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

December 5, 2014

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

RE: **Sprint PCS-Exempt Modification – Crown Site BU: 841295**
Sprint PCS Site ID: CT33XC515
Located at: 719 Amity Road, Bethany, CT 06524

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 Derrylyn Gorski, First Selectman for the Town of Bethany. The Town of Bethany is the Property Owner.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **719 Amity Road, Bethany, CT 06524.** 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: Derrylyn Gorski, First Selectman for the Town of Bethany
Bethany Town Hall
40 Peck Road
Bethany, CT 06524

cc: Town of Bethany
Bethany Town Hall
40 Peck Road
Bethany, CT 06524

Sprint

2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:

CT33XC515

SITE NAME:

BETHANY–SPECTRASITE TOWER

SITE ADDRESS:

719 AMITY ROAD
BETHANY, CT 06524

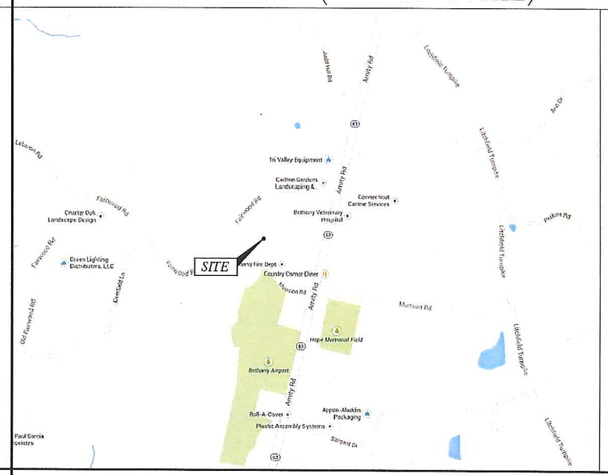
CROWN ID#: 841295

CROWN SITE NAME: BETHANY

SHEET INFORMATION

SITE NUMBER:	CT33XC515
SITE NAME:	BETHANY–SPECTRASITE TOWER
SITE ADDRESS:	719 AMITY ROAD BETHANY, CT 06524
COUNTY:	NEW HAVEN
COORDINATES: (NAD 83)	41° 26' 33.93" N 72° 59' 32.86" W
GROUND ELEV:	748'± AMSL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	150'–0"± AGL
STRUCTURE RAD CENTER:	130'–0"± AGL
ZONING CLASSIFICATION:	B2I
PARCEL ID:	117/1
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 Peter.Culbert@sprint.com
CROWN CM:	JASON D'AMICO (860) 209–0104 jason.d'amico@crowncastle.com
AAV:	AT&T

VICINITY MAP (NOT TO SCALE)



SHEET INDEX

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SP–2	GENERAL NOTES
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GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED. FACILITY HAS NO PLUMBING OR REFRIGERANTS. THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
3. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - 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.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
12/4/14	

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY–SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
TITLE SHEET

SHEET NO:
T–1

DIVISION 01000–GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED TO CALL 1–800–788–7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATION OF ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER.
14. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
16. THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
17. THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS–BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
18. REFER TO: CONSTRUCTION STANDARDS–SPRINT DOCUMENT EXHIBIT A–STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0– 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A–WIHRPRF–STD CONSTR SPECS._15720111042185549 2.DOCM.
20. REFER TO: COLOR CODING–SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09–08–11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000–CONCRETE

1.03 APPLICABLE STANDARDS (USE LATEST EDITIONS)

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

1.04 QUALITY ASSURANCE

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

3.04 SURFACE FINISHES

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

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

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

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

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

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

3.05 PATCHING

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

3.06 DEFECTIVE CONCRETE

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

3.07 PROTECTION

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

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

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

DIVISION 05000 – METALS

PART 1 – GENERAL

1.01 WORK INCLUDED

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

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

1.02 REFERENCE STANDARDS

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

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

PART 2 – PRODUCTS

2.01 MATERIALS

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

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

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

2.02 WELDING

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

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

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

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

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

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

2.03 BOLTING

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

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

C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

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

E. STANDARD, OVERSIZED OR HORIZONTAL SHORT SLOTTED HOLES.

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

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

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

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

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

2.04 FABRICATION

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

2.05 FINISH

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

2.06 PROTECTION

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

PART 3 – ERECTION

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

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

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

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

CROWN CASTLE

TECTONIC • PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
12/4/14	

STATE OF CONNECTICUT
EDWARD N. IAMICELI
20473
LICENSED PROFESSIONAL ENGINEER
12/4/14

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY–SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

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

Sprint

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OVERLAND PARK, KANSAS 66251

CROWN CASTLE

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Newburgh, NY 12550

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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE REVIEWED BY

12/4/14 OF TOWN ENGINEER

STATE OF CONNECTICUT
EDWARD N. TAMIGELI
28473
LICENSED
PROFESSIONAL ENGINEER
12/4/14

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY–SPECTRASITE TOWER

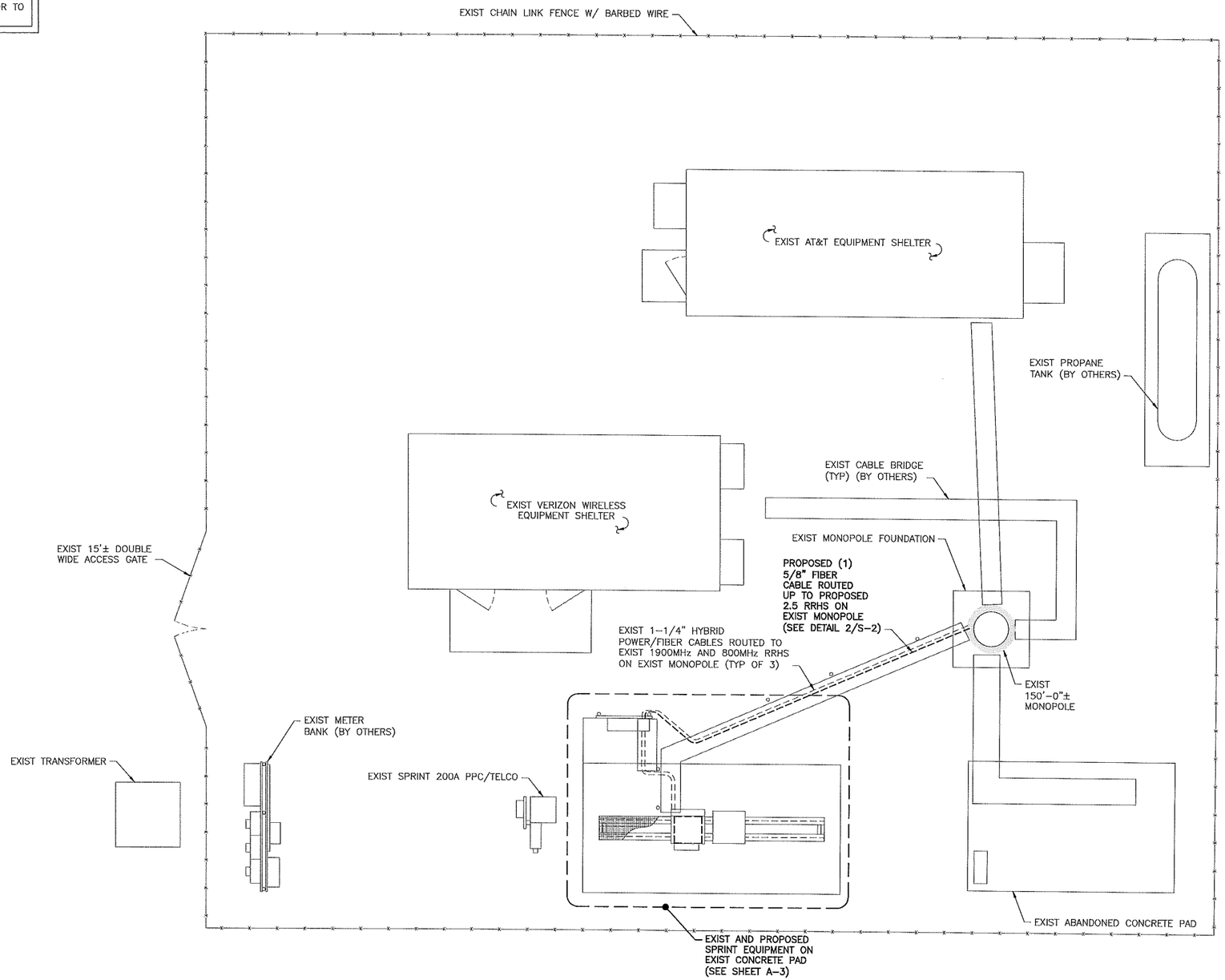
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
GENERAL NOTES

SHEET NO:
SP–2

NORTH NOTE:

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



1 A-1 SITE PLAN

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

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DATE	SUBMITTED BY
12/4/14	STATE OF CONNECTICUT EDWARD N. IAMICELI 28473 LICENSED PROFESSIONAL ENGINEER 12/4/14

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

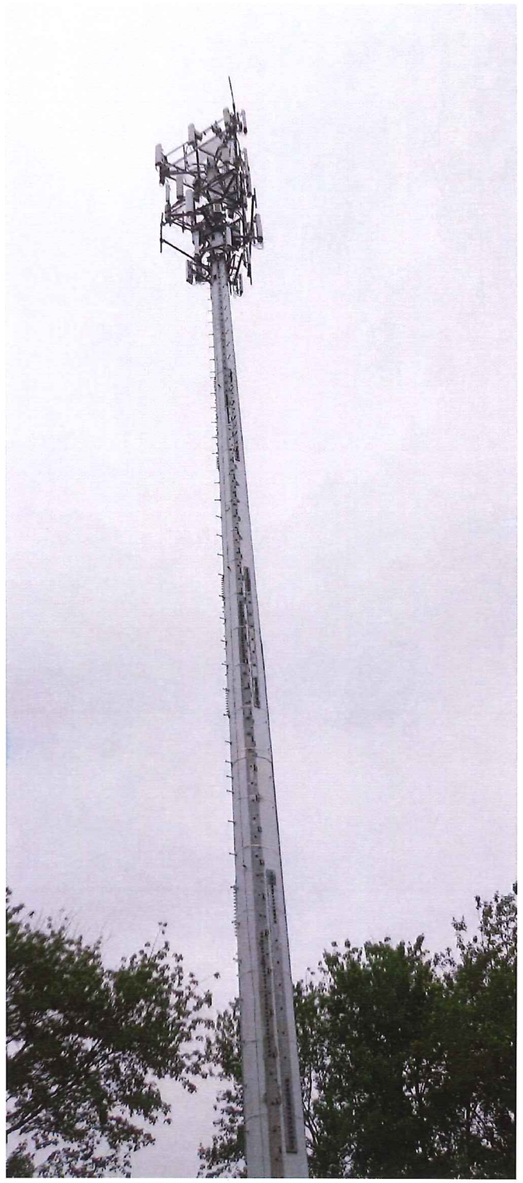
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

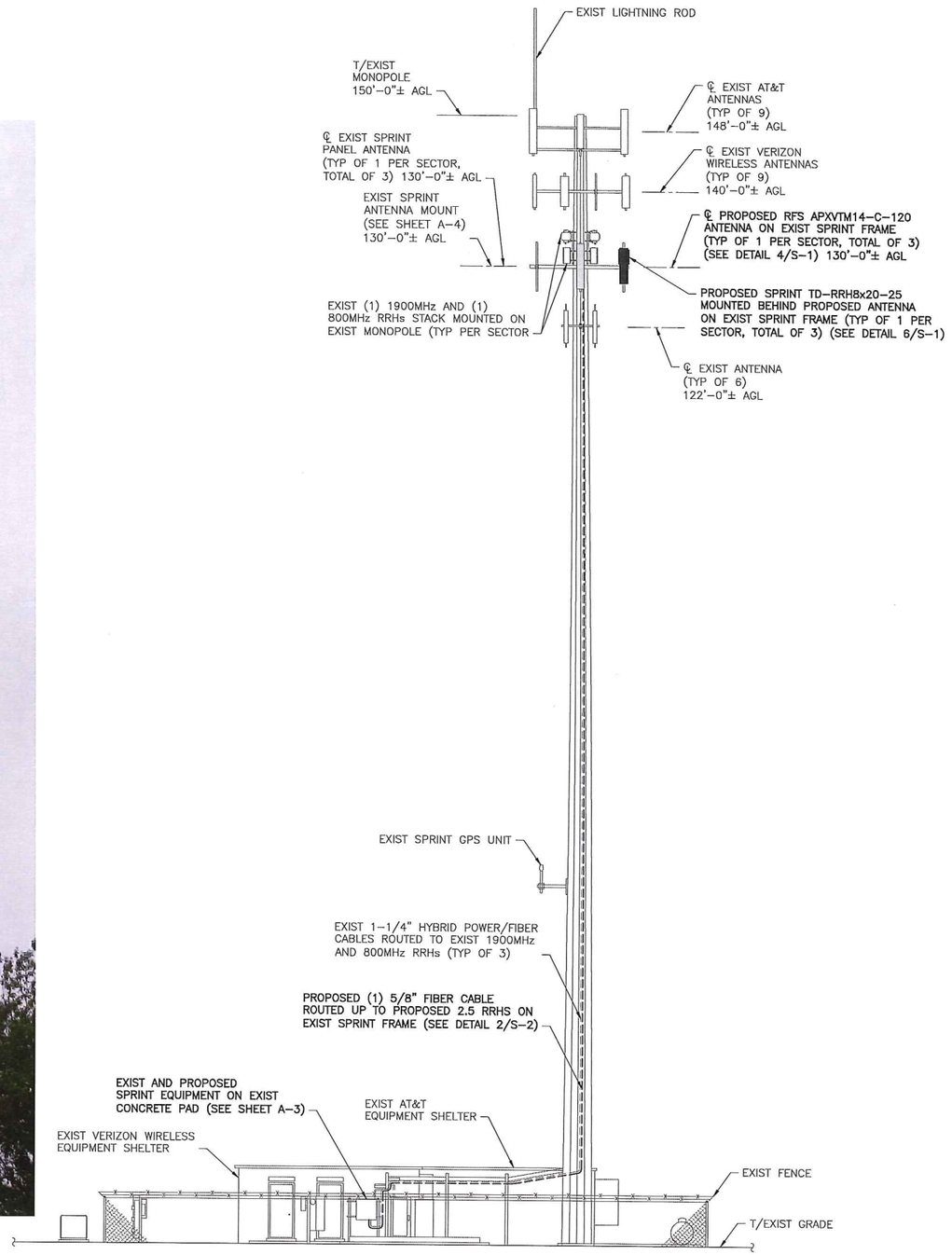
SHEET TITLE:
SITE PLAN

SHEET NO:
A-1

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

THE EXISTING MOUNT HAS BEEN ANALYZED BY TECTONIC ENGINEERING AND FOUND TO BE ADEQUATE TO SUPPORT THE PROPOSED SPRINT UPGRADE AS DETAILED IN THE STRUCTURAL ANALYSIS EVALUATION LETTER DATED 12/3/14.





1 / A-2 ELEVATION

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

Sprint

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PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE: 12/5/14 REVIEWED BY: JOSEPH J. TAMICELLI

STATE OF CONNECTICUT — EDWARD J. TAMICELLI — 28473 — LICENSED PROFESSIONAL ENGINEER — 12/4/14

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

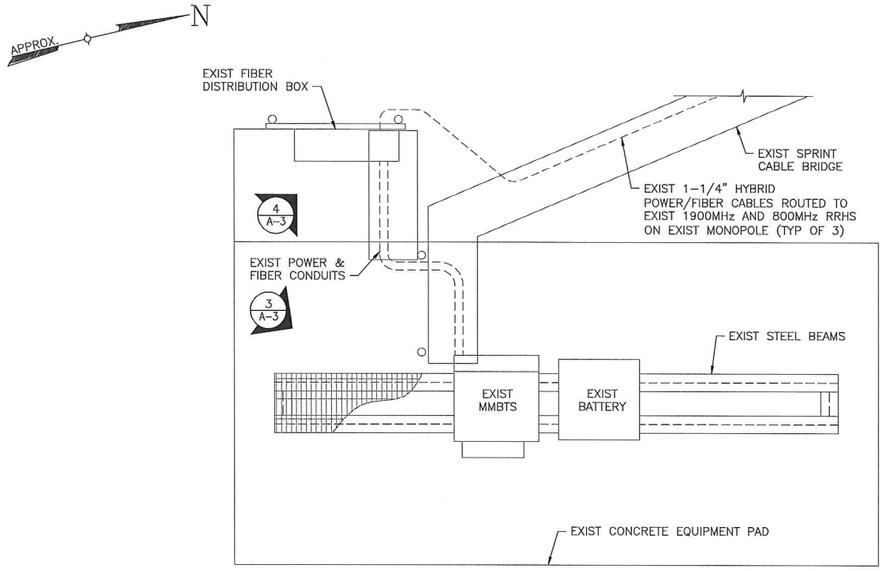
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
ELEVATION

SHEET NO:
A-2

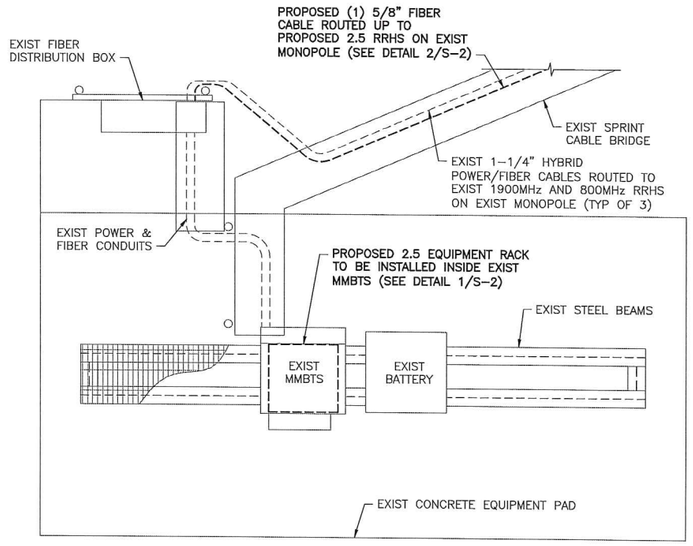
NORTH NOTE:

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



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

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

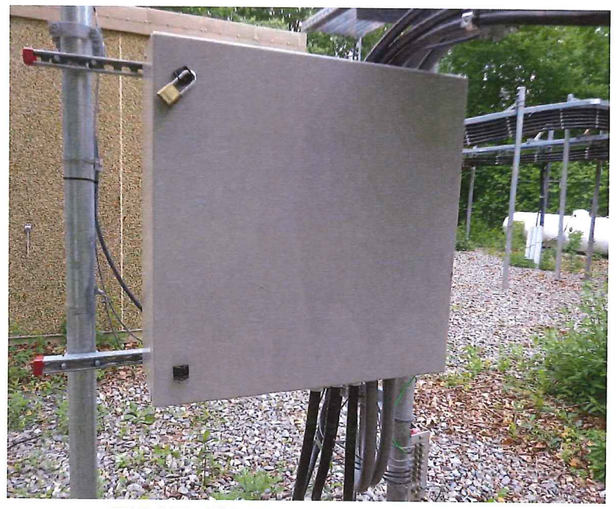


2 A-3 ENLARGED EQUIP. LAYOUT PLAN (FINAL)

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

3 A-3 EXIST EQUIPMENT PAD

SCALE: NTS



4 A-3 EXIST FIBER DISTRIBUTION BOX

SCALE: NTS

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DATE	REVIEWED BY
12/4/14	

EDWARD N. IAMICELI 28478 LICENSED PROFESSIONAL ENGINEER STATE OF CONNECTICUT 12/4/14

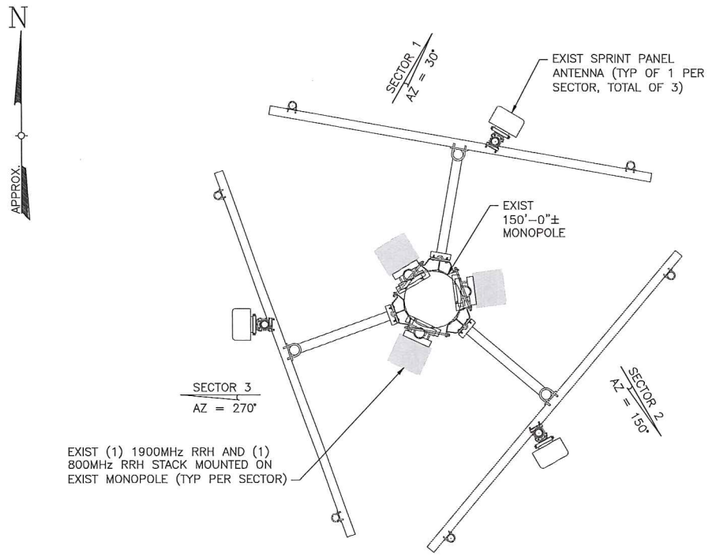
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO:
A-3



1 A-4 ANTENNA LAYOUT PLAN (EXIST)

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

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

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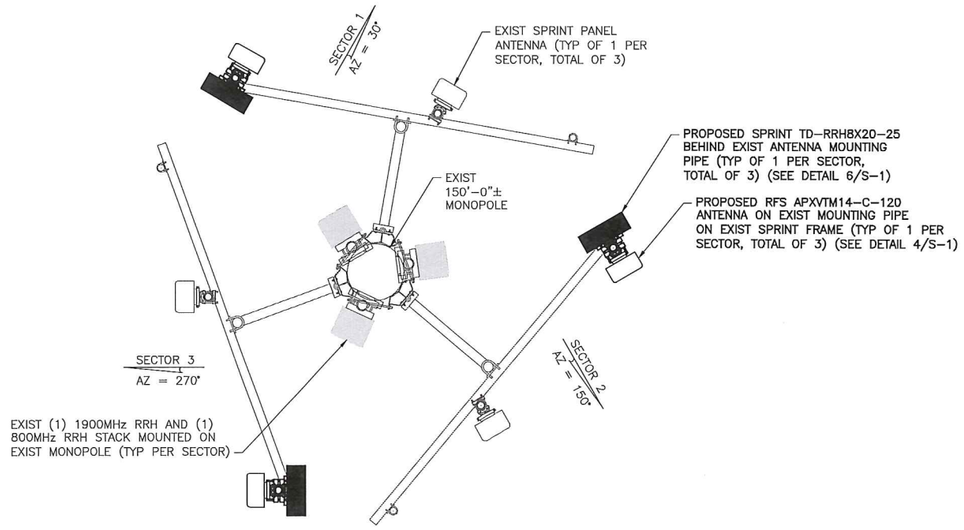
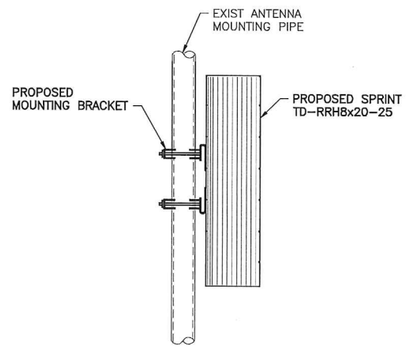


2 A-4 ANTENNA LAYOUT PLAN (FINAL)

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



3 A-4 RRH MOUNTING DETAIL

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

ANTENNA DATA

Status	Exist	Proposed
Antenna Manufacturer	RFS-CEL WAVE	RFS-CEL WAVE
Antenna Model Number	APXVSPP18-C-A20	APXVTM14-C-120
Number of Antennas	3	3
Antenna RAD Center	130'	130'
Antenna Azimuth	30/150/270	30/150/270
Antenna RRH Model Number	1900MHZ/800MHZ RRHs	TD-RRHx20-25
Number of RRH	6	3

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12/4/14 OF CONN

STATE OF CONNECTICUT EDWARD N. IANNICELLI SEAL 28473 LICENSED PROFESSIONAL ENGINEER 12/4/14

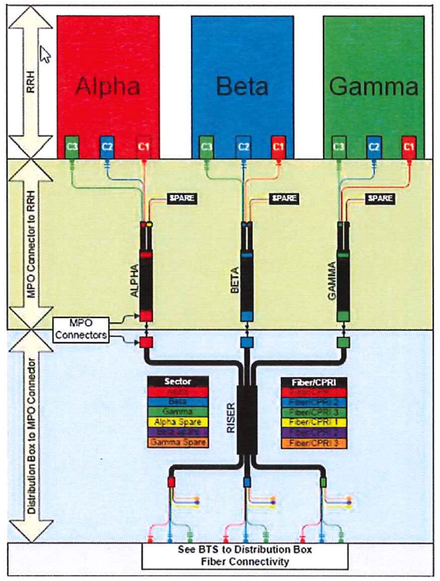
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

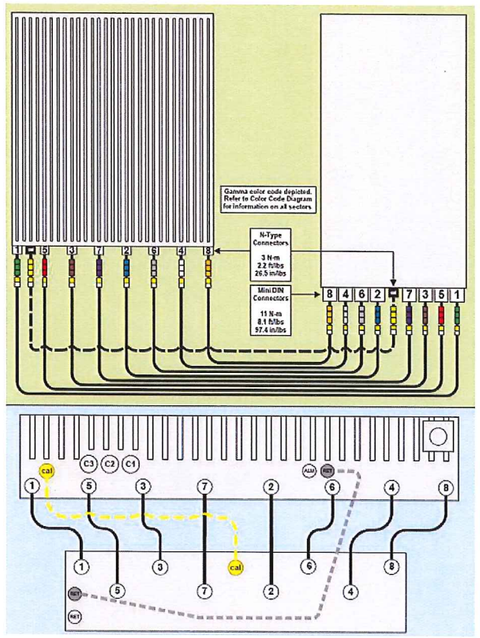
SHEET TITLE:
ANTENNA LAYOUT PLANS

SHEET NO:
A-4



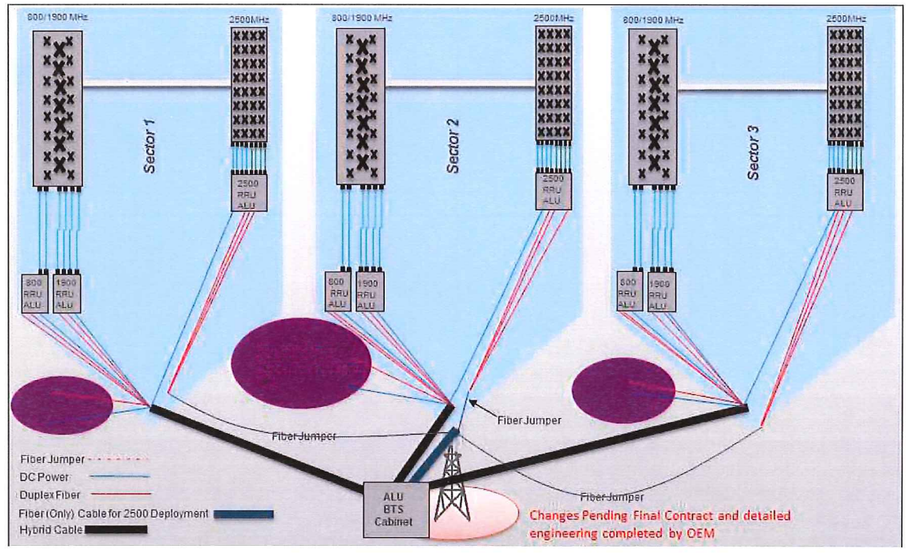
1 A–5 2.5 CABLE COLOR CODING

SCALE: N.T.S.



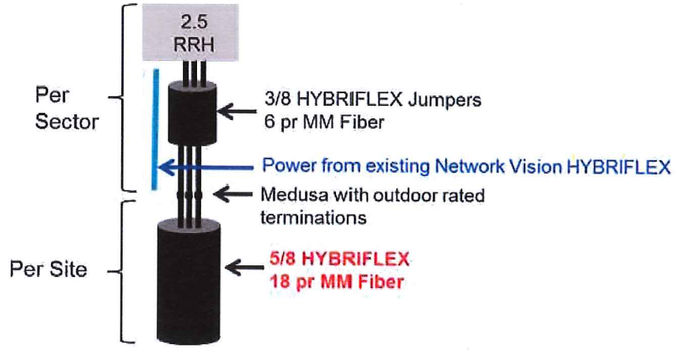
2 A–5 RRH CONNECTIVITY

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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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
12/4/14	OF CONNECTICUT

STATE OF CONNECTICUT
EDWARD N. IAMICELI
SEAL
28473
LICENSED
PROFESSIONAL ENGINEER
12/4/14

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY–SPECTRASITE TOWER

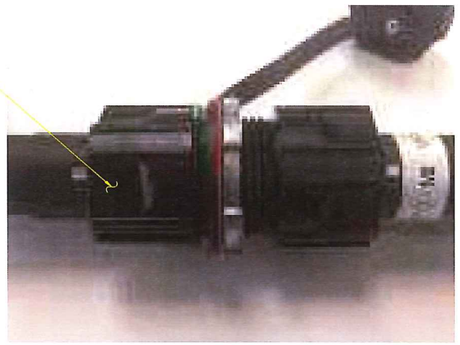
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
RAN WIRING DIAGRAM

SHEET NO:
A–5

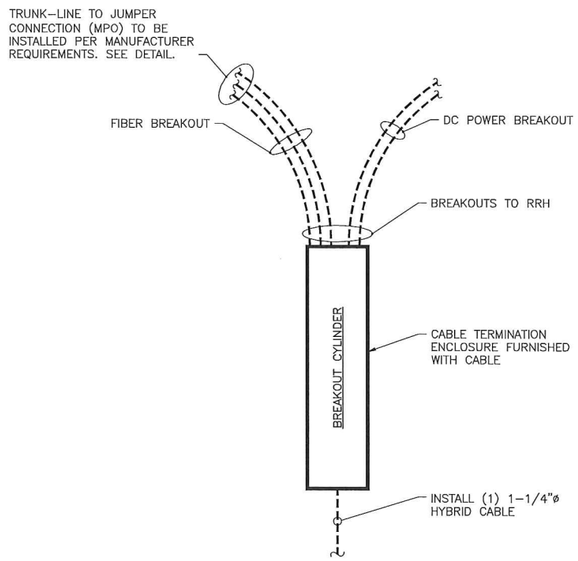
IMPORTANT!! LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAINST THE RED SEAL ON THE RISER CONNECTION

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

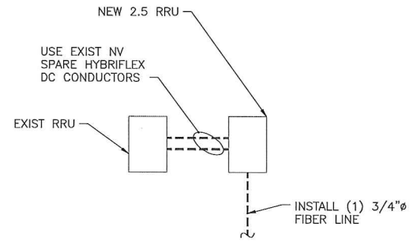


1 / A-6 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS

SCALE: N.T.S.



2.5 HYBRID CABLE W/FIBER & DC FEEDERS



FIBER ONLY TRUNK LINES

2 / A-6 TRUNK LINE DETAILS (TYPICAL)

SCALE: N.T.S.

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

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

Sprint

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

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1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE	REVIEWED BY
12/4/14	[illegible]

STATE OF CONNECTICUT
EDWARD N. HAMMERL
28473
LICENSED
PROFESSIONAL ENGINEER
12/4/14

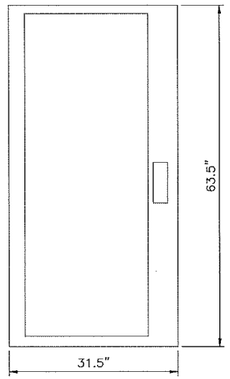
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
CABLE DETAILS

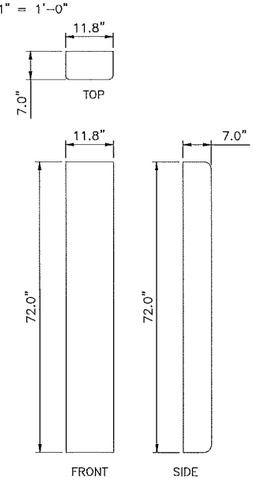
SHEET NO:
A-6



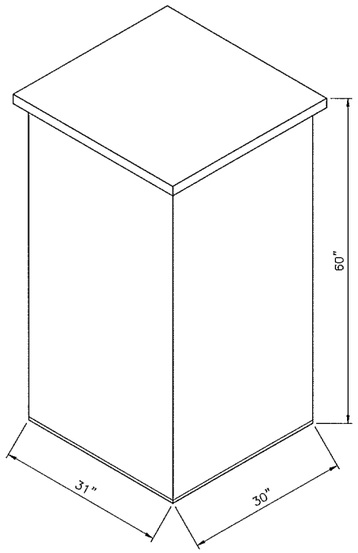
9927 MMBTS MODULAR CELL
SPECIFICATIONS:
HEIGHT: 63.5" WIDTH: 31.5" DEPTH: 38.0"

1/S-1 (EXIST) MMBTS CABINET

SCALE: 1" = 1'-0"



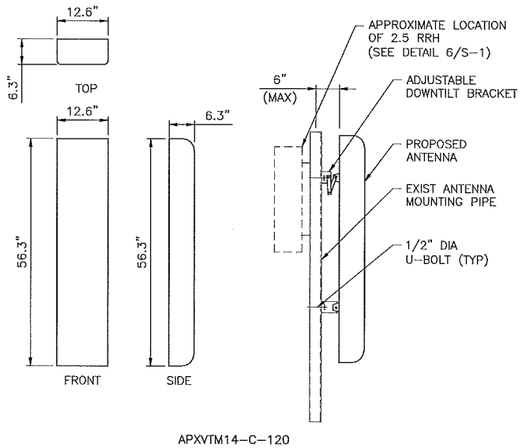
APXVSPP18-C-A20



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

2/S-1 (EXIST) BATTERY CABINET

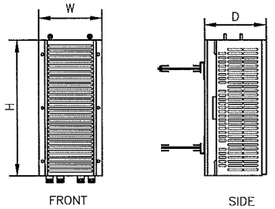
SCALE: 1" = 1'-0"



APXVTM14-C-120

3/S-1 (EXIST) ANTENNA DETAILS

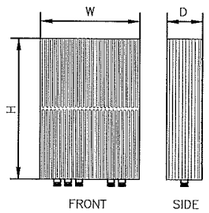
SCALE: 3/4"=1'-0"



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

4/S-1 (PROPOSED) ANTENNA DETAIL

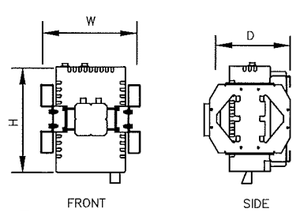
SCALE: 3/4"=1'-0"



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

5/S-1 (EXIST) RRH DETAILS

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



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

6/S-1 (PROPOSED) RRH DETAIL

SCALE: N.T.S.

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SUBMITTALS

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STATE OF CONNECTICUT
EDWARD N. IANNICELLI
28473
LICENSED PROFESSIONAL ENGINEER
12/4/14

SITE NUMBER:
CT33XC515

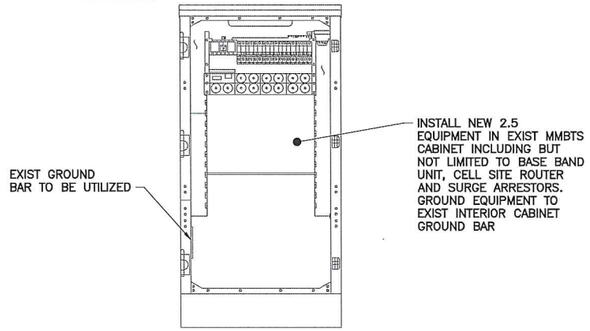
SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

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.

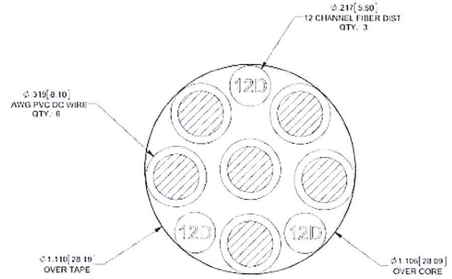
RFS HYBRIFLEX RISER CABLES SCHEDULE

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

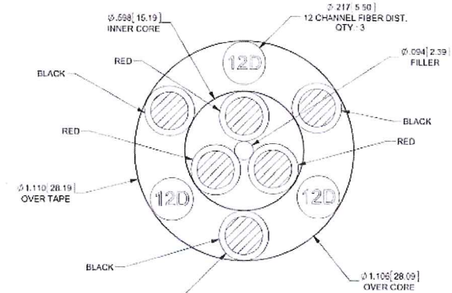
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

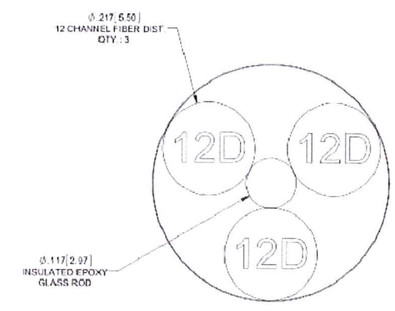
HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF:	RFS		
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"



4 AWG

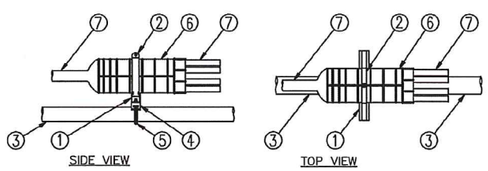


8 AWG & 6 AWG



FIBER ONLY

LEGEND:
1. P1000T-HG UNISTRUT, 12" LONG.
2. 6" PIPE HANGER.
3. EXISTING SUPPORT PIPE.
4. NEW STANDOFF BRACKET, ANDREW PART# 308486-4.
5. NEW ROUND MEMBER ADAPTER SIZED FOR EXISTING PIPE SUPPORT.
6. BREAKOUT UNIT.
7. CABLE.



3 S-2 MEDUSA HEAD DETAIL

SCALE: NTS

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

SCALE: NTS

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2.5 EQUIPMENT DEPLOYMENT
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OVERLAND PARK, KANSAS 66251

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12/4/14	DC

STATE OF CONNECTICUT
EDWARD N. TAMICELI
28473
LICENSED PROFESSIONAL ENGINEER
12/4/14
SEAL

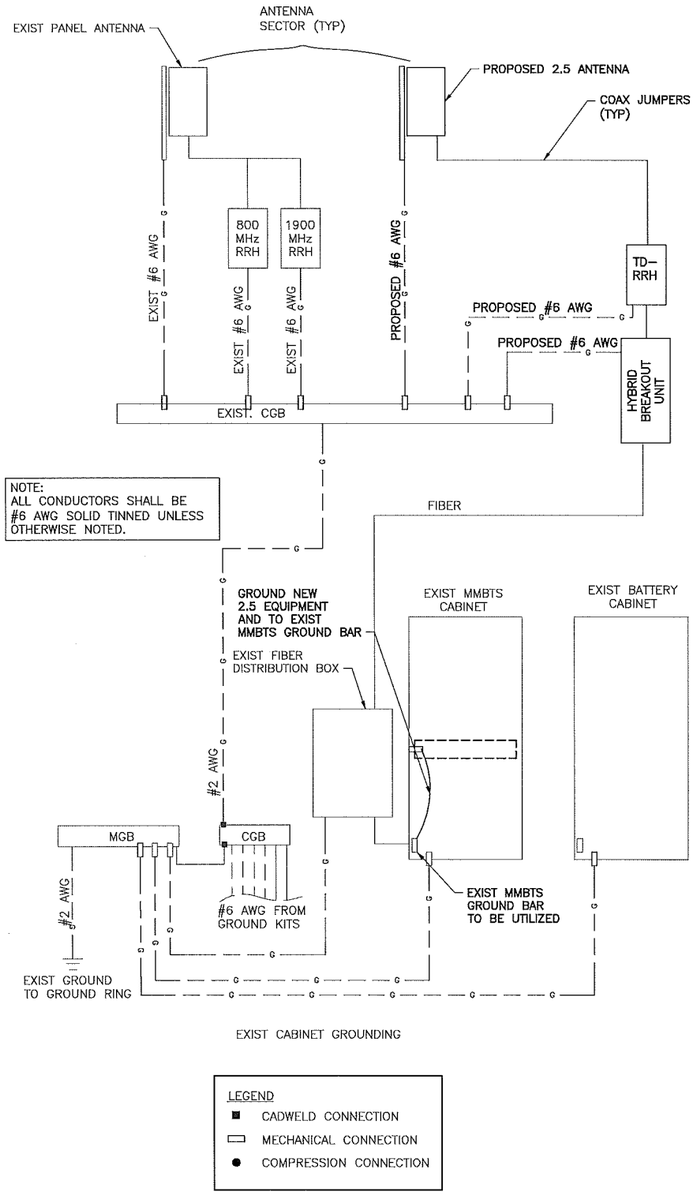
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

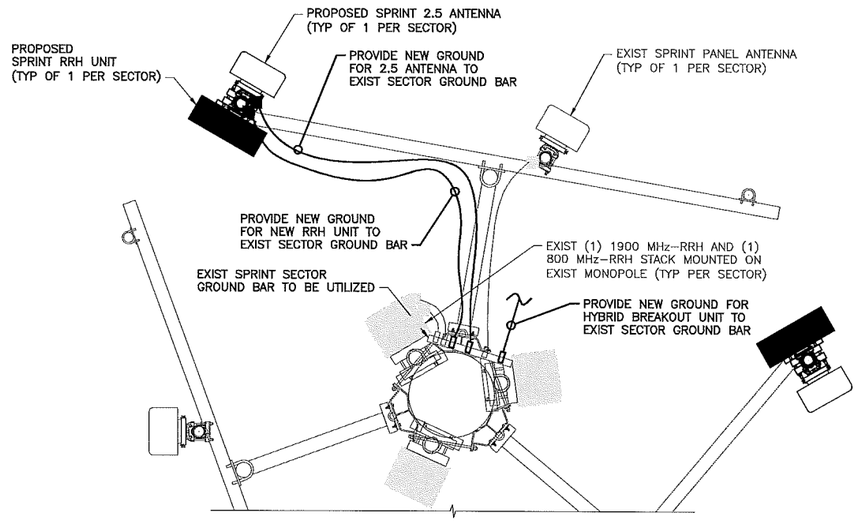
SHEET TITLE:
EQUIPMENT SCHEMATIC DETAILS

SHEET NO:
S-2



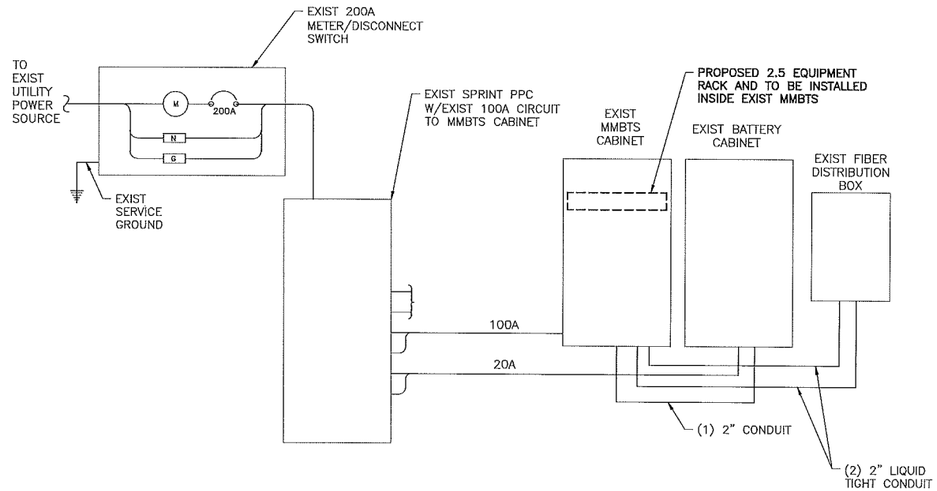
1 E-1 TYPICAL GROUNDING ONE LINE DIAGRAM

SCALE: NTS



2 E-1 TYPICAL ANTENNA GROUNDING PLAN

SCALE: NTS



3 E-1 TYPICAL ELECTRICAL & TELCO PLAN

SCALE: NTS

Sprint

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STATE OF CONNECTICUT
EDWARD N. TAMIGELI
26478
LICENSED
PROFESSIONAL ENGINEER
12/4/14

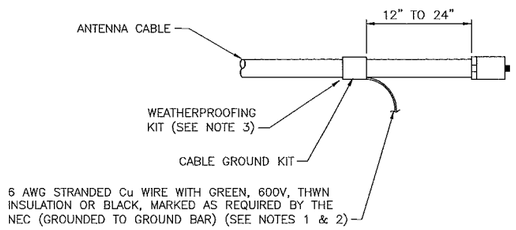
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
ELECTRICAL & GROUNDING PLANS

SHEET NO:
E-1



CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

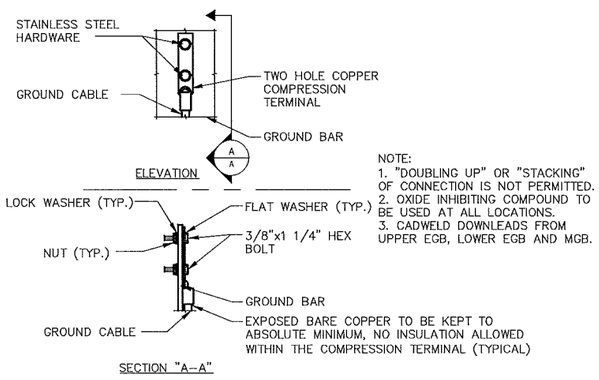
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

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

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

1 / E-2 CABLE GROUNDING KIT DETAIL

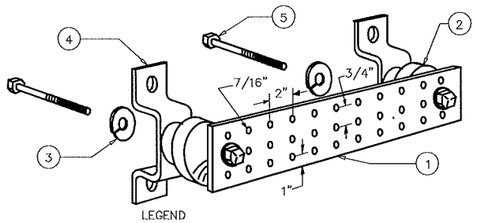
SCALE: N.T.S.



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

2 / E-2 GROUNDING BAR CONN. DETAIL

SCALE: NTS



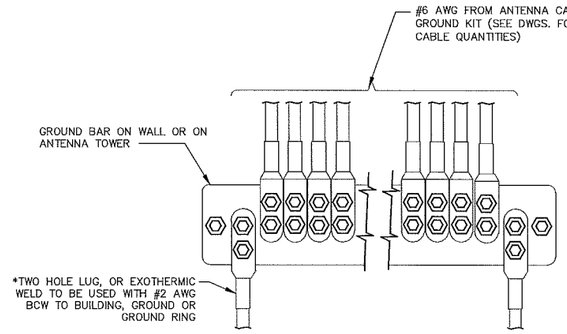
LEGEND

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

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

3 / E-2 GROUNDING BAR DETAIL

SCALE: NTS



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

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

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

4 / E-2 ANTENNA GROUND BAR DETAIL

SCALE: NTS

GROUNDING NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
2. ALL GROUND WIRES SHALL BE #2 AWG UNLESS NOTED OTHERWISE.
3. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
4. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
5. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
6. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
7. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL AND SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
8. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
9. WHEN CABLE LENGTH IS OVER 20' THE MANUFACTURERS GROUND KIT MUST BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS.
10. REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUNDING.
11. HOME RUN GROUNDS ARE NOT APPROVED BY CROWN CASTLE CONSTRUCTION STANDARDS AND THAT ANTENNA BUSS BARS SHOULD BE INSTALLED DIRECTLY TO TOWER STEEL WITHOUT INSULATORS OR DOWN CONDUCTORS.

PROTECTIVE GROUNDING SYSTEM GENERAL NOTES:

1. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF-TAPPING SCREWS.
2. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
3. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH PROJECT MANAGER.
4. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
5. INSTALL GROUND BUSHING ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
6. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
7. GROUND HYBRID CABLE SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

ELECTRICAL AND GROUNDING NOTES

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

Sprint

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

CROWN CASTLE

TECTONIC • PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550

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

www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE	REVISION BY
12/4/14	EDWARD N. IANNICELLI

STATE OF CONNECTICUT
EDWARD N. IANNICELLI
28473
LICENSED
12/4/14
PROFESSIONAL ENGINEER

SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2

June 26, 2014

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6565

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint* Co-Locate – Scenario 2.5B**	
	Carrier Site Number:	CT33XC515
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	841295
	Crown Castle Site Name:	Bethany
	Crown Castle JDE Job Number:	292806
	Crown Castle Work Order Number:	780985
	Crown Castle Application Number:	248837 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	93446.002.01
Site Data:	**719 Amity Road, Bethany, New Haven County, CT** **Latitude *41° 26' 33.93"*, Longitude *-72° 59' 32.86"*** **150 Foot - Monopole Tower**	

Dear Sean Dempsey,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 660222, in accordance with application 248837, revision 1.

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

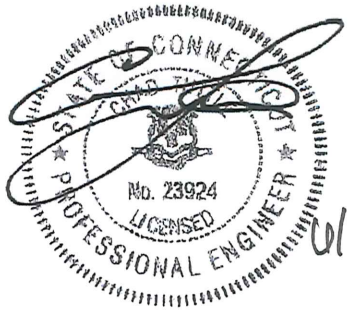
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

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

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

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

Respectfully submitted by:
B+T Engineering, Inc.



6/26/14

Raul Ortiz Jr., E.I.T.
Project Engineer

Chad E. Tuttle, P.E.
President

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Valmont. The original design windspeed and standards are unknown. This tower has been modified multiple times in accommodate with additional loading, these modification are listed in table 4.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	130.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	--
		3	Rfs Celwave	APXVTM14-C-120			

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
148.0	156.0	1	Kathrein	OG-4	12 2 2 2	1-5/8 3/4 3/8 1-1/4	1
	155.0	1	Decibel	DB286-B			
	149.0	6	ADC	CG-1900DD-FULL-DIN			
		6	Comm. Components Inc.	DTMABP7819VG12A			
		6	Ericsson	RRUS-11			
		3	Kathrein	800 10121			
		3	Kathrein	860 10025			
		6	Kmw Comm.	AM-X-CD-16-65-00T-RET			
		12	Powerwave Tech.	LGP21901			
		1	Raycap	DC6-48-60-18-8F			
	148.0	1	--	Platform Mount [LP 713-1]			
140.0	140.0	3	Antel	BXA-70063-6CF-2	--	--	2
		3	Decibel	DB854DG65ESX	12	1-5/8	1
		3	Rymsa Wireless	MG D3-800TV			
		1	--	Platform Mount [LP 303-1]			
132.0	132.0	1	--	Side Arm Mount [SO 102-3]	--	--	1
	131.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER			
		3	Alcatel Lucent	800MHZ RRH			
		3	Alcatel Lucent	TME-1900MHz RRH			
130.0	133.0	1	PCTEL	GPS-TMG-HR-26NCM	1 3	1/2 1-5/8	1
	130.0	3	Rfs Celwave	APXVSPP18-C-A20			
		1	--	T-Arm Mount [TA 602-3]			
		9	**Rfs Celwave**	**ACU-A20-N**	**--**	**--**	**2**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
122.0	120.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1-5/8	2
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
	122.0	1	--	Side Arm Mount [SO 103-3]	12	1-5/8	1

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

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)
Information Not Available						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint Co-Locate, Rev 1	248837	CCI Sites
Tower Manufacturer Drawings	Analysis by B+T Group, Project No. 83154	Date: 01/12/2012	On File
Tower Modifications Drawings	B+T Group, Project No. 84427.0002	Date:07/19/2012	On File
Tower Modifications Drawings	B+T Group, Project No. 83134.003A	Date:02/21/2012	On File
Post Modification Inspection	B+T Group, Project No.83154.004	Date:08/03/2012	On File
Foundation Mapping	Analysis by B+T Group, Project No. 83154	Date:01/12/2012	On File
Soil Properties	Analysis by GPD Group, Project No. 2010260.49, Rev 2	Date:01/26/2010	On File
Antenna Configuration	Crown CAD Package	Date:06/10/2014	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 123.833	Pole	TP22.508x17.61x0.219	1	-6.519	816.208	77.4*	Pass
L2	123.833 - 118.5	Pole	TP23.507x22.508x0.355	2	-7.924	1110.792	70.8*	Pass
L3	118.5 - 116.167	Pole	TP23.943x23.507x0.64	3	-8.384	1920.600	45.5*	Pass
L4	116.167 - 96.58	Pole	TP27.61x23.943x0.46	4	-10.796	1565.995	86.0*	Pass
L5	96.58 - 90.5	Pole	TP28.307x26.345x0.543	5	-13.354	1952.485	86.5*	Pass
L6	90.5 - 60.5	Pole	TP33.911x28.307x0.57	6	-20.225	2510.345	99.1*	Pass
L7	60.5 - 47.5	Pole	TP36.34x33.911x0.638	7	-22.287	3016.925	88.9*	Pass
L8	47.5 - 30.5	Pole	TP38.896x34.687x0.667	8	-30.352	3491.180	93.6*	Pass
L9	30.5 - 16.75	Pole	TP41.467x38.896x0.646	9	-34.820	3615.003	98.6*	Pass
L10	16.75 - 14.25	Pole	TP41.935x41.467x0.642	10	-35.656	3637.730	99.4*	Pass
L11	14.25 - 0	Pole	TP44.6x41.935x0.706	11	-40.970	4436.104	96.0*	Pass
							Summary	
						Pole (L10)	99.4*	Pass
						Rating =	**99.4***	**Pass**

* The capacities were determined using AeroSolutions

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	92.0	Pass
1	Base Plate	Base	79.5	Pass
1	Base Foundation (Soil Interaction)	Base	76.6	Pass

Structure Rating (max from all components) =	**99.4%**

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

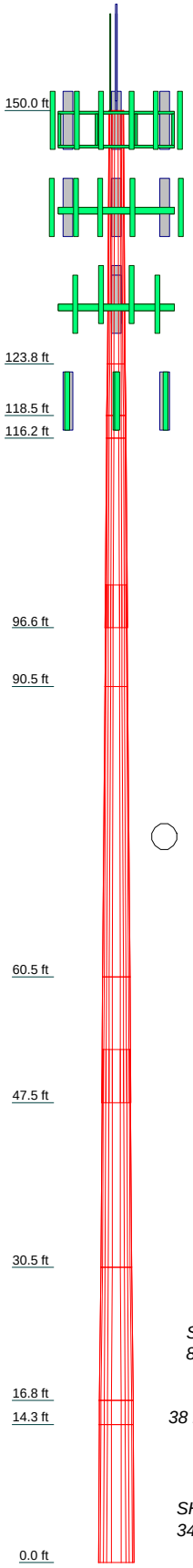
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11
Length (ft)	26.167	5.333	2.333	19.587	10.500	30.000	13.000	22.500	13.750	2.500	14.250
Number of Sides	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.219	0.355	0.640	0.460	0.543	0.570	0.638	0.667	0.646	0.642	0.706
Socket Length (ft)				4.420			5.500				
Top Dia (in)	17.610	22.508	23.502	23.943	26.345	28.307	33.911	34.687	38.896	41.467	41.935
Bot Dia (in)	22.508	23.507	23.943	27.610	28.307	33.911	36.340	38.896	41.467	41.935	44.600
Grade	A572-65	41359ksi	62	49.995272ksi	50.208658ksi	50.306152ksi	51.313664ksi	52.976228ksi	53.143602ksi	53.246419ksi	55.58438ksi
Weight (K)	1.2	0.4	0.3	2.3	1.6	5.4	2.9	5.7	3.7	0.7	4.5



AXIAL 53 K
SHEAR 8 K
MOMENT 915 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 0.750 in ICE

AXIAL 41 K
SHEAR 34 K
MOMENT 3609 kip-ft
TORQUE 3 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' x 3" Omni (E-as per Photo)	156	BXA-70063-6CF-2 w/ Mount Pipe (R)	140
10' Yagi (E-as per Photo)	155	6' x 2" Mount Pipe (E)	140
Lightning Rod 3/4" x 4' on 5' Pole (E-as per Photo)	150	(2) 6' x 2" Mount Pipe (E)	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	6' x 2" Mount Pipe (E)	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	Platform Mount [LP 303-1] (E)	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	TME-1900MHz RRH (E)	132
800 10121 w/ Mount Pipe (E)	148	TME-1900MHz RRH (E)	132
800 10121 w/ Mount Pipe (E)	148	TME-1900MHz RRH (E)	132
800 10121 w/ Mount Pipe (E)	148	800 EXTERNAL NOTCH FILTER (E)	132
OG-4 (E)	148	800 EXTERNAL NOTCH FILTER (E)	132
DB286-B (E)	148	800 EXTERNAL NOTCH FILTER (E)	132
(2) CG-1900DD-FULL-DIN (E)	148	800MHZ RRH (E)	132
(2) CG-1900DD-FULL-DIN (E)	148	800MHZ RRH (E)	132
(2) CG-1900DD-FULL-DIN (E)	148	800MHZ RRH (E)	132
DC6-48-60-18-8F (E)	148	Side Arm Mount [SO 102-3] (E)	132
(4) LGP21901 (E)	148	APXVTM14-C-120 w/ Mount Pipe (P)	130
(4) LGP21901 (E)	148	APXVTM14-C-120 w/ Mount Pipe (P)	130
(4) LGP21901 (E)	148	APXVTM14-C-120 w/ Mount Pipe (P)	130
(2) DTMABP7819VG12A (E)	148	TD-RRH8x20-25 (P)	130
(2) DTMABP7819VG12A (E)	148	TD-RRH8x20-25 (P)	130
(2) DTMABP7819VG12A (E)	148	TD-RRH8x20-25 (P)	130
860 10025 (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
860 10025 (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
860 10025 (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
(2) RRUS-11 (E)	148	GPS-TMG-HR-26NCM (E)	130
(2) RRUS-11 (E)	148	T-Arm Mount [TA 602-3] (E)	130
(2) RRUS-11 (E)	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	122
Platform Mount [LP 713-1] (E)	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	122
DB854DG65ESX w/ Mount Pipe (E)	140	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	122
DB854DG65ESX w/ Mount Pipe (E)	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	122
DB854DG65ESX w/ Mount Pipe (E)	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	122
MG D3-800TV w/ Mount Pipe (E)	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	122
(2) MG D3-800TV w/ Mount Pipe (E)	140	Side Arm Mount [SO 103-3] (E)	122
BXA-70063-6CF-2 w/ Mount Pipe (R)	140		
BXA-70063-6CF-2 w/ Mount Pipe (R)	140		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	52.976228ksi	53 ksi	68 ksi
52.41359ksi	52 ksi	67 ksi	53.143602ksi	53 ksi	68 ksi
49.995272ksi	50 ksi	65 ksi	53.246419ksi	53 ksi	68 ksi
50.208658ksi	50 ksi	65 ksi	53.263798ksi	53 ksi	68 ksi
50.306152ksi	50 ksi	65 ksi	55.58438ksi	56 ksi	71 ksi
51.313664ksi	51 ksi	66 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.4%

B+T Group
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Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***93446.002.01 - BETHANY, CT (BU# 841295)***		
Project:			
Client: Crown Castle	Drawn by: Rortiz	App'd:	
Code: TIA/EIA-222-F	Date: 06/26/14	Scale: NTS	
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.002.01_Aero Calculations\Working RISA\841295 BETHANY.eri		Dwg No. E-1	

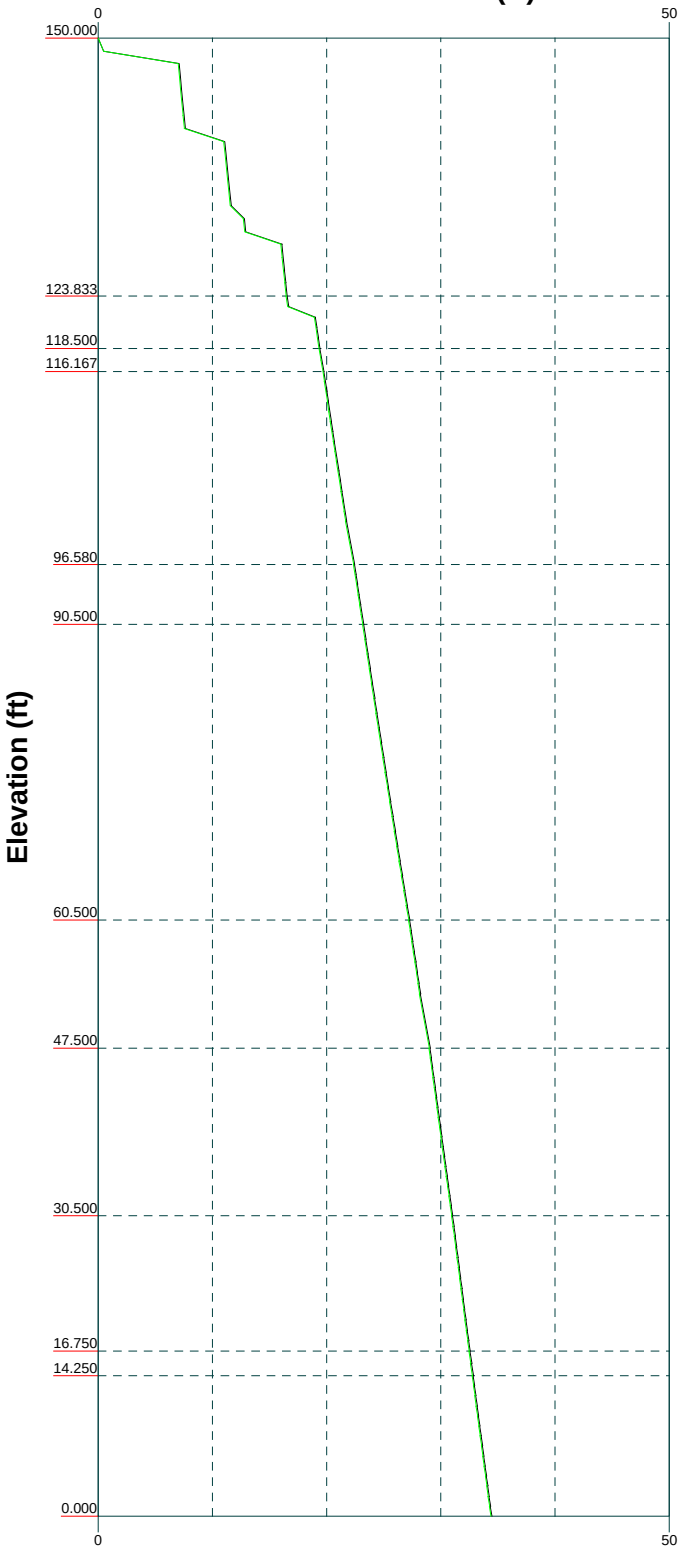
TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Vx Vz

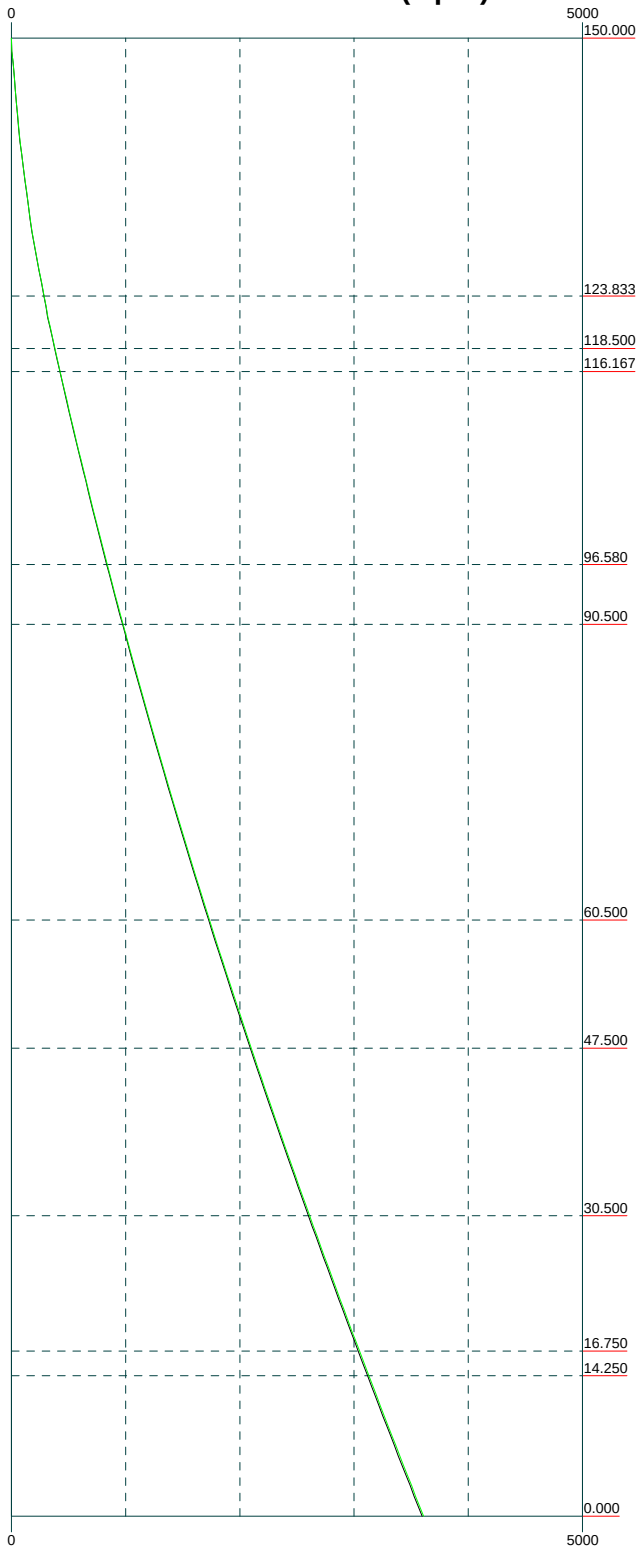
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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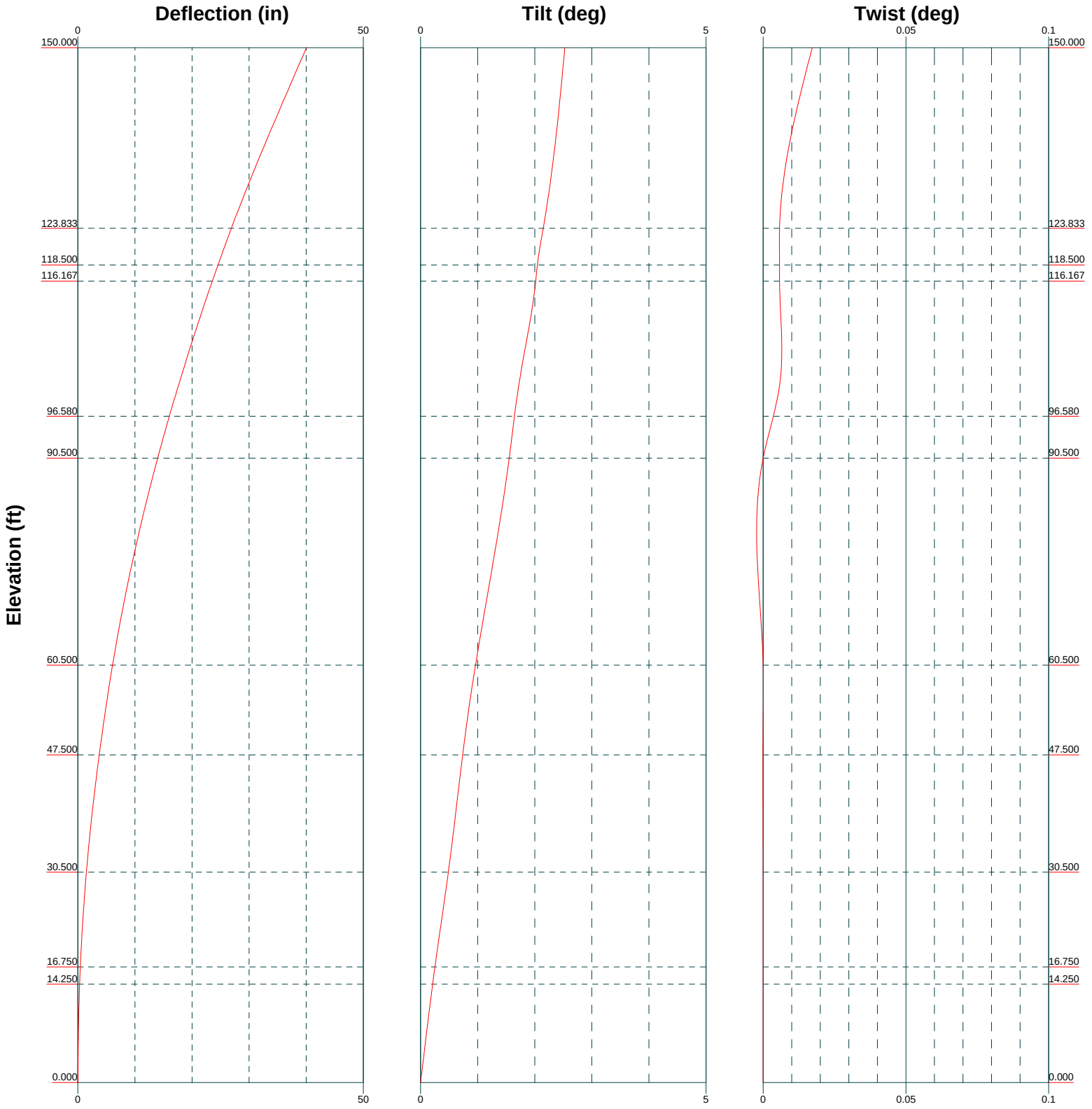
Job: 93446.002.01 - BETHANY, CT (BU# 841295)		
Project:		
Client: Crown Castle	Drawn by: Rortiz	App'd:
Code: TIA/EIA-222-F	Date: 06/26/14	Scale: NTS
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.002.01_Aero Calculations\Working RISA\841295 BETHANY.eri		Dwg No. E-4

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

Maximum Values



B+T GRP

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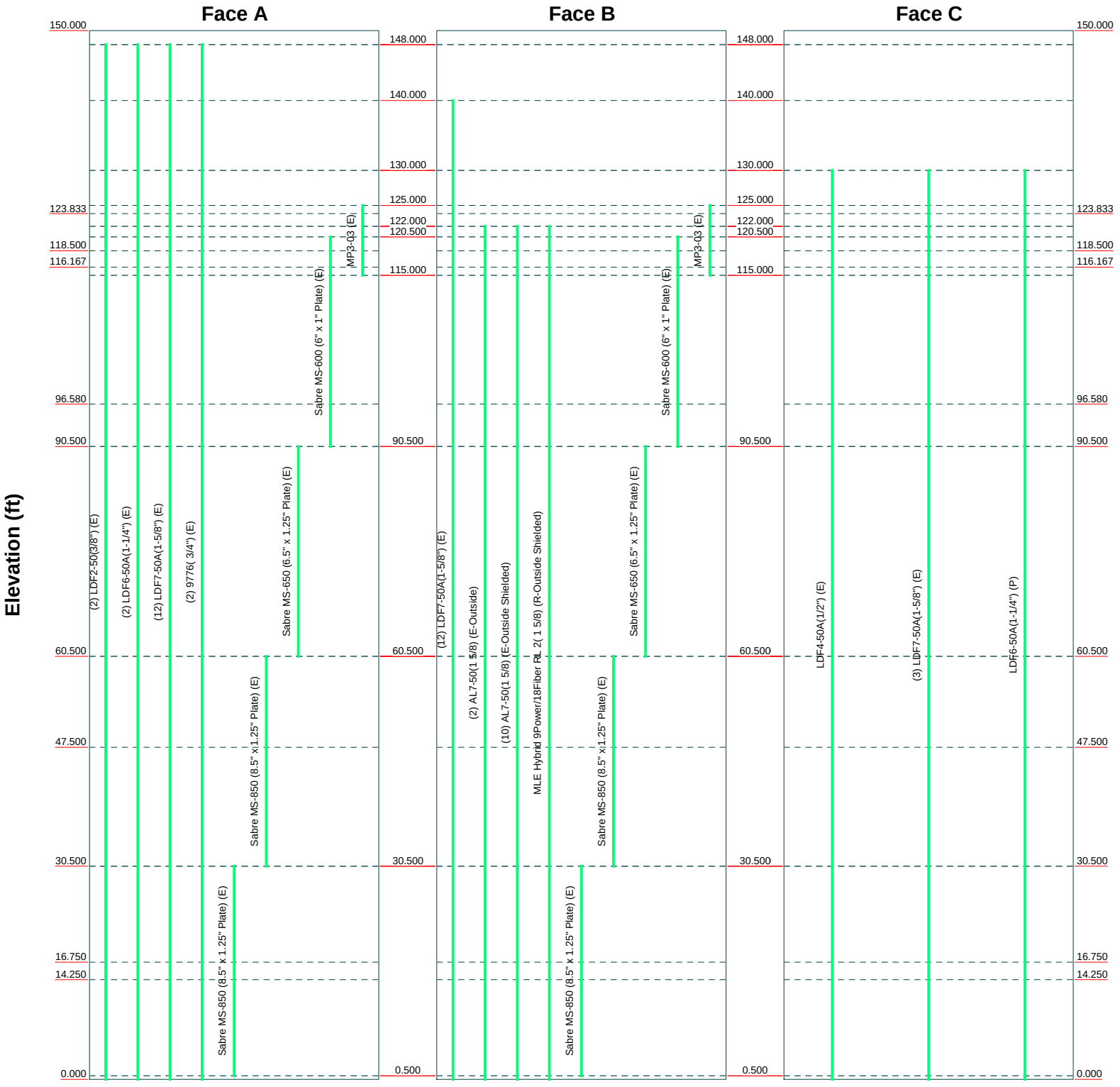
FAX: (918) 295-0265

Job: ***93446.002.01 - BETHANY, CT (BU# 841295)***			
Project:			
Client: Crown Castle	Drawn by: Rortiz	App'd:	
Code: TIA/EIA-222-F	Date: 06/26/14	Scale: NTS	
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.002.01_Aero Calculations\Working RISA\841295 BETHANY.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 150'

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



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Project:		
Client: Crown Castle	Drawn by: Rortiz	App'd:
Code: TIA/EIA-222-F	Date: 06/26/14	Scale: NTS
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.002.01_Aero Calculations\Working RISA\841295 BETHANY.eri		Dwg No. E-7

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
TOWER RATING: 99.4%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	150.000-123.833	26.167	0.000	12	17.610	22.508	0.219	0.875	A572-65 (65 ksi)
L2	123.833-118.500	5.333	0.000	12	22.508	23.507	0.355	1.422	52.41359ksi (52 ksi)
L3	118.500-116.167	2.333	0.000	12	23.507	23.943	0.640	2.560	49.995272ksi (50 ksi)
L4	116.167-96.580	19.587	4.420	12	23.943	27.610	0.460	1.840	50.208658ksi (50 ksi)
L5	96.580-90.500	10.500	0.000	12	26.345	28.307	0.543	2.171	50.306152ksi (50 ksi)
L6	90.500-60.500	30.000	0.000	12	28.307	33.911	0.570	2.279	51.313664ksi (51 ksi)
L7	60.500-47.500	13.000	5.500	12	33.911	36.340	0.638	2.551	52.976228ksi (53 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L8	47.500-30.500	22.500	0.000	12	34.687	38.896	0.667	2.669	53.143602ksi (53 ksi)
L9	30.500-16.750	13.750	0.000	12	38.896	41.467	0.646	2.583	53.246419ksi (53 ksi)
L10	16.750-14.250	2.500	0.000	12	41.467	41.935	0.642	2.569	53.263798ksi (53 ksi)
L11	14.250-0.000	14.250		12	41.935	44.600	0.706	2.824	55.58438ksi (56 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	18.231	12.250	472.914	6.226	9.122	51.843	958.252	6.029	4.133	18.895
	23.302	15.700	995.627	7.980	11.659	85.393	2017.411	7.727	5.446	24.896
L2	23.302	25.355	1588.222	7.931	11.659	136.219	3218.168	12.479	5.080	14.291
	24.336	26.498	1812.762	8.288	12.176	148.874	3673.147	13.041	5.347	15.043
L3	24.336	47.131	3145.548	8.186	12.176	258.330	6373.733	23.197	4.584	7.162
	24.788	48.031	3329.243	8.343	12.403	268.429	6745.948	23.640	4.701	7.345
L4	24.788	34.791	2448.871	8.407	12.403	197.447	4962.076	17.123	5.184	11.267
	28.584	40.223	3784.368	9.720	14.302	264.604	7668.156	19.796	6.166	13.403
L5	28.129	45.098	3832.341	9.237	13.647	280.824	7765.361	22.196	5.606	10.327
	29.305	48.527	4774.535	9.939	14.663	325.621	9674.503	23.884	6.131	11.296
L6	29.305	50.885	4996.850	9.930	14.663	340.782	10124.974	25.044	6.059	10.635
	35.108	61.167	8679.170	11.936	17.566	494.087	17586.352	30.105	7.561	13.272
L7	35.108	68.326	9655.488	11.912	17.566	549.667	19564.637	33.628	7.379	11.571
	37.622	73.314	11927.853	12.781	18.824	633.647	24169.065	36.083	8.030	12.592
L8	36.976	73.096	10798.220	12.179	17.968	600.966	21880.121	35.975	7.508	11.252
	40.268	82.137	15321.381	13.686	20.148	760.444	31045.272	40.425	8.636	12.942
L9	40.268	79.539	14853.288	13.693	20.148	737.211	30096.789	39.146	8.693	13.461
	42.930	84.886	18055.108	14.614	21.480	840.553	36584.543	41.778	9.383	14.529
L10	42.930	84.425	17960.168	14.615	21.480	836.133	36392.170	41.551	9.392	14.624
	43.414	85.392	18584.358	14.783	21.722	855.545	37656.949	42.027	9.517	14.819
L11	43.414	93.727	20335.380	14.760	21.722	936.154	41204.994	46.130	9.346	13.239
	46.173	99.786	24539.423	15.714	23.103	1062.184	49723.523	49.111	10.061	14.25

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 150.000-123.833				1	1	1		
L2 123.833-118.500				1	1	0.947563		
L3 118.500-116.167				1	1	0.903895		
L4 116.167-96.580				1	1	0.939879		
L5 96.580-90.500				1	1	0.949242		
L6 90.500-60.500				1	1	0.949373		
L7				1	1	0.94066		

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
60.500-47.500 L8				1	1	0.952413		
47.500-30.500 L9				1	1	0.958101		
30.500-16.750 L10				1	1	0.959028		
16.750-14.250 L11				1	1	0.959375		
14.250-0.000								

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
LDF2-50(3/8") (E)	A	No	Inside Pole	148.000 - 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
LDF6-50A(1-1/4") (E)	A	No	Inside Pole	148.000 - 0.000	2	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
LDF7-50A(1-5/8") (E)	A	No	Inside Pole	148.000 - 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
9776(3/4") (E)	A	No	Inside Pole	148.000 - 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
$$$ LDF7-50A(1-5/8") (E)	B	No	Inside Pole	140.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
$$$ LDF4-50A(1/2") (E)	C	No	Inside Pole	130.000 - 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
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	130.000 - 0.000	3	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") (P)	C	No	Inside Pole	130.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						4" Ice	0.000	0.001
$$$								
AL7-50(1 5/8) (E-Outside)	B	No	CaAa (Out Of Face)	122.000 - 0.000	2	No Ice	0.196	0.001
						1/2" Ice	0.296	0.002
						1" Ice	0.396	0.004
						2" Ice	0.596	0.010
						4" Ice	0.996	0.030
AL7-50(1 5/8) (E-Outside Shielded)	B	No	Inside Pole	122.000 - 0.000	10	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
MLE Hybrid 9Power/18Fiber RL 2(1 5/8) (R-Outside Shielded)	B	No	Inside Pole	122.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
$$$								
$$$								
Sabre MS-850 (8.5" x 1.25" Plate) (E)	A	No	CaAa (Out Of Face)	30.500 - 0.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-850 (8.5" x 1.25" Plate) (E)	B	No	CaAa (Out Of Face)	30.500 - 0.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
**								
Sabre MS-850 (8.5" x 1.25" Plate) (E)	A	No	CaAa (Out Of Face)	60.500 - 30.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-850 (8.5" x 1.25" Plate) (E)	B	No	CaAa (Out Of Face)	60.500 - 30.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
Sabre MS-650 (6.5" x 1.25" Plate) (E)	A	No	CaAa (Out Of Face)	90.500 - 60.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-650 (6.5" x 1.25" Plate) (E)	B	No	CaAa (Out Of Face)	90.500 - 60.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
Sabre MS-600 (6" x 1" Plate) (E)	A	No	CaAa (Out Of Face)	120.500 - 90.500	1	No Ice	0.167	0.000
						1/2" Ice	0.250	0.000
						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
Sabre MS-600 (6" x 1" Plate) (E)	B	No	CaAa (Out Of Face)	120.500 - 90.500	1	No Ice	0.167	0.000
						1/2" Ice	0.250	0.000
						1" Ice	0.333	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
**								
**								
**								
MP3-03 (E)	A	No	CaAa (Out Of Face)	125.000 - 115.000	1	No Ice	0.262	0.010
						1/2" Ice	0.345	0.015
						1" Ice	0.428	0.020
						2" Ice	0.595	0.040
						4" Ice	0.928	0.080
MP3-03 (E)	B	No	Inside Pole	125.000 - 115.000	1	No Ice	0.000	0.010
						1/2" Ice	0.000	0.010
						1" Ice	0.000	0.010
						2" Ice	0.000	0.010
						4" Ice	0.000	0.010

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.000-123.833	A	0.000	0.000	0.000	0.305	0.300
		B	0.000	0.000	0.000	0.000	0.171
		C	0.000	0.000	0.000	0.000	0.020
L2	123.833-118.500	A	0.000	0.000	0.000	1.729	0.116
		B	0.000	0.000	0.000	1.705	0.131
		C	0.000	0.000	0.000	0.000	0.017
L3	118.500-116.167	A	0.000	0.000	0.000	0.999	0.051
		B	0.000	0.000	0.000	1.303	0.063
		C	0.000	0.000	0.000	0.000	0.008
L4	116.167-96.580	A	0.000	0.000	0.000	3.570	0.245
		B	0.000	0.000	0.000	10.942	0.347
		C	0.000	0.000	0.000	0.000	0.064
L5	96.580-90.500	A	0.000	0.000	0.000	1.013	0.073
		B	0.000	0.000	0.000	3.397	0.104
		C	0.000	0.000	0.000	0.000	0.020
L6	90.500-60.500	A	0.000	0.000	0.000	6.250	0.358
		B	0.000	0.000	0.000	18.010	0.514
		C	0.000	0.000	0.000	0.000	0.098
L7	60.500-47.500	A	0.000	0.000	0.000	2.708	0.155
		B	0.000	0.000	0.000	7.804	0.223
		C	0.000	0.000	0.000	0.000	0.043
L8	47.500-30.500	A	0.000	0.000	0.000	3.542	0.203
		B	0.000	0.000	0.000	10.206	0.292
		C	0.000	0.000	0.000	0.000	0.056
L9	30.500-16.750	A	0.000	0.000	0.000	2.865	0.164
		B	0.000	0.000	0.000	8.254	0.236
		C	0.000	0.000	0.000	0.000	0.045
L10	16.750-14.250	A	0.000	0.000	0.000	0.521	0.030
		B	0.000	0.000	0.000	1.501	0.043
		C	0.000	0.000	0.000	0.000	0.008
L11	14.250-0.000	A	0.000	0.000	0.000	2.865	0.170
		B	0.000	0.000	0.000	8.450	0.244
		C	0.000	0.000	0.000	0.000	0.047

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.000-123.833	A	0.889	0.000	0.000	0.000	0.478	0.311
		B		0.000	0.000	0.000	0.000	0.171
		C		0.000	0.000	0.000	0.000	0.020
L2	123.833-118.500	A	0.877	0.000	0.000	0.000	2.800	0.164
		B		0.000	0.000	0.000	3.225	0.153
		C		0.000	0.000	0.000	0.000	0.017
L3	118.500-116.167	A	0.873	0.000	0.000	0.000	1.678	0.072
		B		0.000	0.000	0.000	2.458	0.077
		C		0.000	0.000	0.000	0.000	0.008
L4	116.167-96.580	A	0.863	0.000	0.000	0.000	6.555	0.256
		B		0.000	0.000	0.000	20.520	0.466
		C		0.000	0.000	0.000	0.000	0.064
L5	96.580-90.500	A	0.850	0.000	0.000	0.000	1.888	0.073
		B		0.000	0.000	0.000	6.370	0.141
		C		0.000	0.000	0.000	0.000	0.020
L6	90.500-60.500	A	0.828	0.000	0.000	0.000	10.389	0.358
		B		0.000	0.000	0.000	32.081	0.688
		C		0.000	0.000	0.000	0.000	0.098
L7	60.500-47.500	A	0.796	0.000	0.000	0.000	4.432	0.155
		B		0.000	0.000	0.000	13.665	0.294
		C		0.000	0.000	0.000	0.000	0.043
L8	47.500-30.500	A	0.765	0.000	0.000	0.000	5.796	0.203
		B		0.000	0.000	0.000	17.869	0.385
		C		0.000	0.000	0.000	0.000	0.056
L9	30.500-16.750	A	0.750	0.000	0.000	0.000	4.583	0.164
		B		0.000	0.000	0.000	14.098	0.306
		C		0.000	0.000	0.000	0.000	0.045
L10	16.750-14.250	A	0.750	0.000	0.000	0.000	0.833	0.030
		B		0.000	0.000	0.000	2.563	0.056
		C		0.000	0.000	0.000	0.000	0.008
L11	14.250-0.000	A	0.750	0.000	0.000	0.000	4.583	0.170
		B		0.000	0.000	0.000	14.444	0.317
		C		0.000	0.000	0.000	0.000	0.047

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.000-123.833	0.000	-0.019	0.000	-0.028
L2	123.833-118.500	0.314	-0.184	0.476	-0.200
L3	118.500-116.167	0.484	-0.149	0.695	-0.147
L4	116.167-96.580	0.540	0.109	0.796	0.167
L5	96.580-90.500	0.552	0.129	0.825	0.194
L6	90.500-60.500	0.594	0.105	0.869	0.177
L7	60.500-47.500	0.611	0.108	0.898	0.182
L8	47.500-30.500	0.619	0.109	0.916	0.186
L9	30.500-16.750	0.628	0.111	0.923	0.186
L10	16.750-14.250	0.633	0.112	0.933	0.189
L11	14.250-0.000	0.631	0.118	0.937	0.198

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
12' x 3" Omni	A	From Leg	3.000	0.000	156.000	No Ice	3.600	3.600	0.020
(E-as per Photo)			0.000			1/2" Ice	4.833	4.833	0.046
			0.000			1" Ice	6.083	6.083	0.080
						2" Ice	8.017	8.017	0.172
						4" Ice	11.048	11.048	0.455
10' Yagi	A	From Leg	3.000	0.000	155.000	No Ice	2.000	2.000	0.050
(E-as per Photo)			0.000			1/2" Ice	3.020	3.020	0.070
			0.000			1" Ice	4.040	4.040	0.090
						2" Ice	6.080	6.080	0.130
						4" Ice	10.160	10.160	0.210
Lightning Rod 3/4" x 4' on 5'	C	From Leg	0.000	0.000	150.000	No Ice	1.628	1.628	0.059
Pole			0.000			1/2" Ice	2.347	2.347	0.078
(E-as per Photo)			5.000			1" Ice	2.947	2.947	0.101
						2" Ice	4.124	4.124	0.162
						4" Ice	6.831	6.831	0.369
$$$									
(2)	A	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2)	B	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2)	C	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
800 10121 w/ Mount Pipe	A	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	B	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	C	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
OG-4	A	From Leg	4.000	0.000	148.000	No Ice	6.000	6.000	0.020
(E)			0.000			1/2" Ice	7.138	7.138	0.061
			8.000			1" Ice	7.863	7.863	0.110
						2" Ice	9.341	9.341	0.233
						4" Ice	12.409	12.409	0.582
DB286-B	B	From Leg	4.000	0.000	148.000	No Ice	4.990	4.990	0.082
(E)			0.000			1/2" Ice	8.982	8.982	0.107
			7.000			1" Ice	12.974	12.974	0.131

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	20.958	20.958	0.180
						4" Ice	36.926	36.926	0.279
(2) CG-1900DD-FULL-DIN (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.319 0.417 0.524 0.764 1.347	0.015 0.023 0.032 0.056 0.136
(2) CG-1900DD-FULL-DIN (E)	B	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.319 0.417 0.524 0.764 1.347	0.015 0.023 0.032 0.056 0.136
(2) CG-1900DD-FULL-DIN (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.319 0.417 0.524 0.764 1.347	0.015 0.023 0.032 0.056 0.136
DC6-48-60-18-8F (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.567 2.798 3.038 3.543 4.658	4.317 4.596 4.885 5.488 6.797	0.019 0.050 0.085 0.167 0.383
(4) LGP21901 (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(4) LGP21901 (E)	B	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(4) LGP21901 (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(2) DTMABP7819VG12A (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
(2) DTMABP7819VG12A (E)	B	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
(2) DTMABP7819VG12A (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
860 10025 (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.163 0.229 0.302 0.476 0.927	0.136 0.199 0.270 0.439 0.879	0.001 0.003 0.005 0.014 0.051

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
860 10025	B	From Leg	4.000	0.000	148.000	No Ice	0.163	0.136	0.001
(E)			0.000			1/2" Ice	0.229	0.199	0.003
			1.000			1" Ice	0.302	0.270	0.005
						2" Ice	0.476	0.439	0.014
						4" Ice	0.927	0.879	0.051
860 10025	C	From Leg	4.000	0.000	148.000	No Ice	0.163	0.136	0.001
(E)			0.000			1/2" Ice	0.229	0.199	0.003
			1.000			1" Ice	0.302	0.270	0.005
						2" Ice	0.476	0.439	0.014
						4" Ice	0.927	0.879	0.051
(2) RRUS-11	A	From Leg	4.000	0.000	148.000	No Ice	3.248	1.379	0.051
(E)			0.000			1/2" Ice	3.490	1.558	0.072
			1.000			1" Ice	3.741	1.745	0.096
						2" Ice	4.268	2.146	0.153
						4" Ice	5.426	3.050	0.314
(2) RRUS-11	B	From Leg	4.000	0.000	148.000	No Ice	3.248	1.379	0.051
(E)			0.000			1/2" Ice	3.490	1.558	0.072
			1.000			1" Ice	3.741	1.745	0.096
						2" Ice	4.268	2.146	0.153
						4" Ice	5.426	3.050	0.314
(2) RRUS-11	C	From Leg	4.000	0.000	148.000	No Ice	3.248	1.379	0.051
(E)			0.000			1/2" Ice	3.490	1.558	0.072
			1.000			1" Ice	3.741	1.745	0.096
						2" Ice	4.268	2.146	0.153
						4" Ice	5.426	3.050	0.314
Platform Mount [LP 713-1]	C	None		0.000	148.000	No Ice	31.270	31.270	1.510
(E)						1/2" Ice	39.680	39.680	1.929
						1" Ice	48.090	48.090	2.348
						2" Ice	64.910	64.910	3.186
						4" Ice	98.550	98.550	4.862
$$$									
DB854DG65ESX w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	6.132	4.100	0.037
(E)			0.000			1/2" Ice	6.594	4.728	0.084
			0.000			1" Ice	7.064	5.379	0.137
						2" Ice	8.037	6.793	0.264
						4" Ice	10.117	9.880	0.630
DB854DG65ESX w/ Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	6.132	4.100	0.037
(E)			0.000			1/2" Ice	6.594	4.728	0.084
			0.000			1" Ice	7.064	5.379	0.137
						2" Ice	8.037	6.793	0.264
						4" Ice	10.117	9.880	0.630
DB854DG65ESX w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	6.132	4.100	0.037
(E)			0.000			1/2" Ice	6.594	4.728	0.084
			0.000			1" Ice	7.064	5.379	0.137
						2" Ice	8.037	6.793	0.264
						4" Ice	10.117	9.880	0.630
MG D3-800TV w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	3.570	3.418	0.037
(E)			0.000			1/2" Ice	3.979	4.119	0.071
			0.000			1" Ice	4.387	4.784	0.111
						2" Ice	5.325	6.164	0.210
						4" Ice	7.341	9.175	0.520
(2) MG D3-800TV w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	3.570	3.418	0.037
(E)			0.000			1/2" Ice	3.979	4.119	0.071
			0.000			1" Ice	4.387	4.784	0.111
						2" Ice	5.325	6.164	0.210
						4" Ice	7.341	9.175	0.520
BXA-70063-6CF-2 w/ Mount	A	From Leg	4.000	0.000	140.000	No Ice	7.969	5.801	0.042

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
Pipe			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	140.000	No Ice 1/2" Ice	7.969 8.609	5.801 6.953	0.042 0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	140.000	No Ice 1/2" Ice	7.969 8.609	5.801 6.953	0.042 0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Platform Mount [LP 303-1]	C	None		0.000	140.000	No Ice	14.660	14.660	1.250
(E)						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
$$$									
TME-1900MHz RRH	A	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044
(E)			0.000			1/2" Ice	3.145	4.065	0.075
			-1.000			1" Ice	3.391	4.337	0.110
						2" Ice	3.909	4.908	0.192
						4" Ice	5.050	6.152	0.407
TME-1900MHz RRH	B	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044
(E)			0.000			1/2" Ice	3.145	4.065	0.075
			-1.000			1" Ice	3.391	4.337	0.110
						2" Ice	3.909	4.908	0.192
						4" Ice	5.050	6.152	0.407
TME-1900MHz RRH	C	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044
(E)			0.000			1/2" Ice	3.145	4.065	0.075
			-1.000			1" Ice	3.391	4.337	0.110
						2" Ice	3.909	4.908	0.192
						4" Ice	5.050	6.152	0.407
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000	0.000	132.000	No Ice	0.770	0.375	0.011
			0.000			1/2" Ice	0.890	0.465	0.017
(E)			-1.000			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	1.000	0.000	132.000	No Ice	0.770	0.375	0.011
			0.000			1/2" Ice	0.890	0.465	0.017

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
(E)			-1.000			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	1.000	0.000	132.000	No Ice	0.770	0.375	0.011
			0.000			1/2" Ice	0.890	0.465	0.017
(E)			-1.000			1" Ice	1.018	0.563	0.024
						2" Ice	1.301	0.787	0.045
						4" Ice	1.970	1.337	0.114
800MHZ RRH	A	From Leg	1.000	0.000	132.000	No Ice	2.490	2.068	0.053
(E)			0.000			1/2" Ice	2.706	2.271	0.074
			-1.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
800MHZ RRH	B	From Leg	1.000	0.000	132.000	No Ice	2.490	2.068	0.053
(E)			0.000			1/2" Ice	2.706	2.271	0.074
			-1.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
800MHZ RRH	C	From Leg	1.000	0.000	132.000	No Ice	2.490	2.068	0.053
(E)			0.000			1/2" Ice	2.706	2.271	0.074
			-1.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
Side Arm Mount [SO 102-3]	C	None		0.000	132.000	No Ice	3.000	3.000	0.081
(E)						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
$$$									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077
			0.000			1/2" Ice	7.662	5.754	0.132
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.339
						4" Ice	11.526	11.412	0.753
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077
			0.000			1/2" Ice	7.662	5.754	0.132
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.339
						4" Ice	11.526	11.412	0.753
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077
			0.000			1/2" Ice	7.662	5.754	0.132
(P)			0.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.339
						4" Ice	11.526	11.412	0.753
TD-RRH8x20-25	A	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	B	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	C	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
(P)			0.000			1/2" Ice	5.014	1.920	0.097
			0.000			1" Ice	5.316	2.145	0.128

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
GPS-TMG-HR-26NCM (E)	A	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.156 0.213 0.279 0.437 0.857	0.156 0.213 0.279 0.437 0.857	0.001 0.002 0.005 0.014 0.052
T-Arm Mount [TA 602-3] (E)	C	None		0.000	130.000	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
$$$									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	A	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	B	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (R)	C	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	A	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.814 7.334 7.850 8.912 11.158	5.631 6.468 7.244 8.849 12.273	0.112 0.169 0.232 0.383 0.806
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	B	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.814 7.334 7.850 8.912 11.158	5.631 6.468 7.244 8.849 12.273	0.112 0.169 0.232 0.383 0.806
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (R)	C	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.814 7.334 7.850 8.912	5.631 6.468 7.244 8.849	0.112 0.169 0.232 0.383

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
Side Arm Mount [SO 103-3] (E)	C	None		0.000	122.000	4" Ice	11.158	12.273	0.806
						No Ice	9.500	9.500	0.224
						1/2" Ice	11.800	11.800	0.317
						1" Ice	14.100	14.100	0.410
						2" Ice	18.700	18.700	0.596
						4" Ice	27.900	27.900	0.968
$$$* *$$$									

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	150 - 123.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-14.369	0.209	1.083
			Max. Mx	5	-6.519	-286.276	0.096
			Max. My	2	-6.537	-0.206	284.224
			Max. Vy	5	16.550	-286.276	0.096
			Max. Vx	2	-16.463	-0.206	284.224
			Max. Torque	12			-2.880
L2	123.833 - 118.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-16.977	0.188	1.169
			Max. Mx	5	-7.924	-380.641	0.201
			Max. My	2	-7.942	-0.244	378.169
			Max. Vy	5	19.420	-380.641	0.201
			Max. Vx	2	-19.333	-0.244	378.169
			Max. Torque	5			2.678
L3	118.5 - 116.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-17.538	0.174	1.204
			Max. Mx	5	-8.384	-426.347	0.248
			Max. My	2	-8.402	-0.261	423.690
			Max. Vy	5	19.769	-426.347	0.248
			Max. Vx	2	-19.682	-0.261	423.690
			Max. Torque	5			2.681
L4	116.167 - 96.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-20.373	0.073	1.162
			Max. Mx	5	-10.796	-741.057	0.404
			Max. My	2	-10.812	-0.372	737.054
			Max. Vy	5	21.760	-741.057	0.404
			Max. Vx	2	-21.672	-0.372	737.054
			Max. Torque	5			2.681
L5	96.58 - 90.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-23.378	0.001	1.125
			Max. Mx	5	-13.354	-977.635	0.500
			Max. My	2	-13.368	-0.451	972.691
			Max. Vy	5	23.256	-977.635	0.500
			Max. Vx	2	-23.168	-0.451	972.691
			Max. Torque	5			2.652
L6	90.5 - 60.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.945	-0.229	0.993
			Max. Mx	5	-20.225	-1734.448	0.729
			Max. My	2	-20.235	-0.680	1726.799
			Max. Vy	5	27.286	-1734.448	0.729
			Max. Vx	2	-27.198	-0.680	1726.799
			Max. Torque	5			2.642
L7	60.5 - 47.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.172	-0.291	0.957
			Max. Mx	5	-22.287	-1942.575	0.779
			Max. My	2	-22.295	-0.738	1934.252
			Max. Vy	5	28.241	-1942.575	0.779
			Max. Vx	2	-28.154	-0.738	1934.252
			Max. Torque	5			2.597
L8	47.5 - 30.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-41.973	-0.486	0.844
			Max. Mx	5	-30.352	-2610.823	0.922
			Max. My	2	-30.357	-0.914	2600.479
			Max. Vy	5	31.049	-2610.823	0.922
			Max. Vx	2	-30.963	-0.914	2600.479

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	5			2.579
L9	30.5 - 16.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-46.702	-0.609	0.773
			Max. Mx	5	-34.820	-3048.019	0.998
			Max. My	2	-34.823	-1.022	3036.453
			Max. Vy	5	32.574	-3048.019	0.998
			Max. Vx	2	-32.489	-1.022	3036.453
			Max. Torque	5			2.556
L10	16.75 - 14.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-47.589	-0.632	0.760
			Max. Mx	5	-35.655	-3129.767	1.012
			Max. My	2	-35.658	-1.041	3117.982
			Max. Vy	5	32.856	-3129.767	1.012
			Max. Vx	2	-32.770	-1.041	3117.982
			Max. Torque	5			2.538
L11	14.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-53.213	-0.769	0.681
			Max. Mx	5	-40.970	-3609.263	1.083
			Max. My	2	-40.970	-1.152	3596.231
			Max. Vy	5	34.478	-3609.263	1.083
			Max. Vx	2	-34.394	-1.152	3596.231
			Max. Torque	5			2.534

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	53.213	0.000	0.000
	Max. H_x	11	40.982	34.463	-0.006
	Max. H_z	2	40.982	-0.006	34.379
	Max. M_x	2	3596.231	-0.006	34.379
	Max. M_z	5	3609.263	-34.463	0.006
	Max. Torsion	5	2.514	-34.463	0.006
	Min. Vert	1	40.982	0.000	0.000
	Min. H_x	5	40.982	-34.463	0.006
	Min. H_z	8	40.982	0.006	-34.379
	Min. M_x	8	-3595.827	0.006	-34.379
	Min. M_z	11	-3608.773	34.463	-0.006
	Min. Torsion	12	-2.516	29.843	17.184

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	40.982	0.000	0.000	-0.187	-0.237	0.000
Dead+Wind 0 deg - No Ice	40.982	0.006	-34.379	-3596.231	-1.152	0.674
Dead+Wind 30 deg - No Ice	40.982	17.237	-29.776	-3114.891	-1805.575	-0.676
Dead+Wind 60 deg - No Ice	40.982	29.849	-17.195	-1798.959	-3126.223	-1.842
Dead+Wind 90 deg - No Ice	40.982	34.463	-0.006	-1.083	-3609.263	-2.514
Dead+Wind 120 deg - No Ice	40.982	29.843	17.184	1797.027	-3125.299	-2.513
Dead+Wind 150 deg - No Ice	40.982	17.226	29.770	3113.599	-1803.984	-1.839
Dead+Wind 180 deg - No Ice	40.982	-0.006	34.379	3595.827	0.662	-0.673
Dead+Wind 210 deg - No Ice	40.982	-17.237	29.776	3114.499	1805.062	0.673

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - No Ice	40.982	-29.849	17.195	1798.595	3125.710	1.839
Dead+Wind 270 deg - No Ice	40.982	-34.463	0.006	0.732	3608.773	2.514
Dead+Wind 300 deg - No Ice	40.982	-29.843	-17.184	-1797.391	3124.832	2.516
Dead+Wind 330 deg - No Ice	40.982	-17.226	-29.770	-3113.990	1803.517	1.842
Dead+Ice+Temp	53.213	0.000	-0.000	-0.681	-0.769	-0.000
Dead+Wind 0 deg+Ice+Temp	53.213	-0.003	-8.359	-912.254	-0.387	0.464
Dead+Wind 30 deg+Ice+Temp	53.213	4.186	-7.237	-789.933	-457.565	0.129
Dead+Wind 60 deg+Ice+Temp	53.213	7.252	-4.177	-456.154	-792.352	-0.241
Dead+Wind 90 deg+Ice+Temp	53.213	8.376	0.003	-0.352	-915.041	-0.546
Dead+Wind 120 deg+Ice+Temp	53.213	7.255	4.182	455.339	-792.758	-0.705
Dead+Wind 150 deg+Ice+Temp	53.213	4.190	7.240	788.817	-458.270	-0.675
Dead+Wind 180 deg+Ice+Temp	53.213	0.003	8.359	910.729	-1.203	-0.464
Dead+Wind 210 deg+Ice+Temp	53.213	-4.186	7.237	788.408	455.974	-0.129
Dead+Wind 240 deg+Ice+Temp	53.213	-7.252	4.177	454.631	790.759	0.241
Dead+Wind 270 deg+Ice+Temp	53.213	-8.376	-0.003	-1.168	913.449	0.546
Dead+Wind 300 deg+Ice+Temp	53.213	-7.255	-4.182	-456.859	791.169	0.705
Dead+Wind 330 deg+Ice+Temp	53.213	-4.190	-7.240	-790.340	456.682	0.675
Dead+Wind 0 deg - Service	40.982	0.002	-11.896	-1246.730	-0.563	0.234
Dead+Wind 30 deg - Service	40.982	5.964	-10.303	-1079.886	-626.050	-0.241
Dead+Wind 60 deg - Service	40.982	10.328	-5.950	-623.738	-1083.851	-0.651
Dead+Wind 90 deg - Service	40.982	11.925	-0.002	-0.516	-1251.297	-0.886
Dead+Wind 120 deg - Service	40.982	10.326	5.946	622.789	-1083.534	-0.884
Dead+Wind 150 deg - Service	40.982	5.961	10.301	1079.164	-625.502	-0.645
Dead+Wind 180 deg - Service	40.982	-0.002	11.896	1246.320	0.066	-0.234
Dead+Wind 210 deg - Service	40.982	-5.964	10.303	1079.478	625.550	0.240
Dead+Wind 240 deg - Service	40.982	-10.328	5.950	623.334	1083.351	0.650
Dead+Wind 270 deg - Service	40.982	-11.925	0.002	0.113	1250.800	0.886
Dead+Wind 300 deg - Service	40.982	-10.326	-5.946	-623.193	1083.040	0.885
Dead+Wind 330 deg - Service	40.982	-5.961	-10.301	-1079.572	625.008	0.646

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-40.982	0.000	0.000	40.982	0.000	0.000%
2	0.006	-40.982	-34.379	-0.006	40.982	34.379	0.000%
3	17.237	-40.982	-29.776	-17.237	40.982	29.776	0.000%
4	29.849	-40.982	-17.195	-29.849	40.982	17.195	0.000%
5	34.463	-40.982	-0.006	-34.463	40.982	0.006	0.000%
6	29.843	-40.982	17.184	-29.843	40.982	-17.184	0.000%
7	17.226	-40.982	29.770	-17.226	40.982	-29.770	0.000%
8	-0.006	-40.982	34.379	0.006	40.982	-34.379	0.000%
9	-17.237	-40.982	29.776	17.237	40.982	-29.776	0.000%
10	-29.849	-40.982	17.195	29.849	40.982	-17.195	0.000%
11	-34.463	-40.982	0.006	34.463	40.982	-0.006	0.000%
12	-29.843	-40.982	-17.184	29.843	40.982	17.184	0.000%
13	-17.226	-40.982	-29.770	17.226	40.982	29.770	0.000%
14	0.000	-53.213	0.000	0.000	53.213	0.000	0.000%
15	-0.003	-53.213	-8.358	0.003	53.213	8.359	0.000%
16	4.186	-53.213	-7.237	-4.186	53.213	7.237	0.000%
17	7.252	-53.213	-4.177	-7.252	53.213	4.177	0.000%
18	8.376	-53.213	0.003	-8.376	53.213	-0.003	0.000%
19	7.255	-53.213	4.182	-7.255	53.213	-4.182	0.000%
20	4.190	-53.213	7.240	-4.190	53.213	-7.240	0.000%
21	0.003	-53.213	8.358	-0.003	53.213	-8.359	0.000%
22	-4.186	-53.213	7.237	4.186	53.213	-7.237	0.000%
23	-7.252	-53.213	4.177	7.252	53.213	-4.177	0.000%
24	-8.376	-53.213	-0.003	8.376	53.213	0.003	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
25	-7.255	-53.213	-4.182	7.255	53.213	4.182	0.000%
26	-4.190	-53.213	-7.240	4.190	53.213	7.240	0.000%
27	0.002	-40.982	-11.896	-0.002	40.982	11.896	0.000%
28	5.964	-40.982	-10.303	-5.964	40.982	10.303	0.000%
29	10.328	-40.982	-5.950	-10.328	40.982	5.950	0.000%
30	11.925	-40.982	-0.002	-11.925	40.982	0.002	0.000%
31	10.326	-40.982	5.946	-10.326	40.982	-5.946	0.000%
32	5.961	-40.982	10.301	-5.961	40.982	-10.301	0.000%
33	-0.002	-40.982	11.896	0.002	40.982	-11.896	0.000%
34	-5.964	-40.982	10.303	5.964	40.982	-10.303	0.000%
35	-10.328	-40.982	5.950	10.328	40.982	-5.950	0.000%
36	-11.925	-40.982	0.002	11.925	40.982	-0.002	0.000%
37	-10.326	-40.982	-5.946	10.326	40.982	5.946	0.000%
38	-5.961	-40.982	-10.301	5.961	40.982	10.301	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	0.00049202
3	Yes	6	0.00000001	0.00007662
4	Yes	6	0.00000001	0.00008150
5	Yes	5	0.00000001	0.00014784
6	Yes	6	0.00000001	0.00007497
7	Yes	6	0.00000001	0.00008025
8	Yes	4	0.00000001	0.00044592
9	Yes	6	0.00000001	0.00007982
10	Yes	6	0.00000001	0.00007527
11	Yes	5	0.00000001	0.00014475
12	Yes	6	0.00000001	0.00008175
13	Yes	6	0.00000001	0.00007615
14	Yes	4	0.00000001	0.00000831
15	Yes	5	0.00000001	0.00052690
16	Yes	5	0.00000001	0.00070165
17	Yes	5	0.00000001	0.00070836
18	Yes	5	0.00000001	0.00052902
19	Yes	5	0.00000001	0.00069241
20	Yes	5	0.00000001	0.00070718
21	Yes	5	0.00000001	0.00052367
22	Yes	5	0.00000001	0.00069721
23	Yes	5	0.00000001	0.00069335
24	Yes	5	0.00000001	0.00052869
25	Yes	5	0.00000001	0.00071426
26	Yes	5	0.00000001	0.00069654
27	Yes	4	0.00000001	0.00017920
28	Yes	5	0.00000001	0.00018442
29	Yes	5	0.00000001	0.00020647
30	Yes	4	0.00000001	0.00074884
31	Yes	5	0.00000001	0.00017796
32	Yes	5	0.00000001	0.00019993
33	Yes	4	0.00000001	0.00017746
34	Yes	5	0.00000001	0.00019782
35	Yes	5	0.00000001	0.00017895
36	Yes	4	0.00000001	0.00074322
37	Yes	5	0.00000001	0.00020730
38	Yes	5	0.00000001	0.00018216

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.833	40.040	30	2.527	0.019
L2	123.833 - 118.5	26.892	30	2.148	0.007
L3	118.5 - 116.167	24.549	30	2.045	0.005
L4	116.167 - 96.58	23.557	30	2.016	0.005
L5	101 - 90.5	17.608	30	1.720	0.003
L6	90.5 - 60.5	13.981	30	1.553	0.003
L7	60.5 - 47.5	6.080	30	0.960	0.001
L8	53 - 30.5	4.676	30	0.828	0.001
L9	30.5 - 16.75	1.499	30	0.487	0.001
L10	16.75 - 14.25	0.435	30	0.253	0.000
L11	14.25 - 0	0.313	30	0.212	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	12' x 3" Omni	30	40.040	2.527	0.019	10899
155.000	10' Yagi	30	40.040	2.527	0.019	10899
150.000	Lightning Rod 3/4" x 4' on 5' Pole	30	40.040	2.527	0.019	10899
148.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	30	38.985	2.504	0.018	10899
140.000	DB854DG65ESX w/ Mount Pipe	30	34.800	2.409	0.013	5449
132.000	TME-1900MHz RRH	30	30.757	2.297	0.009	3026
130.000	APXVTM14-C-120 w/ Mount Pipe	30	29.781	2.264	0.009	2724
122.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	30	26.072	2.109	0.006	2591

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.833	115.165	5	7.268	0.054
L2	123.833 - 118.5	77.411	5	6.183	0.019
L3	118.5 - 116.167	70.678	5	5.888	0.016
L4	116.167 - 96.58	67.826	5	5.805	0.015
L5	101 - 90.5	50.716	5	4.954	0.010
L6	90.5 - 60.5	40.280	5	4.474	0.008
L7	60.5 - 47.5	17.526	5	2.768	0.004
L8	53 - 30.5	13.480	5	2.386	0.003
L9	30.5 - 16.75	4.322	5	1.404	0.001
L10	16.75 - 14.25	1.255	5	0.730	0.001
L11	14.25 - 0	0.904	5	0.610	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	12' x 3" Omni	5	115.165	7.268	0.054	3903
155.000	10' Yagi	5	115.165	7.268	0.054	3903
150.000	Lightning Rod 3/4" x 4' on 5' Pole	5	115.165	7.268	0.054	3903
148.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	5	112.137	7.204	0.050	3903
140.000	DB854DG65ESX w/ Mount Pipe	5	100.124	6.933	0.038	1950
132.000	TME-1900MHz RRH	5	88.514	6.610	0.027	1081
130.000	APXVTM14-C-120 w/ Mount Pipe	5	85.712	6.516	0.024	972
122.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	5	75.056	6.072	0.017	922

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	150 - 123.833 (1)	TP22.508x17.61x0.219	26.167	0.000	0.0	39.000	15.700	-6.519	612.309	0.011
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	5.333	0.000	0.0	31.448	26.498	-7.924	833.302	0.010
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	2.333	0.000	0.0	29.997	48.031	-8.384	1440.810	0.006
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	19.587	0.000	0.0	30.125	38.997	-10.796	1174.790	0.009
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	10.500	0.000	0.0	30.184	48.527	-13.354	1464.730	0.009
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57 H1-3+VT (1.38 CR) - 6	30.000	0.000	0.0	30.788	61.167	-20.225	1883.230	0.011
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	13.000	0.000	0.0	31.786	71.204	-22.287	2263.260	0.010
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	22.500	0.000	0.0	31.886	82.137	-30.352	2619.040	0.012
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646 H1-3+VT (1.38 CR) - 9	13.750	0.000	0.0	31.948	84.886	-34.820	2711.930	0.013
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642 H1-3+VT (1.39 CR) - 10	2.500	0.000	0.0	31.958	85.392	-35.656	2728.980	0.013
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	14.250	0.000	0.0	33.351	99.786	-40.970	3327.910	0.012

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	150 - 123.833 (1)	TP22.508x17.61x0.219	286.276	40.229	39.000	1.032	0.000	0.000	39.000	0.000
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	380.641	30.682	31.448	0.976	0.000	0.000	31.448	0.000
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	426.348	19.060	29.997	0.635	0.000	0.000	29.997	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 $\frac{f_{by}}{F_{by}}$
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	741.058	35.772	30.125	1.187	0.000	0.000	30.125	0.000
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	977.633	36.029	30.184	1.194	0.000	0.000	30.184	0.000
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57	1734.450	42.125	30.788	1.368	0.000	0.000	30.788	0.000
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	1942.575	39.021	31.786	1.228	0.000	0.000	31.786	0.000
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	2610.825	41.199	31.886	1.292	0.000	0.000	31.886	0.000
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646	3048.017	43.514	31.948	1.362	0.000	0.000	31.948	0.000
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642	3129.767	43.899	31.958	1.374	0.000	0.000	31.958	0.000
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	3609.267	40.776	33.351	1.223	0.000	0.000	33.351	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 123.833 (1)	TP22.508x17.61x0.219	16.550	1.054	26.000	0.082	2.670	0.177	26.000	0.007
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	19.420	0.733	20.965	0.071	2.678	0.101	20.965	0.005
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	19.769	0.412	19.998	0.042	2.681	0.056	19.998	0.003
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	21.760	0.558	20.084	0.056	2.660	0.060	20.084	0.003
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	23.256	0.479	20.122	0.048	2.644	0.046	20.122	0.002
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57	27.286	0.446	20.526	0.044	2.599	0.030	20.526	0.001
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	28.241	0.397	21.191	0.038	2.588	0.024	21.191	0.001
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	31.049	0.378	21.257	0.036	2.557	0.019	21.257	0.001
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646	32.575	0.384	21.299	0.037	2.539	0.017	21.299	0.001
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642	32.856	0.385	21.305	0.037	2.536	0.017	21.305	0.001
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	34.478	0.346	22.234	0.032	2.516	0.013	22.234	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123.833 (1)	0.011	1.032	0.000	0.082	0.007	1.044 ✔	1.333	H1-3+VT ✔
L2	123.833 - 118.5 (2)	0.010	0.976	0.000	0.071	0.005	0.987 ✔	1.333	H1-3+VT ✔
L3	118.5 - 116.167 (3)	0.006	0.635	0.000	0.042	0.003	0.642 ✔	1.333	H1-3+VT ✔
L4	116.167 - 96.58 (4)	0.009	1.187	0.000	0.056	0.003	1.198 ✔	1.333	H1-3+VT ✔

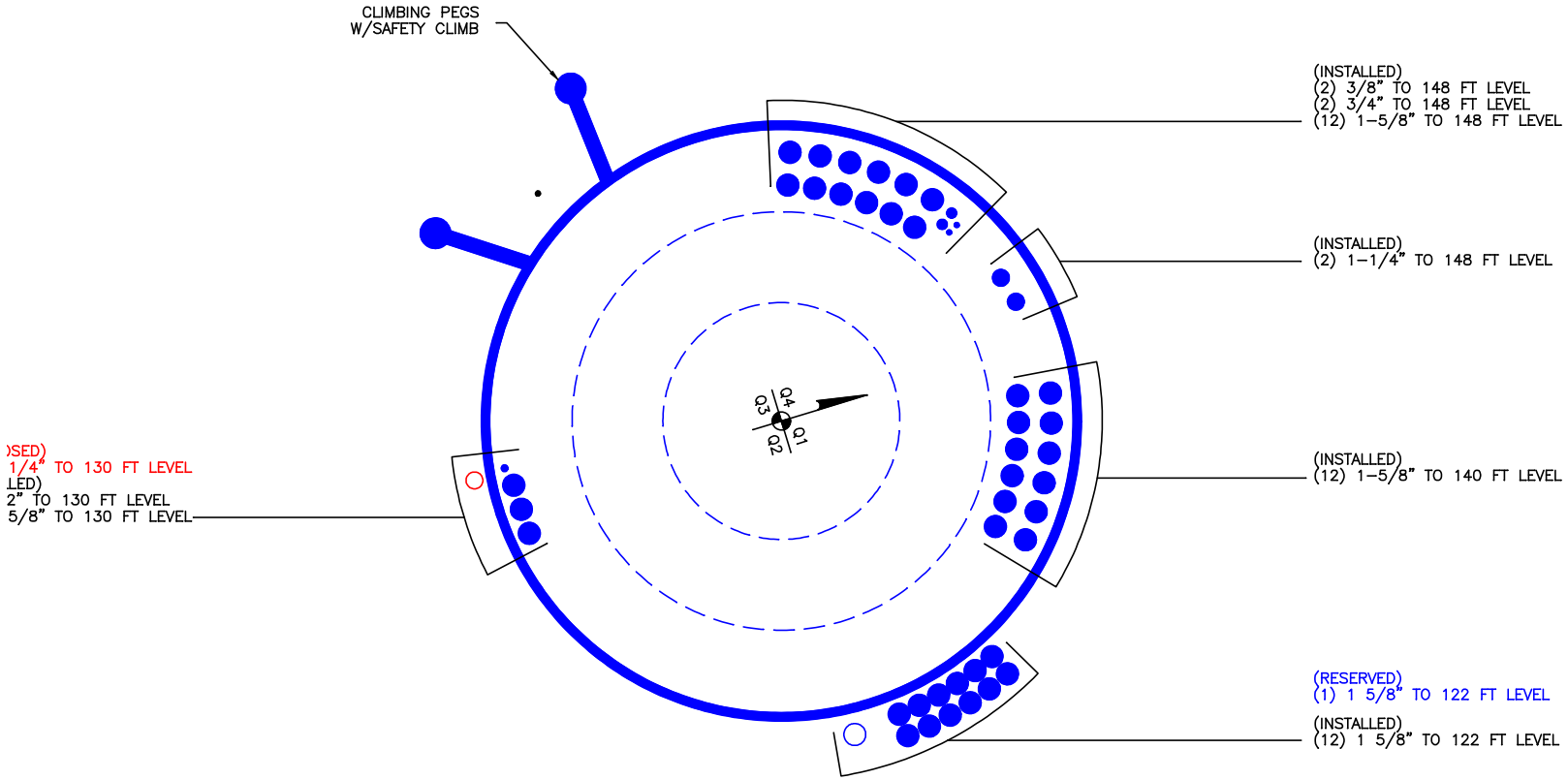
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L5	96.58 - 90.5 (5)	0.009	1.194	0.000	0.048	0.002	1.203 ✔	1.333	H1-3+VT ✔
L6	90.5 - 60.5 (6)	0.011	1.368	0.000	0.044	0.001	1.379 ✔	1.333	H1-3+VT ✔
L7	60.5 - 47.5 (7)	0.010	1.228	0.000	0.038	0.001	1.238 ✔	1.333	H1-3+VT ✔
L8	47.5 - 30.5 (8)	0.012	1.292	0.000	0.036	0.001	1.304 ✔	1.333	H1-3+VT ✔
L9	30.5 - 16.75 (9)	0.013	1.362	0.000	0.037	0.001	1.375 ✔	1.333	H1-3+VT ✔
L10	16.75 - 14.25 (10)	0.013	1.374	0.000	0.037	0.001	1.387 ✔	1.333	H1-3+VT ✔
L11	14.25 - 0 (11)	0.012	1.223	0.000	0.032	0.001	1.235 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 123.833	Pole	TP22.508x17.61x0.219	1	-6.519	816.208	77.4%	Pass
L2	123.833 - 118.5	Pole	TP23.507x22.508x0.355	2	-7.924	1110.792	70.8%	Pass
L3	118.5 - 116.167	Pole	TP23.943x23.507x0.64	3	-8.384	1920.600	45.5%	Pass
L4	116.167 - 96.58	Pole	TP27.61x23.943x0.46	4	-10.796	1565.995	86.0%	Pass
L5	96.58 - 90.5	Pole	TP28.307x26.345x0.543	5	-13.354	1952.485	86.5%	Pass
L6	90.5 - 60.5	Pole	TP33.911x28.307x0.57	6	-20.225	2510.345	99.1%	Pass
L7	60.5 - 47.5	Pole	TP36.34x33.911x0.638	7	-22.287	3016.925	88.9%	Pass
L8	47.5 - 30.5	Pole	TP38.896x34.687x0.667	8	-30.352	3491.180	93.6%	Pass
L9	30.5 - 16.75	Pole	TP41.467x38.896x0.646	9	-34.820	3615.003	98.6%	Pass
L10	16.75 - 14.25	Pole	TP41.935x41.467x0.642	10	-35.656	3637.730	99.4%	Pass
L11	14.25 - 0	Pole	TP44.6x41.935x0.706	11	-40.970	4436.104	96.0%	Pass
							Summary	
						Pole (L10)	99.4	Pass
						RATING =	**99.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841295 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1							
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp	
0	30.5	2	MS-850	F	0	T&C	1
30.5	60.5	3	MS-850	F	0	T&C	
60.5	90.5	3	MS-650	F	0	T&C	
90.5	118.5	3	MS-600	F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	

Reinforcement 2							
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp	
0	16.75	2	MS-850	F	0	T&C	1
14.25	30.5	1	MS-850	F	0	T&C	1
116.167	123.833	3	MP303	F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	
				F	0	T&C	

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

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.		Bottom Elevation Failure	Top Elevation Failure	Section Failure %
123.8330	150.0000	0.2188	65	80	77.4%										**77.4%**	150.0000	26.1670	0.0000	12	17.6100	22.5084				1			
118.5000	123.8330	0.2188	65	80	57.9%				3	MP303	70.8%				**70.8%**	123.8330	5.3330	0.0000	12	22.5084	23.5067				2			
116.1670	118.5000	0.2188	65	80	35.9%	3	MS-600	45.5%	3	MP303	37.8%				**45.5%**	118.5000	2.3330	0.0000	12	23.5067	23.9434				3			
96.5800	116.1670	0.2188	65	80	67.8%	3	MS-600	86.0%							**86.0%**	116.1670	19.5870	4.4200	12	23.9434	27.6100				4			
90.5000	101.0000	0.3125	65	80	67.8%	3	MS-600	86.5%							**86.5%**	101.0000	10.5000	0.0000	12	26.3451	28.3067				5			
60.5000	90.5000	0.3125	65	80	79.4%	3	MS-650	99.1%							**99.1%**	90.5000	30.0000	0.0000	12	28.3067	33.9113				6			
47.5000	60.5000	0.3125	65	80	73.7%	3	MS-850	88.9%							**88.9%**	60.5000	13.0000	5.5000	12	33.9113	36.3400				7			
30.5000	53.0000	0.3750	65	80	77.8%	3	MS-850	93.6%							**93.6%**	53.0000	22.5000	0.0000	12	34.6875	38.8956				8			
16.7500	30.5000	0.3750	65	80	82.1%	2	MS-850	51.2%	1	MS-850	98.6%				**98.6%**	30.5000	13.7500	0.0000	12	38.8956	41.4673				9			
14.2500	16.7500	0.3750	65	80	82.8%	2	MS-850	51.6%	1	MS-850	99.4%				**99.4%**	16.7500	2.5000	0.0000	12	41.4673	41.9348				10			
0.0000	14.2500	0.3750	65	80	80.4%	2	MS-850	96.0%	2	MS-850	76.5%				**96.0%**	14.2500	14.2500	0.0000	12	41.9348	44.6000				11			
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Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	30.5	2	MS-850	F	T&C
30.5	60.5	3	MS-850	F	T&C
60.5	90.5	3	MS-650	F	T&C
90.5	118.5	3	MS-600	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

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

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

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0	16.75	2	MS-850	F	T&C
14.25	30.5	1	MS-850	F	T&C
116.167	123.833	3	MP303	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

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

Rein3

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

Reinforcement Capacity

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

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
Model	*Wt*	*A*	*Ix*	*Iy*	*Y*	*X*	*Tw*	*W*	*Wf*	*Tf*	*Dh*	*Fy*	*Fu*	*Kx*	*Lx*	*Ky*	*Ly*	*PAll*	*PAll.inc*	*Ptype.ASD*	*phiPn*	*Ptype.LRFD*
MP303	9.9	2.92	0.66	6.57	0.59	0	0.30	4.06	1.57	0.64	1.21875	65	80	0.80	18	1.00	18	96.4	128.6	Rupture	**144.7**	Rupture
MS-400	10.2	3.00	0.14	4.00	0.375	0	0.75	4	0	0	1.25	65	80	0.80	16.875	1.00	16.875	80.6	107.5	Rupture	120.9	Rupture
MS-450	15.3	4.50	0.38	7.59	0.5	0	1	4.5	0	0	1.25	65	80	0.80	20.625	1.00	20.625	127.5	170.0	Rupture	191.3	Rupture
MS-600	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.25	65	80	0.80	16.375	1.00	16.375	187.5	250.0	Rupture	281.3	Rupture
MS-650	27.6	8.13	1.06	28.61	0.625	0	1.25	6.5	0	0	1.25	65	80	0.80	19.25	1.00	19.25	259.4	345.8	Rupture	389.1	Rupture
MS-850	36.2	10.63	1.38	63.97	0.625	0	1.25	8.5	0	0	1.25	65	80	0.80	17.25	1.00	17.25	349.7	466.2	Compress.	539.1	Rupture

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	841295
Name:	BETHANY
App. #:	247523 Revision # 0

Base Reactions		
Moment:	3609	ft-kip
Axial:	41	kip
Shear:	34	kip
Base Plate Type:	Circular	

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data

Quantity:	12	
Diameter:	2.25	in
Material:	A615 GR 75	
Bolt Circle:	52.7	in
Bolt Spacing:		in
Bolt Group Area:	47.71	in^2
Bolt Group MOIx:	16552	in^4

Reactions Seen by Original AR Group

Moment:	2406.2	kip-ft
Axial:	41.0	kip
Shear:	34.5	kip

Original AR Capacity Check

Tension Load:	179.3	kip
Allowable load:	194.8	kip
AR Capacity:	92.0%	Pass

First Added Anchor Rod Data

Quantity:	6	
Diameter:	2.25	in
Material:	A772	
Bolt Circle:	52.7	in
Bolt Group Area:	23.86	in^2
Bolt Group MOIx:	8276	in^4

Reactions Seen by First Added AR Group

Moment:	1203.1	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check

Tension Load:	176.5	kip
Allowable load:	262.4	kip
AR Capacity:	67.3%	Pass

Second Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

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

TIA Rev F

Site Data

BU#:	*841295*
Site Name:	*BETHANY*
App #:	*247523 Revision # 0*
Pole Manufacturer:	*Other*

Reactions		
Moment:	2406.1756	ft-kips
Axial:	40.9696	kips
Shear:	34.478401	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	52.68	in

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

Anchor Rod Results

		Rigid
Maximum Rod Tension:	179.3 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	92.0% **Pass**	

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

n/a

Stiffener Results

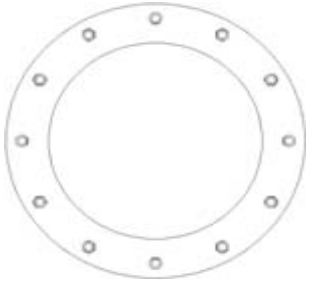
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

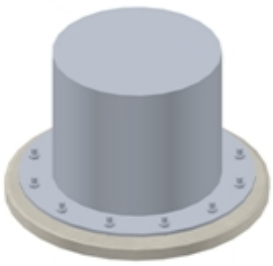
Pole Results

Pole Punching Shear Check:	n/a

Pole Data		
Diam:	44.6	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	





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

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

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

TIA Rev F

Site Data

BU#:	*841295*
Site Name:	*BETHANY*
App #:	*247523 Revision # 0*
Pole Manufacturer:	*Other*

Reactions		
Moment:	3609	ft-kips
Axial:	41	kips
Shear:	34	kips

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

Plate Data		
Diam:	58.67	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.95	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:	44.6	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Base Plate Results Flexural Check

Base Plate Stress:	47.7	ksi
Allowable Plate Stress:	60.0	ksi
Base Plate Stress Ratio:	79.5%	**Pass**

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 28.04

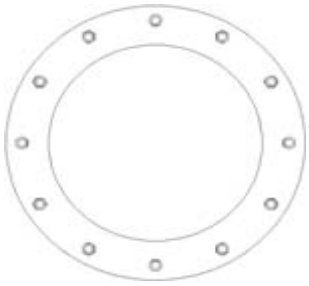
n/a

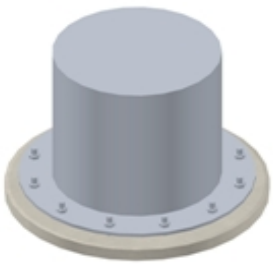
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

PROJECT	**841295 - Bethany, CT**				
SUBJECT	**Foundation Analysis**				
DATE	**06/26/14**	PAGE	1	OF	1

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

Monopole Pad & Pier Foundation Analysis

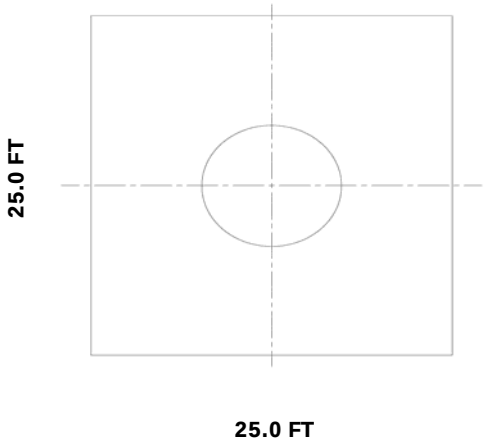
Rev. Type: F

Design Loads:

	Input unfactored loads	
Shear:	34.0	kips
Moment:	3,609.0	ft-kips
Tower Height:	150.0	ft
Tower Weight:	41.0	kips

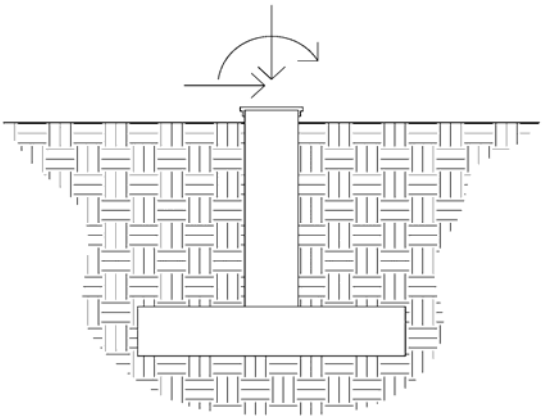
Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	44.60	in
Bearing Depth:	7.5	ft
Pad Width:	25.0	ft
Neglected Depth:	3.3	ft
Thickness:	6.0	ft
Pier Diameter:	6.0	ft
Pier Height Above Grade:	0.5	ft
BP Dist. Above Pier:	0.0	in
Clear Cover:	3.0	in



Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	0.15	kcf

Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	0.100	kcf
Ult. Bearing Capacity:	8.000	ksf
Angle of Friction:	30.000	deg
Cohesion:	0.000	ksf
Passive Pressure:	0.000	ksf
Base Friction:	0.300	

Summary of Results

Req'd Pier Diam.	OK
Overturning	76.6%
Shear Capacity	32.0%
Bearing	52.3%
Pad Shear - 1-way	17.9%
Pad Shear - 2-way	2.0%

** Notes:

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

Sprint Existing Facility

Site ID: CT33XC515

Bethany - Spectrasite Tower

719 Amity Road
Bethany, CT 06524

September 6, 2014

EBI Project Number: 62144511

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

EBI Consulting
environmental | engineering | due diligence

September 6, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC515 - Bethany - Spectrasite Tower

Site Total: 46.90% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **719 Amity Road, Bethany, 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 **719 Amity Road, Bethany, 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 **130 feet** above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Site ID	CT33XC515 - Bethany - Spectrasite Tower
Site Addresss	719 Amity Road, Bethany, CT, 06524
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	130	124	1/2 "	0.5	0	138.69	0.32%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	130	124	1/2 "	0.5	0	39.00	0.16%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	130	124	1/2 "	0.5	0	138.69	0.57%
														Sector total Power Density Value:		1.06%

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	130	124	1/2 "	0.5	0	138.69	0.32%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	130	124	1/2 "	0.5	0	39.00	0.16%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	130	124	1/2 "	0.5	0	138.69	0.57%
														Sector total Power Density Value:		1.06%

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	130	124	1/2 "	0.5	0	138.69	0.32%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	130	124	1/2 "	0.5	0	39.00	0.16%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	130	124	1/2 "	0.5	0	138.69	0.57%
														Sector total Power Density Value:		1.06%

Site Composite MPE %	
Carrier	MPE %
Sprint	3.17%
Bethany Fire Dept	0.42%
Bethany Hwy Dept	0.70%
AT&T	17.11%
Verizon Wireless	20.05%
MetroPCS	5.45%
Total Site MPE %	**46.90%**

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Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **3.17% (1.06% from sector 1, 1.06% from sector 2 and 1.06% 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 **46.90%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803