112 71	A	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	0.68	0.45	0.01
						1/2" Ice	0.80	0.56	0.02
						1" Ice	0.93	0.68	0.03
						2" Ice	1.22	0.94	0.04
						4" Ice	1.90	1.57	0.11
(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	A	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	6.84	3.19	0.06
						1/2" Ice	7.31	3.82	0.10
						1" Ice	7.78	4.46	0.15
						2" Ice	8.77	5.80	0.28
						4" Ice	10.85	8.73	0.63
(2) KRY 112 71	B	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	0.68	0.45	0.01
						1/2" Ice	0.80	0.56	0.02
						1" Ice	0.93	0.68	0.03
						2" Ice	1.22	0.94	0.04
						4" Ice	1.90	1.57	0.11
(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	B	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	6.84	3.19	0.06
						1/2" Ice	7.31	3.82	0.10
						1" Ice	7.78	4.46	0.15
						2" Ice	8.77	5.80	0.28
						4" Ice	10.85	8.73	0.63
(2) KRY 112 71	C	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	0.68	0.45	0.01
						1/2" Ice	0.80	0.56	0.02
						1" Ice	0.93	0.68	0.03
						2" Ice	1.22	0.94	0.04
						4" Ice	1.90	1.57	0.11
(2) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	C	From Centroid-Face	3.94 -0.69 1.00	-10.0000	119.00	No Ice	6.84	3.19	0.06
						1/2" Ice	7.31	3.82	0.10
						1" Ice	7.78	4.46	0.15
						2" Ice	8.77	5.80	0.28
						4" Ice	10.85	8.73	0.63
KS24019-L112A	C	From Face	4.00 0.00 1.00	0.0000	99.00	No Ice	0.16	0.16	0.01
						1/2" Ice	0.22	0.22	0.01
						1" Ice	0.30	0.30	0.01
						2" Ice	0.48	0.48	0.02
						4" Ice	0.95	0.95	0.06
Side Arm Mount [SO 701-1]	C	From Face	2.00 0.00 0.00	0.0000	99.00	No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft^2	K
A-ANT-23G-1-C	A	Paraboloid w/Shroud (HP)	From Centroid -Face	3.86 -1.04 3.00	5.0000		150.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.28 1.45 1.63 2.03 2.96	0.02 0.02 0.04 0.08 0.19
A-ANT-23G-2-C	A	Paraboloid w/Shroud (HP)	From Centroid -Face	3.86 -1.04 2.00	5.0000		150.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.01 0.02 0.03 0.05 0.08
A-ANT-23G-2-C	B	Paraboloid w/Shroud (HP)	From Centroid -Face	3.86 -1.04 2.00	-15.0000		150.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.31 4.94 6.34	0.03 0.06 0.10 0.19 0.43
A-ANT-23G-2-C	C	Paraboloid w/Shroud (HP)	From Centroid -Face	3.86 -1.04 2.00	-10.0000		150.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.01 0.02 0.03 0.05 0.08

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

Comb. No.	Description
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.61	-0.20	0.13
			Max. Mx	5	-9.01	-429.55	-5.08
			Max. My	8	-8.95	-4.71	-443.60
			Max. Vy	5	16.89	-429.55	-5.08
			Max. Vx	8	17.28	-4.71	-443.60
			Max. Torque	5			-0.96
L2	108 - 69.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.06	-0.40	-0.33
			Max. Mx	5	-15.10	-1146.66	-10.17
			Max. My	8	-15.06	-9.06	-1174.55
			Max. Vy	5	21.59	-1146.66	-10.17
			Max. Vx	8	21.94	-9.06	-1174.55
			Max. Torque	5			-1.26
L3	69.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.66	-0.63	-0.46
			Max. Mx	5	-23.42	-2016.95	-14.87
			Max. My	8	-23.40	-13.30	-2057.63
			Max. Vy	5	25.99	-2016.95	-14.87
			Max. Vx	8	26.34	-13.30	-2057.63
			Max. Torque	5			-1.29
L4	32.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-46.11	-0.83	-0.58
			Max. Mx	5	-34.53	-3086.41	-19.63
			Max. My	8	-34.53	-17.60	-3140.12
			Max. Vy	5	30.27	-3086.41	-19.63
			Max. Vx	8	30.61	-17.60	-3140.12
			Max. Torque	5			-1.31

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	21	46.11	-0.03	-7.32
	Max. H_x	11	34.55	30.22	0.06
	Max. H_z	2	34.55	0.09	30.58
	Max. M_x	2	3138.06	0.09	30.58
	Max. M_z	5	3086.41	-30.25	-0.12

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	11	1.22	30.22	0.06
	Min. Vert	1	34.55	0.00	0.00
	Min. H_x	5	34.55	-30.25	-0.12
	Min. H_z	8	34.55	-0.11	-30.59
	Min. M_x	8	-3140.12	-0.11	-30.59
	Min. M_z	11	-3081.21	30.22	0.06
	Min. Torsion	5	-1.31	-30.25	-0.12

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	34.55	0.00	0.00	0.35	-0.29	0.00
Dead+Wind 0 deg - No Ice	34.55	-0.09	-30.58	-3138.06	14.30	-0.28
Dead+Wind 30 deg - No Ice	34.55	14.98	-26.48	-2717.80	-1520.45	0.12
Dead+Wind 60 deg - No Ice	34.55	26.13	-15.19	-1552.47	-2662.80	0.97
Dead+Wind 90 deg - No Ice	34.55	30.25	0.12	19.63	-3086.41	1.31
Dead+Wind 120 deg - No Ice	34.55	26.22	15.37	1582.99	-2676.98	0.91
Dead+Wind 150 deg - No Ice	34.55	15.18	26.53	2725.59	-1551.36	0.67
Dead+Wind 180 deg - No Ice	34.55	0.11	30.59	3140.12	-17.60	0.27
Dead+Wind 210 deg - No Ice	34.55	-15.04	26.46	2714.29	1529.02	-0.18
Dead+Wind 240 deg - No Ice	34.55	-26.16	15.23	1560.89	2665.71	-0.86
Dead+Wind 270 deg - No Ice	34.55	-30.22	-0.06	-9.46	3081.21	-1.22
Dead+Wind 300 deg - No Ice	34.55	-26.18	-15.37	-1581.69	2669.16	-0.79
Dead+Wind 330 deg - No Ice	34.55	-15.15	-26.53	-2725.45	1546.88	-0.51
Dead+Ice+Temp	46.11	0.00	0.00	0.58	-0.83	0.00
Dead+Wind 0 deg+Ice+Temp	46.11	-0.03	-7.32	-782.80	3.13	0.05
Dead+Wind 30 deg+Ice+Temp	46.11	3.60	-6.33	-677.61	-382.91	0.16
Dead+Wind 60 deg+Ice+Temp	46.11	6.28	-3.63	-386.70	-670.08	0.34
Dead+Wind 90 deg+Ice+Temp	46.11	7.27	0.03	5.72	-776.65	0.37
Dead+Wind 120 deg+Ice+Temp	46.11	6.31	3.68	395.94	-673.95	0.21
Dead+Wind 150 deg+Ice+Temp	46.11	3.65	6.35	681.07	-391.17	0.09
Dead+Wind 180 deg+Ice+Temp	46.11	0.03	7.32	784.36	-5.56	-0.05
Dead+Wind 210 deg+Ice+Temp	46.11	-3.61	6.33	677.83	383.31	-0.18
Dead+Wind 240 deg+Ice+Temp	46.11	-6.29	3.64	389.75	669.11	-0.32
Dead+Wind 270 deg+Ice+Temp	46.11	-7.26	-0.02	-2.27	773.76	-0.35
Dead+Wind 300 deg+Ice+Temp	46.11	-6.29	-3.68	-394.55	670.45	-0.19
Dead+Wind 330 deg+Ice+Temp	46.11	-3.65	-6.35	-679.94	388.46	-0.05
Dead+Wind 0 deg - Service	34.55	-0.03	-10.58	-1087.10	4.76	-0.10
Dead+Wind 30 deg - Service	34.55	5.18	-9.16	-941.45	-527.01	0.05
Dead+Wind 60 deg - Service	34.55	9.04	-5.25	-537.65	-922.79	0.33
Dead+Wind 90 deg - Service	34.55	10.47	0.04	7.04	-1069.56	0.46
Dead+Wind 120 deg - Service	34.55	9.07	5.32	548.73	-927.73	0.32
Dead+Wind 150 deg - Service	34.55	5.25	9.18	944.65	-537.74	0.24
Dead+Wind 180 deg - Service	34.55	0.04	10.58	1088.28	-6.30	0.10
Dead+Wind 210 deg - Service	34.55	-5.20	9.15	940.71	529.58	-0.06
Dead+Wind 240 deg - Service	34.55	-9.05	5.27	541.05	923.41	-0.30
Dead+Wind 270 deg - Service	34.55	-10.46	-0.02	-3.04	1067.36	-0.43
Dead+Wind 300 deg - Service	34.55	-9.06	-5.32	-547.79	924.62	-0.28
Dead+Wind 330 deg - Service	34.55	-5.24	-9.18	-944.12	535.79	-0.18

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	0.00	-34.55	0.00	0.00	34.55	0.00	0.000%
2	-0.09	-34.55	-30.58	0.09	34.55	30.58	0.000%
3	14.98	-34.55	-26.48	-14.98	34.55	26.48	0.000%
4	26.13	-34.55	-15.19	-26.13	34.55	15.19	0.000%
5	30.25	-34.55	0.12	-30.25	34.55	-0.12	0.000%
6	26.22	-34.55	15.37	-26.22	34.55	-15.37	0.000%
7	15.18	-34.55	26.53	-15.18	34.55	-26.53	0.000%
8	0.11	-34.55	30.59	-0.11	34.55	-30.59	0.000%
9	-15.04	-34.55	26.46	15.04	34.55	-26.46	0.000%
10	-26.16	-34.55	15.23	26.16	34.55	-15.23	0.000%
11	-30.22	-34.55	-0.06	30.22	34.55	0.06	0.000%
12	-26.18	-34.55	-15.37	26.18	34.55	15.37	0.000%
13	-15.15	-34.55	-26.53	15.15	34.55	26.53	0.000%
14	0.00	-46.11	0.00	0.00	46.11	0.00	0.000%
15	-0.03	-46.11	-7.32	0.03	46.11	7.32	0.000%
16	3.60	-46.11	-6.33	-3.60	46.11	6.33	0.000%
17	6.28	-46.11	-3.63	-6.28	46.11	3.63	0.000%
18	7.27	-46.11	0.03	-7.27	46.11	-0.03	0.000%
19	6.31	-46.11	3.68	-6.31	46.11	-3.68	0.000%
20	3.65	-46.11	6.35	-3.65	46.11	-6.35	0.000%
21	0.03	-46.11	7.32	-0.03	46.11	-7.32	0.000%
22	-3.61	-46.11	6.33	3.61	46.11	-6.33	0.000%
23	-6.29	-46.11	3.64	6.29	46.11	-3.64	0.000%
24	-7.26	-46.11	-0.02	7.26	46.11	0.02	0.000%
25	-6.29	-46.11	-3.68	6.29	46.11	3.68	0.000%
26	-3.65	-46.11	-6.35	3.65	46.11	6.35	0.000%
27	-0.03	-34.55	-10.58	0.03	34.55	10.58	0.000%
28	5.18	-34.55	-9.16	-5.18	34.55	9.16	0.000%
29	9.04	-34.55	-5.25	-9.04	34.55	5.25	0.000%
30	10.47	-34.55	0.04	-10.47	34.55	-0.04	0.000%
31	9.07	-34.55	5.32	-9.07	34.55	-5.32	0.000%
32	5.25	-34.55	9.18	-5.25	34.55	-9.18	0.000%
33	0.04	-34.55	10.58	-0.04	34.55	-10.58	0.000%
34	-5.20	-34.55	9.15	5.20	34.55	-9.15	0.000%
35	-9.05	-34.55	5.27	9.05	34.55	-5.27	0.000%
36	-10.46	-34.55	-0.02	10.46	34.55	0.02	0.000%
37	-9.06	-34.55	-5.32	9.06	34.55	5.32	0.000%
38	-5.24	-34.55	-9.18	5.24	34.55	9.18	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	0.00044681
3	Yes	5	0.00000001	0.00057216
4	Yes	5	0.00000001	0.00055983
5	Yes	4	0.00000001	0.00092488
6	Yes	5	0.00000001	0.00059284
7	Yes	5	0.00000001	0.00057740
8	Yes	4	0.00000001	0.00018502
9	Yes	5	0.00000001	0.00057416
10	Yes	5	0.00000001	0.00058063

11	Yes	4	0.00000001	0.00047144
12	Yes	5	0.00000001	0.00057277
13	Yes	5	0.00000001	0.00059030
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00015329
16	Yes	5	0.00000001	0.00018917
17	Yes	5	0.00000001	0.00018715
18	Yes	5	0.00000001	0.00015197
19	Yes	5	0.00000001	0.00019253
20	Yes	5	0.00000001	0.00019215
21	Yes	5	0.00000001	0.00015362
22	Yes	5	0.00000001	0.00018885
23	Yes	5	0.00000001	0.00018920
24	Yes	5	0.00000001	0.00015118
25	Yes	5	0.00000001	0.00018992
26	Yes	5	0.00000001	0.00019170
27	Yes	4	0.00000001	0.00008312
28	Yes	5	0.00000001	0.00004720
29	Yes	5	0.00000001	0.00004510
30	Yes	4	0.00000001	0.00014939
31	Yes	5	0.00000001	0.00005037
32	Yes	5	0.00000001	0.00004756
33	Yes	4	0.00000001	0.00006924
34	Yes	5	0.00000001	0.00004743
35	Yes	5	0.00000001	0.00004863
36	Yes	4	0.00000001	0.00011826
37	Yes	5	0.00000001	0.00004677
38	Yes	5	0.00000001	0.00004989

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
L1	150 - 108 (1)	TP30.401x22x0.25	42.00	0.00	0.0	36.000	23.6677	-8.95	852.04	0.011
L2	108 - 69.75 (2)	TP37.553x29.1509x0.3125	42.00	0.00	0.0	36.000	36.5171	-15.06	1314.61	0.011
L3	69.75 - 32.5 (3)	TP44.379x35.9778x0.375	42.00	0.00	0.0	39.000	51.8064	-23.40	2020.45	0.012
L4	32.5 - 0 (4)	TP50.13x42.5288x0.4375	38.00	0.00	0.0	39.000	70.0043	-34.53	2730.17	0.013

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	150 - 108 (1)	TP30.401x22x0.25	443.62	31.311	36.000	0.870	0.00	0.000	36.000	0.000
L2	108 - 69.75 (2)	TP37.553x29.1509x0.3125	1174.58	43.536	36.000	1.209	0.00	0.000	36.000	0.000
L3	69.75 - 32.5 (3)	TP44.379x35.9778x0.375	2057.68	45.478	39.000	1.166	0.00	0.000	39.000	0.000
L4	32.5 - 0 (4)	TP50.13x42.5288x0.4375	3140.17	44.347	39.000	1.137	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 108 (1)	TP30.401x22x0.25	17.28	0.730	24.000	0.062	0.43	0.014	24.000	0.001
L2	108 - 69.75 (2)	TP37.553x29.1509x0.3125	21.94	0.601	24.000	0.051	0.38	0.007	24.000	0.000
L3	69.75 - 32.5 (3)	TP44.379x35.9778x0.375	26.34	0.508	26.000	0.040	0.32	0.003	26.000	0.000
L4	32.5 - 0 (4)	TP50.13x42.5288x0.4375	30.61	0.437	26.000	0.034	0.27	0.002	26.000	0.000

Pole Interaction Design Data

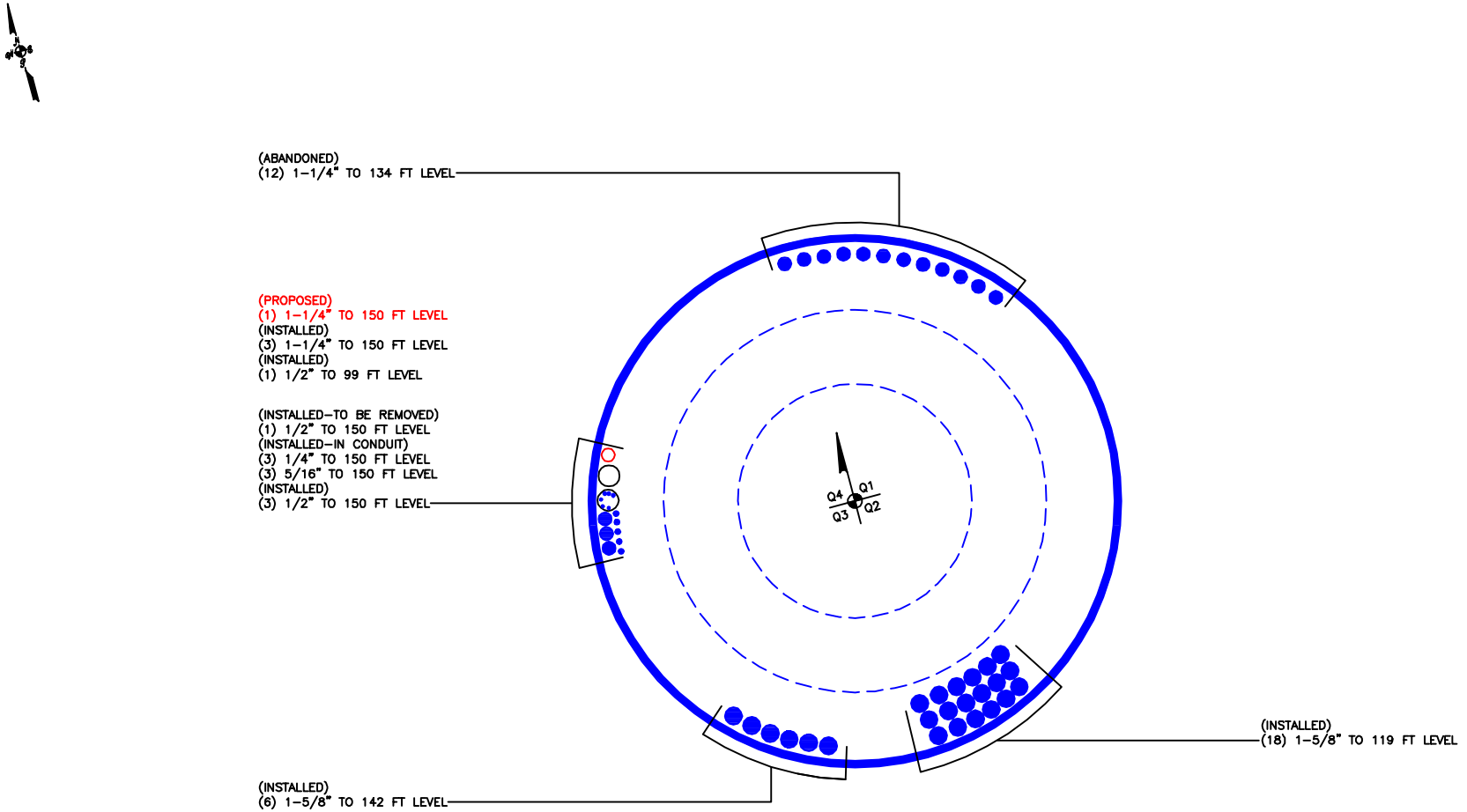
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 108 (1)	0.011	0.870	0.000	0.062	0.001	0.881 ✔	1.333	H1-3+VT ✔
L2	108 - 69.75 (2)	0.011	1.209	0.000	0.051	0.000	1.221 ✔	1.333	H1-3+VT ✔
L3	69.75 - 32.5 (3)	0.012	1.166	0.000	0.040	0.000	1.178 ✔	1.333	H1-3+VT ✔
L4	32.5 - 0 (4)	0.013	1.137	0.000	0.034	0.000	1.150 ✔	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	150 - 108	Pole	TP30.401x22x0.25	1	-8.95	1135.77	66.1	Pass
L2	108 - 69.75	Pole	TP37.553x29.1509x0.3125	2	-15.06	1752.38	91.6	Pass
L3	69.75 - 32.5	Pole	TP44.379x35.9778x0.375	3	-23.40	2693.26	88.4	Pass
L4	32.5 - 0	Pole	TP50.13x42.5288x0.4375	4	-34.53	3639.32	86.3	Pass
						Summary	ELC:	Existing/Proposed (LC5)
						Pole (L2)	91.6	Pass
						Rating =	91.6	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876319 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876319*
Site Name: *Naugatuck 2 Uniroyal*
App #: *245820 Rev. 5*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	57	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	7	in

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

Pole Data		
Diam:	50.13	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3140.16	ft-kips
Unfactored Axial, P:	34.55	kips
Unfactored Shear, V:	30.59	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	160.3	Kips
Allowable Tension:	195.0	Kips
Anchor Rod Stress Ratio:	82.2%	**Pass**

Base Plate Results Flexural Check

Base Plate Stress:	44.5	ksi
Allowable PL Bending Stress:	50.0	ksi
Base Plate Stress Ratio:	89.1%	**Pass**

PL Ref. Data
Yield Line (in):
30.48
Max PL Length:
30.48

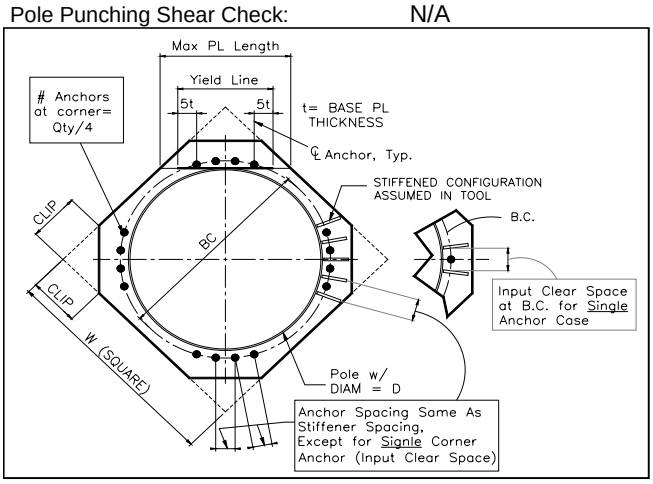
N/A - Unstiffened

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



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

Caisson Analysis (F)
876319 Naugatuck 2 Uniroyal
015-00428-00

Moment =	*3140.16*	*k*ft*
Axial =	*34.55*	*k*
Shear =	*30.59*	*k*

Foundation Data		
Diameter =	*7*	*ft*
Length =	*26.5*	*ft*
Rebar Size =	*#11*	
# of bars =	*32*	
Tie Size =	*#5*	
Clear Cover =	*4*	*in*
f'c =	*3*	*ksi*

Soil Capacity From Caisson Program Using Additional Safety Factors

Additional Safety Factor from Caisson = *3*

$$\textit{Capacity} = \frac{\textit{Safety Factor of 2}}{\textit{Additional Safety Factor}} = \frac{2.00}{3.00} = 66.7\% \quad \text{O.K.}$$

Project Title: BU# 876319 Naugatuck 2 Uniroyal
Project Notes:

Calculation Method: Full 8CD

******* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
7.00	0.50	3.00	60.00

Soil Properties

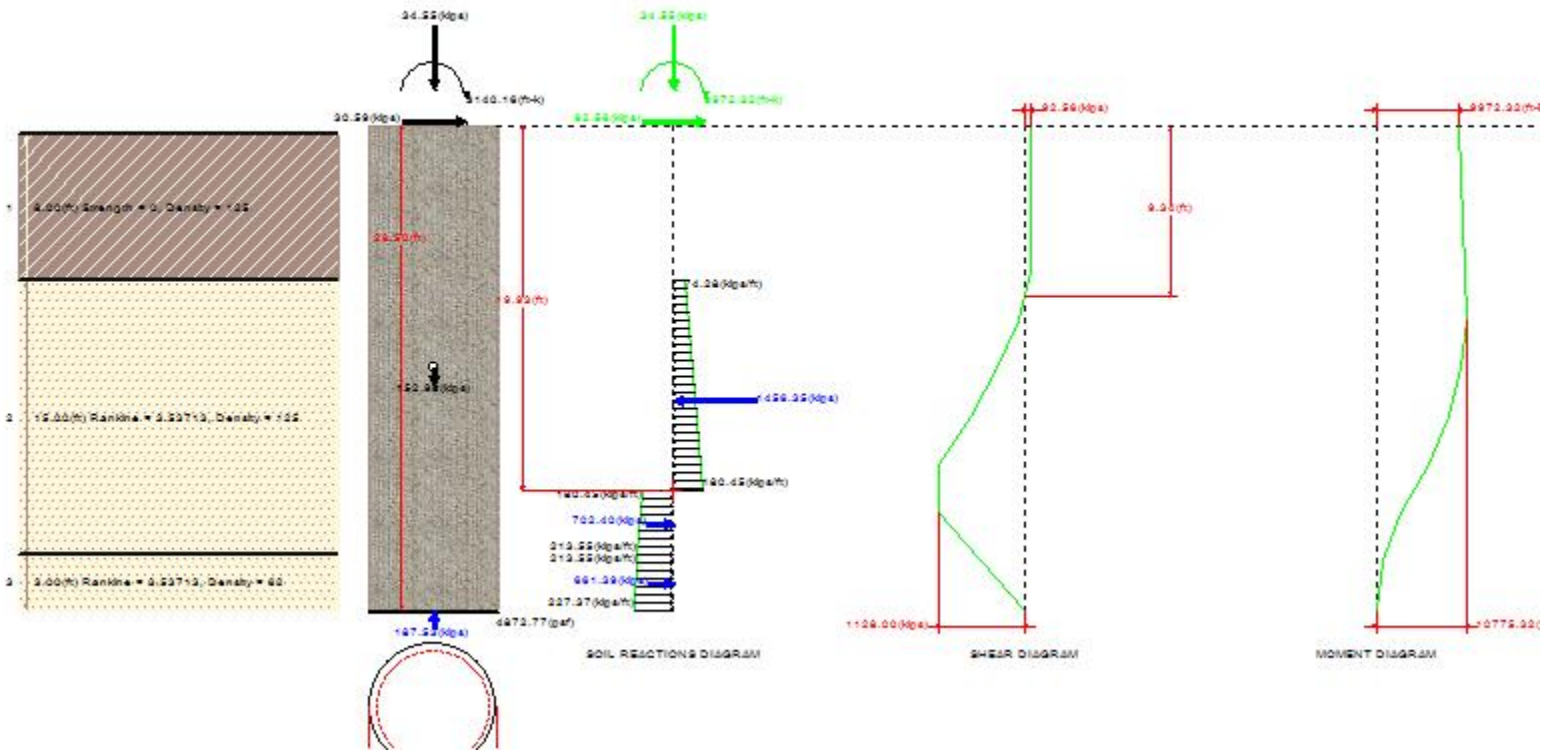
Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	8.00	0.00	125.0			
2	Sand	15.00	8.00	125.0		3.537	34.00
3	Sand	3.00	23.00	62.0		3.537	34.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure

3140.2 34.5 30.59 3.00

******* R E S U L T S



Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
26.500	152.976	897.8	3975.0	4872.8

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer	Thickness	Density	CU	KP	Force	Arm

	to Top of Pier (ft)	(ft)	(lbs/ft^3)	(psf)	(kips)	(ft)
Clay	0.50	8.00	125.0		0.00	4.50
Sand	8.50	11.43	125.0	3.537	1456.35	15.01
Sand	19.93	3.57	125.0	3.537	-702.40	21.77
Sand	23.50	3.00	62.0	3.537	-661.39	25.02

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	92.6	9972.3	30.9	3324.1
2.65	92.6	10217.6	30.9	3405.9
5.30	92.6	10462.9	30.9	3487.6
7.95	92.6	10708.2	30.9	3569.4
10.60	-83.9	10775.3	-28.0	3591.8
13.25	-365.0	10194.9	-121.7	3398.3
15.90	-711.3	8783.1	-237.1	2927.7
18.55	-1122.9	6367.2	-374.3	2122.4
21.20	-1128.0	3069.7	-376.0	1023.2
23.85	-586.4	784.1	-195.5	261.4
26.50	-0.0	-0.0	-0.0	-0.0

Reinforcement and Capacity

Total Reinforcement Percent	Reinforcement Area (in^2)	Usable Axial Capacity (kips)	Usable Moment Capacity (ft-k)
0.44	24.38	34.5	3748.8

US Standard Re-Bars (Select one of the following)

Quantity	Name	Area (in^2)	Diameter (in)	Spacing (in)
122	#4	0.20	0.500	1.91
79	#5	0.31	0.625	2.94
56	#6	0.44	0.750	4.15

41	#7	0.60	0.875	5.67
31	#8	0.79	1.000	7.50
25	#9	1.00	1.128	9.30
20	#10	1.27	1.270	11.62
16	#11	1.56	1.410	14.53
11	#14	2.25	1.693	21.13

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *876319*
Site Name: *Naugatuck 2 Uniroyal*
App #: *245820 Rev. 5*

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:

Pier Diameter =	7.0	ft
Concrete Area =	5541.8	in^2

Reinforcement:

Clear Cover to **Tie**=	4.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	6.11	ft
Vert. Cage Diameter =	73.34	in
Vertical Bar Size =	11	
Bar Diameter =	1.41	in
Bar Area =	1.56	in^2
Number of Bars =	32	
As Total=	49.92	in^2
A s/ Aconc, Rho:	0.0090	0.90%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.90%	**OK**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	8839.70	kips
at Mu=(ϕ=0.65)Mn=	5309.39	ft-kips
Max Tu, (φ=0.9) Tn =	2695.68	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	3591.8	ft-kips **(* Note)**
Max. Service Shaft P:	34.55	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	**Shaft Factored Loads**		
1.30	Mu:	4669.34	ft-kips
1.30	Pu:	44.915	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2002

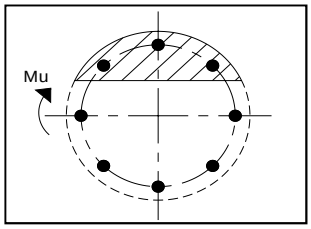
Seismic Properties

Seismic Design Category = B
Seismic Risk = **Low**

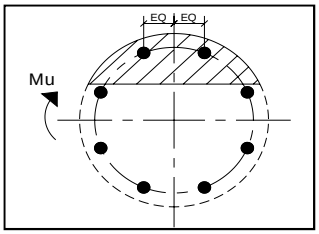
Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **2**



Case 1



Case 2

Dist. From Edge to Neutral Axis:	**16.85**	in
Extreme Steel Strain, ϵt:	**0.0110**	
	ϵt > 0.0050, Tension Controlled	
Reduction Factor,φ:	**0.900**	

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	44.92	kips
Drilled Shaft Moment Capacity, φMn:	**7463.31**	ft-kips
Drilled Shaft Superimposed Mu:	**4669.34**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**62.6%**

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

Sprint Existing Facility

Site ID: CT03XC035

Naugatuck 2 Uniroyal

280 Elm Street
Naugatuck, CT Zip:

June 29, 2015

EBI Project Number: 6215003885

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

EBI Consulting
environmental | engineering | due diligence

June 29, 2015

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC035 - Naugatuck 2 Uniroyal

Site Total: 24.21% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **280 Elm Street, Naugatuck, 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 **280 Elm Street, Naugatuck, 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) 4 channels in the 1900 MHz Band were considered for each sector of the proposed installation.

2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation.

3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.

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

5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications 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 **150 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	CT03XC035 - Naugatuck 2 Uniroyal
Site Addresss	280 Elm Street, Naugatuck, CT, Zip:
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	4	80	5.9	150	144	1/2 "	0.5	0	277.39	0.48%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
														Sector total Power Density Value:		1.02%

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	4	80	5.9	150	144	1/2 "	0.5	0	277.39	0.48%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
														Sector total Power Density Value:		1.02%

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	4	80	5.9	150	144	1/2 "	0.5	0	277.39	0.48%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	150	144	1/2 "	0.5	0	39.00	0.12%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	150	144	1/2 "	0.5	0	138.69	0.42%
														Sector total Power Density Value:		1.02%

Site Composite MPE %	
Carrier	MPE %
Sprint	3.07%
Nextel	3.38%
Verizon Wireless	9.68%
MetroPCS	3.47%
Clearwire	0.85%
Sprint MW	0.10%
T-Mobile	3.66%
Total Site MPE %	**24.21%**

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Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **3.07% (1.02% from sector 1, 1.02% from sector 2 and 1.02% 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 **24.21%** 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

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May 1, 2015

STRUCTURAL ANALYSIS EVALUATION LETTER – REVISION 1

Michelle Hisert
Real Estate Manager III
Upstate NY and Southern Connecticut
Sprint, Regional Site Development
Michelle.hisert@sprint.com

Site Number: CT03XC035
Site Name: NAUGATUCK 2 UNIROYAL
Site Address: 280 Elm St, Naugatuck, CT 06770
Crown ID#: 876319

Project Number: 7225-Crown Sprint 2.5
Project Name: Sprint 2.5 Equipment Deployment
Work Order: 7225.CT03XC035

Dear Ms. Hisert,

This letter is to confirm Tectonic Engineering and Surveying Consultants P.C.'s (TECTONIC) structural assessment of the proposed Sprint antenna mounting system at the site noted above. The intent of the review is to determine if the load from the proposed modification of antennas and equipment will exceed the structural capacity of the new antenna mounting system.

Currently Sprint has three (3) panel antennas mounted to a low-profile platform at a RAD elevation of approximately one hundred and fifty feet (150'-0") above ground level. Sprint is proposing to replace the existing mount with a newer model platform. The existing antennas and appurtenances below will be relocated to the new mounting platform. In addition, Sprint is proposing to install three (3) panel antennas and associated appurtenances as part of this upgrade. The final configuration upon this installation will be as follows:

3 (E) RFS APXVSPP18-C-A20 (72.0"Hx11.8"Wx7.0"D, 57 lbs.) panel antennas, one (1) per sector, mounted to steel pipes.
3 (E) Alcatel Lucent 800 MHz (19.7"Hx13.0"Wx10.8"D, 53 lbs.) RRH, one (1) per sector mounted to steel pipes.
3 (E) Alcatel Lucent 1900 MHZ 4x45W (25.0"Hx11.1"Wx11.4"D, 60 lbs.), one (1) per sector, mounted to steel pipes.
3 (E) Dragonwave A-ANT-23G-2-C (26.1"Hx26.1"Wx13.2"D, 27.1 lbs.) microwave dish, one (1) per sector, mounted to steel pipes.
1 (E) Dragonwave A-ANT-23G-1-C (13.0"Hx13.0"Wx10.1"D, 20.3 lbs.) microwave dish, mounted to a steel pipe.
3 (P) RFS APXVTM14-C-120 (56.3"Hx12.6"Wx6.3"D, 56 lbs.) panel antennas, one (1) per sector, mounted to steel pipes.
3 (P) Alcatel Lucent TD-RRH8x20-25 (26.1"Hx18.6"Wx6.7"D, 70 lbs.), one (1) per sector, mounted to steel pipes.
3 (E) 1-1/4" diameter Hybrid Power/Fiber cables routed along the interior of the pole up to the antennas.
1 (P) 5/8" diameter Fiber cable routed along the interior of the pole up to the antennas.

The relocated and proposed antennas and the proposed platform are to be located at the same RAD elevation as the existing Sprint installation.

The Commscope p/N MC-PA12L-B series triangular low-profile platform is designed to support appurtenances mounted on four (4) pipe mounts per sector. Based on the capacity letter provided by the manufacturer, each of these appurtenances may have an effective area of up to 11 ft^2 for the proposed elevation and location of this tower. For the proposed configuration, the total area of appurtenances mounted on each pipe will not exceed 10.5 ft^2. Based on this information, we believe that this mount will be adequate to support the loads due to the installation described above.

A detailed analysis of the proposed mounting platform has not been performed. This certification is based on information provided by the client and recommendations by the mount manufacturer.

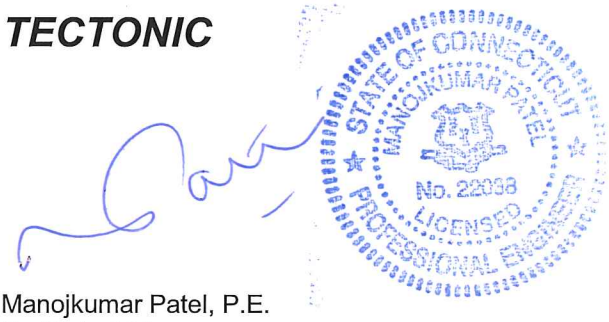
Please note that the antennas and associated appurtenances are to be installed as indicated in the construction drawings prepared by TECTONIC, dated 4/8/15. Any further changes to the antenna or other appurtenances configuration and location should be reviewed with respect to their effect on structural loads prior to implementation.

The existing structure analysis is completed by others and therefore not part of this assessment.

Should you have any questions, please do not hesitate to contact us.

Sincerely,

TECTONIC



Manojkumar Patel, P.E.
Sr. Project Manager

Encl: MC-PA12L-B Series Low Profile Platform – Capacity Rating Letter