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

January 12, 2015

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

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 876355**
Sprint PCS Site ID: CT03XC365
Located at: 474-480 Main Street, Monroe, CT 06468

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 Stephen J. Vavrek, First Selectman for the Town of Monroe, and 742 Nursery, LLC, Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **474-480 Main Street, Monroe, CT 06468**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

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

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

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

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

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

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

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

Sincerely,

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)

cc: The Honorable Stephen J. Vavrek, First Selectman
Monroe Town Hall
7 Fan Hill Road
Monroe, CT 06468

742 Nursery, LLC
Attn: Keith M. Bunovsky, Jr.
742 Main Street
Monroe, CT 06468

Sprint

2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:

CT03XC365

SITE NAME:

UPPER STEPNEY–TLC

SITE ADDRESS:

474–480 MAIN STREET
MONROE, CT 06468

CROWN ID#: 876355

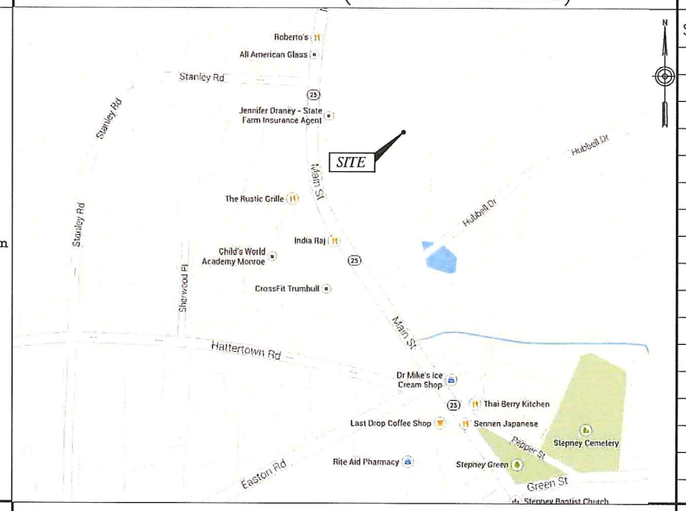
CROWN SITE NAME: UPPER STEPNEY–TLC

SHEET INFORMATION

SITE NUMBER:	CT03XC365
SITE NAME:	UPPER STEPNEY–TLC
SITE ADDRESS:	474–480 MAIN STREET MONROE, CT 06468
COUNTY:	FAIRFIELD
COORDINATES: (NAD 83)	41° 19' 31.99"N 73° 15' 57.05"W
GROUND ELEV:	451'± AMSL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	194'–0"± AGL
STRUCTURE RAD CENTER:	150'–0"± AGL
ZONING CLASSIFICATION:	B1
MAP–BLOCK–LOT:	045 022 0Z

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
AAV:	CHARTER

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

SHT. NO.	SHEET DESCRIPTION
T–1	TITLE SHEET
SP–1	GENERAL NOTES
SP–2	GENERAL NOTES
A–1	SITE PLAN
A–2	ELEVATION
A–3	ENLARGED EQUIPMENT LAYOUT PLANS
A–4	ANTENNA LAYOUT PLANS
A–5	RAN WIRING DIAGRAM
A–6	CABLE DETAILS
S–1	EQUIPMENT DETAILS
S–2	EQUIPMENT SCHEMATIC DETAILS
E–1	ELECTRICAL & GROUNDING PLANS
E–2	GROUNDING DETAILS & NOTES

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.
   - 2005 STATE OF CONNECTICUT BUILDING CODE.
   - 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.

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

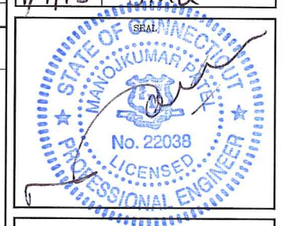
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 7225.CT03XC365

NO	DATE	DESCRIPTION	BY
0	06/16/14	FOR COMMENT	JT
1	01/09/15	FOR CONSTRUCTION	MP

DATE	REVIEWED BY
1/9/15	JMQ



SITE NUMBER:
CT03XC365

SITE NAME:
UPPER STEPNEY–TLC

SITE ADDRESS:
474–480 MAIN STREET
MONROE, CT 06468

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 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._157201110421855492.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. ACI–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

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SUBMITTALS

PROJECT NO: 7225.CT03XC365

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DATE	REVIEWED BY
1/9/15	JMC

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

SITE NUMBER:
CT03XC365

SITE NAME:
UPPER STEPNEY–TLC

SITE ADDRESS:
474–480 MAIN STREET
MONROE, CT 06468

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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SUBMITTALS

PROJECT NO: 7225.CT03XC365

NO	DATE	DESCRIPTION	BY
0	06/16/14	FOR COMMENT	JT
1	01/09/15	FOR CONSTRUCTION	MP

DATE	REVIEWED BY
1/9/15	JMQ

SEAL

STATE OF CONNECTICUT
MANOJKUMAR PATEL
No. 22038
LICENSED
PROFESSIONAL ENGINEER

SITE NUMBER:
CT03XC365

SITE NAME:
UPPER STEPNEY–TLC

SITE ADDRESS:
474–480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
GENERAL NOTES

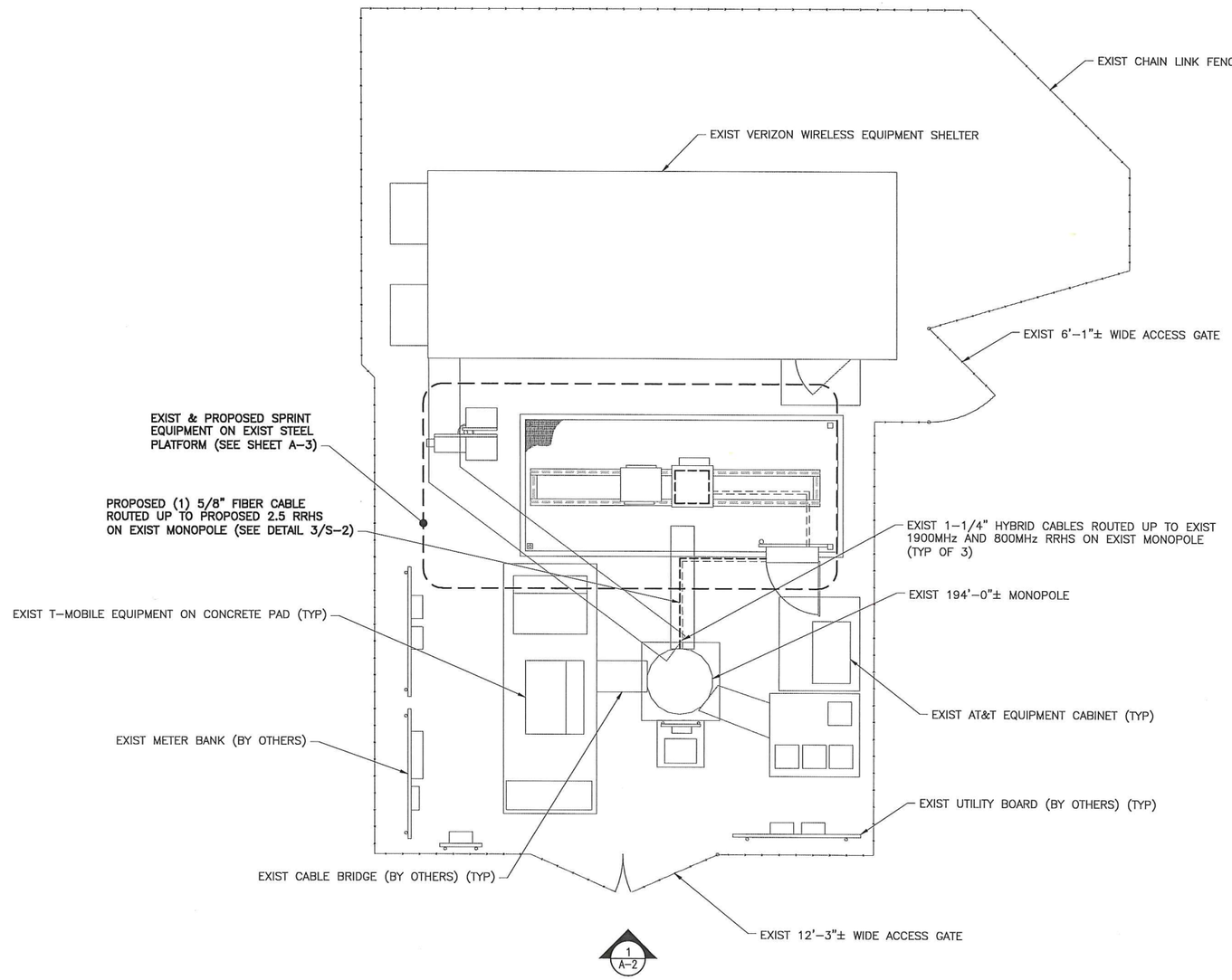
SHEET NO:
SP–2

N

APPROX.

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.



1
A-1
SITE PLAN
SCALE: 1/4" = 1'-0"

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SITE ADDRESS:
474-480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
SITE PLAN

SHEET NO:
A-1

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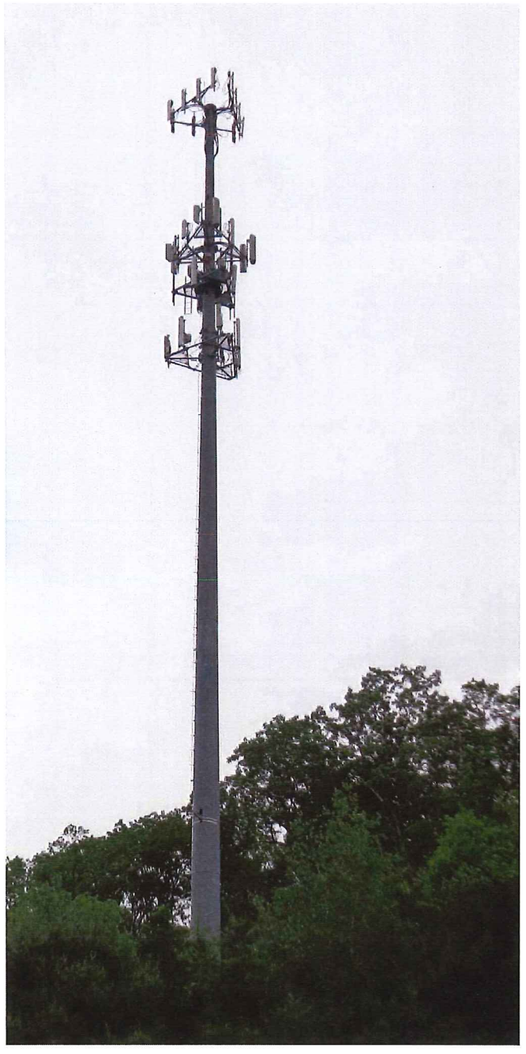

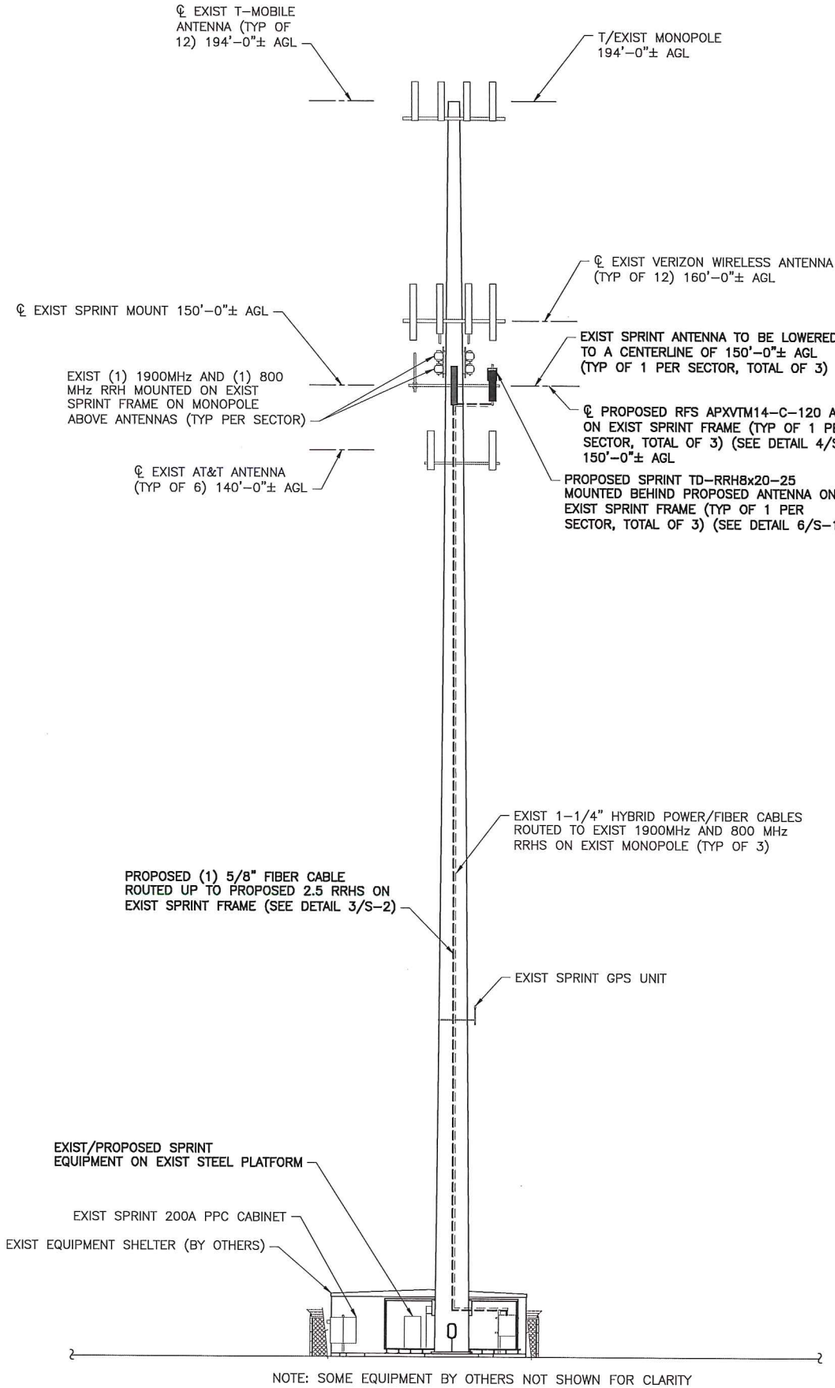

NOTE: SOME EQUIPMENT BY OTHERS NOT SHOWN FOR CLARITY

1 / A–2 ELEVATION

SCALE: 3/16" = 1'–0"

Sprint

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SHEET TITLE:
ELEVATION

SHEET NO:
A–2

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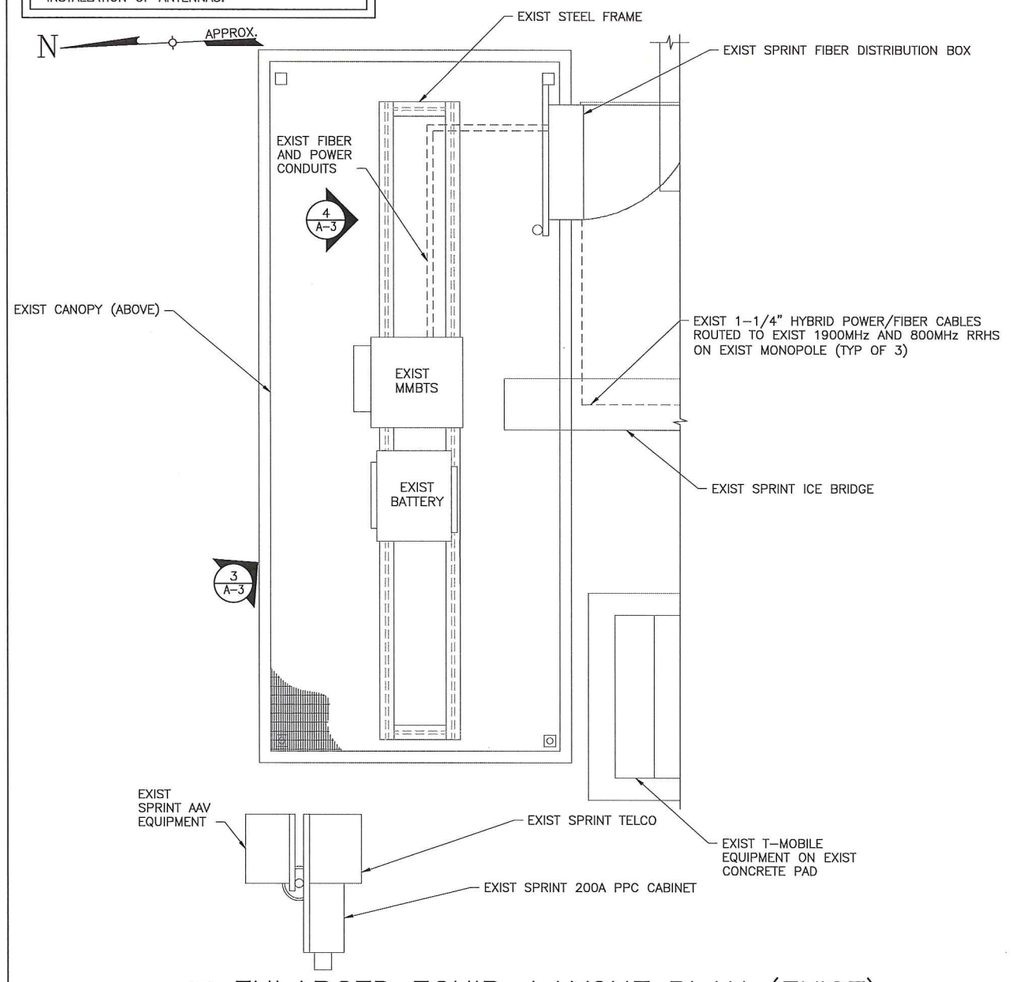
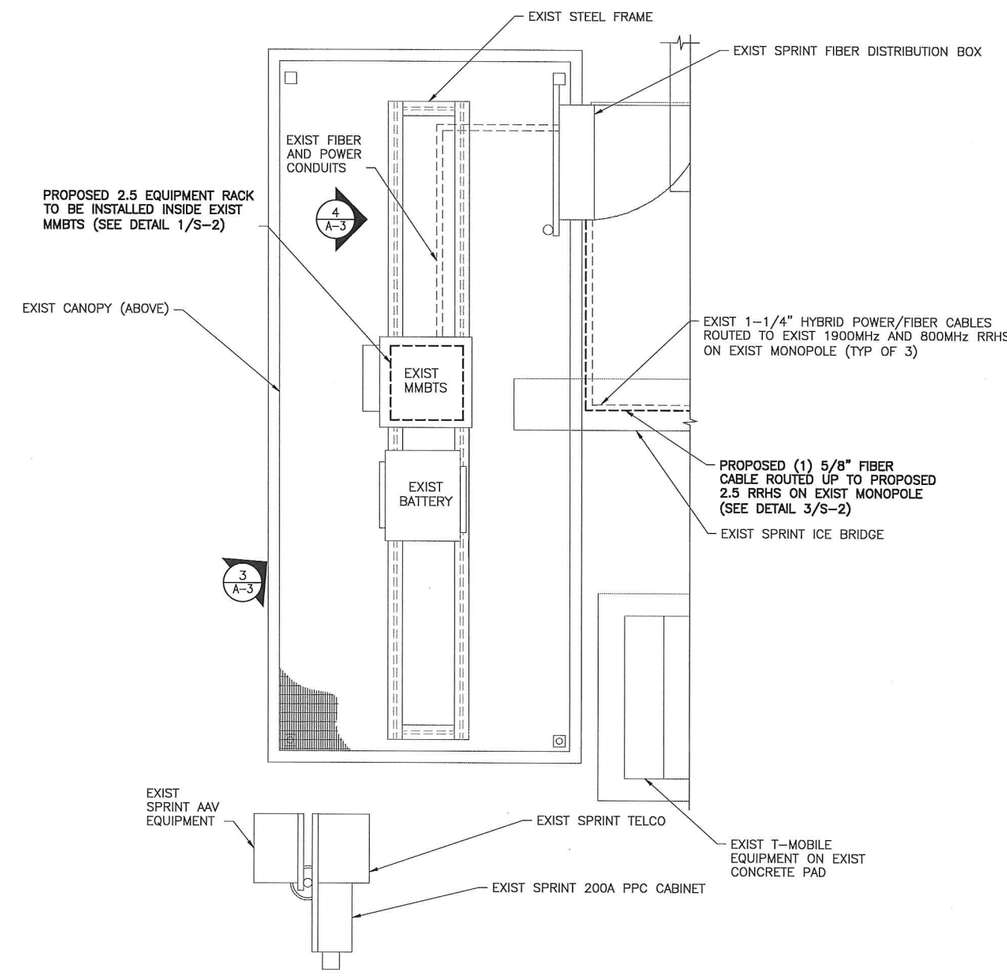


1 A-3 ENLARGED EQUIP. LAYOUT PLAN (EXIST)

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

3 A-3 EXIST EQUIPMENT PAD

SCALE: NTS



2 A-3 ENLARGED EQUIP. LAYOUT PLAN (FINAL)

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

4 A-3 EXIST FIBER DISTRIBUTION BOX

SCALE: NTS

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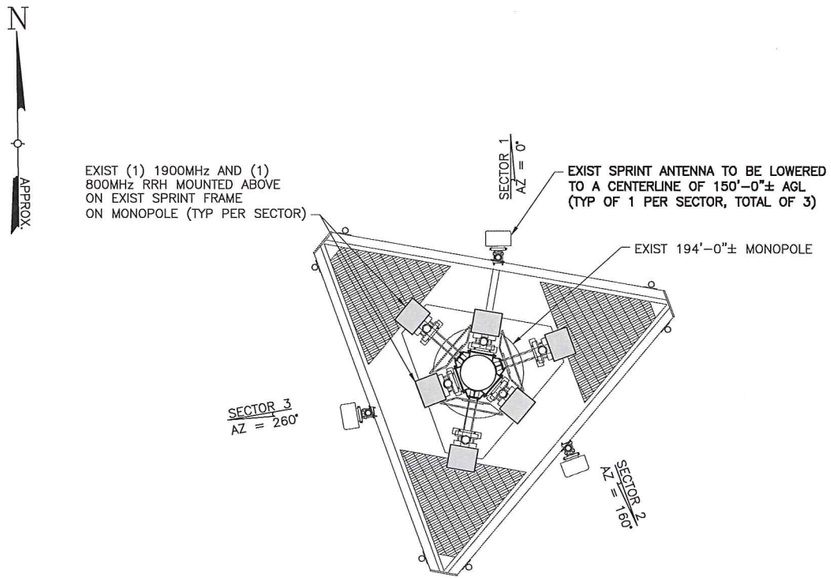
MONROE, CT 06468

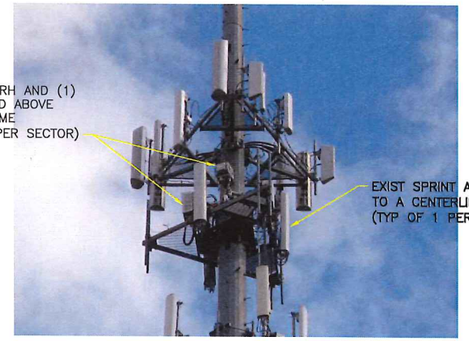
SHEET TITLE:
ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO:
A-3



1 A-4 ANTENNA LAYOUT PLAN (EXIST)

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



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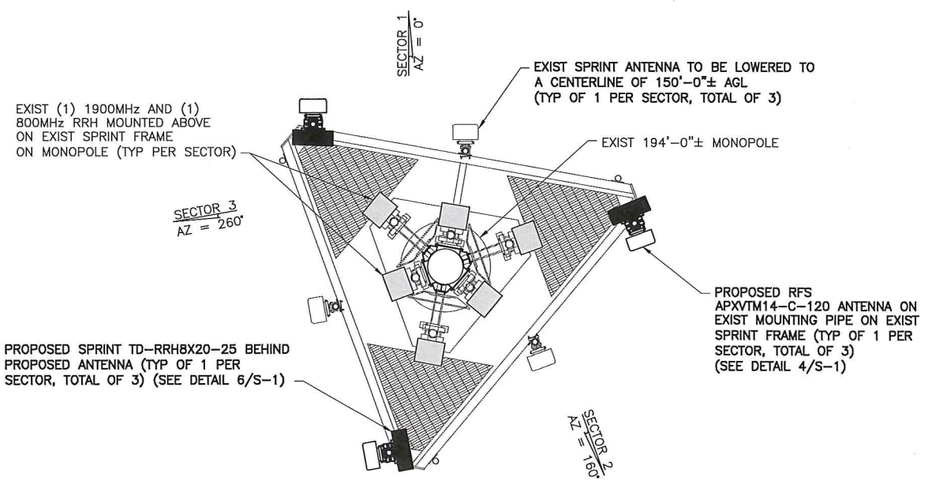
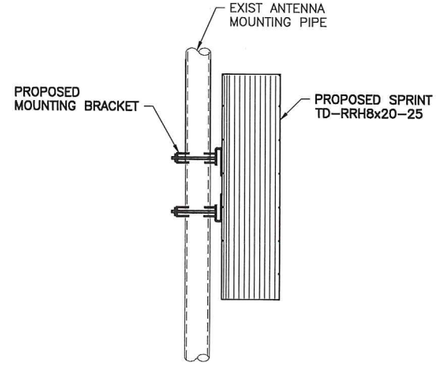


2 A-4 ANTENNA LAYOUT PLAN (FINAL)

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



3 A-4 RRH MOUNTING DETAIL

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

ANTENNA DATA

Status	Exist **(Proposed)**	**Proposed**
Antenna Manufacturer	RFS-CEL WAVE	**RFS-CEL WAVE**
Antenna Model Number	APXVSPP18C-A20	**APXVTM14-C-120**
Number of Antennas	3	**3**
Antenna RAD Center	152' **(150')**	**150'**
Antenna Azimuth	0/160/260	**0/160/260**
Antenna RRH Model Number	1900MHz/800MHz RRHS	**TD-RRH8x20-25**
Number of RRH	6	**3**

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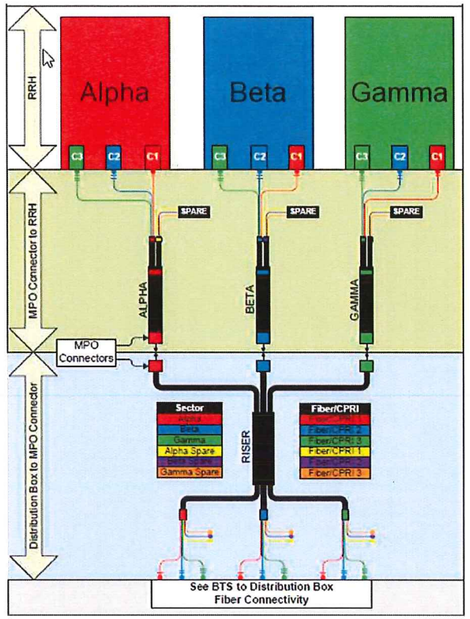
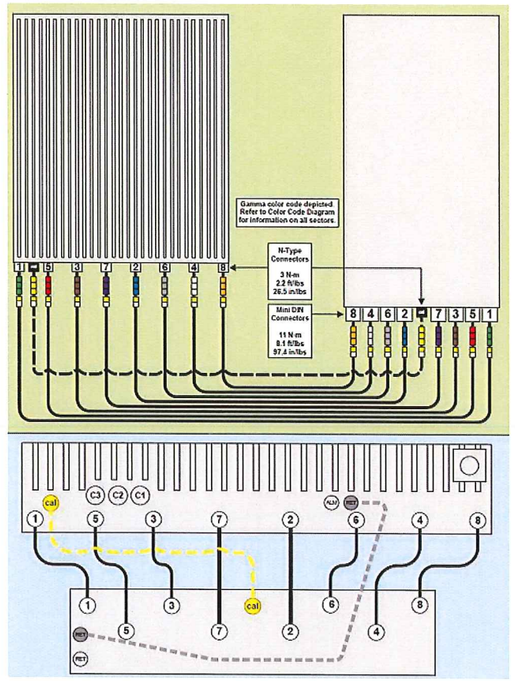
SHEET TITLE:
ANTENNA LAYOUT PLANS

SHEET NO:
A-4



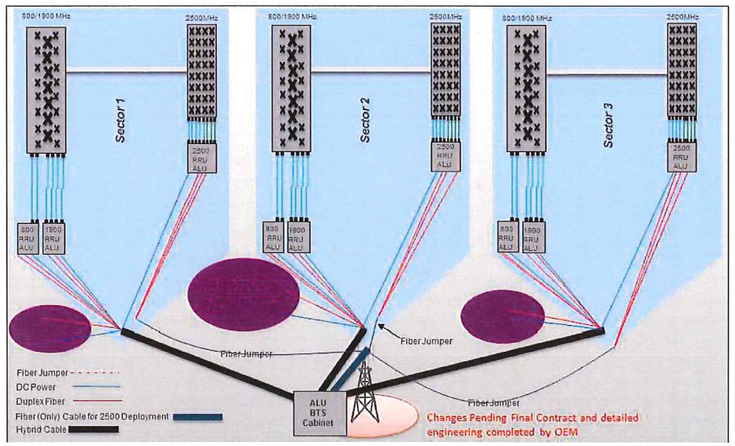
1 / A–5 2.5 CABLE COLOR CODING

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.

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CT03XC365

SITE NAME:
UPPER STEPNEY–TLC

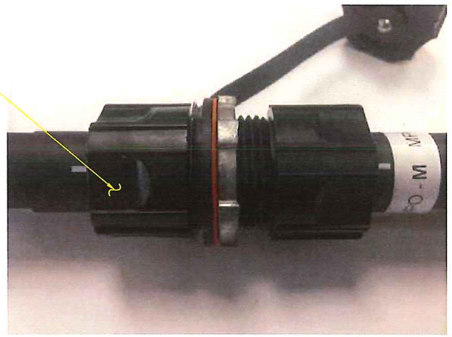
SITE ADDRESS:
474–480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
CABLE COLOR CODING DETAILS

SHEET NO:
A–5

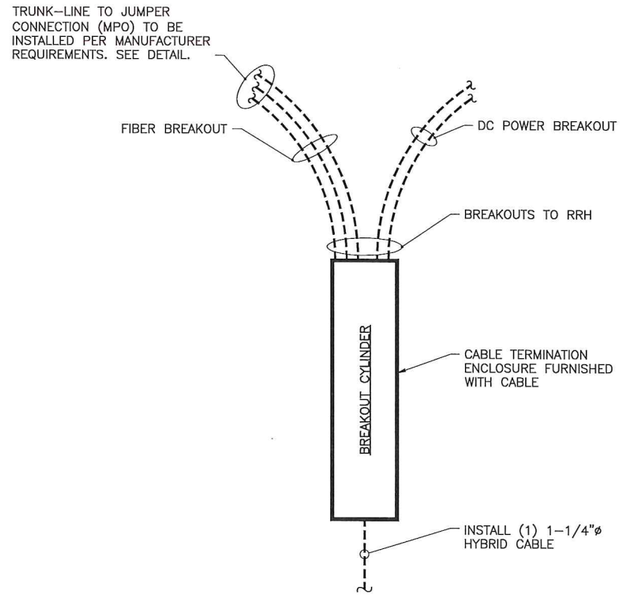
IMPORTANT!! LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAINST THE RED SEAL ON THE RISER CONNECTION

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

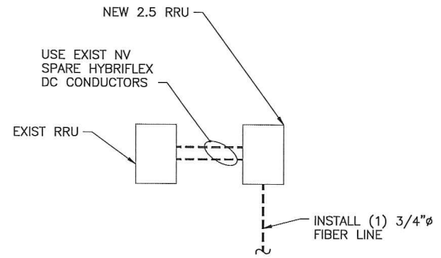


1 / A-6 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS

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.CT03XC365

NO	DATE	DESCRIPTION	BY
0	06/16/14	FOR COMMENT	JT
1	01/09/15	FOR CONSTRUCTION	MP

DATE	REVIEWED BY
1/9/15	JMQ

SEAL

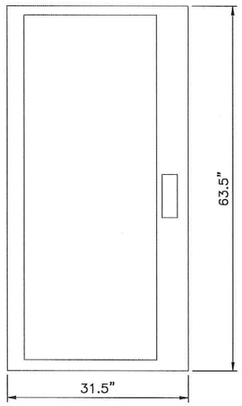
SITE NUMBER:
CT03XC365

SITE NAME:
UPPER STEPNEY-TLC

SITE ADDRESS:
474-480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
CABLE DETAILS

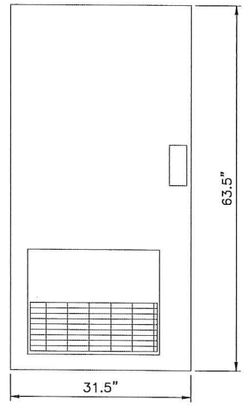
SHEET NO:
A-6



9927 MMBTS MODULAR CELL	
SPECIFICATIONS:	
HEIGHT:	63.5"
WIDTH:	31.5"
DEPTH:	38.0"

1/S-1 (EXIST) MMBTS CABINET

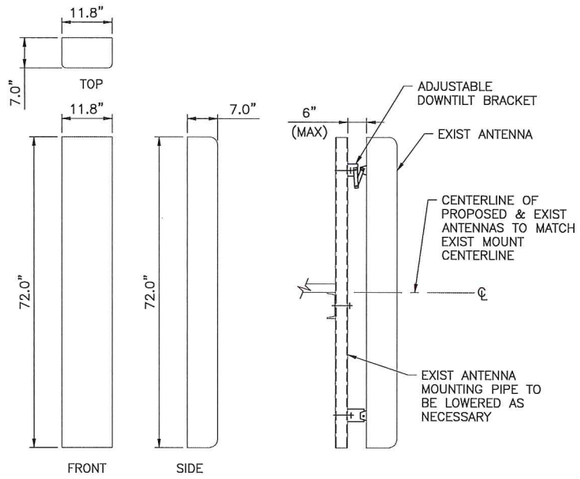
SCALE: 1" = 1'-0"



BATTERY	
SPECIFICATIONS:	
HEIGHT:	63.5"
WIDTH:	31.5"
DEPTH:	28.0"

2/S-1 (EXIST) BATTERY CABINET

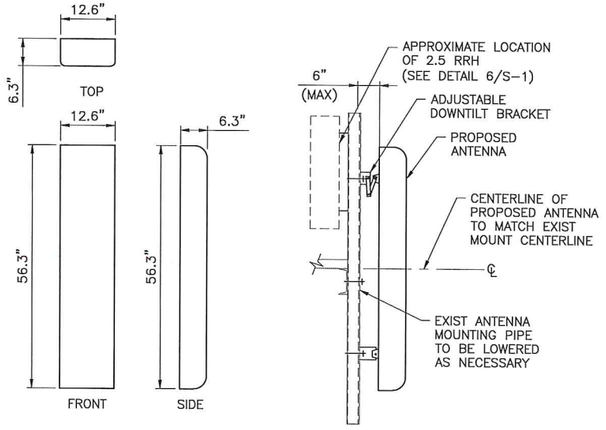
SCALE: 1" = 1'-0"



APXVSPP18-C-A20

3/S-1 (EXIST) ANTENNA DETAIL

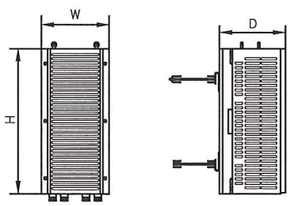
SCALE: 3/4"=1'-0"



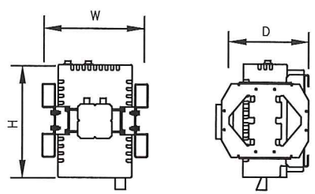
APXVTM14-C-120

4/S-1 (PROPOSED) ANTENNA DETAIL

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



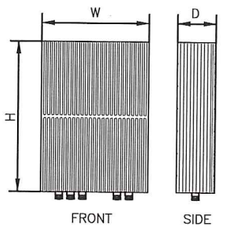
TYPE:	1900 MHz 4x45W
MODEL #:	RRH 1900 4X45 65MHz
HEIGHT:	25.0"
WIDTH:	11.1"
DEPTH:	11.4"
WEIGHT:	±60 LBS.



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:	6.7"
WEIGHT:	±70 LBS

6/S-1 (PROPOSED) RRH DETAIL

SCALE: N.T.S.

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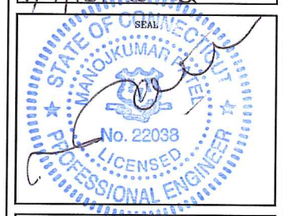


SITE NUMBER:
CT03XC365

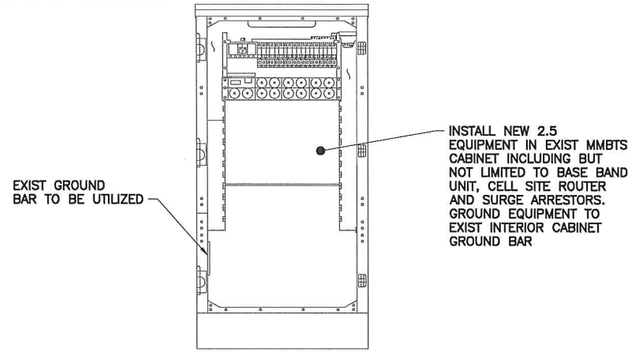
SITE NAME:
UPPER STEPNEY-TLC

SITE ADDRESS:
474-480 MAIN STREET
MONROE, CT 06468

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.

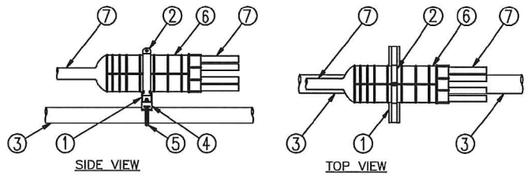


FRONT ELEVATION
(CABINET INTERIOR)

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.



2 S-2 MEDUSA HEAD DETAIL

SCALE: NTS

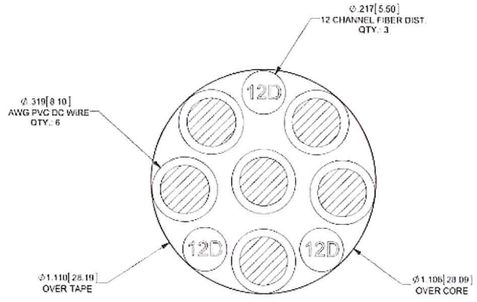
RFS HYBRIFLEX RISER CABLES SCHEDULE

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

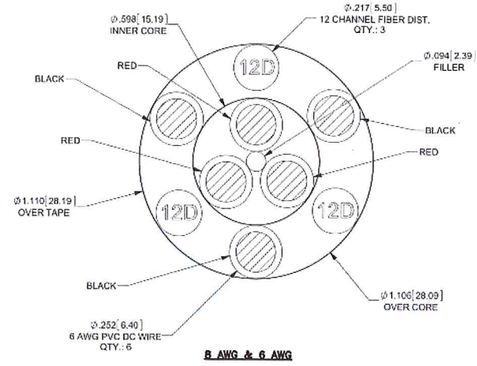
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

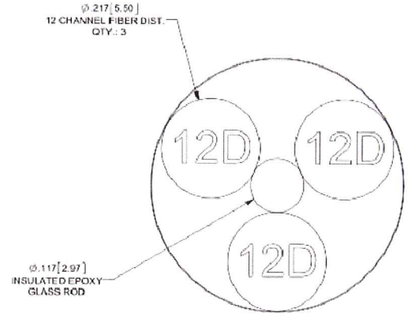
HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF:	RFS		
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"



4 AWG



8 AWG & 6 AWG



FIBER ONLY

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

SCALE: NTS

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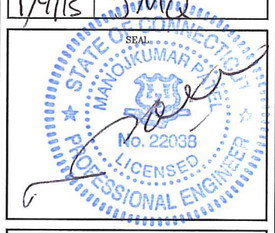

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CT03XC365

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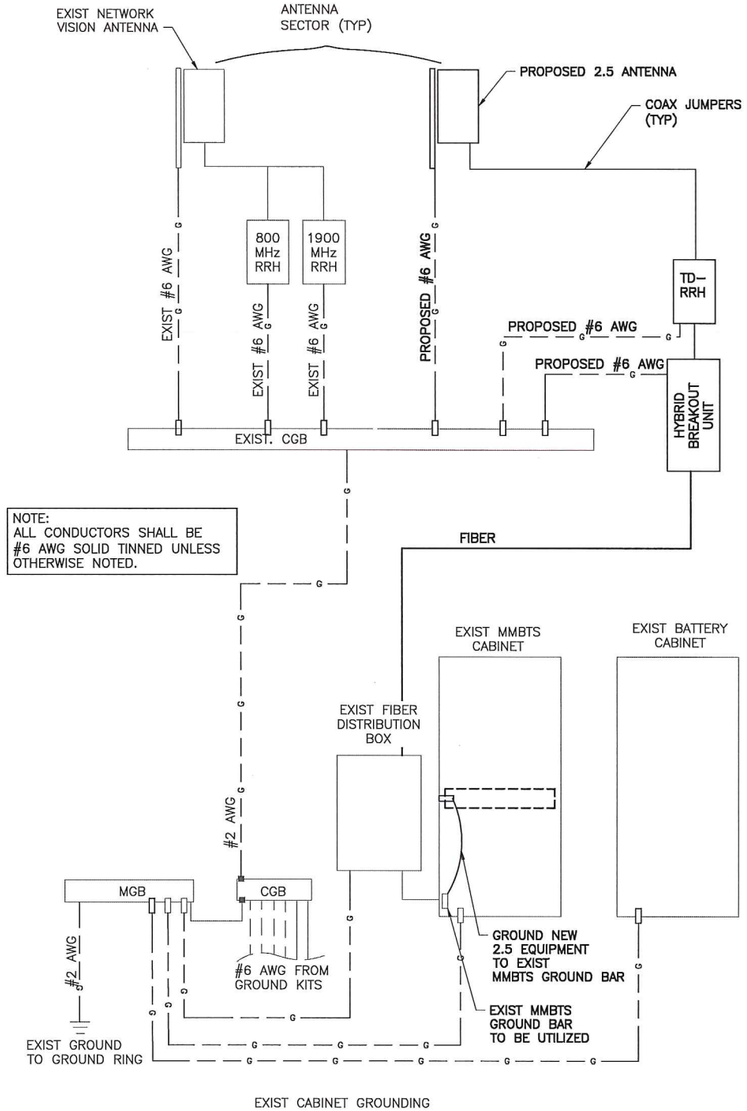
SITE ADDRESS:
474-480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
EQUIPMENT SCHEMATIC DETAILS

SHEET NO:
S-2



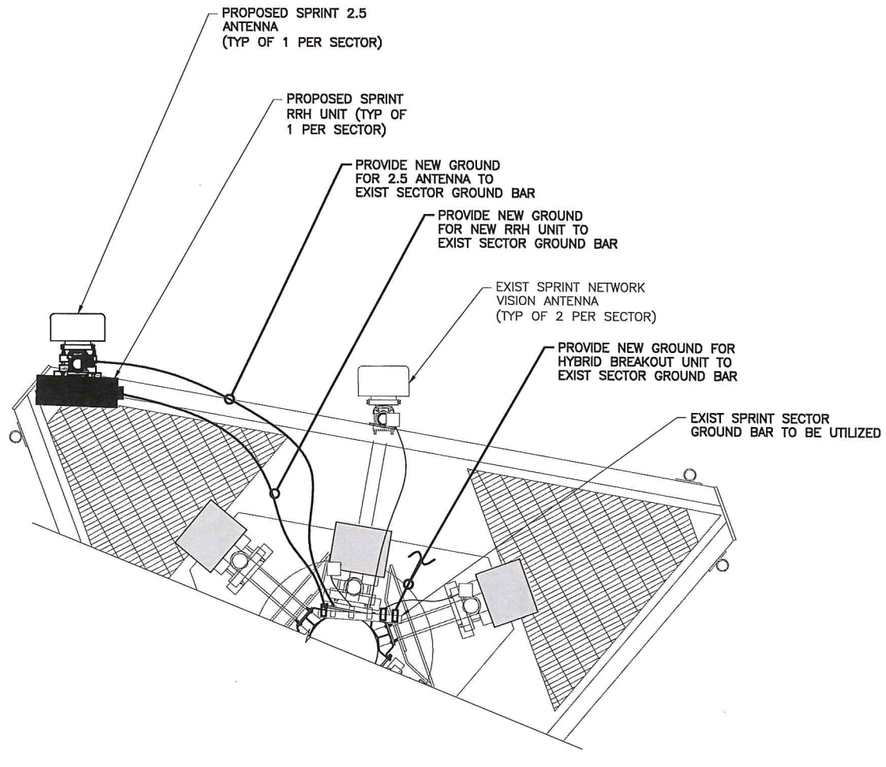
NOTE:
ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.

EXIST CABINET GROUNDING

LEGEND
- CADWELD CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION

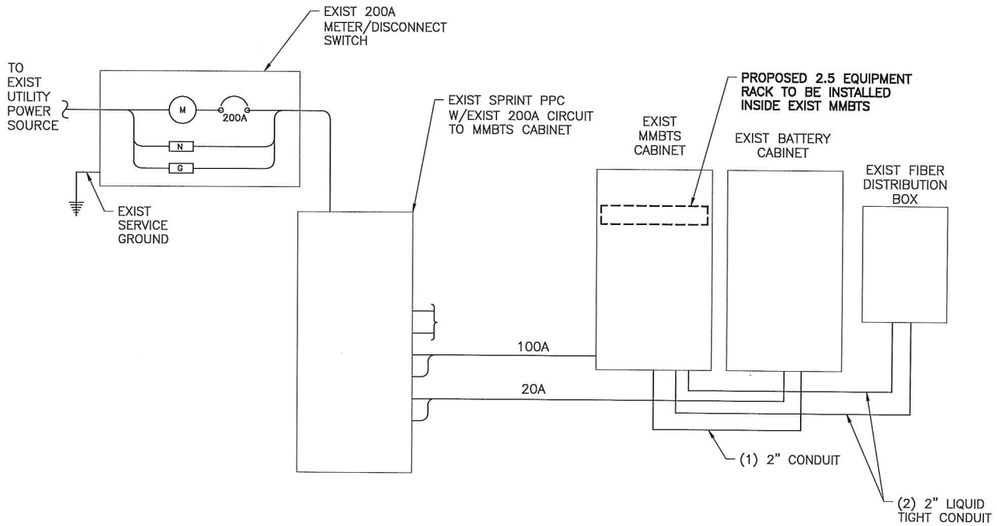
1 / E-1 TYPICAL GROUNDING ONE LINE DIAGRAM

SCALE: NTS



2 / E-1 TYPICAL ANTENNA GROUNDING PLAN

SCALE: NTS



3 / E-1 TYPICAL ELECTRICAL & TELCO PLAN

SCALE: NTS

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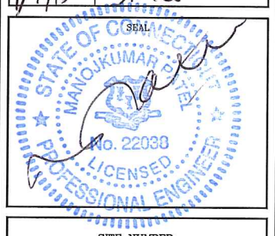

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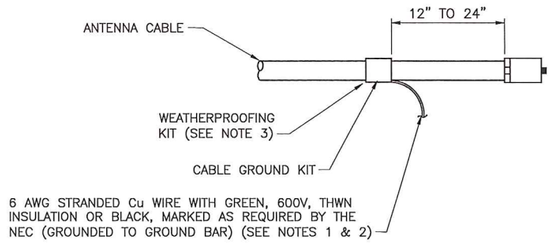
MONROE, CT 06468

SHEET TITLE:
ELECTRICAL & GROUNDING PLANS

SHEET NO:
E-1



CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

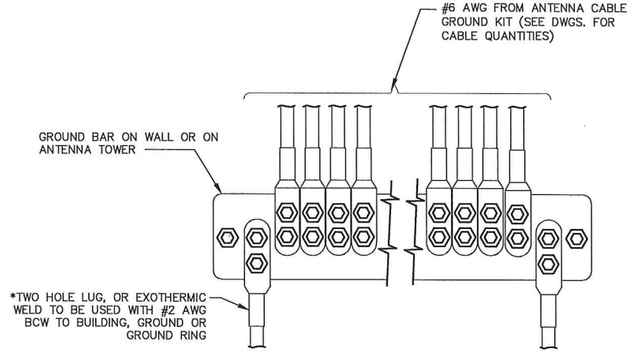
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

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.



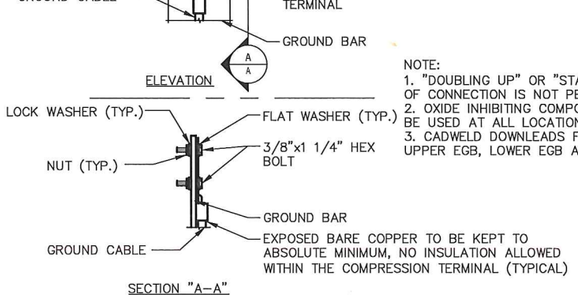
* – GROUND BARS AT THE BOTTOM OF TOWERS/MONOPOLES SHALL ONLY USE EXOTHERMIC WELDS.

– 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

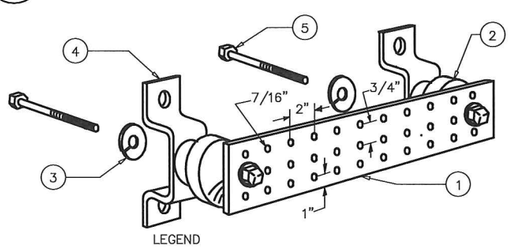


NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

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

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
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Newburgh, NY 12550
Phone: (845) 567–6656
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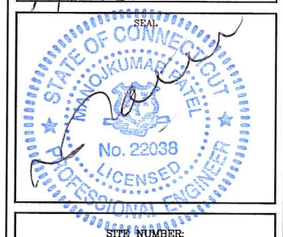
SUBMITTALS

PROJECT NO: 7225.CT03XC365

NO	DATE	DESCRIPTION	BY
0	06/16/14	FOR COMMENT	JT
1	01/09/15	FOR CONSTRUCTION	MP

DATE	REVIEWED BY
1/9/15	JMQ

SEAL:



SITE NUMBER:
CT03XC365

SITE NAME:
UPPER STEPNEY–TLC

SITE ADDRESS:
474–480 MAIN STREET
MONROE, CT 06468

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E–2

Date: **June 6, 2014**

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

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	**Scenario 2.5 B**
	Carrier Site Number:	CT03XC365
Crown Castle Designation:	**Crown Castle BU Number:**	876355
	Crown Castle Site Name:	UPPER STEPNEY - TLC
	Crown Castle JDE Job Number:	288231
	Crown Castle Work Order Number:	773459
	Crown Castle Application Number:	245853 Rev. 0
Engineering Firm Designation:	**FDH Engineering, Inc. Project Number:**	1466K11400(R1)
Site Data:	**474-480 Main St., MONROE, Fairfield County, CT** **Latitude *41° 19' 31.99"*, Longitude *-73° 15' 57.05"*** **191.5 Foot - Monopole Tower**	

Dear Patrick Byrum,

FDH Engineering, Inc. 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 652694, in accordance with application 245853, revision 0.

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

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

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

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

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

Respectfully submitted by:

Jeffrey B. Ray, EI
Project Engineer

Reviewed by:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 191.5 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in October of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	152.0	3	rfs celwave	APXVTM14-C-140	1	1-1/4	-
		3	alcatel lucent	TD-RRH8x20-25			

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
192.0	194.0	12	ems wireless	RV65-18-02DPL2 w/ Mount Pipe	24	1-5/8	1
		6	ericsson	KRY 112 144/1			
	192.0	1	crown mounts	T-Arm Mount [TA 602-3]			
160.0	160.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	2
		3	kathrein	742 213 w/ Mount Pipe			
		1	rfs	DB-B1-6C-8AB-0Z Junction Box			
		2	antel	BXA-171063-12BF w/ Mount Pipe	12	1-5/8	1
		1	antel	BXA-171063-8BF-2 w/ Mount Pipe			
		2	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		1	antel	BXA-70063/4CF w/ Mount Pipe			
		4	antel	LPA-80063/6CF w/ Mount Pipe			
		2	antel	LPA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	crown mounts	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
154.0	154.0	3	alcatel lucent	800 MHz RRH	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	crown mounts	Side Arm Mount [SO 102-3]			
150.0	152.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1-1/4	1
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	150.0	1	crown mounts	Platform Mount [LP 601-1]			
140.0	140.0	1	crown mounts	Platform Mount [LP 403-1]	6 2 1	1-1/4 5/8 3/8	1
		3	ericsson	RRUS-11			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
50.0	52.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	50.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
191.5	191.5	12	Dapa	48000	-	-
181.5	181.5	12	Dapa	48000	-	-
171.5	171.5	12	Dapa	48000	-	-
161.5	161.5	12	Dapa	48000	-	-
150	150	12	Dapa	48000	-	-
140	140	12	Dapa	48000	-	-
50	50	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Associates, Inc.	1531885	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineering Endeavors, Inc.	1631625	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineering Endeavors, Inc.	1631582	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Engineering, Inc. 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	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-1.745	602.356	25.1	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-12.004	1553.518	63.8	Pass
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-21.738	2908.153	70.2	Pass
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-35.084	4143.924	67.7	Pass
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-40.738	4302.990	70.6	Pass
							Summary	
						Pole (L5)	70.6	Pass
						RATING =	**70.6**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	62.6	Pass
1	Base Plate	0	84.2	Pass
1	Base Foundation Soil Interaction	0	59.3	Pass

Structure Rating (max from all components) =	**84.2%**

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

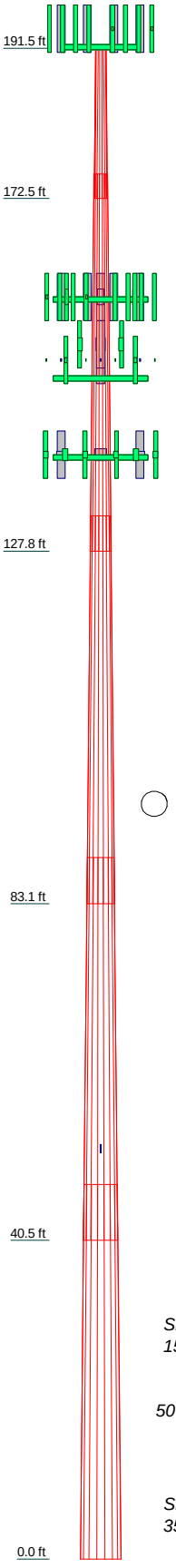
4.1) Recommendations

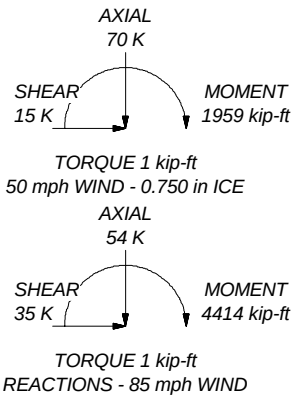
The tower and its base foundation have sufficient capacity to carry the existing, reserved and proposed loading. No modifications are required at this time.

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	19.040	18	0.188	3.083	15.500	20.460		0.7
2	47.790	18	0.313	4.500	19.282	31.600		4.1
3	49.170	18	0.438	5.833	29.815	42.190	A572-65	8.3
4	48.460	18	0.500	7.083	39.847	52.590		12.0
5	47.540	18	0.500		49.727	62.000		14.2
								39.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) RV65-18-02DPL2 w/ Mount Pipe	192	Side Arm Mount [SO 102-3]	154
(4) RV65-18-02DPL2 w/ Mount Pipe	192	APXVSPP18-C-A20 w/ Mount Pipe	150
(4) RV65-18-02DPL2 w/ Mount Pipe	192	APXVSPP18-C-A20 w/ Mount Pipe	150
(2) KRY 112 144/1	192	APXVSPP18-C-A20 w/ Mount Pipe	150
(2) KRY 112 144/1	192	(3) ACU-A20-N	150
(2) KRY 112 144/1	192	(3) ACU-A20-N	150
T-Arm Mount [TA 602-3]	192	(3) ACU-A20-N	150
Lightning Rod	191.5	800 EXTERNAL NOTCH FILTER	150
742 213 w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
742 213 w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
742 213 w/ Mount Pipe	160	APXVTM14-C-120 w/ Mount Pipe	150
RRH2X40-AWS	160	APXVTM14-C-120 w/ Mount Pipe	150
RRH2X40-AWS	160	APXVTM14-C-120 w/ Mount Pipe	150
RRH2X40-AWS	160	TD-RRH8x20-25	150
DB-B1-6C-8AB-0Z Junction Box	160	TD-RRH8x20-25	150
(2) LPA-80063/6CF w/ Mount Pipe	160	TD-RRH8x20-25	150
(2) LPA-80063/6CF w/ Mount Pipe	160	Platform Mount [LP 601-1]	150
(2) LPA-80080/4CF w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-70063-6CF-2 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-70063-6CF-2 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-70063/4CF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
BXA-171063-12BF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
BXA-171063-12BF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
BXA-171063-8BF-2 w/ Mount Pipe	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	RRUS-11	140
Platform Mount [LP 303-1]	160	RRUS-11	140
PCS 1900MHz 4x45W-65MHz	154	RRUS-11	140
PCS 1900MHz 4x45W-65MHz	154	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	154	Platform Mount [LP 403-1]	140
800 MHz RRH	154	OG-860/1920/GPS-A	50
800 MHz RRH	154	Side Arm Mount [SO 701-1]	50
800 MHz RRH	154		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield 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 50 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: 70.6%

FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
Phone: 9197551012
FAX: 9197551031

Tower Analysis

Job: Upper Stepney, BU# 876355			
Project: 1466K11400			
Client: Crown Castle	Drawn by: Jeffrey B. Ray	App'd:	
Code: TIA/EIA-222-F	Date: 06/04/14	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 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	191.500-172.460	19.040	3.083	18	15.500	20.460	0.188	0.750	A572-65 (65 ksi)
L2	172.460-127.753	47.790	4.500	18	19.282	31.600	0.313	1.250	A572-65 (65 ksi)
L3	127.753-83.083	49.170	5.833	18	29.815	42.190	0.438	1.750	A572-65 (65 ksi)
L4	83.083-40.457	48.460	7.083	18	39.847	52.590	0.500	2.000	A572-65 (65 ksi)
L5	40.457-0.000	47.540		18	49.727	62.000	0.500	2.000	A572-65

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
									(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	15.739	9.113	269.950	5.436	7.874	34.284	540.256	4.557	2.398	12.789
	20.776	12.065	626.423	7.197	10.394	60.270	1253.670	6.033	3.271	17.445
L2	20.386	18.815	855.356	6.734	9.795	87.324	1711.837	9.409	2.844	9.099
	32.087	31.033	3838.018	11.107	16.053	239.087	7681.086	15.520	5.012	16.037
L3	31.425	40.794	4448.064	10.429	15.146	293.678	8901.981	20.401	4.477	10.234
	42.841	57.979	12769.382	14.822	21.433	595.795	25555.567	28.995	6.655	15.212
L4	42.019	62.444	12213.654	13.968	20.242	603.375	24443.379	31.228	6.133	12.266
	53.401	82.667	28338.539	18.492	26.716	1060.744	56714.366	41.341	8.376	16.752
L5	52.351	78.124	23918.500	17.476	25.261	946.836	47868.472	39.069	7.872	15.744
	62.956	97.600	46637.979	21.833	31.496	1480.759	93337.326	48.810	10.032	20.064

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 191.500-172.460				1	1	1		
L2 172.460-127.753				1	1	1		
L3 127.753-83.083				1	1	1		
L4 83.083-40.457				1	1	1		
L5 40.457-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
Safety Line 3/8	C	Surface Ar (CaAa)	191.500 - 0.000	1	1	-0.020 0.200	0.375		0.000
Climbing Ladder	A	Surface Af (CaAa)	152.000 - 144.000	1	1	-0.030 -0.030	2.500	10.000	0.008
HB158-1-08U8-S8J18(1-5/8") *	B	Surface Ar (CaAa)	160.000 - 0.000	1	1	0.450 0.500	1.980		0.001

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
*								
LDF7-50A(1-5/8")	A	No	Inside Pole	191.500 - 0.000	24	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
*								
AVA7-50(1-5/8")	C	No	Inside Pole	160.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
*								
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	150.000 - 0.000	4	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
*								
LDF6-50A(1-1/4")	B	No	Inside Pole	140.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	B	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG82ST-BRDA(5/8")	B	No	Inside Pole	140.000 - 0.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
*								
LDF4-50A(1/2")	A	No	Inside Pole	50.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
*								

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	191.500-172.460	A	0.000	0.000	0.000	0.000	0.375
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.714	0.000	0.004
L2	172.460-127.753	A	0.000	0.000	3.333	0.000	1.050
		B	0.000	0.000	6.385	0.000	0.099
		C	0.000	0.000	1.677	0.000	0.281
L3	127.753-83.083	A	0.000	0.000	0.000	0.000	1.094
		B	0.000	0.000	8.845	0.000	0.265

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	1.675	0.000	0.385
L4	83.083-40.457	A	0.000	0.000	0.000	0.000	1.045
		B	0.000	0.000	8.440	0.000	0.253
		C	0.000	0.000	1.599	0.000	0.367
L5	40.457-0.000	A	0.000	0.000	0.000	0.000	0.996
		B	0.000	0.000	8.010	0.000	0.240
		C	0.000	0.000	1.517	0.000	0.349

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	191.500-172.460	A	0.920	0.000	0.000	0.000	0.000	0.375
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	4.218	0.000	0.032
L2	172.460-127.753	A	0.898	0.000	0.000	5.787	0.000	1.088
		B		0.000	0.000	12.320	0.000	0.204
		C		0.000	0.000	9.905	0.000	0.346
L3	127.753-83.083	A	0.861	0.000	0.000	0.000	0.000	1.094
		B		0.000	0.000	16.872	0.000	0.406
		C		0.000	0.000	9.702	0.000	0.447
L4	83.083-40.457	A	0.808	0.000	0.000	0.000	0.000	1.045
		B		0.000	0.000	15.784	0.000	0.380
		C		0.000	0.000	8.942	0.000	0.423
L5	40.457-0.000	A	0.750	0.000	0.000	0.000	0.000	0.996
		B		0.000	0.000	14.549	0.000	0.351
		C		0.000	0.000	8.056	0.000	0.396

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	191.500-172.460	-0.010	0.055	-0.051	0.267
L2	172.460-127.753	-0.168	-0.019	-0.241	0.160
L3	127.753-83.083	0.249	0.184	0.378	0.478
L4	83.083-40.457	0.250	0.185	0.385	0.485
L5	40.457-0.000	0.251	0.186	0.385	0.479

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft	C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K

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
Lightning Rod	C	From Leg	0.000 0.000 2.000	0.000	191.500	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.250 0.664 0.973 1.494 2.683	0.250 0.664 0.973 1.494 2.683	0.031 0.034 0.039 0.059 0.137
***									
(4) RV65-18-02DPL2 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.537 3.954 4.368 5.275 7.316	3.294 4.020 4.696 6.098 9.102	0.031 0.064 0.103 0.201 0.509
(4) RV65-18-02DPL2 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.537 3.954 4.368 5.275 7.316	3.294 4.020 4.696 6.098 9.102	0.031 0.064 0.103 0.201 0.509
(4) RV65-18-02DPL2 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.537 3.954 4.368 5.275 7.316	3.294 4.020 4.696 6.098 9.102	0.031 0.064 0.103 0.201 0.509
(2) KRY 112 144/1	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.411 0.500 0.597 0.818 1.363	0.189 0.256 0.332 0.510 0.970	0.011 0.014 0.018 0.032 0.081
(2) KRY 112 144/1	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.411 0.500 0.597 0.818 1.363	0.189 0.256 0.332 0.510 0.970	0.011 0.014 0.018 0.032 0.081
(2) KRY 112 144/1	C	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.411 0.500 0.597 0.818 1.363	0.189 0.256 0.332 0.510 0.970	0.011 0.014 0.018 0.032 0.081
T-Arm Mount [TA 602-3]	C	None		0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.590 15.440 19.290 26.990 42.390	11.590 15.440 19.290 26.990 42.390	0.774 0.990 1.206 1.639 2.503
***									
742 213 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.373 5.950 6.501 7.611 9.933	4.620 6.000 6.982 8.852 12.794	0.049 0.094 0.146 0.277 0.683
742 213 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.373 5.950 6.501 7.611 9.933	4.620 6.000 6.982 8.852 12.794	0.049 0.094 0.146 0.277 0.683
742 213 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.373 5.950 6.501 7.611 9.933	4.620 6.000 6.982 8.852 12.794	0.049 0.094 0.146 0.277 0.683

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
RRH2X40-AWS	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2X40-AWS	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2X40-AWS	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
DB-B1-6C-8AB-0Z Junction Box	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.577 11.241 11.872 13.163 15.866	10.671 11.932 12.911 14.921 19.158	0.052 0.145 0.246 0.476 1.088
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.577 11.241 11.872 13.163 15.866	10.671 11.932 12.911 14.921 19.158	0.052 0.145 0.246 0.476 1.088
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.856 3.220 3.592 4.450 6.318	7.227 7.922 8.634 10.112 13.339	0.030 0.076 0.128 0.253 0.613
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.969 8.609 9.216 10.459 13.066	5.801 6.953 7.819 9.601 13.366	0.042 0.103 0.171 0.335 0.804
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.969 8.609 9.216 10.459 13.066	5.801 6.953 7.819 9.601 13.366	0.042 0.103 0.171 0.335 0.804
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.295 5.713 6.141 7.025 8.923	3.470 4.046 4.638 5.913 8.881	0.027 0.068 0.115 0.228 0.558
BXA-171063-12BF w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.971 5.521 6.036 7.091 9.359	5.228 6.389 7.261 9.046 12.817	0.040 0.086 0.139 0.271 0.671
BXA-171063-12BF w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	160.000	No Ice 1/2" Ice	4.971 5.521	5.228 6.389	0.040 0.086

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
				0.000				1" Ice	6.036	7.261	0.139
								2" Ice	7.091	9.046	0.271
								4" Ice	9.359	12.817	0.671
BXA-171063-8BF-2 w/ Mount Pipe	C	From Leg	4.000	0.000		0.000	160.000	No Ice	3.179	3.353	0.029
			0.000					1/2" Ice	3.555	3.971	0.061
			0.000					1" Ice	3.964	4.595	0.099
								2" Ice	4.853	5.893	0.193
								4" Ice	6.767	8.885	0.488
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000		0.000	160.000	No Ice	0.367	0.085	0.003
			0.000					1/2" Ice	0.451	0.136	0.005
			0.000					1" Ice	0.543	0.196	0.009
								2" Ice	0.755	0.343	0.020
								4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000		0.000	160.000	No Ice	0.367	0.085	0.003
			0.000					1/2" Ice	0.451	0.136	0.005
			0.000					1" Ice	0.543	0.196	0.009
								2" Ice	0.755	0.343	0.020
								4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000		0.000	160.000	No Ice	0.367	0.085	0.003
			0.000					1/2" Ice	0.451	0.136	0.005
			0.000					1" Ice	0.543	0.196	0.009
								2" Ice	0.755	0.343	0.020
								4" Ice	1.281	0.740	0.063
Platform Mount [LP 303-1]	C	None		0.000		0.000	160.000	No Ice	14.660	14.660	1.250
								1/2" Ice	18.870	18.870	1.481
								1" Ice	23.080	23.080	1.713
								2" Ice	31.500	31.500	2.175
								4" Ice	48.340	48.340	3.101
***											
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.000	0.000		0.000	154.000	No Ice	2.709	2.611	0.060
			0.000					1/2" Ice	2.948	2.847	0.083
			0.000					1" Ice	3.195	3.092	0.110
								2" Ice	3.716	3.608	0.173
								4" Ice	4.862	4.744	0.347
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.000	0.000		0.000	154.000	No Ice	2.709	2.611	0.060
			0.000					1/2" Ice	2.948	2.847	0.083
			0.000					1" Ice	3.195	3.092	0.110
								2" Ice	3.716	3.608	0.173
								4" Ice	4.862	4.744	0.347
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.000	0.000		0.000	154.000	No Ice	2.709	2.611	0.060
			0.000					1/2" Ice	2.948	2.847	0.083
			0.000					1" Ice	3.195	3.092	0.110
								2" Ice	3.716	3.608	0.173
								4" Ice	4.862	4.744	0.347
800 MHz RRH	A	From Leg	2.000	0.000		0.000	154.000	No Ice	2.490	2.068	0.053
			0.000					1/2" Ice	2.706	2.271	0.074
			0.000					1" Ice	2.931	2.481	0.098
								2" Ice	3.407	2.928	0.157
								4" Ice	4.462	3.927	0.318
800 MHz RRH	B	From Leg	2.000	0.000		0.000	154.000	No Ice	2.490	2.068	0.053
			0.000					1/2" Ice	2.706	2.271	0.074
			0.000					1" Ice	2.931	2.481	0.098
								2" Ice	3.407	2.928	0.157
								4" Ice	4.462	3.927	0.318
800 MHz RRH	C	From Leg	2.000	0.000		0.000	154.000	No Ice	2.490	2.068	0.053
			0.000					1/2" Ice	2.706	2.271	0.074
			0.000					1" Ice	2.931	2.481	0.098

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Lateral ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
								2" Ice	3.407	2.928	0.157
								4" Ice	4.462	3.927	0.318
Side Arm Mount [SO 102-3]	C	None				0.000	154.000	No Ice	3.000	3.000	0.081
								1/2" Ice	3.480	3.480	0.111
								1" Ice	3.960	3.960	0.141
								2" Ice	4.920	4.920	0.201
								4" Ice	6.840	6.840	0.321
*											
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	8.498	6.946	0.083
								1/2" Ice	9.149	8.127	0.151
								1" Ice	9.767	9.021	0.227
								2" Ice	11.031	10.844	0.406
								4" Ice	13.679	14.851	0.909
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	8.498	6.946	0.083
								1/2" Ice	9.149	8.127	0.151
								1" Ice	9.767	9.021	0.227
								2" Ice	11.031	10.844	0.406
								4" Ice	13.679	14.851	0.909
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	8.498	6.946	0.083
								1/2" Ice	9.149	8.127	0.151
								1" Ice	9.767	9.021	0.227
								2" Ice	11.031	10.844	0.406
								4" Ice	13.679	14.851	0.909
(3) ACU-A20-N	A	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.078	0.136	0.001
								1/2" Ice	0.121	0.189	0.002
								1" Ice	0.173	0.251	0.004
								2" Ice	0.302	0.400	0.012
								4" Ice	0.665	0.802	0.045
(3) ACU-A20-N	B	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.078	0.136	0.001
								1/2" Ice	0.121	0.189	0.002
								1" Ice	0.173	0.251	0.004
								2" Ice	0.302	0.400	0.012
								4" Ice	0.665	0.802	0.045
(3) ACU-A20-N	C	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.078	0.136	0.001
								1/2" Ice	0.121	0.189	0.002
								1" Ice	0.173	0.251	0.004
								2" Ice	0.302	0.400	0.012
								4" Ice	0.665	0.802	0.045
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.770	0.375	0.011
								1/2" Ice	0.890	0.465	0.017
								1" Ice	1.018	0.563	0.024
								2" Ice	1.301	0.787	0.045
								4" Ice	1.970	1.337	0.114
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.770	0.375	0.011
								1/2" Ice	0.890	0.465	0.017
								1" Ice	1.018	0.563	0.024
								2" Ice	1.301	0.787	0.045
								4" Ice	1.970	1.337	0.114
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	0.770	0.375	0.011
								1/2" Ice	0.890	0.465	0.017
								1" Ice	1.018	0.563	0.024
								2" Ice	1.301	0.787	0.045
								4" Ice	1.970	1.337	0.114
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	2.000	0.000	150.000	No Ice	7.134	4.959	0.077
								1/2" Ice	7.662	5.754	0.131
								1" Ice	8.183	6.472	0.193
								2" Ice	9.256	8.010	0.338

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	11.526	11.412	0.752
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.134 7.662 8.183 9.256 11.526	4.959 5.754 6.472 8.010 11.412	0.077 0.131 0.193 0.338 0.752
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.134 7.662 8.183 9.256 11.526	4.959 5.754 6.472 8.010 11.412	0.077 0.131 0.193 0.338 0.752
TD-RRH8x20-25	A	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.720 5.014 5.316 5.948 7.314	1.700 1.917 2.143 2.620 3.677	0.070 0.097 0.128 0.200 0.397
TD-RRH8x20-25	B	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.720 5.014 5.316 5.948 7.314	1.700 1.917 2.143 2.620 3.677	0.070 0.097 0.128 0.200 0.397
TD-RRH8x20-25	C	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.720 5.014 5.316 5.948 7.314	1.700 1.917 2.143 2.620 3.677	0.070 0.097 0.128 0.200 0.397
Platform Mount [LP 601-1]	C	None		0.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.470 33.590 38.710 48.950 69.430	28.470 33.590 38.710 48.950 69.430	1.122 1.514 1.905 2.689 4.255
***									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.144 0.218 0.393 0.886
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.144 0.218 0.393 0.886

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
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	140.000	No Ice		8.637	6.362	0.079
			0.000				1/2" Ice		9.290	7.538	0.144
			0.000				1" Ice		9.910	8.427	0.218
							2" Ice		11.176	10.239	0.393
							4" Ice		13.829	14.099	0.886
(2) LGP21401	A	From Leg	4.000	0.000	0.000	140.000	No Ice		1.288	0.233	0.014
			0.000				1/2" Ice		1.445	0.313	0.021
			0.000				1" Ice		1.611	0.403	0.030
							2" Ice		1.969	0.608	0.055
							4" Ice		2.788	1.121	0.135
(2) LGP21401	B	From Leg	4.000	0.000	0.000	140.000	No Ice		1.288	0.233	0.014
			0.000				1/2" Ice		1.445	0.313	0.021
			0.000				1" Ice		1.611	0.403	0.030
							2" Ice		1.969	0.608	0.055
							4" Ice		2.788	1.121	0.135
(2) LGP21401	C	From Leg	4.000	0.000	0.000	140.000	No Ice		1.288	0.233	0.014
			0.000				1/2" Ice		1.445	0.313	0.021
			0.000				1" Ice		1.611	0.403	0.030
							2" Ice		1.969	0.608	0.055
							4" Ice		2.788	1.121	0.135
RRUS-11	A	From Leg	4.000	0.000	0.000	140.000	No Ice		2.942	1.246	0.055
			0.000				1/2" Ice		3.172	1.412	0.074
			0.000				1" Ice		3.410	1.587	0.097
							2" Ice		3.913	1.963	0.151
							4" Ice		5.023	2.819	0.302
RRUS-11	B	From Leg	4.000	0.000	0.000	140.000	No Ice		2.942	1.246	0.055
			0.000				1/2" Ice		3.172	1.412	0.074
			0.000				1" Ice		3.410	1.587	0.097
							2" Ice		3.913	1.963	0.151
							4" Ice		5.023	2.819	0.302
RRUS-11	C	From Leg	4.000	0.000	0.000	140.000	No Ice		2.942	1.246	0.055
			0.000				1/2" Ice		3.172	1.412	0.074
			0.000				1" Ice		3.410	1.587	0.097
							2" Ice		3.913	1.963	0.151
							4" Ice		5.023	2.819	0.302
DC6-48-60-18-8F	C	From Leg	4.000	0.000	0.000	140.000	No Ice		2.567	4.317	0.033
			0.000				1/2" Ice		2.798	4.596	0.064
			0.000				1" Ice		3.038	4.885	0.099
							2" Ice		3.543	5.488	0.181
							4" Ice		4.658	6.797	0.397
Platform Mount [LP 403-1]	C	None			0.000	140.000	No Ice		18.850	18.850	1.500
							1/2" Ice		24.300	24.300	1.797
							1" Ice		29.750	29.750	2.093
							2" Ice		40.650	40.650	2.686
							4" Ice		62.450	62.450	3.872
***											
OG-860/1920/GPS-A	A	From Leg	2.000	0.000	0.000	50.000	No Ice		0.329	0.404	0.002
			0.000				1/2" Ice		0.434	0.514	0.005
			2.000				1" Ice		0.548	0.632	0.010
							2" Ice		0.802	0.894	0.024
							4" Ice		1.414	1.521	0.079
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	0.000	50.000	No Ice		0.850	1.670	0.065
			0.000				1/2" Ice		1.140	2.340	0.079
			0.000				1" Ice		1.430	3.010	0.093
							2" Ice		2.010	4.350	0.121
							4" Ice		3.170	7.030	0.177
***											

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	181.542	1.628	0.030	28.528	A	0.000	28.528	28.528	100.00	0.000	0.000
191.500-172.4					B	0.000	28.528		100.00	0.000	0.000
60					C	0.000	28.528		100.00	0.714	0.000
L2	148.680	1.537	0.028	96.262	A	0.000	96.262	96.262	100.00	3.333	0.000
172.460-127.7					B	0.000	96.262		100.00	6.385	0.000
53					C	0.000	96.262		100.00	1.677	0.000
L3	104.611	1.39	0.026	136.127	A	0.000	136.127	136.127	100.00	0.000	0.000
127.753-83.08					B	0.000	136.127		100.00	8.845	0.000
3					C	0.000	136.127		100.00	1.675	0.000
L4	61.453	1.194	0.022	166.903	A	0.000	166.903	166.903	100.00	0.000	0.000
83.083-40.457					B	0.000	166.903		100.00	8.440	0.000
					C	0.000	166.903		100.00	1.599	0.000
L5	19.608	1	0.018	191.421	A	0.000	191.421	191.421	100.00	0.000	0.000
40.457-0.000					B	0.000	191.421		100.00	8.010	0.000
					C	0.000	191.421		100.00	1.517	0.000

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	181.542	1.628	0.010	0.920	31.449	A	0.000	31.449	31.449	100.00	0.000	0.000
191.500-172.460						B	0.000	31.449		100.00	0.000	0.000
						C	0.000	31.449		100.00	4.218	0.000
L2	148.680	1.537	0.010	0.898	103.119	A	0.000	103.119	103.119	100.00	5.787	0.000
172.460-127.753						B	0.000	103.119		100.00	12.320	0.000
						C	0.000	103.119		100.00	9.905	0.000
L3	104.611	1.39	0.009	0.861	142.817	A	0.000	142.817	142.817	100.00	0.000	0.000
127.753-83.083						B	0.000	142.817		100.00	16.872	0.000
						C	0.000	142.817		100.00	9.702	0.000
L4	61.453	1.194	0.008	0.808	173.022	A	0.000	173.022	173.022	100.00	0.000	0.000
83.083-40.457						B	0.000	173.022		100.00	15.784	0.000
						C	0.000	173.022		100.00	8.942	0.000
L5 40.457-0.000	19.608	1	0.006	0.750	196.869	A	0.000	196.869	196.869	100.00	0.000	0.000
						B	0.000	196.869		100.00	14.549	0.000
						C	0.000	196.869		100.00	8.056	0.000

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	181.542	1.628	0.010	28.528	A	0.000	28.528	28.528	100.00	0.000	0.000
191.500-172.4					B	0.000	28.528		100.00	0.000	0.000
60					C	0.000	28.528		100.00	0.714	0.000
L2	148.680	1.537	0.010	96.262	A	0.000	96.262	96.262	100.00	3.333	0.000
172.460-127.7					B	0.000	96.262		100.00	6.385	0.000
53					C	0.000	96.262		100.00	1.677	0.000
L3	104.611	1.39	0.009	136.127	A	0.000	136.127	136.127	100.00	0.000	0.000
127.753-83.08					B	0.000	136.127		100.00	8.845	0.000
3					C	0.000	136.127		100.00	1.675	0.000
L4	61.453	1.194	0.008	166.903	A	0.000	166.903	166.903	100.00	0.000	0.000
83.083-40.457					B	0.000	166.903		100.00	8.440	0.000
					C	0.000	166.903		100.00	1.599	0.000
L5	19.608	1	0.006	191.421	A	0.000	191.421	191.421	100.00	0.000	0.000
40.457-0.000					B	0.000	191.421		100.00	8.010	0.000
					C	0.000	191.421		100.00	1.517	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.407	1.095	A	1	0.65	1	1	1	31.449	0.434	0.023	C
191.500-172.4			B	1	0.65	1	1	1	31.449			
60			C	1	0.65	1	1	1	31.449			
L2	1.638	5.379	A	1	0.65	1	1	1	103.119	1.579	0.035	C
172.460-127.7			B	1	0.65	1	1	1	103.119			
53			C	1	0.65	1	1	1	103.119			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L3	1.947	10.041	A	1	0.65	1	1	1	142.817	1.792	0.040	C
127.753-83.08			B	1	0.65	1	1	1	142.817			
3			C	1	0.65	1	1	1	142.817			
L4	1.848	13.996	A	1	0.65	1	1	1	173.022	1.762	0.041	C
83.083-40.457			B	1	0.65	1	1	1	173.022			
			C	1	0.65	1	1	1	173.022			
L5	1.744	16.368	A	1	0.65	1	1	1	196.869	1.629	0.040	C
40.457-0.000			B	1	0.65	1	1	1	196.869			
			C	1	0.65	1	1	1	196.869			
Sum Weight:	7.584	46.879						OTM	641.249 kip-ft	7.196		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.407	1.095	A	1	0.65	1	1	1	31.449	0.434	0.023	C
191.500-172.4			B	1	0.65	1	1	1	31.449			
60			C	1	0.65	1	1	1	31.449			
L2	1.638	5.379	A	1	0.65	1	1	1	103.119	1.579	0.035	C
172.460-127.7			B	1	0.65	1	1	1	103.119			
53			C	1	0.65	1	1	1	103.119			
L3	1.947	10.041	A	1	0.65	1	1	1	142.817	1.792	0.040	C
127.753-83.08			B	1	0.65	1	1	1	142.817			
3			C	1	0.65	1	1	1	142.817			
L4	1.848	13.996	A	1	0.65	1	1	1	173.022	1.762	0.041	C
83.083-40.457			B	1	0.65	1	1	1	173.022			
			C	1	0.65	1	1	1	173.022			
L5	1.744	16.368	A	1	0.65	1	1	1	196.869	1.629	0.040	C
40.457-0.000			B	1	0.65	1	1	1	196.869			
			C	1	0.65	1	1	1	196.869			
Sum Weight:	7.584	46.879						OTM	641.249 kip-ft	7.196		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.407	1.095	A	1	0.65	1	1	1	31.449	0.434	0.023	C
191.500-172.4			B	1	0.65	1	1	1	31.449			
60			C	1	0.65	1	1	1	31.449			
L2	1.638	5.379	A	1	0.65	1	1	1	103.119	1.579	0.035	C
172.460-127.7			B	1	0.65	1	1	1	103.119			
53			C	1	0.65	1	1	1	103.119			
L3	1.947	10.041	A	1	0.65	1	1	1	142.817	1.792	0.040	C
127.753-83.08			B	1	0.65	1	1	1	142.817			
3			C	1	0.65	1	1	1	142.817			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L4	1.848	13.996	A	1	0.65	1	1	1	173.022	1.762	0.041	C
83.083-40.457			B	1	0.65	1	1	1	173.022			
			C	1	0.65	1	1	1	173.022			
L5	1.744	16.368	A	1	0.65	1	1	1	196.869	1.629	0.040	C
40.457-0.000			B	1	0.65	1	1	1	196.869			
			C	1	0.65	1	1	1	196.869			
Sum Weight:	7.584	46.879						OTM	641.249 kip-ft	7.196		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	521.641 kip-ft	6.025		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	521.641 kip-ft	6.025		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
191.500-172.4			B	1	0.65	1	1	1	28.528			
60			C	1	0.65	1	1	1	28.528			
L2	1.429	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
172.460-127.7			B	1	0.65	1	1	1	96.262			
53			C	1	0.65	1	1	1	96.262			
L3	1.744	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
127.753-83.08			B	1	0.65	1	1	1	136.127			
3			C	1	0.65	1	1	1	136.127			
L4	1.665	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
83.083-40.457			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5	1.585	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
40.457-0.000			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.802	39.180						OTM	521.641 kip-ft	6.025		

Discrete Appurtenance Pressures - No Ice $G_H = 1.690$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft²	C_AA_C Side ft²
Lightning Rod	240.000	0.031	-0.559	0.323	193.500	1.658	0.031	0.250	0.250
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.124	0.000	-4.646	194.000	1.659	0.031	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	120.000	0.124	4.023	2.323	194.000	1.659	0.031	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.124	-4.023	2.323	194.000	1.659	0.031	14.150	13.175
KRY 112 144/1	0.000	0.022	0.000	-4.646	194.000	1.659	0.031	0.822	0.377
KRY 112 144/1	120.000	0.022	4.023	2.323	194.000	1.659	0.031	0.822	0.377
KRY 112 144/1	240.000	0.022	-4.023	2.323	194.000	1.659	0.031	0.822	0.377
T-Arm Mount [TA 602-3]	0.000	0.774	0.000	0.000	192.000	1.654	0.031	11.590	11.590
742 213 w/ Mount Pipe	0.000	0.049	0.000	-4.970	160.000	1.570	0.029	5.373	4.620
742 213 w/ Mount Pipe	120.000	0.049	4.304	2.485	160.000	1.570	0.029	5.373	4.620
742 213 w/ Mount Pipe	240.000	0.049	-4.304	2.485	160.000	1.570	0.029	5.373	4.620
RRH2X40-AWS	0.000	0.044	0.000	-4.970	160.000	1.570	0.029	2.522	1.589

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2
RRH2X40-AWS	120.000	0.044	4.304	2.485	160.000	1.570	0.029	2.522	1.589
RRH2X40-AWS	240.000	0.044	-4.304	2.485	160.000	1.570	0.029	2.522	1.589
DB-B1-6C-8AB-0Z Junction Box	240.000	0.044	-4.304	2.485	160.000	1.570	0.029	5.600	2.333
LPA-80063/6CF w/ Mount Pipe	0.000	0.104	0.000	-4.970	160.000	1.570	0.029	21.154	21.341
LPA-80063/6CF w/ Mount Pipe	120.000	0.104	4.304	2.485	160.000	1.570	0.029	21.154	21.341
LPA-80080/4CF w/ Mount Pipe	240.000	0.060	-4.304	2.485	160.000	1.570	0.029	5.712	14.455
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.042	0.000	-4.970	160.000	1.570	0.029	7.969	5.801
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.042	4.304	2.485	160.000	1.570	0.029	7.969	5.801
BXA-70063/4CF w/ Mount Pipe	240.000	0.027	-4.304	2.485	160.000	1.570	0.029	5.295	3.470
BXA-171063-12BF w/ Mount Pipe	0.000	0.040	0.000	-4.970	160.000	1.570	0.029	4.971	5.228
BXA-171063-12BF w/ Mount Pipe	120.000	0.040	4.304	2.485	160.000	1.570	0.029	4.971	5.228
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.029	-4.304	2.485	160.000	1.570	0.029	3.179	3.353
FD9R6004/2C-3L	0.000	0.006	0.000	-4.970	160.000	1.570	0.029	0.733	0.169
FD9R6004/2C-3L	120.000	0.006	4.304	2.485	160.000	1.570	0.029	0.733	0.169
FD9R6004/2C-3L	240.000	0.006	-4.304	2.485	160.000	1.570	0.029	0.733	0.169
Platform Mount [LP 303-1]	0.000	1.250	0.000	0.000	160.000	1.570	0.029	14.660	14.660
PCS 1900MHz 4x45W-65MHz	0.000	0.060	0.000	-3.035	154.000	1.553	0.029	2.709	2.611
PCS 1900MHz 4x45W-65MHz	120.000	0.060	2.628	1.517	154.000	1.553	0.029	2.709	2.611
PCS 1900MHz 4x45W-65MHz	240.000	0.060	-2.628	1.517	154.000	1.553	0.029	2.709	2.611
800 MHz RRH	0.000	0.053	0.000	-3.035	154.000	1.553	0.029	2.490	2.068
800 MHz RRH	120.000	0.053	2.628	1.517	154.000	1.553	0.029	2.490	2.068
800 MHz RRH	240.000	0.053	-2.628	1.517	154.000	1.553	0.029	2.490	2.068
Side Arm Mount [SO 102-3]	0.000	0.081	0.000	0.000	154.000	1.553	0.029	3.000	3.000
APXVSPP18-C-A20 w/ Mount Pipe	0.000	0.083	0.000	-5.078	152.000	1.547	0.029	8.498	6.946
APXVSPP18-C-A20 w/ Mount Pipe	120.000	0.083	4.397	2.539	152.000	1.547	0.029	8.498	6.946
APXVSPP18-C-A20 w/ Mount Pipe	240.000	0.083	-4.397	2.539	152.000	1.547	0.029	8.498	6.946
ACU-A20-N	0.000	0.003	0.000	-5.078	152.000	1.547	0.029	0.233	0.408
ACU-A20-N	120.000	0.003	4.397	2.539	152.000	1.547	0.029	0.233	0.408
ACU-A20-N	240.000	0.003	-4.397	2.539	152.000	1.547	0.029	0.233	0.408
800 EXTERNAL NOTCH FILTER	0.000	0.011	0.000	-5.078	152.000	1.547	0.029	0.770	0.375
800 EXTERNAL NOTCH FILTER	120.000	0.011	4.397	2.539	152.000	1.547	0.029	0.770	0.375
800 EXTERNAL NOTCH FILTER	240.000	0.011	-4.397	2.539	152.000	1.547	0.029	0.770	0.375
APXVTM14-C-120 w/ Mount Pipe	0.000	0.077	0.000	-5.078	152.000	1.547	0.029	7.134	4.959
APXVTM14-C-120 w/ Mount Pipe	120.000	0.077	4.397	2.539	152.000	1.547	0.029	7.134	4.959
APXVTM14-C-120 w/ Mount Pipe	240.000	0.077	-4.397	2.539	152.000	1.547	0.029	7.134	4.959
TD-RRH8x20-25	0.000	0.070	0.000	-5.078	152.000	1.547	0.029	4.720	1.700
TD-RRH8x20-25	120.000	0.070	4.397	2.539	152.000	1.547	0.029	4.720	1.700

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2
TD-RRH8x20-25	240.000	0.070	-4.397	2.539	152.000	1.547	0.029	4.720	1.700
Platform Mount [LP 601-1]	0.000	1.122	0.000	0.000	150.000	1.541	0.029	28.470	28.470
7770.00 w/ Mount Pipe	0.000	0.055	0.000	-5.185	140.000	1.511	0.028	6.119	4.254
7770.00 w/ Mount Pipe	120.000	0.055	4.490	2.593	140.000	1.511	0.028	6.119	4.254
7770.00 w/ Mount Pipe	240.000	0.055	-4.490	2.593	140.000	1.511	0.028	6.119	4.254
P65-16-XLH-RR w/ Mount Pipe	0.000	0.079	0.000	-5.185	140.000	1.511	0.028	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	120.000	0.079	4.490	2.593	140.000	1.511	0.028	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	240.000	0.079	-4.490	2.593	140.000	1.511	0.028	8.637	6.362
LGP21401	0.000	0.028	0.000	-5.185	140.000	1.511	0.028	2.576	0.465
LGP21401	120.000	0.028	4.490	2.593	140.000	1.511	0.028	2.576	0.465
LGP21401	240.000	0.028	-4.490	2.593	140.000	1.511	0.028	2.576	0.465
RRUS-11	0.000	0.055	0.000	-5.185	140.000	1.511	0.028	2.942	1.246
RRUS-11	120.000	0.055	4.490	2.593	140.000	1.511	0.028	2.942	1.246
RRUS-11	240.000	0.055	-4.490	2.593	140.000	1.511	0.028	2.942	1.246
DC6-48-60-18-8F	240.000	0.033	-4.490	2.593	140.000	1.511	0.028	2.567	4.317
Platform Mount [LP 403-1]	0.000	1.500	0.000	0.000	140.000	1.511	0.028	18.850	18.850
OG-860/1920/GPS-A	0.000	0.002	0.000	-4.087	52.000	1.139	0.021	0.329	0.404
Side Arm Mount [SO 701-1]	0.000	0.065	0.000	-3.587	50.000	1.126	0.021	0.850	1.670
	Sum Weight:	7.847							

Discrete Appurtenance Pressures - With Ice $G_H = 1.690$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Lightning Rod	240.000	0.038	-0.559	0.323	193.500	1.658	0.011	0.927	0.927	0.926
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.389	0.000	-4.646	194.000	1.659	0.011	17.229	18.388	0.926
RV65-18-02DPL2 w/ Mount Pipe	120.000	0.389	4.023	2.323	194.000	1.659	0.011	17.229	18.388	0.926
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.389	-4.023	2.323	194.000	1.659	0.011	17.229	18.388	0.926
KRY 112 144/1	0.000	0.036	0.000	-4.646	194.000	1.659	0.011	1.166	0.642	0.926
KRY 112 144/1	120.000	0.036	4.023	2.323	194.000	1.659	0.011	1.166	0.642	0.926
KRY 112 144/1	240.000	0.036	-4.023	2.323	194.000	1.659	0.011	1.166	0.642	0.926
T-Arm Mount [TA 602-3]	0.000	1.175	0.000	0.000	192.000	1.654	0.011	18.724	18.724	0.926
742 213 w/ Mount Pipe	0.000	0.136	0.000	-4.970	160.000	1.570	0.010	6.398	6.798	0.906
742 213 w/ Mount Pipe	120.000	0.136	4.304	2.485	160.000	1.570	0.010	6.398	6.798	0.906
742 213 w/ Mount Pipe	240.000	0.136	-4.304	2.485	160.000	1.570	0.010	6.398	6.798	0.906
RRH2X40-AWS	0.000	0.078	0.000	-4.970	160.000	1.570	0.010	2.948	1.970	0.906
RRH2X40-AWS	120.000	0.078	4.304	2.485	160.000	1.570	0.010	2.948	1.970	0.906
RRH2X40-AWS	240.000	0.078	-4.304	2.485	160.000	1.570	0.010	2.948	1.970	0.906
DB-B1-6C-8AB-0Z Junction Box	240.000	0.113	-4.304	2.485	160.000	1.570	0.010	6.179	2.748	0.906
LPA-80063/6CF w/ Mount Pipe	0.000	0.453	0.000	-4.970	160.000	1.570	0.010	23.508	25.455	0.906
LPA-80063/6CF w/ Mount Pipe	120.000	0.453	4.304	2.485	160.000	1.570	0.010	23.508	25.455	0.906
LPA-80080/4CF w/ Mount Pipe	240.000	0.237	-4.304	2.485	160.000	1.570	0.010	7.045	17.001	0.906

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.159	0.000	-4.970	160.000	1.570	0.010	9.102	7.657	0.906
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.159	4.304	2.485	160.000	1.570	0.010	9.102	7.657	0.906
BXA-70063/4CF w/ Mount Pipe	240.000	0.106	-4.304	2.485	160.000	1.570	0.010	6.061	4.527	0.906
BXA-171063-12BF w/ Mount Pipe	0.000	0.129	0.000	-4.970	160.000	1.570	0.010	5.940	7.098	0.906
BXA-171063-12BF w/ Mount Pipe	120.000	0.129	4.304	2.485	160.000	1.570	0.010	5.940	7.098	0.906
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.092	-4.304	2.485	160.000	1.570	0.010	3.887	4.478	0.906
FD9R6004/2C-3L	0.000	0.016	0.000	-4.970	160.000	1.570	0.010	1.052	0.370	0.906
FD9R6004/2C-3L	120.000	0.016	4.304	2.485	160.000	1.570	0.010	1.052	0.370	0.906
FD9R6004/2C-3L	240.000	0.016	-4.304	2.485	160.000	1.570	0.010	1.052	0.370	0.906
Platform Mount [LP 303-1]	0.000	1.669	0.000	0.000	160.000	1.570	0.010	22.292	22.292	0.906
PCS 1900MHz 4x45W-65MHz	0.000	0.104	0.000	-3.035	154.000	1.553	0.010	3.147	3.045	0.902
PCS 1900MHz 4x45W-65MHz	120.000	0.104	2.628	1.517	154.000	1.553	0.010	3.147	3.045	0.902
PCS 1900MHz 4x45W-65MHz	240.000	0.104	-2.628	1.517	154.000	1.553	0.010	3.147	3.045	0.902
800 MHz RRH	0.000	0.094	0.000	-3.035	154.000	1.553	0.010	2.887	2.440	0.902
800 MHz RRH	120.000	0.094	2.628	1.517	154.000	1.553	0.010	2.887	2.440	0.902
800 MHz RRH	240.000	0.094	-2.628	1.517	154.000	1.553	0.010	2.887	2.440	0.902
Side Arm Mount [SO 102-3]	0.000	0.135	0.000	0.000	154.000	1.553	0.010	3.866	3.866	0.902
APXVSPP18-C-A20 w/ Mount Pipe	0.000	0.211	0.000	-5.078	152.000	1.547	0.010	9.643	8.841	0.899
APXVSPP18-C-A20 w/ Mount Pipe	120.000	0.211	4.397	2.539	152.000	1.547	0.010	9.643	8.841	0.899
APXVSPP18-C-A20 w/ Mount Pipe	240.000	0.211	-4.397	2.539	152.000	1.547	0.010	9.643	8.841	0.899
ACU-A20-N	0.000	0.012	0.000	-5.078	152.000	1.547	0.010	0.487	0.715	0.899
ACU-A20-N	120.000	0.012	4.397	2.539	152.000	1.547	0.010	0.487	0.715	0.899
ACU-A20-N	240.000	0.012	-4.397	2.539	152.000	1.547	0.010	0.487	0.715	0.899
800 EXTERNAL NOTCH FILTER	0.000	0.023	0.000	-5.078	152.000	1.547	0.010	0.992	0.544	0.899
800 EXTERNAL NOTCH FILTER	120.000	0.023	4.397	2.539	152.000	1.547	0.010	0.992	0.544	0.899
800 EXTERNAL NOTCH FILTER	240.000	0.023	-4.397	2.539	152.000	1.547	0.010	0.992	0.544	0.899
APXVTM14-C-120 w/ Mount Pipe	0.000	0.180	0.000	-5.078	152.000	1.547	0.010	8.078	6.328	0.899
APXVTM14-C-120 w/ Mount Pipe	120.000	0.180	4.397	2.539	152.000	1.547	0.010	8.078	6.328	0.899
APXVTM14-C-120 w/ Mount Pipe	240.000	0.180	-4.397	2.539	152.000	1.547	0.010	8.078	6.328	0.899
TD-RRH8x20-25	0.000	0.122	0.000	-5.078	152.000	1.547	0.010	5.256	2.097	0.899
TD-RRH8x20-25	120.000	0.122	4.397	2.539	152.000	1.547	0.010	5.256	2.097	0.899
TD-RRH8x20-25	240.000	0.122	-4.397	2.539	152.000	1.547	0.010	5.256	2.097	0.899
Platform Mount [LP 601-1]	0.000	1.827	0.000	0.000	150.000	1.541	0.010	37.680	37.680	0.899
7770.00 w/ Mount Pipe	0.000	0.145	0.000	-5.185	140.000	1.511	0.010	7.020	5.560	0.892
7770.00 w/ Mount Pipe	120.000	0.145	4.490	2.593	140.000	1.511	0.010	7.020	5.560	0.892
7770.00 w/ Mount Pipe	240.000	0.145	-4.490	2.593	140.000	1.511	0.010	7.020	5.560	0.892
P65-16-XLH-RR w/ Mount Pipe	0.000	0.202	0.000	-5.185	140.000	1.511	0.010	9.776	8.235	0.892
P65-16-XLH-RR w/ Mount Pipe	120.000	0.202	4.490	2.593	140.000	1.511	0.010	9.776	8.235	0.892

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
P65-16-XLH-RR w/ Mount Pipe	240.000	0.202	-4.490	2.593	140.000	1.511	0.010	9.776	8.235	0.892
LGP21401	0.000	0.057	0.000	-5.185	140.000	1.511	0.010	3.151	0.767	0.892
LGP21401	120.000	0.057	4.490	2.593	140.000	1.511	0.010	3.151	0.767	0.892
LGP21401	240.000	0.057	-4.490	2.593	140.000	1.511	0.010	3.151	0.767	0.892
RRUS-11	0.000	0.092	0.000	-5.185	140.000	1.511	0.010	3.359	1.550	0.892
RRUS-11	120.000	0.092	4.490	2.593	140.000	1.511	0.010	3.359	1.550	0.892
RRUS-11	240.000	0.092	-4.490	2.593	140.000	1.511	0.010	3.359	1.550	0.892
DC6-48-60-18-8F	240.000	0.092	-4.490	2.593	140.000	1.511	0.010	2.986	4.823	0.892
Platform Mount [LP 403-1]	0.000	2.029	0.000	0.000	140.000	1.511	0.010	28.573	28.573	0.892
OG-860/1920/GPS-A	0.000	0.008	0.000	-4.087	52.000	1.139	0.007	0.500	0.582	0.788
Side Arm Mount [SO 701-1]	0.000	0.087	0.000	-3.587	50.000	1.126	0.007	1.307	2.726	0.788
	Sum Weight:	14.778								

Discrete Appurtenance Pressures - Service $G_H = 1.690$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2
Lightning Rod	240.000	0.031	-0.559	0.323	193.500	1.658	0.011	0.250	0.250
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.124	0.000	-4.646	194.000	1.659	0.011	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	120.000	0.124	4.023	2.323	194.000	1.659	0.011	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.124	-4.023	2.323	194.000	1.659	0.011	14.150	13.175
KRY 112 144/1	0.000	0.022	0.000	-4.646	194.000	1.659	0.011	0.822	0.377
KRY 112 144/1	120.000	0.022	4.023	2.323	194.000	1.659	0.011	0.822	0.377
KRY 112 144/1	240.000	0.022	-4.023	2.323	194.000	1.659	0.011	0.822	0.377
T-Arm Mount [TA 602-3]	0.000	0.774	0.000	0.000	192.000	1.654	0.011	11.590	11.590
742 213 w/ Mount Pipe	0.000	0.049	0.000	-4.970	160.000	1.570	0.010	5.373	4.620
742 213 w/ Mount Pipe	120.000	0.049	4.304	2.485	160.000	1.570	0.010	5.373	4.620
742 213 w/ Mount Pipe	240.000	0.049	-4.304	2.485	160.000	1.570	0.010	5.373	4.620
RRH2X40-AWS	0.000	0.044	0.000	-4.970	160.000	1.570	0.010	2.522	1.589
RRH2X40-AWS	120.000	0.044	4.304	2.485	160.000	1.570	0.010	2.522	1.589
RRH2X40-AWS	240.000	0.044	-4.304	2.485	160.000	1.570	0.010	2.522	1.589
DB-B1-6C-8AB-0Z Junction Box	240.000	0.044	-4.304	2.485	160.000	1.570	0.010	5.600	2.333
LPA-80063/6CF w/ Mount Pipe	0.000	0.104	0.000	-4.970	160.000	1.570	0.010	21.154	21.341
LPA-80063/6CF w/ Mount Pipe	120.000	0.104	4.304	2.485	160.000	1.570	0.010	21.154	21.341
LPA-80080/4CF w/ Mount Pipe	240.000	0.060	-4.304	2.485	160.000	1.570	0.010	5.712	14.455
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.042	0.000	-4.970	160.000	1.570	0.010	7.969	5.801
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.042	4.304	2.485	160.000	1.570	0.010	7.969	5.801
BXA-70063/4CF w/ Mount Pipe	240.000	0.027	-4.304	2.485	160.000	1.570	0.010	5.295	3.470
BXA-171063-12BF w/ Mount Pipe	0.000	0.040	0.000	-4.970	160.000	1.570	0.010	4.971	5.228
BXA-171063-12BF w/ Mount Pipe	120.000	0.040	4.304	2.485	160.000	1.570	0.010	4.971	5.228

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.029	-4.304	2.485	160.000	1.570	0.010	3.179	3.353
FD9R6004/2C-3L	0.000	0.006	0.000	-4.970	160.000	1.570	0.010	0.733	0.169
FD9R6004/2C-3L	120.000	0.006	4.304	2.485	160.000	1.570	0.010	0.733	0.169
FD9R6004/2C-3L	240.000	0.006	-4.304	2.485	160.000	1.570	0.010	0.733	0.169
Platform Mount [LP 303-1]	0.000	1.250	0.000	0.000	160.000	1.570	0.010	14.660	14.660
PCS 1900MHz 4x45W-65MHz	0.000	0.060	0.000	-3.035	154.000	1.553	0.010	2.709	2.611
PCS 1900MHz 4x45W-65MHz	120.000	0.060	2.628	1.517	154.000	1.553	0.010	2.709	2.611
PCS 1900MHz 4x45W-65MHz	240.000	0.060	-2.628	1.517	154.000	1.553	0.010	2.709	2.611
800 MHz RRH	0.000	0.053	0.000	-3.035	154.000	1.553	0.010	2.490	2.068
800 MHz RRH	120.000	0.053	2.628	1.517	154.000	1.553	0.010	2.490	2.068
800 MHz RRH	240.000	0.053	-2.628	1.517	154.000	1.553	0.010	2.490	2.068
Side Arm Mount [SO 102-3]	0.000	0.081	0.000	0.000	154.000	1.553	0.010	3.000	3.000
APXVSPP18-C-A20 w/ Mount Pipe	0.000	0.083	0.000	-5.078	152.000	1.547	0.010	8.498	6.946
APXVSPP18-C-A20 w/ Mount Pipe	120.000	0.083	4.397	2.539	152.000	1.547	0.010	8.498	6.946
APXVSPP18-C-A20 w/ Mount Pipe	240.000	0.083	-4.397	2.539	152.000	1.547	0.010	8.498	6.946
ACU-A20-N	0.000	0.003	0.000	-5.078	152.000	1.547	0.010	0.233	0.408
ACU-A20-N	120.000	0.003	4.397	2.539	152.000	1.547	0.010	0.233	0.408
ACU-A20-N	240.000	0.003	-4.397	2.539	152.000	1.547	0.010	0.233	0.408
800 EXTERNAL NOTCH FILTER	0.000	0.011	0.000	-5.078	152.000	1.547	0.010	0.770	0.375
800 EXTERNAL NOTCH FILTER	120.000	0.011	4.397	2.539	152.000	1.547	0.010	0.770	0.375
800 EXTERNAL NOTCH FILTER	240.000	0.011	-4.397	2.539	152.000	1.547	0.010	0.770	0.375
APXVTM14-C-120 w/ Mount Pipe	0.000	0.077	0.000	-5.078	152.000	1.547	0.010	7.134	4.959
APXVTM14-C-120 w/ Mount Pipe	120.000	0.077	4.397	2.539	152.000	1.547	0.010	7.134	4.959
APXVTM14-C-120 w/ Mount Pipe	240.000	0.077	-4.397	2.539	152.000	1.547	0.010	7.134	4.959
TD-RRH8x20-25	0.000	0.070	0.000	-5.078	152.000	1.547	0.010	4.720	1.700
TD-RRH8x20-25	120.000	0.070	4.397	2.539	152.000	1.547	0.010	4.720	1.700
TD-RRH8x20-25	240.000	0.070	-4.397	2.539	152.000	1.547	0.010	4.720	1.700
Platform Mount [LP 601-1]	0.000	1.122	0.000	0.000	150.000	1.541	0.010	28.470	28.470
7770.00 w/ Mount Pipe	0.000	0.055	0.000	-5.185	140.000	1.511	0.010	6.119	4.254
7770.00 w/ Mount Pipe	120.000	0.055	4.490	2.593	140.000	1.511	0.010	6.119	4.254
7770.00 w/ Mount Pipe	240.000	0.055	-4.490	2.593	140.000	1.511	0.010	6.119	4.254
P65-16-XLH-RR w/ Mount Pipe	0.000	0.079	0.000	-5.185	140.000	1.511	0.010	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	120.000	0.079	4.490	2.593	140.000	1.511	0.010	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	240.000	0.079	-4.490	2.593	140.000	1.511	0.010	8.637	6.362
LGP21401	0.000	0.028	0.000	-5.185	140.000	1.511	0.010	2.576	0.465
LGP21401	120.000	0.028	4.490	2.593	140.000	1.511	0.010	2.576	0.465
LGP21401	240.000	0.028	-4.490	2.593	140.000	1.511	0.010	2.576	0.465
RRUS-11	0.000	0.055	0.000	-5.185	140.000	1.511	0.010	2.942	1.246
RRUS-11	120.000	0.055	4.490	2.593	140.000	1.511	0.010	2.942	1.246
RRUS-11	240.000	0.055	-4.490	2.593	140.000	1.511	0.010	2.942	1.246
DC6-48-60-18-8F	240.000	0.033	-4.490	2.593	140.000	1.511	0.010	2.567	4.317
Platform Mount [LP	0.000	1.500	0.000	0.000	140.000	1.511	0.010	18.850	18.850

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z ksf	C_AA_C Front ft^2	C_AA_C Side ft^2
403-1]									
OG-860/1920/GPS-A	0.000	0.002	0.000	-4.087	52.000	1.139	0.007	0.329	0.404
Side Arm Mount [SO 701-1]	0.000	0.065	0.000	-3.587	50.000	1.126	0.007	0.850	1.670
	Sum Weight:	7.847							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	39.180					
Bracing Weight	0.000					
Total Member Self-Weight	39.180			-0.082	-0.038	
Total Weight	53.829			-0.082	-0.038	
Wind 0 deg - No Ice		-0.154	-34.716	-4259.424	23.837	1.145
Wind 30 deg - No Ice		17.152	-29.988	-3676.843	-2096.040	0.688
Wind 60 deg - No Ice		29.862	-17.225	-2109.076	-3654.295	0.046
Wind 90 deg - No Ice		34.570	0.154	23.794	-4233.395	-0.608
Wind 120 deg - No Ice		30.016	17.491	2150.266	-3678.170	-1.099
Wind 150 deg - No Ice		17.418	30.142	3700.554	-2137.393	-1.296
Wind 180 deg - No Ice		0.154	34.716	4259.260	-23.913	-1.145
Wind 210 deg - No Ice		-17.152	29.988	3676.679	2095.964	-0.688
Wind 240 deg - No Ice		-29.862	17.225	2108.913	3654.219	-0.046
Wind 270 deg - No Ice		-34.570	-0.154	-23.957	4233.319	0.608
Wind 300 deg - No Ice		-30.016	-17.491	-2150.429	3678.094	1.099
Wind 330 deg - No Ice		-17.418	-30.142	-3700.718	2137.317	1.296
Member Ice	7.699					
Total Weight Ice	69.241			0.290	-1.060	
Wind 0 deg - Ice		-0.042	-14.815	-1855.929	5.375	0.606
Wind 30 deg - Ice		7.356	-12.809	-1604.025	-920.340	0.433
Wind 60 deg - Ice		12.783	-7.371	-922.247	-1599.734	0.144
Wind 90 deg - Ice		14.785	0.042	6.725	-1850.765	-0.184
Wind 120 deg - Ice		12.825	7.444	933.972	-1606.169	-0.462
Wind 150 deg - Ice		7.429	12.851	1611.040	-931.485	-0.617
Wind 180 deg - Ice		0.042	14.815	1856.509	-7.495	-0.606
Wind 210 deg - Ice		-7.356	12.809	1604.606	918.220	-0.433
Wind 240 deg - Ice		-12.783	7.371	922.827	1597.615	-0.144
Wind 270 deg - Ice		-14.785	-0.042	-6.144	1848.646	0.184
Wind 300 deg - Ice		-12.825	-7.444	-933.392	1604.049	0.462
Wind 330 deg - Ice		-7.429	-12.851	-1610.460	929.365	0.617
Total Weight	53.829			-0.082	-0.038	
Wind 0 deg - Service		-0.053	-12.013	-1474.031	8.315	0.396
Wind 30 deg - Service		5.935	-10.377	-1272.446	-725.207	0.238
Wind 60 deg - Service		10.333	-5.960	-729.966	-1264.395	0.016
Wind 90 deg - Service		11.962	0.053	8.051	-1464.776	-0.210
Wind 120 deg - Service		10.386	6.052	743.855	-1272.657	-0.380
Wind 150 deg - Service		6.027	10.430	1280.287	-739.516	-0.448
Wind 180 deg - Service		0.053	12.013	1473.610	-8.208	-0.396
Wind 210 deg - Service		-5.935	10.377	1272.025	725.314	-0.238
Wind 240 deg - Service		-10.333	5.960	729.546	1264.502	-0.016
Wind 270 deg - Service		-11.962	-0.053	-8.472	1464.883	0.210
Wind 300 deg - Service		-10.386	-6.052	-744.275	1272.764	0.380
Wind 330 deg - Service		-6.027	-10.430	-1280.707	739.623	0.448

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	191.5 - 172.46	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-3.732	0.025	-0.033
			Max. Mx	11	-1.748	59.688	0.009
			Max. My	8	-1.745	-0.008	-59.697
			Max. Vy	11	-3.828	59.688	0.009
			Max. Vx	2	-3.829	0.021	59.672
			Max. Torque	25			0.018
L2	172.46 - 127.753	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-22.528	-0.179	0.227
			Max. Mx	11	-12.043	598.152	3.732
			Max. My	2	-12.017	3.989	602.216
			Max. Vy	11	-22.191	598.152	3.732
			Max. Vx	2	-22.374	3.989	602.216
			Max. Torque	13			-2.097
L3	127.753 - 83.0833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.843	-0.384	0.008
			Max. Mx	11	-21.763	1649.347	10.656
			Max. My	8	-21.746	-10.463	-1661.408
			Max. Vy	11	-26.347	1649.347	10.656
			Max. Vx	2	-26.531	10.864	1661.404
			Max. Torque	13			-1.053
L4	83.0833 - 40.4567	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-49.076	-0.676	0.072
			Max. Mx	11	-35.097	2824.663	17.439
			Max. My	2	-35.089	17.371	2844.514
			Max. Vy	11	-30.451	2824.663	17.439
			Max. Vx	2	-30.603	17.371	2844.514
			Max. Torque	7			1.229
L5	40.4567 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-70.167	-1.060	-0.290
			Max. Mx	5	-53.812	-4372.160	-24.633
			Max. My	2	-53.812	24.691	4399.072
			Max. Vy	5	34.597	-4372.160	-24.633
			Max. Vx	2	-34.743	24.691	4399.072
			Max. Torque	7			1.280

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	21	70.167	-0.042	-14.815
	Max. H_x	11	53.829	34.570	0.154
	Max. H_z	2	53.829	0.154	34.716
	Max. M_x	2	4399.072	0.154	34.716
	Max. M_z	5	4372.160	-34.570	-0.154
	Max. Torsion	7	1.280	-17.418	-30.142
	Min. Vert	1	53.829	0.000	0.000
	Min. H_x	5	53.829	-34.570	-0.154
	Min. H_z	8	53.829	-0.154	-34.716
	Min. M_x	8	-4398.903	-0.154	-34.716
	Min. M_z	11	-4372.097	34.570	0.154
	Min. Torsion	13	-1.280	17.418	30.142

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

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	53.829	0.000	0.000	-0.082	-0.038	0.000
Dead+Wind 0 deg - No Ice	53.829	-0.154	-34.716	-4399.072	24.691	1.136
Dead+Wind 30 deg - No Ice	53.829	17.152	-29.988	-3797.438	-2164.692	0.685
Dead+Wind 60 deg - No Ice	53.829	29.862	-17.225	-2178.237	-3774.088	0.047
Dead+Wind 90 deg - No Ice	53.829	34.570	0.154	24.633	-4372.160	-0.604
Dead+Wind 120 deg - No Ice	53.829	30.016	17.491	2220.822	-3798.700	-1.089
Dead+Wind 150 deg - No Ice	53.829	17.418	30.142	3821.886	-2207.436	-1.280
Dead+Wind 180 deg - No Ice	53.829	0.154	34.716	4398.903	-24.734	-1.128
Dead+Wind 210 deg - No Ice	53.829	-17.152	29.988	3797.263	2164.640	-0.676
Dead+Wind 240 deg - No Ice	53.829	-29.862	17.225	2178.066	3774.027	-0.047
Dead+Wind 270 deg - No Ice	53.829	-34.570	-0.154	-24.794	4372.097	0.595
Dead+Wind 300 deg - No Ice	53.829	-30.016	-17.491	-2220.977	3798.646	1.081
Dead+Wind 330 deg - No Ice	53.829	-17.418	-30.142	-3822.045	2207.392	1.280
Dead+Ice+Temp	70.167	0.000	0.000	0.290	-1.060	0.000
Dead+Wind 0 deg+Ice+Temp	70.167	-0.042	-14.815	-1954.010	5.673	0.595
Dead+Wind 30 deg+Ice+Temp	70.167	7.356	-12.809	-1688.792	-968.933	0.427
Dead+Wind 60 deg+Ice+Temp	70.167	12.783	-7.371	-970.982	-1684.217	0.144
Dead+Wind 90 deg+Ice+Temp	70.167	14.785	0.042	7.080	-1948.512	-0.177
Dead+Wind 120 deg+Ice+Temp	70.167	12.825	7.444	983.319	-1691.003	-0.451
Dead+Wind 150 deg+Ice+Temp	70.167	7.429	12.851	1696.153	-980.694	-0.603
Dead+Wind 180 deg+Ice+Temp	70.167	0.042	14.815	1954.583	-7.911	-0.593
Dead+Wind 210 deg+Ice+Temp	70.167	-7.356	12.809	1689.364	966.693	-0.425
Dead+Wind 240 deg+Ice+Temp	70.167	-12.783	7.371	971.556	1681.974	-0.144
Dead+Wind 270 deg+Ice+Temp	70.167	-14.785	-0.042	-6.504	1946.269	0.176
Dead+Wind 300 deg+Ice+Temp	70.167	-12.825	-7.444	-982.742	1688.762	0.450
Dead+Wind 330 deg+Ice+Temp	70.167	-7.429	-12.851	-1695.576	978.455	0.603
Dead+Wind 0 deg - Service	53.829	-0.053	-12.013	-1523.887	8.533	0.396
Dead+Wind 30 deg - Service	53.829	5.935	-10.377	-1315.459	-749.852	0.238
Dead+Wind 60 deg - Service	53.829	10.333	-5.960	-754.574	-1307.324	0.016
Dead+Wind 90 deg - Service	53.829	11.962	0.053	8.477	-1514.504	-0.210
Dead+Wind 120 deg - Service	53.829	10.386	6.052	769.231	-1315.880	-0.380
Dead+Wind 150 deg - Service	53.829	6.027	10.430	1323.846	-764.678	-0.447
Dead+Wind 180 deg - Service	53.829	0.053	12.013	1523.717	-8.590	-0.395
Dead+Wind 210 deg - Service	53.829	-5.935	10.377	1315.288	749.794	-0.237
Dead+Wind 240 deg - Service	53.829	-10.333	5.960	754.404	1307.264	-0.016
Dead+Wind 270 deg - Service	53.829	-11.962	-0.053	-8.646	1514.444	0.209
Dead+Wind 300 deg - Service	53.829	-10.386	-6.052	-769.400	1315.822	0.379
Dead+Wind 330 deg - Service	53.829	-6.027	-10.430	-1324.015	764.620	0.447

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-53.829	0.000	0.000	53.829	0.000	0.000%
2	-0.154	-53.829	-34.716	0.154	53.829	34.716	0.000%
3	17.152	-53.829	-29.988	-17.152	53.829	29.988	0.000%
4	29.862	-53.829	-17.225	-29.862	53.829	17.225	0.000%
5	34.570	-53.829	0.154	-34.570	53.829	-0.154	0.000%
6	30.016	-53.829	17.491	-30.016	53.829	-17.491	0.000%
7	17.418	-53.829	30.142	-17.418	53.829	-30.142	0.000%
8	0.154	-53.829	34.716	-0.154	53.829	-34.716	0.000%
9	-17.152	-53.829	29.988	17.152	53.829	-29.988	0.000%
10	-29.862	-53.829	17.225	29.862	53.829	-17.225	0.000%
11	-34.570	-53.829	-0.154	34.570	53.829	0.154	0.000%
12	-30.016	-53.829	-17.491	30.016	53.829	17.491	0.000%
13	-17.418	-53.829	-30.142	17.418	53.829	30.142	0.000%
14	0.000	-70.167	0.000	0.000	70.167	0.000	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
15	-0.042	-70.167	-14.815	0.042	70.167	14.815	0.000%
16	7.356	-70.167	-12.809	-7.356	70.167	12.809	0.000%
17	12.783	-70.167	-7.371	-12.783	70.167	7.371	0.000%
18	14.785	-70.167	0.042	-14.785	70.167	-0.042	0.000%
19	12.825	-70.167	7.444	-12.825	70.167	-7.444	0.000%
20	7.429	-70.167	12.851	-7.429	70.167	-12.851	0.000%
21	0.042	-70.167	14.815	-0.042	70.167	-14.815	0.000%
22	-7.356	-70.167	12.809	7.356	70.167	-12.809	0.000%
23	-12.783	-70.167	7.371	12.783	70.167	-7.371	0.000%
24	-14.785	-70.167	-0.042	14.785	70.167	0.042	0.000%
25	-12.825	-70.167	-7.444	12.825	70.167	7.444	0.000%
26	-7.429	-70.167	-12.851	7.429	70.167	12.851	0.000%
27	-0.053	-53.829	-12.013	0.053	53.829	12.013	0.000%
28	5.935	-53.829	-10.377	-5.935	53.829	10.377	0.000%
29	10.333	-53.829	-5.960	-10.333	53.829	5.960	0.000%
30	11.962	-53.829	0.053	-11.962	53.829	-0.053	0.000%
31	10.386	-53.829	6.052	-10.386	53.829	-6.052	0.000%
32	6.027	-53.829	10.430	-6.027	53.829	-10.430	0.000%
33	0.053	-53.829	12.013	-0.053	53.829	-12.013	0.000%
34	-5.935	-53.829	10.377	5.935	53.829	-10.377	0.000%
35	-10.333	-53.829	5.960	10.333	53.829	-5.960	0.000%
36	-11.962	-53.829	-0.053	11.962	53.829	0.053	0.000%
37	-10.386	-53.829	-6.052	10.386	53.829	6.052	0.000%
38	-6.027	-53.829	-10.430	6.027	53.829	10.430	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	0.00029118
3	Yes	5	0.00000001	0.00044430
4	Yes	5	0.00000001	0.00043807
5	Yes	4	0.00000001	0.00017374
6	Yes	5	0.00000001	0.00044063
7	Yes	5	0.00000001	0.00046025
8	Yes	4	0.00000001	0.00060631
9	Yes	5	0.00000001	0.00043372
10	Yes	5	0.00000001	0.00043848
11	Yes	4	0.00000001	0.00043281
12	Yes	5	0.00000001	0.00045803
13	Yes	5	0.00000001	0.00043993
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00021895
16	Yes	5	0.00000001	0.00037200
17	Yes	5	0.00000001	0.00036847
18	Yes	5	0.00000001	0.00021790
19	Yes	5	0.00000001	0.00037062
20	Yes	5	0.00000001	0.00037910
21	Yes	5	0.00000001	0.00021914
22	Yes	5	0.00000001	0.00036593
23	Yes	5	0.00000001	0.00036845
24	Yes	5	0.00000001	0.00021773
25	Yes	5	0.00000001	0.00037714
26	Yes	5	0.00000001	0.00036969
27	Yes	4	0.00000001	0.00008039

28	Yes	4	0.00000001	0.00077023
29	Yes	4	0.00000001	0.00074662
30	Yes	4	0.00000001	0.00006049
31	Yes	4	0.00000001	0.00074459
32	Yes	4	0.00000001	0.00081831
33	Yes	4	0.00000001	0.00009633
34	Yes	4	0.00000001	0.00073101
35	Yes	4	0.00000001	0.00074836
36	Yes	4	0.00000001	0.00007226
37	Yes	4	0.00000001	0.00081018
38	Yes	4	0.00000001	0.00074285

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	43.107	38	2.128	0.004
L2	175.543 - 127.753	36.157	38	2.011	0.004
L3	132.253 - 83.0833	19.693	38	1.530	0.001
L4	88.9167 - 40.4567	8.417	38	0.927	0.001
L5	47.54 - 0	2.356	38	0.456	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.000	(4) RV65-18-02DPL2 w/ Mount Pipe	38	43.107	2.128	0.004	22980
191.500	Lightning Rod	38	43.107	2.128	0.004	22980
160.000	742 213 w/ Mount Pipe	38	29.747	1.865	0.003	5517
154.000	PCS 1900MHz 4x45W-65MHz	38	27.407	1.800	0.003	5055
150.000	APXVSPP18-C-A20 w/ Mount Pipe	38	25.893	1.754	0.003	4788
140.000	7770.00 w/ Mount Pipe	38	22.291	1.631	0.002	4229
50.000	OG-860/1920/GPS-A	38	2.590	0.482	0.000	4515

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	124.094	13	6.131	0.012
L2	175.543 - 127.753	104.123	13	5.796	0.012
L3	132.253 - 83.0833	56.770	13	4.411	0.004
L4	88.9167 - 40.4567	24.282	13	2.673	0.001
L5	47.54 - 0	6.799	13	1.317	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.000	(4) RV65-18-02DPL2 w/ Mount Pipe	13	124.094	6.131	0.012	8148
191.500	Lightning Rod	13	124.094	6.131	0.012	8148
160.000	742 213 w/ Mount Pipe	13	85.695	5.377	0.010	1950
154.000	PCS 1900MHz 4x45W-65MHz	13	78.964	5.189	0.008	1786
150.000	APXVSPP18-C-A20 w/ Mount Pipe	13	74.611	5.057	0.007	1691
140.000	7770.00 w/ Mount Pipe	13	64.246	4.704	0.005	1490
50.000	OG-860/1920/GPS-A	13	7.475	1.390	0.001	1567

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	191.5 - 190.436	TP20.46x15.5x0.188	19.040	0.000	0.0	39.0000	9.278	-0.987	361.833	0.003
	190.436 - 189.372					39.0000	9.443	-1.037	368.265	0.003
	189.372 - 188.309					39.0000	9.608	-1.088	374.697	0.003
	188.309 - 187.245					39.0000	9.773	-1.139	381.129	0.003
	187.245 - 186.181					39.0000	9.937	-1.192	387.561	0.003
	186.181 - 185.117					39.0000	10.102	-1.244	393.993	0.003
	185.117 - 184.054					39.0000	10.267	-1.297	400.424	0.003
	184.054 - 182.99					39.0000	10.432	-1.351	406.856	0.003
	182.99 - 181.926					39.0000	10.597	-1.406	413.288	0.003
	181.926 - 180.862					39.0000	10.762	-1.461	419.720	0.003
	180.862 - 179.798					39.0000	10.927	-1.515	426.152	0.004
	179.798 - 178.735					39.0000	11.092	-1.571	432.584	0.004
	178.735 - 177.671					39.0000	11.257	-1.629	439.016	0.004
	177.671 - 176.607					39.0000	11.422	-1.687	445.448	0.004
	176.607 - 175.543					39.0000	11.587	-1.745	451.880	0.004
	175.543 - 172.46					39.0000	12.065	-0.819	470.522	0.002
L2	175.543 - 172.46	TP31.6x19.282x0.313	47.790	0.000	0.0	39.0000	19.603	-1.296	764.534	0.002
	172.46 - 170.226					39.0000	20.174	-2.325	786.806	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	170.226 - 167.993					39.0000	20.746	-2.540	809.078	0.003
	167.993 - 165.759					39.0000	21.317	-2.759	831.350	0.003
	165.759 - 163.525					39.0000	21.888	-2.982	853.622	0.003
	163.525 - 161.291					39.0000	22.459	-3.210	875.894	0.004
	161.291 - 159.058					39.0000	23.030	-4.910	898.166	0.005
	159.058 - 156.824					39.0000	23.601	-5.153	920.438	0.006
	156.824 - 154.59					39.0000	24.172	-5.402	942.710	0.006
	154.59 - 152.357					39.0000	24.743	-5.995	964.982	0.006
	152.357 - 150.123					39.0000	25.314	-6.256	987.254	0.006
	150.123 - 147.889					39.0000	25.885	-8.013	1009.530	0.008
	147.889 - 145.656					39.0000	26.456	-8.292	1031.800	0.008
	145.656 - 143.422					39.0000	27.027	-8.577	1054.070	0.008
	143.422 - 141.188					39.0000	27.598	-8.868	1076.340	0.008
	141.188 - 138.954					39.0000	28.170	-11.057	1098.610	0.010
	138.954 - 136.721					39.0000	28.741	-11.367	1120.890	0.010
	136.721 - 134.487					39.0000	29.312	-11.682	1143.160	0.010
	134.487 - 132.253					39.0000	29.883	-12.004	1165.430	0.010
	132.253 - 127.753					39.0000	31.033	-5.637	1210.300	0.005
L3	132.253 - 127.753	TP42.19x29.815x0.438	49.170	0.000	0.0	39.0000	42.367	-7.620	1652.320	0.005
	127.753 - 125.596					39.0000	43.121	-13.678	1681.730	0.008
	125.596 - 123.438					39.0000	43.875	-14.102	1711.130	0.008
	123.438 - 121.281					39.0000	44.629	-14.533	1740.540	0.008
	121.281 - 119.123					39.0000	45.383	-14.971	1769.950	0.008
	119.123 - 116.965					39.0000	46.137	-15.414	1799.360	0.009
	116.965 - 114.808					39.0000	46.891	-15.864	1828.760	0.009
	114.808 - 112.65					39.0000	47.645	-16.320	1858.170	0.009
	112.65 - 110.493					39.0000	48.400	-16.782	1887.580	0.009
	110.493 - 108.335					39.0000	49.153	-17.251	1916.990	0.009
	108.335 - 106.177					39.0000	49.908	-17.725	1946.400	0.009
	106.177 - 104.02					39.0000	50.662	-18.206	1975.800	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	104.02 - 101.862					39.0000	51.416	-18.693	2005.210	0.009
	101.862 - 99.7046					39.0000	52.170	-19.185	2034.620	0.009
	99.7046 - 97.547					39.0000	52.924	-19.684	2064.030	0.010
	97.547 - 95.3894					39.0000	53.678	-20.188	2093.430	0.010
	95.3894 - 93.2319					39.0000	54.432	-20.699	2122.840	0.010
	93.2319 - 91.0743					39.0000	55.186	-21.215	2152.250	0.010
	91.0743 - 88.9167					39.0000	55.940	-21.738	2181.660	0.010
	88.9167 - 83.0833					39.0000	57.979	-11.563	2261.160	0.005
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	48.460	0.000	0.0	39.0000	64.878	-12.813	2530.240	0.005
	83.0833 - 81.1087					39.0000	65.702	-24.929	2562.380	0.010
	81.1087 - 79.1341					39.0000	66.526	-25.477	2594.510	0.010
	79.1341 - 77.1594					39.0000	67.350	-26.031	2626.650	0.010
	77.1594 - 75.1848					39.0000	68.174	-26.590	2658.790	0.010
	75.1848 - 73.2102					39.0000	68.998	-27.155	2690.930	0.010
	73.2102 - 71.2356					39.0000	69.822	-27.726	2723.070	0.010
	71.2356 - 69.2609					39.0000	70.646	-28.303	2755.200	0.010
	69.2609 - 67.2863					39.0000	71.470	-28.885	2787.340	0.010
	67.2863 - 65.3117					39.0000	72.294	-29.473	2819.480	0.010
	65.3117 - 63.337					39.0000	73.118	-30.066	2851.620	0.011
	63.337 - 61.3624					39.0000	73.942	-30.666	2883.760	0.011
	61.3624 - 59.3878					39.0000	74.767	-31.270	2915.890	0.011
	59.3878 - 57.4131					39.0000	75.591	-31.881	2948.030	0.011
	57.4131 - 55.4385					39.0000	76.415	-32.497	2980.170	0.011
	55.4385 - 53.4639					39.0000	77.239	-33.119	3012.310	0.011
	53.4639 - 51.4893					39.0000	78.063	-33.746	3044.450	0.011
	51.4893 - 49.5146					39.0000	78.887	-34.445	3076.580	0.011
	49.5146 - 47.54					39.0000	79.711	-35.084	3108.720	0.011
	47.54 - 40.4567					39.0000	82.667	-19.894	3224.010	0.006
L5	47.54 - 40.4567	TP62x49.727x0.5	47.540	0.000	0.0	39.0000	81.026	-19.371	3160.010	0.006
	40.4567 - 38.3274					39.0000	81.898	-39.986	3194.030	0.013
	38.3274 - 36.1981					39.0000	82.771	-40.700	3228.050	0.013
	36.1981 -					39.0000	82.771	-40.738	3228.050	0.013

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	34.0688									
	34.0688 - 31.9395					39.0000	83.643	-41.458	3262.070	0.013
	31.9395 - 29.8102					39.0000	84.515	-42.184	3296.090	0.013
	29.8102 - 27.6809					39.0000	85.388	-42.917	3330.110	0.013
	27.6809 - 25.5516					39.0000	86.260	-43.657	3364.140	0.013
	25.5516 - 23.4223					39.0000	87.132	-44.402	3398.160	0.013
	23.4223 - 21.293					39.0000	88.005	-45.154	3432.180	0.013
	21.293 - 19.1637					39.0000	88.877	-45.913	3466.200	0.013
	19.1637 - 17.0344					39.0000	89.749	-46.677	3500.220	0.013
	17.0344 - 14.9051					39.0000	90.622	-47.448	3534.250	0.013
	14.9051 - 12.7758					39.0000	91.494	-48.226	3568.270	0.014
	12.7758 - 10.6465					39.0000	92.366	-49.010	3602.290	0.014
	10.6465 - 8.51719					39.0000	93.239	-49.800	3636.310	0.014
	8.51719 - 6.38789					39.0000	94.111	-50.596	3670.330	0.014
	6.38789 - 4.2586					39.0000	94.983	-51.399	3704.350	0.014
	4.2586 - 2.1293					39.0000	95.856	-52.209	3738.380	0.014
	2.1293 - 0					39.0000	96.728	-53.025	3772.400	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	191.5 - 190.436	TP20.46x15.5x0.188	9.054	3.0568	39.0000	0.078	0.000	0.0000	39.0000	0.000
	190.436 - 189.372		12.273	3.9993	39.0000	0.103	0.000	0.0000	39.0000	0.000
	189.372 - 188.309		15.550	4.8935	39.0000	0.125	0.000	0.0000	39.0000	0.000
	188.309 - 187.245		18.885	5.7431	39.0000	0.147	0.000	0.0000	39.0000	0.000
	187.245 - 186.181		22.279	6.5512	39.0000	0.168	0.000	0.0000	39.0000	0.000
	186.181 - 185.117		25.734	7.3207	39.0000	0.188	0.000	0.0000	39.0000	0.000
	185.117 - 184.054		29.251	8.0544	39.0000	0.207	0.000	0.0000	39.0000	0.000
	184.054 - 182.99		32.829	8.7548	39.0000	0.224	0.000	0.0000	39.0000	0.000
	182.99 - 181.926		36.471	9.4240	39.0000	0.242	0.000	0.0000	39.0000	0.000
	181.926 -		40.176	10.0641	39.0000	0.258	0.000	0.0000	39.0000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	180.862									
	180.862 - 179.798		43.948	10.6774	39.0000	0.274	0.000	0.0000	39.0000	0.000
	179.798 - 178.735		47.784	11.2652	39.0000	0.289	0.000	0.0000	39.0000	0.000
	178.735 - 177.671		51.688	11.8292	39.0000	0.303	0.000	0.0000	39.0000	0.000
	177.671 - 176.607		55.658	12.3709	39.0000	0.317	0.000	0.0000	39.0000	0.000
	176.607 - 175.543		59.697	12.8917	39.0000	0.331	0.000	0.0000	39.0000	0.000
	175.543 - 172.46		28.273	5.6293	39.0000	0.144	0.000	0.0000	39.0000	0.000
L2	175.543 - 172.46	TP31.6x19.282x0.313	43.556	5.5101	39.0000	0.141	0.000	0.0000	39.0000	0.000
	172.46 - 170.226		81.050	9.6768	39.0000	0.248	0.000	0.0000	39.0000	0.000
	170.226 - 167.993		90.644	10.2304	39.0000	0.262	0.000	0.0000	39.0000	0.000
	167.993 - 165.759		100.618	10.7516	39.0000	0.276	0.000	0.0000	39.0000	0.000
	165.759 - 163.525		110.979	11.2438	39.0000	0.288	0.000	0.0000	39.0000	0.000
	163.525 - 161.291		121.735	11.7100	39.0000	0.300	0.000	0.0000	39.0000	0.000
	161.291 - 159.058		138.974	12.7093	39.0000	0.326	0.000	0.0000	39.0000	0.000
	159.058 - 156.824		164.958	14.3597	39.0000	0.368	0.000	0.0000	39.0000	0.000
	156.824 - 154.59		191.356	15.8749	39.0000	0.407	0.000	0.0000	39.0000	0.000
	154.59 - 152.357		219.648	17.3856	39.0000	0.446	0.000	0.0000	39.0000	0.000
	152.357 - 150.123		248.897	18.8166	39.0000	0.482	0.000	0.0000	39.0000	0.000
	150.123 - 147.889		292.437	21.1378	39.0000	0.542	0.000	0.0000	39.0000	0.000
	147.889 - 145.656		331.734	22.9485	39.0000	0.588	0.000	0.0000	39.0000	0.000
	145.656 - 143.422		371.467	24.6165	39.0000	0.631	0.000	0.0000	39.0000	0.000
	143.422 - 141.188		411.638	26.1553	39.0000	0.671	0.000	0.0000	39.0000	0.000
	141.188 - 138.954		455.992	27.8044	39.0000	0.713	0.000	0.0000	39.0000	0.000
	138.954 - 136.721		505.034	29.5768	39.0000	0.758	0.000	0.0000	39.0000	0.000
	136.721 - 134.487		554.522	31.2154	39.0000	0.800	0.000	0.0000	39.0000	0.000
	134.487 - 132.253		604.460	32.7319	39.0000	0.839	0.000	0.0000	39.0000	0.000
	132.253 - 127.753		307.566	15.4370	39.0000	0.396	0.000	0.0000	39.0000	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	399.055	15.1095	39.0000	0.387	0.000	0.0000	39.0000	0.000
	127.753 - 125.596		756.332	27.6375	39.0000	0.709	0.000	0.0000	39.0000	0.000
	125.596 - 123.438		806.462	28.4584	39.0000	0.730	0.000	0.0000	39.0000	0.000
	123.438 -		857.017	29.2223	39.0000	0.749	0.000	0.0000	39.0000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	121.281									
	121.281 - 119.123		908.000	29.9336	39.0000	0.768	0.000	0.0000	39.0000	0.000
	119.123 - 116.965		959.400	30.5963	39.0000	0.785	0.000	0.0000	39.0000	0.000
	116.965 - 114.808		1011.24 2	31.2141	39.0000	0.800	0.000	0.0000	39.0000	0.000
	114.808 - 112.65		1063.50 8	31.7902	39.0000	0.815	0.000	0.0000	39.0000	0.000
	112.65 - 110.493		1116.20 8	32.3277	39.0000	0.829	0.000	0.0000	39.0000	0.000
	110.493 - 108.335		1169.35 0	32.8294	39.0000	0.842	0.000	0.0000	39.0000	0.000
	108.335 - 106.177		1222.92 5	33.2978	39.0000	0.854	0.000	0.0000	39.0000	0.000
	106.177 - 104.02		1276.95 0	33.7353	39.0000	0.865	0.000	0.0000	39.0000	0.000
	104.02 - 101.862		1331.40 8	34.1441	39.0000	0.875	0.000	0.0000	39.0000	0.000
	101.862 - 99.7046		1386.31 7	34.5261	39.0000	0.885	0.000	0.0000	39.0000	0.000
	99.7046 - 97.547		1441.67 5	34.8832	39.0000	0.894	0.000	0.0000	39.0000	0.000
	97.547 - 95.3894		1497.48 3	35.2170	39.0000	0.903	0.000	0.0000	39.0000	0.000
	95.3894 - 93.2319		1553.74 2	35.5292	39.0000	0.911	0.000	0.0000	39.0000	0.000
	93.2319 - 91.0743		1610.45 8	35.8212	39.0000	0.918	0.000	0.0000	39.0000	0.000
	91.0743 - 88.9167		1667.62 5	36.0944	39.0000	0.925	0.000	0.0000	39.0000	0.000
	88.9167 - 83.0833		882.117	17.7668	39.0000	0.456	0.000	0.0000	39.0000	0.000
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	942.700	17.3598	39.0000	0.445	0.000	0.0000	39.0000	0.000
	83.0833 - 81.1087		1878.89 2	33.7321	39.0000	0.865	0.000	0.0000	39.0000	0.000
	81.1087 - 79.1341		1933.32 5	33.8498	39.0000	0.868	0.000	0.0000	39.0000	0.000
	79.1341 - 77.1594		1988.13 3	33.9579	39.0000	0.871	0.000	0.0000	39.0000	0.000
	77.1594 - 75.1848		2043.30 0	34.0568	39.0000	0.873	0.000	0.0000	39.0000	0.000
	75.1848 - 73.2102		2098.83 3	34.1471	39.0000	0.876	0.000	0.0000	39.0000	0.000
	73.2102 - 71.2356		2154.74 2	34.2294	39.0000	0.878	0.000	0.0000	39.0000	0.000
	71.2356 - 69.2609		2211.00 8	34.3042	39.0000	0.880	0.000	0.0000	39.0000	0.000
	69.2609 - 67.2863		2267.64 2	34.3719	39.0000	0.881	0.000	0.0000	39.0000	0.000
	67.2863 - 65.3117		2324.64 2	34.4329	39.0000	0.883	0.000	0.0000	39.0000	0.000
	65.3117 - 63.337		2382.01 7	34.4876	39.0000	0.884	0.000	0.0000	39.0000	0.000
	63.337 - 61.3624		2439.75 0	34.5364	39.0000	0.886	0.000	0.0000	39.0000	0.000
	61.3624 - 59.3878		2497.85 0	34.5797	39.0000	0.887	0.000	0.0000	39.0000	0.000
	59.3878 -		2556.31	34.6178	39.0000	0.888	0.000	0.0000	39.0000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	57.4131		7							
	57.4131 - 55.4385		2615.150	34.6509	39.0000	0.888	0.000	0.0000	39.0000	0.000
	55.4385 - 53.4639		2674.350	34.6794	39.0000	0.889	0.000	0.0000	39.0000	0.000
	53.4639 - 51.4893		2733.917	34.7036	39.0000	0.890	0.000	0.0000	39.0000	0.000
	51.4893 - 49.5146		2794.100	34.7268	39.0000	0.890	0.000	0.0000	39.0000	0.000
	49.5146 - 47.54		2854.500	34.7442	39.0000	0.891	0.000	0.0000	39.0000	0.000
	47.54 - 40.4567		1583.792	17.9171	39.0000	0.459	0.000	0.0000	39.0000	0.000
L5	47.54 - 40.4567	TP62x49.727x0.5	1490.783	17.5584	39.0000	0.450	0.000	0.0000	39.0000	0.000
	40.4567 - 38.3274		3141.725	36.2153	39.0000	0.929	0.000	0.0000	39.0000	0.000
	38.3274 - 36.1981		3209.233	36.2142	39.0000	0.929	0.000	0.0000	39.0000	0.000
	36.1981 - 34.0688		3209.233	36.2142	39.0000	0.929	0.000	0.0000	39.0000	0.000
	34.0688 - 31.9395		3277.108	36.2091	39.0000	0.928	0.000	0.0000	39.0000	0.000
	31.9395 - 29.8102		3345.333	36.2004	39.0000	0.928	0.000	0.0000	39.0000	0.000
	29.8102 - 27.6809		3413.933	36.1882	39.0000	0.928	0.000	0.0000	39.0000	0.000
	27.6809 - 25.5516		3482.892	36.1729	39.0000	0.928	0.000	0.0000	39.0000	0.000
	25.5516 - 23.4223		3552.217	36.1546	39.0000	0.927	0.000	0.0000	39.0000	0.000
	23.4223 - 21.293		3621.917	36.1335	39.0000	0.927	0.000	0.0000	39.0000	0.000
	21.293 - 19.1637		3691.983	36.1099	39.0000	0.926	0.000	0.0000	39.0000	0.000
	19.1637 - 17.0344		3762.425	36.0839	39.0000	0.925	0.000	0.0000	39.0000	0.000
	17.0344 - 14.9051		3833.250	36.0557	39.0000	0.925	0.000	0.0000	39.0000	0.000
	14.9051 - 12.7758		3904.450	36.0254	39.0000	0.924	0.000	0.0000	39.0000	0.000
	12.7758 - 10.6465		3976.033	35.9933	39.0000	0.923	0.000	0.0000	39.0000	0.000
	10.6465 - 8.51719		4048.000	35.9594	39.0000	0.922	0.000	0.0000	39.0000	0.000
	8.51719 - 6.38789		4120.358	35.9240	39.0000	0.921	0.000	0.0000	39.0000	0.000
	6.38789 - 4.2586		4193.100	35.8870	39.0000	0.920	0.000	0.0000	39.0000	0.000
	4.2586 - 2.1293		4266.233	35.8486	39.0000	0.919	0.000	0.0000	39.0000	0.000
	2.1293 - 0		4339.758	35.8090	39.0000	0.918	0.000	0.0000	39.0000	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	191.5 - 190.436	TP20.46x15.5x0.188	3.000	0.3233	26.0000	0.025	0.000	0.0000	26.0000	0.000
	190.436 - 189.372		3.053	0.3234	26.0000	0.025	0.000	0.0001	26.0000	0.000
	189.372 - 188.309		3.108	0.3235	26.0000	0.025	0.001	0.0001	26.0000	0.000
	188.309 - 187.245		3.164	0.3237	26.0000	0.025	0.001	0.0001	26.0000	0.000
	187.245 - 186.181		3.220	0.3240	26.0000	0.025	0.001	0.0001	26.0000	0.000
	186.181 - 185.117		3.277	0.3244	26.0000	0.025	0.001	0.0002	26.0000	0.000
	185.117 - 184.054		3.335	0.3249	26.0000	0.025	0.008	0.0011	26.0000	0.000
	184.054 - 182.99		3.394	0.3254	26.0000	0.025	0.008	0.0010	26.0000	0.000
	182.99 - 181.926		3.454	0.3259	26.0000	0.025	0.008	0.0010	26.0000	0.000
	181.926 - 180.862		3.514	0.3266	26.0000	0.025	0.008	0.0009	26.0000	0.000
	180.862 - 179.798		3.576	0.3273	26.0000	0.025	0.013	0.0015	26.0000	0.000
	179.798 - 178.735		3.638	0.3280	26.0000	0.025	0.013	0.0015	26.0000	0.000
	178.735 - 177.671		3.701	0.3288	26.0000	0.025	0.013	0.0014	26.0000	0.000
	177.671 - 176.607		3.765	0.3296	26.0000	0.025	0.013	0.0014	26.0000	0.000
	176.607 - 175.543		3.829	0.3305	26.0000	0.025	0.013	0.0014	26.0000	0.000
	175.543 - 172.46		1.645	0.1364	26.0000	0.010	0.005	0.0005	26.0000	0.000
L2	175.543 - 172.46	TP31.6x19.282x0.313	2.398	0.1223	26.0000	0.009	0.008	0.0005	26.0000	0.000
	172.46 - 170.226		4.208	0.2086	26.0000	0.016	0.017	0.0010	26.0000	0.000
	170.226 - 167.993		4.377	0.2110	26.0000	0.016	0.018	0.0010	26.0000	0.000
	167.993 - 165.759		4.548	0.2134	26.0000	0.016	0.019	0.0010	26.0000	0.000
	165.759 - 163.525		4.723	0.2158	26.0000	0.017	0.020	0.0010	26.0000	0.000
	163.525 - 161.291		4.902	0.2182	26.0000	0.017	0.021	0.0010	26.0000	0.000
	161.291 - 159.058		11.541	0.5011	26.0000	0.039	2.097	0.0931	26.0000	0.004
	159.058 - 156.824		11.724	0.4968	26.0000	0.038	2.097	0.0886	26.0000	0.003
	156.824 - 154.59		11.910	0.4927	26.0000	0.038	2.095	0.0844	26.0000	0.003
	154.59 - 152.357		12.999	0.5254	26.0000	0.040	2.093	0.0805	26.0000	0.003
	152.357 - 150.123		13.191	0.5211	26.0000	0.040	2.091	0.0768	26.0000	0.003
	150.123 - 147.889		17.499	0.6760	26.0000	0.052	2.089	0.0734	26.0000	0.003
	147.889 - 145.656		17.693	0.6688	26.0000	0.051	2.086	0.0702	26.0000	0.003
	145.656 - 143.422		17.889	0.6619	26.0000	0.051	2.084	0.0672	26.0000	0.003

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 $\frac{f_{vt}}{F_{vt}}$
	143.422 - 141.188		18.088	0.6554	26.0000	0.050	2.082	0.0643	26.0000	0.002
	141.188 - 138.954		21.863	0.7761	26.0000	0.060	2.079	0.0617	26.0000	0.002
	138.954 - 136.721		22.062	0.7676	26.0000	0.059	1.030	0.0294	26.0000	0.001
	136.721 - 134.487		22.263	0.7595	26.0000	0.058	1.028	0.0282	26.0000	0.001
	134.487 - 132.253		22.466	0.7518	26.0000	0.058	1.025	0.0270	26.0000	0.001
	132.253 - 127.753		10.108	0.3257	26.0000	0.025	0.446	0.0109	26.0000	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	12.848	0.3033	26.0000	0.023	0.576	0.0106	26.0000	0.000
	127.753 - 125.596		23.150	0.5369	26.0000	0.041	1.020	0.0181	26.0000	0.001
	125.596 - 123.438		23.346	0.5321	26.0000	0.041	1.022	0.0175	26.0000	0.001
	123.438 - 121.281		23.543	0.5275	26.0000	0.041	1.023	0.0169	26.0000	0.001
	121.281 - 119.123		23.741	0.5231	26.0000	0.040	1.025	0.0164	26.0000	0.001
	119.123 - 116.965		23.940	0.5189	26.0000	0.040	1.027	0.0159	26.0000	0.001
	116.965 - 114.808		24.140	0.5148	26.0000	0.040	1.029	0.0154	26.0000	0.001
	114.808 - 112.65		24.342	0.5109	26.0000	0.039	1.031	0.0150	26.0000	0.001
	112.65 - 110.493		24.544	0.5071	26.0000	0.039	1.033	0.0145	26.0000	0.001
	110.493 - 108.335		24.747	0.5035	26.0000	0.039	1.035	0.0141	26.0000	0.001
	108.335 - 106.177		24.951	0.5000	26.0000	0.038	1.037	0.0137	26.0000	0.001
	106.177 - 104.02		25.157	0.4966	26.0000	0.038	1.039	0.0133	26.0000	0.001
	104.02 - 101.862		25.363	0.4933	26.0000	0.038	1.041	0.0130	26.0000	0.000
	101.862 - 99.7046		25.571	0.4901	26.0000	0.038	1.043	0.0126	26.0000	0.000
	99.7046 - 97.547		25.779	0.4871	26.0000	0.037	1.045	0.0123	26.0000	0.000
	97.547 - 95.3894		25.989	0.4842	26.0000	0.037	1.047	0.0120	26.0000	0.000
	95.3894 - 93.2319		26.199	0.4813	26.0000	0.037	1.049	0.0117	26.0000	0.000
	93.2319 - 91.0743		26.411	0.4786	26.0000	0.037	1.051	0.0114	26.0000	0.000
	91.0743 - 88.9167		26.624	0.4759	26.0000	0.037	1.053	0.0111	26.0000	0.000
	88.9167 - 83.0833		13.365	0.2305	26.0000	0.018	0.514	0.0050	26.0000	0.000
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	13.952	0.2151	26.0000	0.017	0.546	0.0049	26.0000	0.000
	83.0833 - 81.1087		27.495	0.4185	26.0000	0.032	1.061	0.0093	26.0000	0.000
	81.1087 - 79.1341		27.680	0.4161	26.0000	0.032	1.063	0.0090	26.0000	0.000
	79.1341 - 77.1594		27.866	0.4138	26.0000	0.032	1.065	0.0088	26.0000	0.000

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 $\frac{f_{vt}}{F_{vt}}$
	77.1594 - 75.1848		28.052	0.4115	26.0000	0.032	1.067	0.0086	26.0000	0.000
	75.1848 - 73.2102		28.238	0.4093	26.0000	0.031	1.069	0.0085	26.0000	0.000
	73.2102 - 71.2356		28.423	0.4071	26.0000	0.031	1.071	0.0083	26.0000	0.000
	71.2356 - 69.2609		28.609	0.4050	26.0000	0.031	1.073	0.0081	26.0000	0.000
	69.2609 - 67.2863		28.795	0.4029	26.0000	0.031	1.075	0.0079	26.0000	0.000
	67.2863 - 65.3117		28.980	0.4009	26.0000	0.031	1.077	0.0078	26.0000	0.000
	65.3117 - 63.337		29.166	0.3989	26.0000	0.031	1.079	0.0076	26.0000	0.000
	63.337 - 61.3624		29.352	0.3970	26.0000	0.031	1.081	0.0074	26.0000	0.000
	61.3624 - 59.3878		29.538	0.3951	26.0000	0.030	1.083	0.0073	26.0000	0.000
	59.3878 - 57.4131		29.723	0.3932	26.0000	0.030	1.085	0.0071	26.0000	0.000
	57.4131 - 55.4385		29.909	0.3914	26.0000	0.030	1.087	0.0070	26.0000	0.000
	55.4385 - 53.4639		30.094	0.3896	26.0000	0.030	1.089	0.0069	26.0000	0.000
	53.4639 - 51.4893		30.280	0.3879	26.0000	0.030	1.091	0.0067	26.0000	0.000
	51.4893 - 49.5146		30.517	0.3868	26.0000	0.030	1.227	0.0074	26.0000	0.000
	49.5146 - 47.54		30.702	0.3852	26.0000	0.030	1.229	0.0073	26.0000	0.000
	47.54 - 40.4567		16.410	0.1985	26.0000	0.015	0.639	0.0035	26.0000	0.000
L5	47.54 - 40.4567	TP62x49.727x0.5	15.088	0.1862	26.0000	0.014	0.598	0.0034	26.0000	0.000
	40.4567 - 38.3274		31.649	0.3864	26.0000	0.030	1.239	0.0070	26.0000	0.000
	38.3274 - 36.1981		31.817	0.3844	26.0000	0.030	1.241	0.0068	26.0000	0.000
	36.1981 - 34.0688		31.986	0.3864	26.0000	0.029	1.243	0.0068	26.0000	0.000
	34.0688 - 31.9395		32.156	0.3844	26.0000	0.029	1.245	0.0067	26.0000	0.000
	31.9395 - 29.8102		32.328	0.3825	26.0000	0.029	1.247	0.0066	26.0000	0.000
	29.8102 - 27.6809		32.500	0.3806	26.0000	0.029	1.250	0.0065	26.0000	0.000
	27.6809 - 25.5516		32.674	0.3788	26.0000	0.029	1.252	0.0063	26.0000	0.000
	25.5516 - 23.4223		32.848	0.3770	26.0000	0.029	1.254	0.0062	26.0000	0.000
	23.4223 - 21.293		33.024	0.3753	26.0000	0.029	1.256	0.0061	26.0000	0.000
	21.293 - 19.1637		33.201	0.3736	26.0000	0.028	1.258	0.0060	26.0000	0.000
	19.1637 - 17.0344		33.379	0.3719	26.0000	0.028	1.261	0.0059	26.0000	0.000
	17.0344 - 14.9051		33.558	0.3703	26.0000	0.028	1.263	0.0058	26.0000	0.000
	14.9051 - 12.7758		33.738	0.3687	26.0000	0.028	1.265	0.0057	26.0000	0.000

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 $\frac{f_{vt}}{F_{vt}}$
	12.7758 - 10.6465		33.919	0.3672	26.0000	0.028	1.268	0.0056	26.0000	0.000
	10.6465 - 8.51719		34.101	0.3657	26.0000	0.028	1.270	0.0055	26.0000	0.000
	8.51719 - 6.38789		34.284	0.3643	26.0000	0.028	1.272	0.0054	26.0000	0.000
	6.38789 - 4.2586		34.468	0.3629	26.0000	0.028	1.275	0.0053	26.0000	0.000
	4.2586 - 2.1293		34.654	0.3615	26.0000	0.028	1.277	0.0052	26.0000	0.000
	2.1293 - 0		34.840	0.3602	26.0000	0.027	1.280	0.0052	26.0000	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	191.5 - 190.436	0.003	0.078	0.000	0.025	0.000	0.081	1.333	H1-3+VT
	190.436 - 189.372	0.003	0.103	0.000	0.025	0.000	0.106	1.333	H1-3+VT
	189.372 - 188.309	0.003	0.125	0.000	0.025	0.000	0.129	1.333	H1-3+VT
	188.309 - 187.245	0.003	0.147	0.000	0.025	0.000	0.150	1.333	H1-3+VT
	187.245 - 186.181	0.003	0.168	0.000	0.025	0.000	0.171	1.333	H1-3+VT
	186.181 - 185.117	0.003	0.188	0.000	0.025	0.000	0.191	1.333	H1-3+VT
	185.117 - 184.054	0.003	0.207	0.000	0.025	0.000	0.210	1.333	H1-3+VT
	184.054 - 182.99	0.003	0.224	0.000	0.025	0.000	0.228	1.333	H1-3+VT
	182.99 - 181.926	0.003	0.242	0.000	0.025	0.000	0.245	1.333	H1-3+VT
	181.926 - 180.862	0.003	0.258	0.000	0.025	0.000	0.262	1.333	H1-3+VT
	180.862 - 179.798	0.004	0.274	0.000	0.025	0.000	0.277	1.333	H1-3+VT
	179.798 - 178.735	0.004	0.289	0.000	0.025	0.000	0.293	1.333	H1-3+VT
	178.735 - 177.671	0.004	0.303	0.000	0.025	0.000	0.307	1.333	H1-3+VT
	177.671 - 176.607	0.004	0.317	0.000	0.025	0.000	0.321	1.333	H1-3+VT
	176.607 - 175.543	0.004	0.331	0.000	0.025	0.000	0.335	1.333	H1-3+VT
	175.543 - 172.46	0.002	0.144	0.000	0.010	0.000	0.146	1.333	H1-3+VT
L2	175.543 - 172.46	0.002	0.141	0.000	0.009	0.000	0.143	1.333	H1-3+VT
	172.46 - 170.226	0.003	0.248	0.000	0.016	0.000	0.251	1.333	H1-3+VT
	170.226 - 167.993	0.003	0.262	0.000	0.016	0.000	0.266	1.333	H1-3+VT

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
	167.993 - 165.759	0.003	0.276	0.000	0.016	0.000	0.279	1.333	H1-3+VT
	165.759 - 163.525	0.003	0.288	0.000	0.017	0.000	0.292	1.333	H1-3+VT
	163.525 - 161.291	0.004	0.300	0.000	0.017	0.000	0.304	1.333	H1-3+VT
	161.291 - 159.058	0.005	0.326	0.000	0.039	0.004	0.332	1.333	H1-3+VT
	159.058 - 156.824	0.006	0.368	0.000	0.038	0.003	0.374	1.333	H1-3+VT
	156.824 - 154.59	0.006	0.407	0.000	0.038	0.003	0.413	1.333	H1-3+VT
	154.59 - 152.357	0.006	0.446	0.000	0.040	0.003	0.453	1.333	H1-3+VT
	152.357 - 150.123	0.006	0.482	0.000	0.040	0.003	0.489	1.333	H1-3+VT
	150.123 - 147.889	0.008	0.542	0.000	0.052	0.003	0.551	1.333	H1-3+VT
	147.889 - 145.656	0.008	0.588	0.000	0.051	0.003	0.597	1.333	H1-3+VT
	145.656 - 143.422	0.008	0.631	0.000	0.051	0.003	0.640	1.333	H1-3+VT
	143.422 - 141.188	0.008	0.671	0.000	0.050	0.002	0.680	1.333	H1-3+VT
	141.188 - 138.954	0.010	0.713	0.000	0.060	0.002	0.724	1.333	H1-3+VT
	138.954 - 136.721	0.010	0.758	0.000	0.059	0.001	0.769	1.333	H1-3+VT
	136.721 - 134.487	0.010	0.800	0.000	0.058	0.001	0.812	1.333	H1-3+VT
	134.487 - 132.253	0.010	0.839	0.000	0.058	0.001	0.850	1.333	H1-3+VT
	132.253 - 127.753	0.005	0.396	0.000	0.025	0.000	0.401	1.333	H1-3+VT
L3	132.253 - 127.753	0.005	0.387	0.000	0.023	0.000	0.392	1.333	H1-3+VT
	127.753 - 125.596	0.008	0.709	0.000	0.041	0.001	0.717	1.333	H1-3+VT
	125.596 - 123.438	0.008	0.730	0.000	0.041	0.001	0.738	1.333	H1-3+VT
	123.438 - 121.281	0.008	0.749	0.000	0.041	0.001	0.758	1.333	H1-3+VT
	121.281 - 119.123	0.008	0.768	0.000	0.040	0.001	0.776	1.333	H1-3+VT
	119.123 - 116.965	0.009	0.785	0.000	0.040	0.001	0.794	1.333	H1-3+VT
	116.965 - 114.808	0.009	0.800	0.000	0.040	0.001	0.809	1.333	H1-3+VT
	114.808 - 112.65	0.009	0.815	0.000	0.039	0.001	0.824	1.333	H1-3+VT
	112.65 - 110.493	0.009	0.829	0.000	0.039	0.001	0.838	1.333	H1-3+VT
	110.493 - 108.335	0.009	0.842	0.000	0.039	0.001	0.851	1.333	H1-3+VT
	108.335 - 106.177	0.009	0.854	0.000	0.038	0.001	0.863	1.333	H1-3+VT
	106.177 - 104.02	0.009	0.865	0.000	0.038	0.001	0.875	1.333	H1-3+VT
	104.02 - 101.862	0.009	0.875	0.000	0.038	0.000	0.885	1.333	H1-3+VT

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
	101.862 - 99.7046	0.009	0.885	0.000	0.038	0.000	0.895	1.333	H1-3+VT
	99.7046 - 97.547	0.010	0.894	0.000	0.037	0.000	0.904	1.333	H1-3+VT
	97.547 - 95.3894	0.010	0.903	0.000	0.037	0.000	0.913	1.333	H1-3+VT
	95.3894 - 93.2319	0.010	0.911	0.000	0.037	0.000	0.921	1.333	H1-3+VT
	93.2319 - 91.0743	0.010	0.918	0.000	0.037	0.000	0.929	1.333	H1-3+VT
	91.0743 - 88.9167	0.010	0.925	0.000	0.037	0.000	0.936	1.333	H1-3+VT
	88.9167 - 83.0833	0.005	0.456	0.000	0.018	0.000	0.461	1.333	H1-3+VT
L4	88.9167 - 83.0833	0.005	0.445	0.000	0.017	0.000	0.450	1.333	H1-3+VT
	83.0833 - 81.1087	0.010	0.865	0.000	0.032	0.000	0.875	1.333	H1-3+VT
	81.1087 - 79.1341	0.010	0.868	0.000	0.032	0.000	0.878	1.333	H1-3+VT
	79.1341 - 77.1594	0.010	0.871	0.000	0.032	0.000	0.881	1.333	H1-3+VT
	77.1594 - 75.1848	0.010	0.873	0.000	0.032	0.000	0.884	1.333	H1-3+VT
	75.1848 - 73.2102	0.010	0.876	0.000	0.031	0.000	0.886	1.333	H1-3+VT
	73.2102 - 71.2356	0.010	0.878	0.000	0.031	0.000	0.888	1.333	H1-3+VT
	71.2356 - 69.2609	0.010	0.880	0.000	0.031	0.000	0.890	1.333	H1-3+VT
	69.2609 - 67.2863	0.010	0.881	0.000	0.031	0.000	0.892	1.333	H1-3+VT
	67.2863 - 65.3117	0.010	0.883	0.000	0.031	0.000	0.894	1.333	H1-3+VT
	65.3117 - 63.337	0.011	0.884	0.000	0.031	0.000	0.895	1.333	H1-3+VT
	63.337 - 61.3624	0.011	0.886	0.000	0.031	0.000	0.896	1.333	H1-3+VT
	61.3624 - 59.3878	0.011	0.887	0.000	0.030	0.000	0.898	1.333	H1-3+VT
	59.3878 - 57.4131	0.011	0.888	0.000	0.030	0.000	0.899	1.333	H1-3+VT
	57.4131 - 55.4385	0.011	0.888	0.000	0.030	0.000	0.900	1.333	H1-3+VT
	55.4385 - 53.4639	0.011	0.889	0.000	0.030	0.000	0.900	1.333	H1-3+VT
	53.4639 - 51.4893	0.011	0.890	0.000	0.030	0.000	0.901	1.333	H1-3+VT
	51.4893 - 49.5146	0.011	0.890	0.000	0.030	0.000	0.902	1.333	H1-3+VT
	49.5146 - 47.54	0.011	0.891	0.000	0.030	0.000	0.902	1.333	H1-3+VT
	47.54 - 40.4567	0.006	0.459	0.000	0.015	0.000	0.466	1.333	H1-3+VT
L5	47.54 - 40.4567	0.006	0.450	0.000	0.014	0.000	0.456	1.333	H1-3+VT
	40.4567 - 38.3274	0.013	0.929	0.000	0.030	0.000	0.941	1.333	H1-3+VT
	38.3274 - 36.1981	0.013	0.929	0.000	0.030	0.000	0.941	1.333	H1-3+VT

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
	36.1981 - 34.0688	0.013	0.929	0.000	0.029	0.000	0.941	1.333	H1-3+VT
	34.0688 - 31.9395	0.013	0.928	0.000	0.029	0.000	0.941	1.333	H1-3+VT
	31.9395 - 29.8102	0.013	0.928	0.000	0.029	0.000	0.941	1.333	H1-3+VT
	29.8102 - 27.6809	0.013	0.928	0.000	0.029	0.000	0.941	1.333	H1-3+VT
	27.6809 - 25.5516	0.013	0.928	0.000	0.029	0.000	0.941	1.333	H1-3+VT
	25.5516 - 23.4223	0.013	0.927	0.000	0.029	0.000	0.940	1.333	H1-3+VT
	23.4223 - 21.293	0.013	0.927	0.000	0.029	0.000	0.940	1.333	H1-3+VT
	21.293 - 19.1637	0.013	0.926	0.000	0.028	0.000	0.939	1.333	H1-3+VT
	19.1637 - 17.0344	0.013	0.925	0.000	0.028	0.000	0.939	1.333	H1-3+VT
	17.0344 - 14.9051	0.013	0.925	0.000	0.028	0.000	0.938	1.333	H1-3+VT
	14.9051 - 12.7758	0.014	0.924	0.000	0.028	0.000	0.937	1.333	H1-3+VT
	12.7758 - 10.6465	0.014	0.923	0.000	0.028	0.000	0.937	1.333	H1-3+VT
	10.6465 - 8.51719	0.014	0.922	0.000	0.028	0.000	0.936	1.333	H1-3+VT
	8.51719 - 6.38789	0.014	0.921	0.000	0.028	0.000	0.935	1.333	H1-3+VT
	6.38789 - 4.2586	0.014	0.920	0.000	0.028	0.000	0.934	1.333	H1-3+VT
	4.2586 - 2.1293	0.014	0.919	0.000	0.028	0.000	0.933	1.333	H1-3+VT
	2.1293 - 0	0.014	0.918	0.000	0.027	0.000	0.932	1.333	H1-3+VT

Section Capacity Table

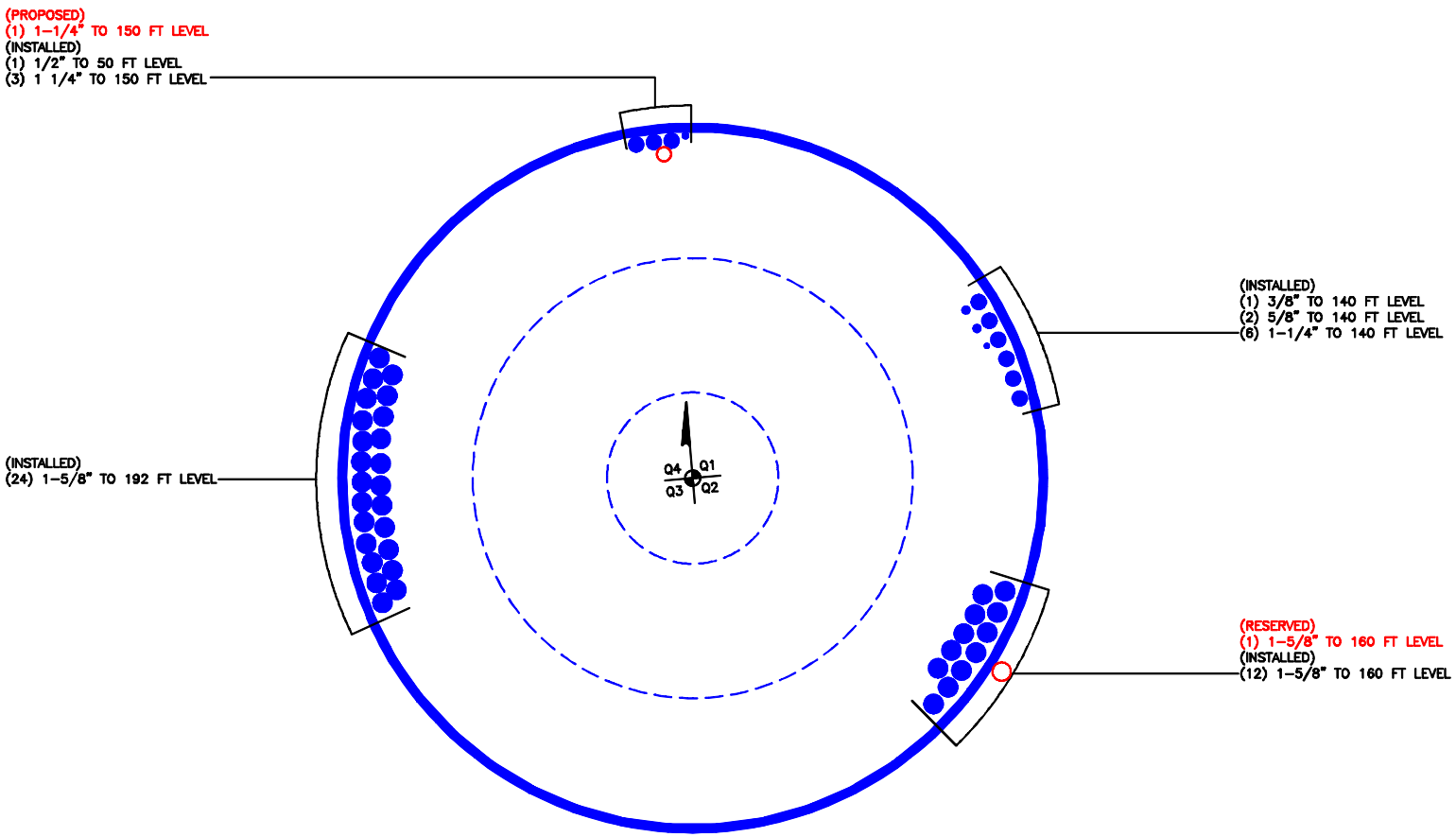
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-1.745	602.356	25.1	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-12.004	1553.518	63.8	Pass
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-21.738	2908.153	70.2	Pass
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-35.084	4143.924	67.7	Pass
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-40.738	4302.990	70.6	Pass
							Summary	
						Pole (L5)	70.6	Pass
						RATING =	**70.6**	**Pass**

Element Map

Section No.	Section Elevation ft	Component Type	Element List
L1	191.500-172.460	Pole	1
L2	172.460-127.753	Pole	2
L3	127.753-83.083	Pole	3
L4	83.083-40.457	Pole	4
L5	40.457-0.000	Pole	5
			Total number of elements: 5

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876355 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

Project No. *1466K11400*
Site Name: *Upper Stepney*
Site ID:

Pole Manufacturer:	*Other*

Reactions		
Moment:	4414	ft-kips
Axial:	54	kips
Shear:	35	kips

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	71	in

Plate Data		
Diam:	77	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.20	in

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

Pole Data		
Diam:	62	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	122.1	Kips	Rigid
Allowable Tension:	195.0	Kips	Service, ASD
Anchor Rod Stress Ratio:	62.6%	**Pass**	Fty*ASIF

Base Plate Results Flexural Check

Base Plate Stress:	50.5	ksi	Rigid
Allowable Plate Stress:	60.0	ksi	Service ASD
Base Plate Stress Ratio:	84.2%	**Pass**	0.75*Fy*ASIF
			Y.L. Length: 34.60

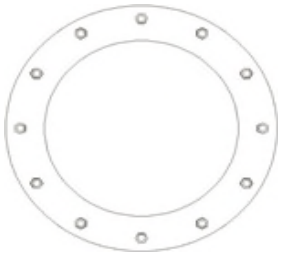
n/a

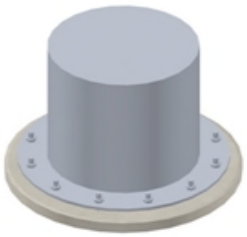
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: *876355*
Site Name: *Upper Stepney*
App #:

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	5	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	30	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	56.25	ft^2
Pier Height:	3.00	ft
Soil (above pad) Height:	2.00	ft

Soil Parameters		
Unit Weight, γ:	170.0	pcf
Ultimate Bearing Capacity, qn:	24.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	18.00	ksf
Passive Pres. Coeff., Kp	3.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	47.3	kips
Pad Force Location Above D:	1.29	ft
ϕ(Passive Pressure Moment):	60.75	ft-kips
Factored O.T. M(WL), "1.6W":	6242.4	ft-kips
Factored OT (MW-Msoil), M1	6181.65	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.15	ft
Sum of Soil Wedges Wt:	12.93	kips
Soil Wedges ecc, K1:	10.71	ft
Ftg+Soil above Pad wt:	717.2	kips
Unfactored (Total ftg-soil Wt):	730.12	kips
1.2D. **No Soil Wedges**.	925.43	kips
0.9D. **With Soil Wedges**	705.71	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	54	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	35	kips
Unfactored WL Moment, M:	4414	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	64.8	kips
0.90	0.9D+1.6W, Pu:	48.6	kips
1.35	Vu:	47.25	kips
	Mu:	5958.9	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	925.43	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	6181.65	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	6.68	ft
Orthogonal qu=	1.94	ksf
qu/ϕ*qn Ratio=	**10.80%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	4.72	ft
Diagonal qu=	2.19	ksf
qu/ϕ*qn Ratio=	**12.17%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	705.71	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	6056.99	ft-kips

Orthogonal ecc3 = M2/P2 =	8.58	ft
Ortho Non Bearing Length,NBL=	17.17	ft
Orthogonal qu=	1.83	ksf
Diagonal qu=	2.21	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	4414.00		
M Orthogonal:	7444.32	**59.29%**	**Pass**
M Diagonal:	7444.32	**59.29%**	**Pass**

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

Sprint Existing Facility

Site ID: CT03XC365

Upper Stepney - TLC

474 - 480 Main Street
Monroe, CT 06468

July 14, 2014

EBI Project Number: 62143783

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

EBI Consulting
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July 14, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC365 - Upper Stepney - TLC

Site Total: 32.76% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 474 - 480 Main Street, Monroe, 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 474 - 480 Main Street, Monroe, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **152 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	CT03XC365 - Upper Stepney - TLC
Site Addresss	474 - 480 Main Street, Monroe, CT, 06468
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.23%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	152	146	1/2 "	0.5	0	39.00	0.12%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.41%
														Sector total Power Density Value:		0.76%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.23%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	152	146	1/2 "	0.5	0	39.00	0.12%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.41%
														Sector total Power Density Value:		0.76%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.23%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	152	146	1/2 "	0.5	0	39.00	0.12%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	152	146	1/2 "	0.5	0	138.69	0.41%
														Sector total Power Density Value:		0.76%

Site Composite MPE %	
Carrier	MPE %
Sprint	2.29%
T-Mobile	1.89%
AT&T	9.97%
Verizon Wireless	18.61%
Total Site MPE %	**32.76%**

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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 **2.29% (0.76% from sector 1, 0.76% from sector 2 and 0.76% 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 **32.76%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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