Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

September 22, 2017

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

RE: **Notice of Exempt Modification for Sprint 2.5 Rework Crown Site BU: 841295**
Sprint Site ID: CT33XC515
719 Amity Road, Bethany, CT 06524
Latitude: 41° 26' 33.93"/ Longitude: -72° 59' 32.86"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 131-foot level of the existing 150-foot monopole at 719 Amity Road in Bethany, CT. The tower is owned by Crown Castle. The property is owned by the Town of Bethany. Sprint intends to install three (3) antennas, three (3) RRHs, and one (1) hybrid cable.

This facility was approved by the Connecticut Siting Council in Docket No. 168 on June 6, 1995. This approval included the conditions that:

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed communication service and the tower shall not exceed a total height of 150 feet above ground level (AGL).

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Ms. Derrylyn Gorski, First Selectman, Town of Bethany, Planning & Zoning, and Tax Collector, Town of Bethany, as the property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that 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: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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:

Ms. Derrylyn Gorski, First Selectman
Bethany Town Hall
40 Peck Road
Bethany, CT 06524

Tax Collector
Bethany Town Hall
40 Peck Road
Bethany, CT 06524

Planning & Zoning
Bethany Town Hall
40 Peck Road
Bethany, CT 06524

DOCKET NO. 168 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located on the former site of the Bethany Airport, 719 Amity Road (Route 63) in Bethany, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	July 6, 1995

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact, and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications tower and equipment building at the proposed site in Bethany, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Springwich Cellular Limited Partnership (Springwich), for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed site located at the Bethany Airport, 719 Amity Road, Bethany, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed communications service and the tower shall not exceed a total height of 150 feet above ground level (AGL).

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include detailed plans for the tower location and tower foundation; the placement of all antennas to be attached to this tower; equipment building, access road, utility line, and security fence; site clearing and tree trimming; and water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control, as amended.

3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The New Haven Register and Beth-Wood News.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

APPLICANT	**ITS REPRESENTATIVES**
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. Springwich Cellular Limited Partnership 227 Church Street New Haven, CT 06510
INTERVENOR	**ITS REPRESENTATIVES**
Metro Mobile CTS of Hartford, Inc.	Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive Wallingford, CT 06492 Attn: David S. Malko, P.E., Manager Engineering & Regulatory Services Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Brian C.S. Freeman, Esq.

CERTIFICATION

The Undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in Docket No. 168 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located on the former site of the Bethany Airport, 719 Amity Road (Route 63) in Bethany, Connecticut, and voted as follows:

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Reginald J. Smith Designee: Gerald J. Heffernan	YES
Commissioner Sidney J. Holbrook Designee: Fred Riese	YES
William J. Huber	YES
Gloria Dibble Pond	ABSENT
William H. Smith	YES
Colin C. Tait	ABSTAIN
Edward S. Wilensky	ABSENT
Dana J. Wright	YES

Dated at New Britain, Connecticut, July 6, 1995.

STATE OF CONNECTICUT }

ss. New Britain, Connecticut }
COUNTY OF HARTFORD
STATE OF CONNECTICUT } July 7, 1995

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Joel M. Rinebold
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 168 have been forwarded by Certified First Class Return Receipt Requested mail on July 7, 1995, to all parties and intervenors of record as listed on the attached service list, dated April 10, 1995.

ATTEST:

Gloria B. Owens
Administrative Assistant
Connecticut Siting Council

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2013.

Information on the Property Records for the Municipality of Bethany was last updated on 9/20/2017.

Property Summary Information

Parcel Data And Values | Building | Outbuildings | Google Map

Parcel Information

Location:	755 AMITY RD	Property Use:	Public Use	Primary Use:	Fire Station - Volunteer
Unique ID:	00016500	Map Block Lot:	117/1	Acres:	138.50
490 Acres:	0.00	Zone:	B&I	Volume / Page:	0044/0306
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	70% Assessed Value
Land	1,476,000	1,033,200
Buildings	1,740,164	1,218,110

	Appraised Value	70% Assessed Value
Detached Outbuildings	159,624	111,740
Total	3,375,788	2,363,050

Owner's Information

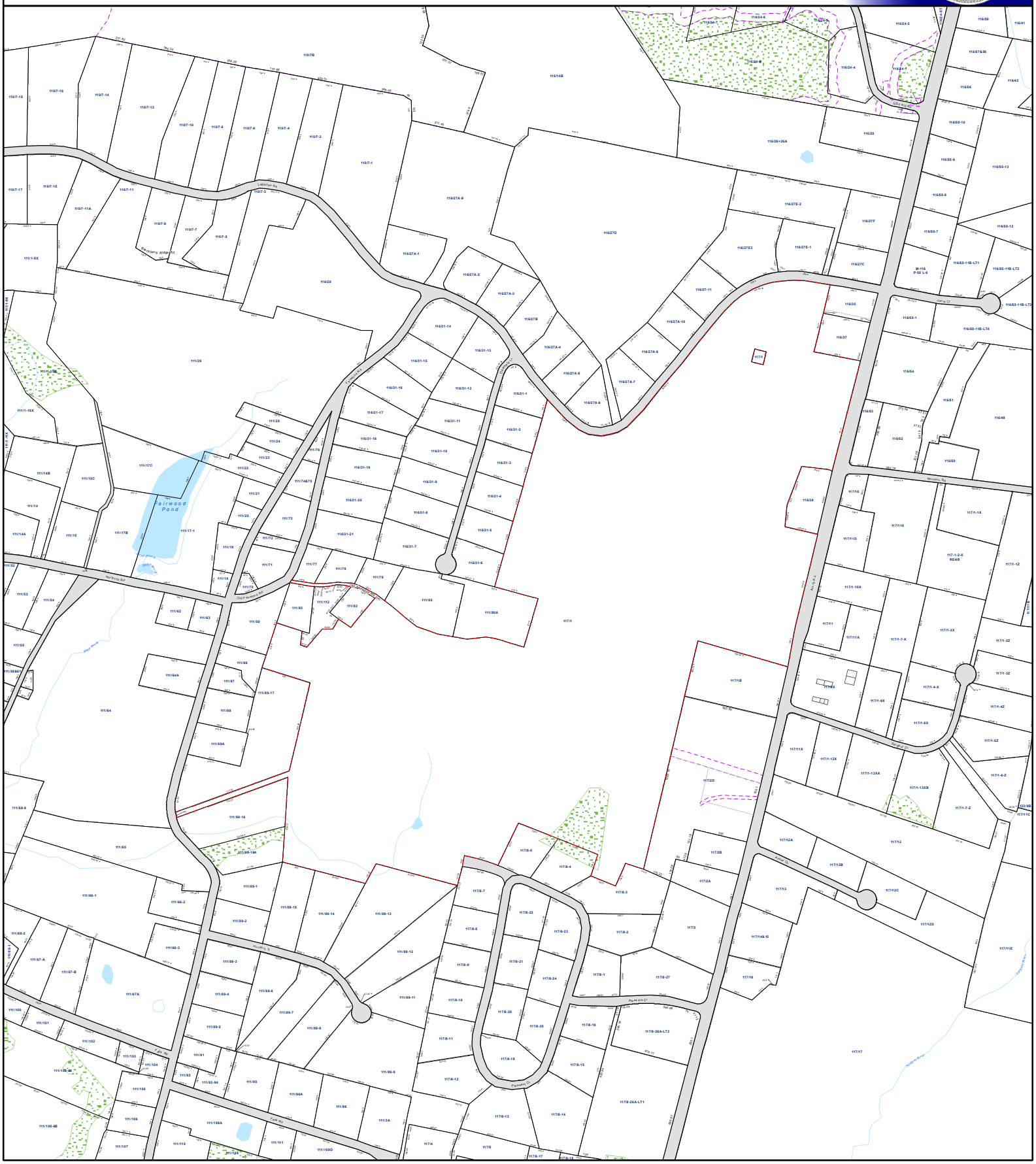
Owner's Data
BETHANY TOWN OF 40 PECK RD BETHANY CT 06524

Back To Search (JavaScript:window.history.back(1);)
Print View (PrintPage.aspx?towncode=008&uniqueid=00016500)

Town of Bethany, Connecticut
Assessment Parcel Map

Parcel: **00016500**

Address: **755 AMITY RD**



N
W E
S

Approximate Scale: **1 inch = 750 feet**

0 380 760 1,140 1,520

Feet

Map Produced: Aug 2017

Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Bethany and its mapping contractors assume no legal responsibility for the information contained herein.

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

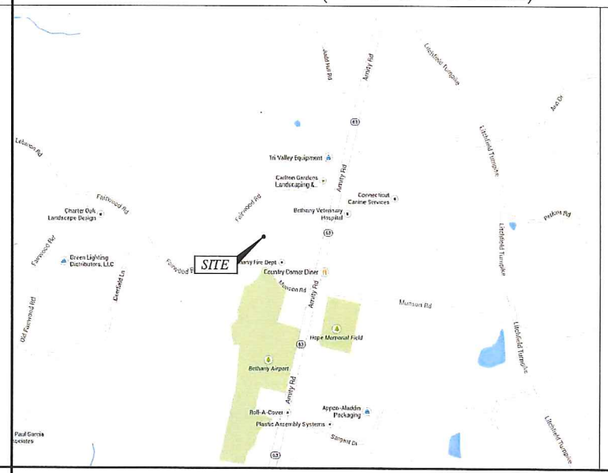
APPROVED
By Susan Vale at 9:01 am, Dec 05, 2014

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

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

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED. FACILITY HAS NO PLUMBING OR REFRIGERANTS. THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
3. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - 2005 STATE OF CONNECTICUT BUILDING CODE.
   - ANSI/TIA/EIA–222–F–1996.
   - NATIONAL ELECTRICAL CODE, LATEST EDITION.

PROJECT DESCRIPTION

1. (1) NEW 2.5 EQUIPMENT RACK INSIDE EXIST MMBTS CABINET.
2. (3) NEW RFS APXVTM14–C–120 ANTENNAS.
3. (3) NEW TD–RRH8x20–25 RRH.
4. (1) NEW 5/8" FIBER CABLE.

AERIAL VIEW (NOT TO SCALE)

APPROVALS

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

CONSTRUCTION: _____ DATE: _____

LEASING/
SITE ACQUISITION: _____ DATE: _____

LANDLORD/
PROPERTY OWNER: _____ DATE: _____

R.F. ENGINEER: _____ DATE: _____

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

CROWN CASTLE

TECTONIC
• PLANNING
• ENGINEERING
• SURVEYING
• CONSTRUCTION MANAGEMENT

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

SUBMITTALS

PROJECT NO: 7225.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. 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:
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.

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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
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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

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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

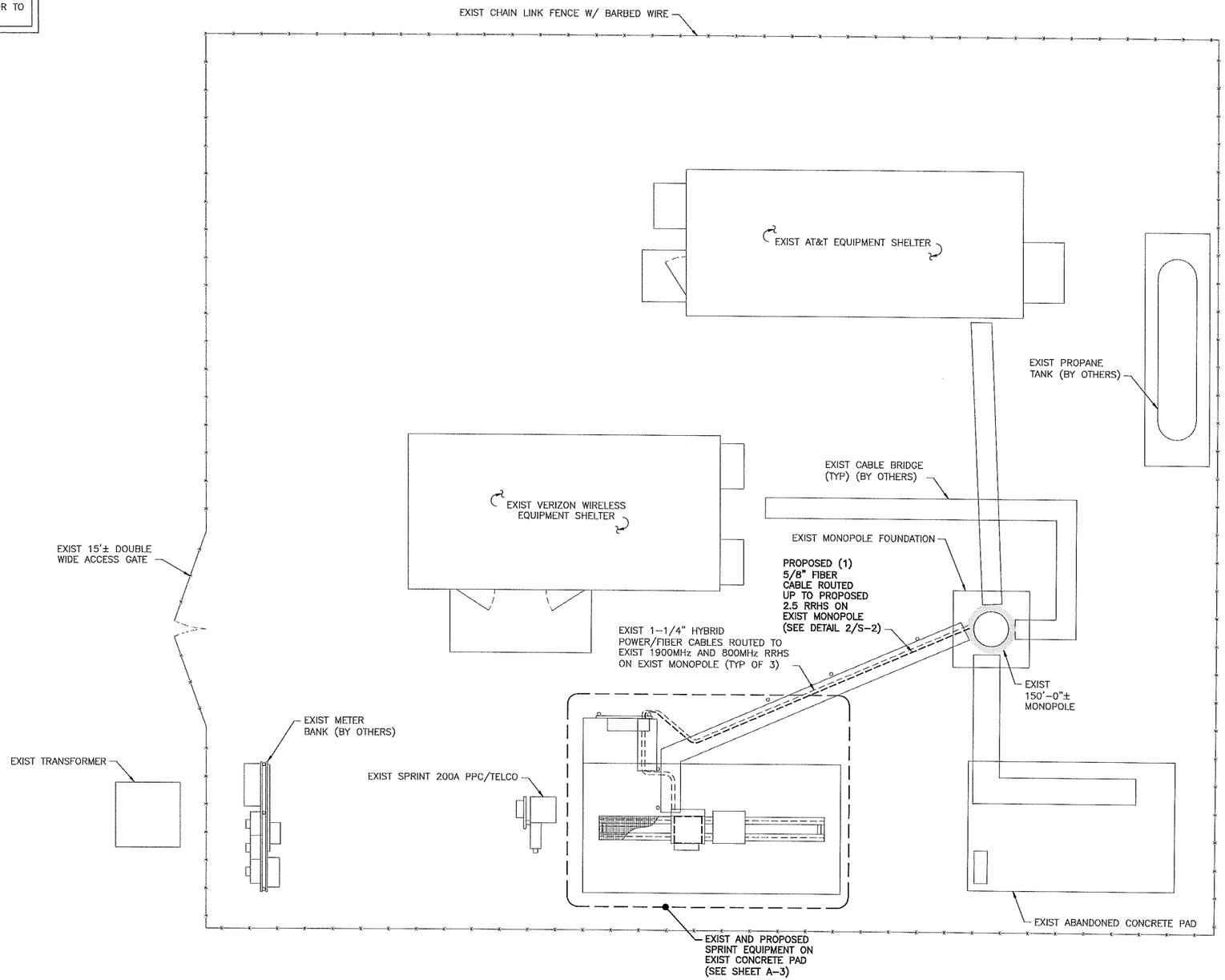
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

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

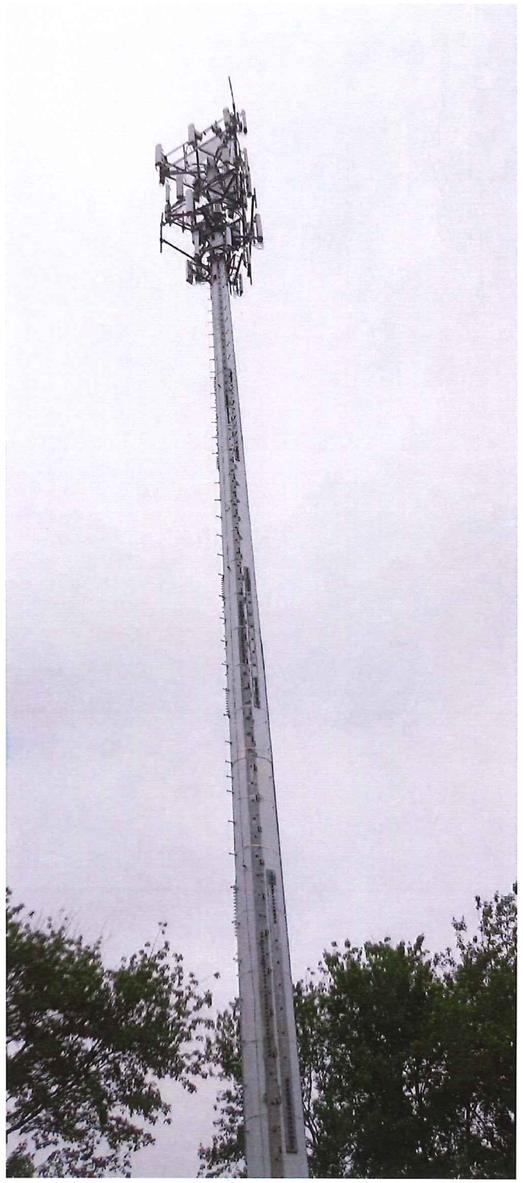
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

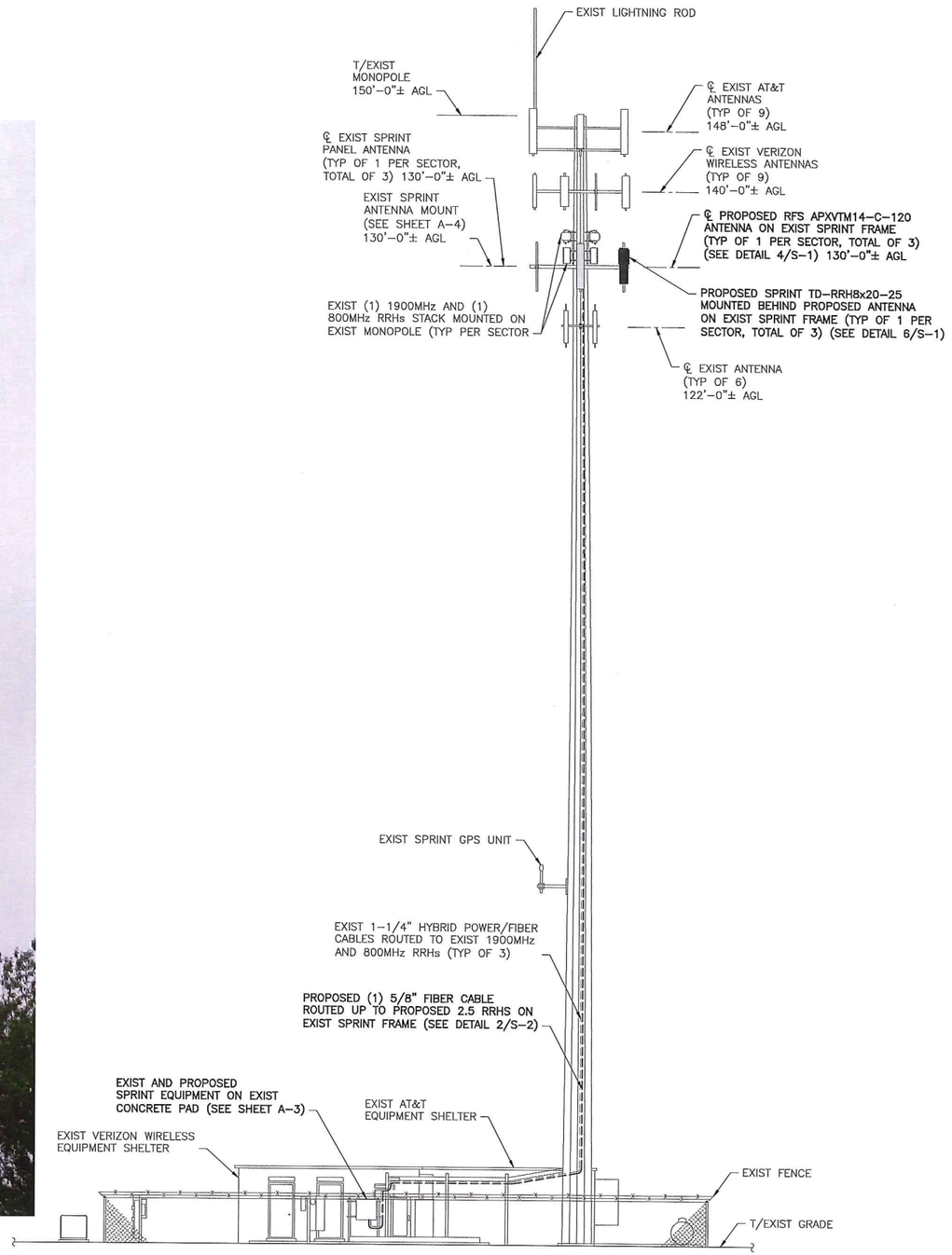
SHEET TITLE:
SITE PLAN

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"

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SUBMITTALS

PROJECT NO: 7225.CT33XC515

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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

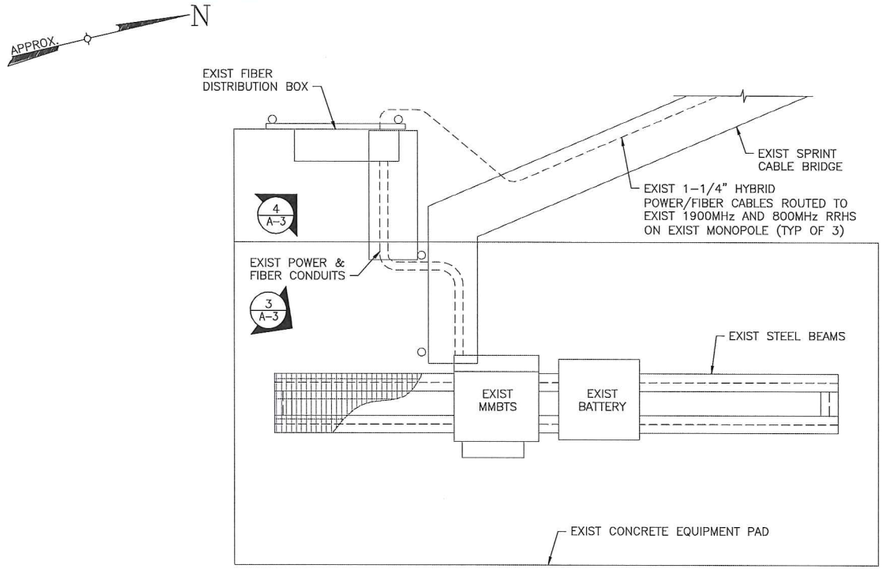
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
ELEVATION

SHEET NO:
A-2

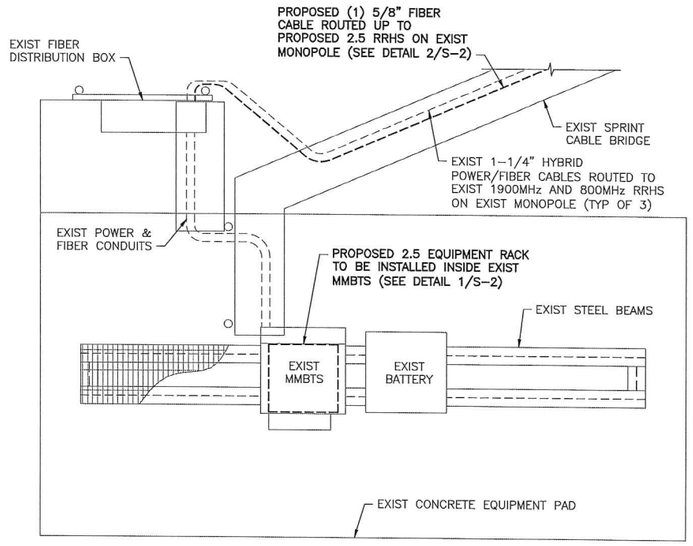
NORTH NOTE:

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"

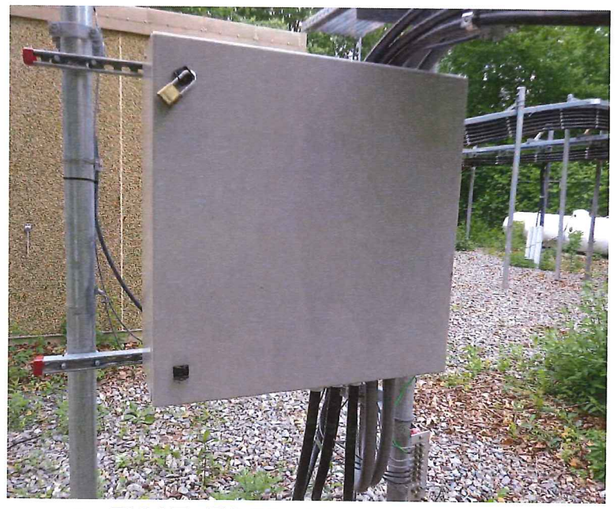


2 A-3 ENLARGED EQUIP. LAYOUT PLAN (FINAL)

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

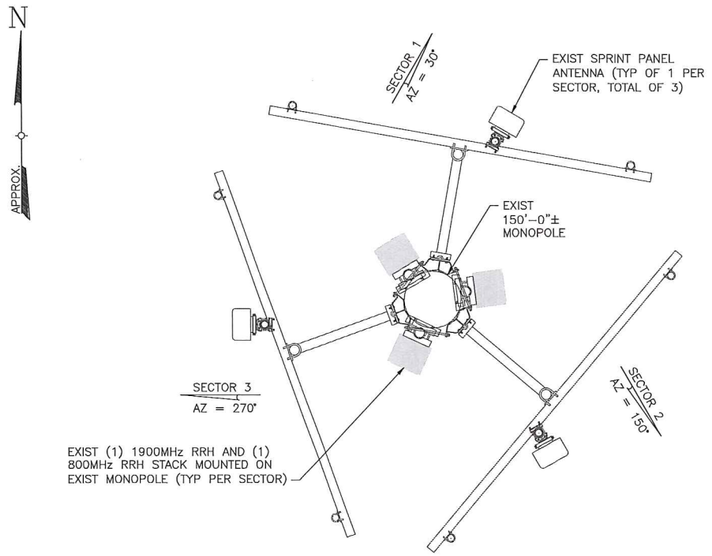
SITE NUMBER:
CT33XC515

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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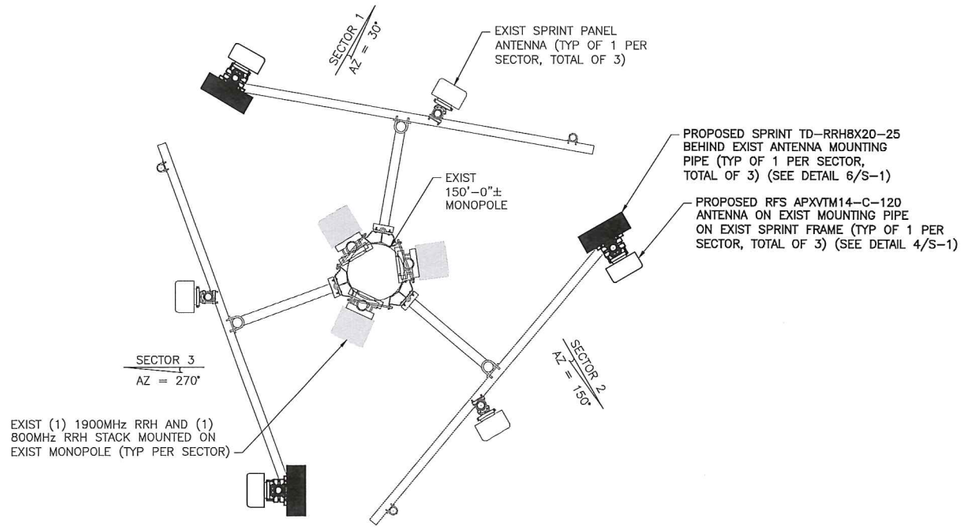
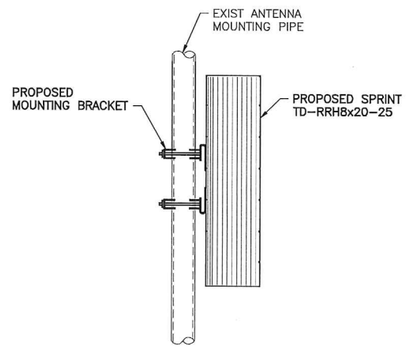


2 A-4 ANTENNA LAYOUT PLAN (FINAL)

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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PROJECT NO: 7225.CT33XC515

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0	07/08/14	PER COMMENTS	MP
1	12/04/14	FOR CONSTRUCTION	DC

DATE REVIEWED BY

12/4/14 OF CONN

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

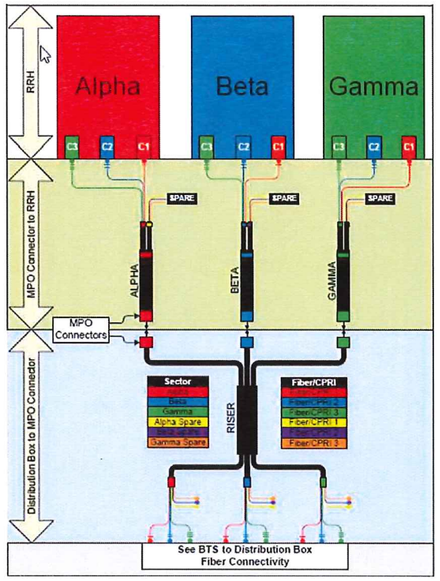
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

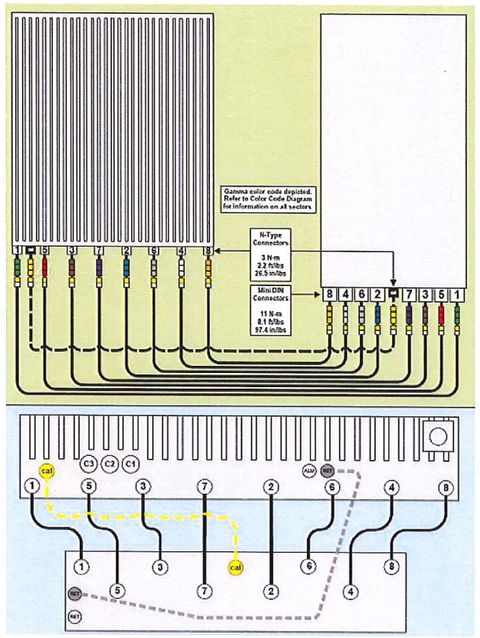
SHEET TITLE:
ANTENNA LAYOUT PLANS

SHEET NO:
A-4



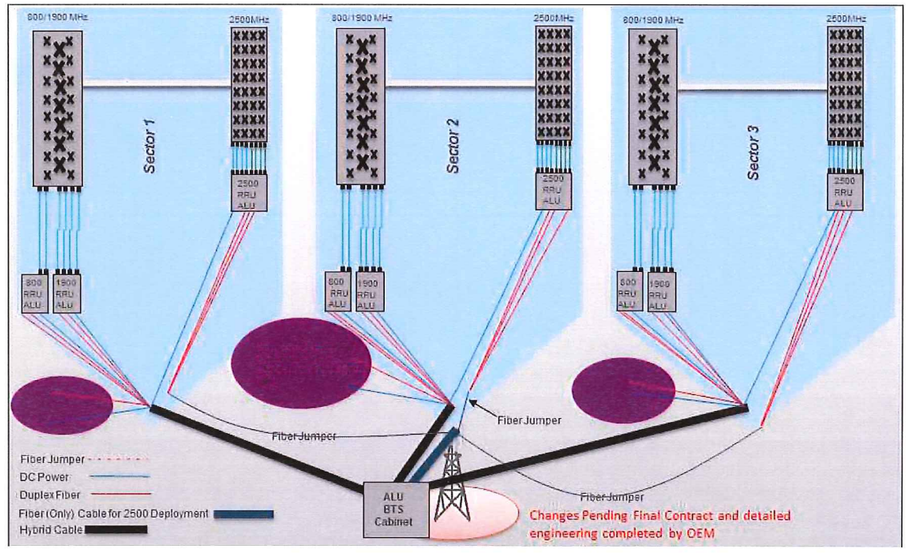
1 A–5 2.5 CABLE COLOR CODING

SCALE: N.T.S.



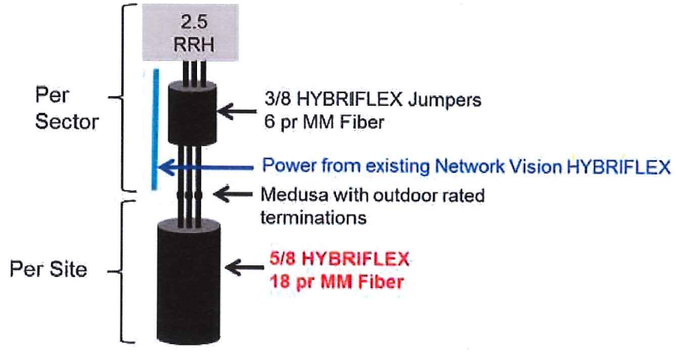
2 A–5 RRH CONNECTIVITY

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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2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

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SUBMITTALS

PROJECT NO: 7225.CT33XC515

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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

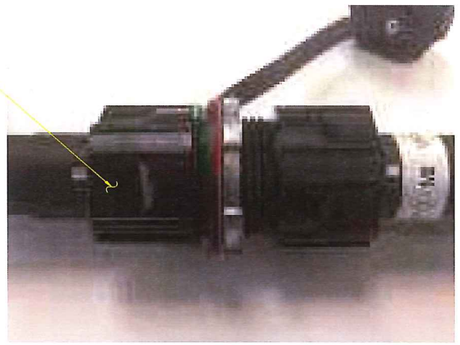
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
RAN WIRING DIAGRAM

SHEET NO:
A–5

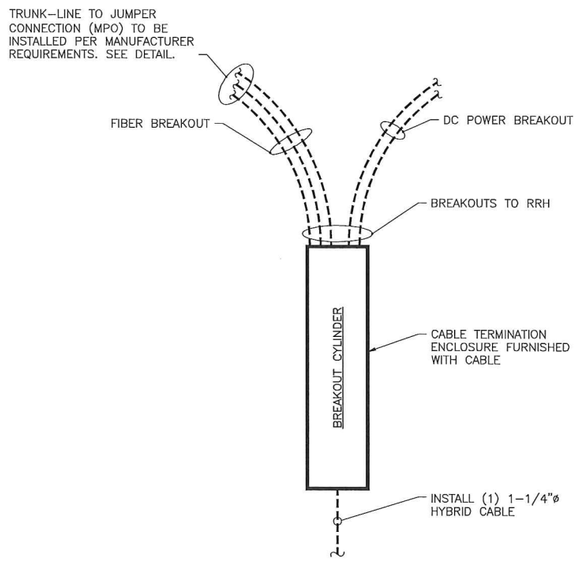
IMPORTANT!! LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAINST THE RED SEAL ON THE RISER CONNECTION

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

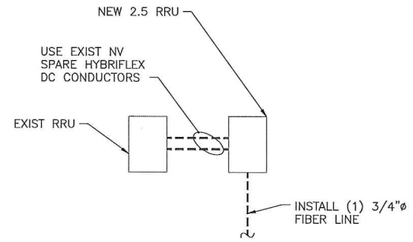


1 / A-6 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS

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.

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2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

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SUBMITTALS

PROJECT NO: 7225.CT33XC515

NO	DATE	DESCRIPTION	BY
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12/4/14	[illegible]

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

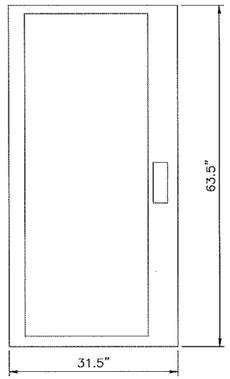
SITE NUMBER:
CT33XC515

SITE NAME:
BETHANY-SPECTRASITE TOWER

SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

SHEET TITLE:
CABLE DETAILS

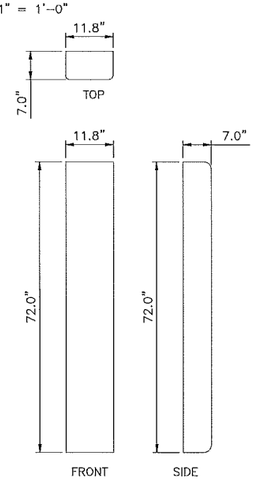
SHEET NO:
A-6



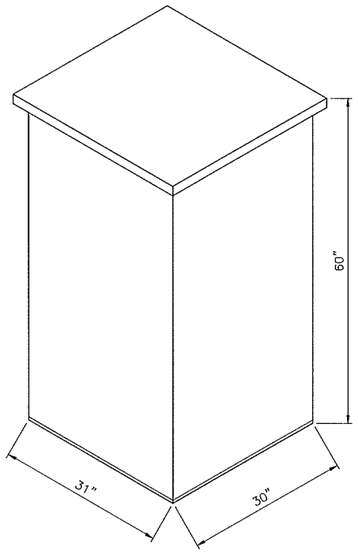
9927 MMBTS MODULAR CELL
SPECIFICATIONS:
HEIGHT: 63.5" WIDTH: 31.5" DEPTH: 38.0"

1/S-1 (EXIST) MMBTS CABINET

SCALE: 1" = 1'-0"



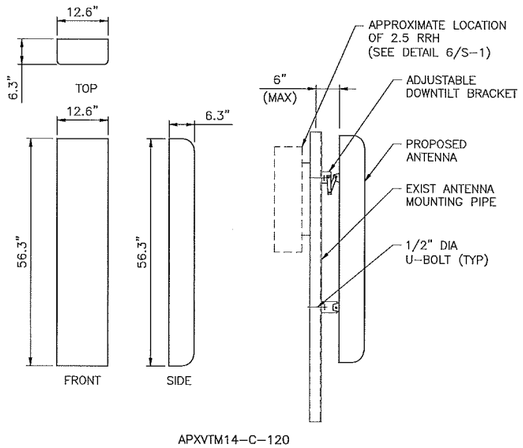
APXVSPP18-C-A20



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

2/S-1 (EXIST) BATTERY CABINET

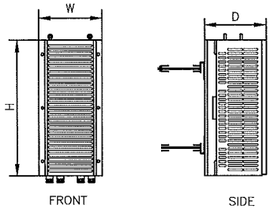
SCALE: 1" = 1'-0"



APXVTM14-C-120

3/S-1 (EXIST) ANTENNA DETAILS

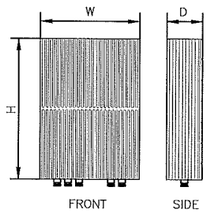
SCALE: 3/4"=1'-0"



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

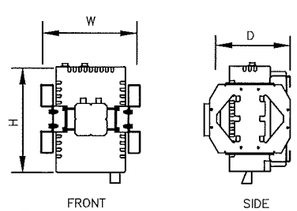
SCALE: 3/4"=1'-0"



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

SITE NUMBER:
CT33XC515

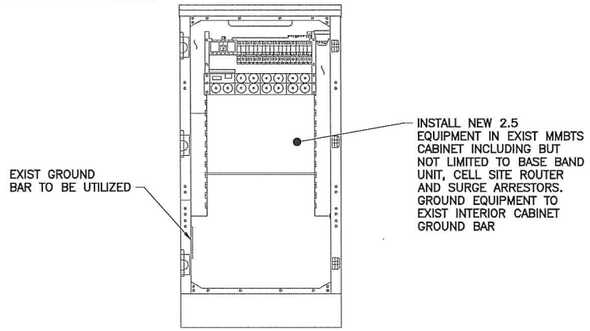
SITE NAME:
BETHANY-SPECTRASITE TOWER

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.

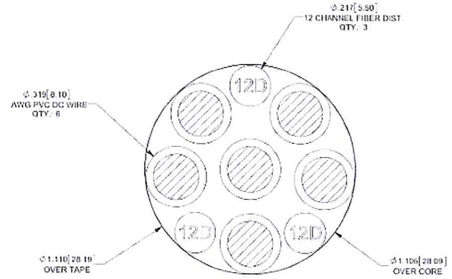
RFS HYBRIFLEX RISER CABLES SCHEDULE

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

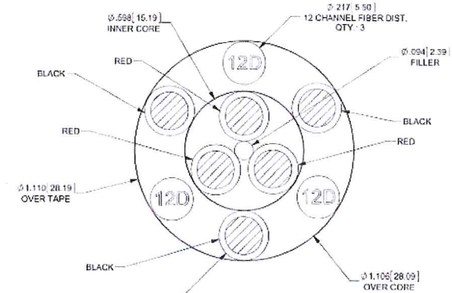
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

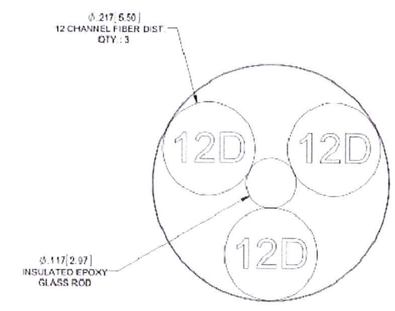
HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF:	RFS		
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"



4 AWG

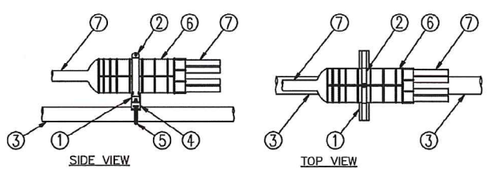


8 AWG & 6 AWG



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

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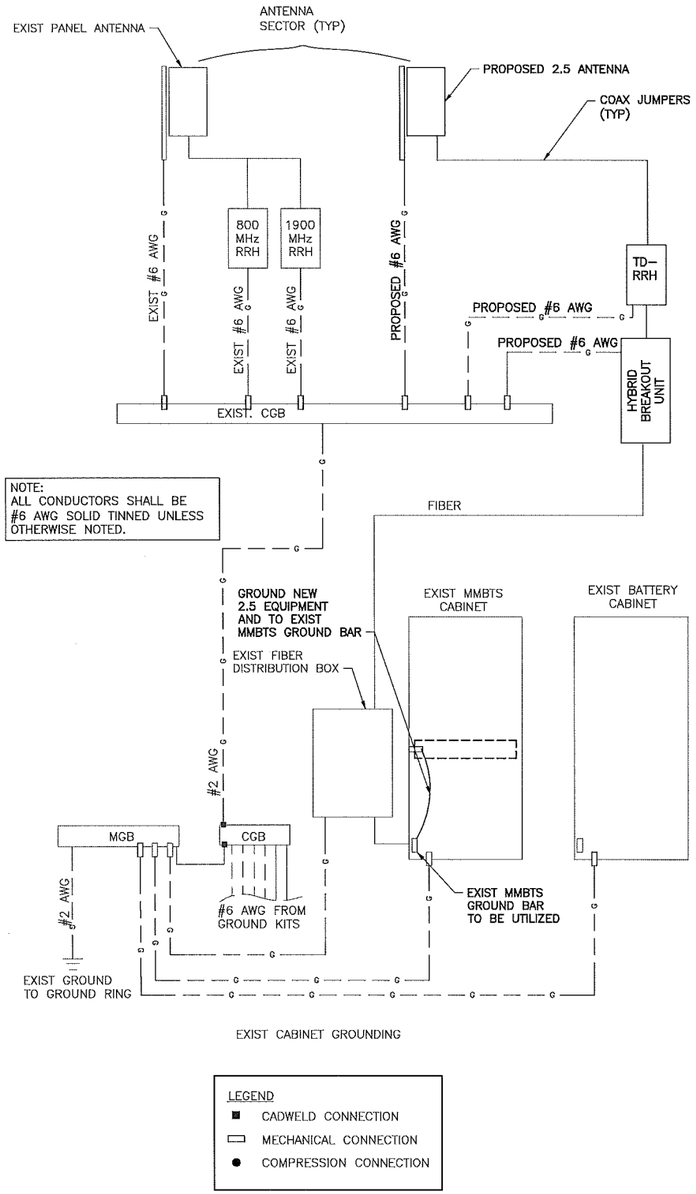
SITE ADDRESS:
719 AMITY ROAD
BETHANY, CT 06524

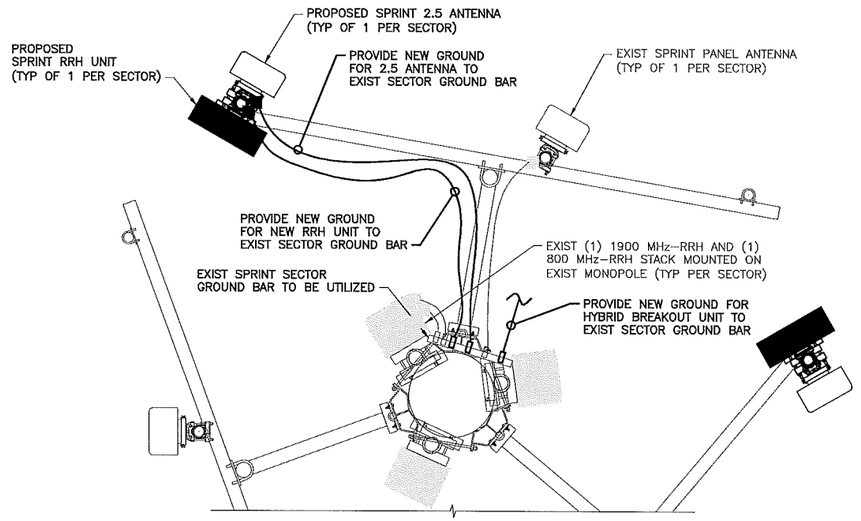
SHEET TITLE:
EQUIPMENT SCHEMATIC DETAILS

SHEET NO:
S-2



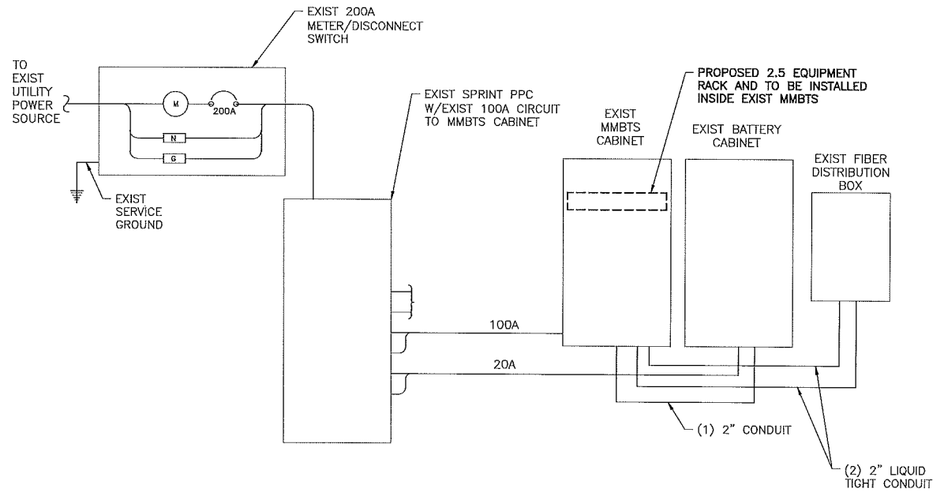
1 E-1 TYPICAL GROUNDING ONE LINE DIAGRAM

SCALE: NTS



2 E-1 TYPICAL ANTENNA GROUNDING PLAN

SCALE: NTS



3 E-1 TYPICAL ELECTRICAL & TELCO PLAN

SCALE: NTS

Sprint

2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

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12/4/14	

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

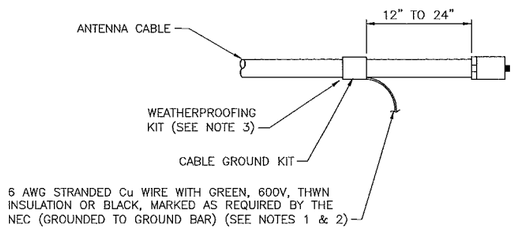
SITE NUMBER:
CT33XC515

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:

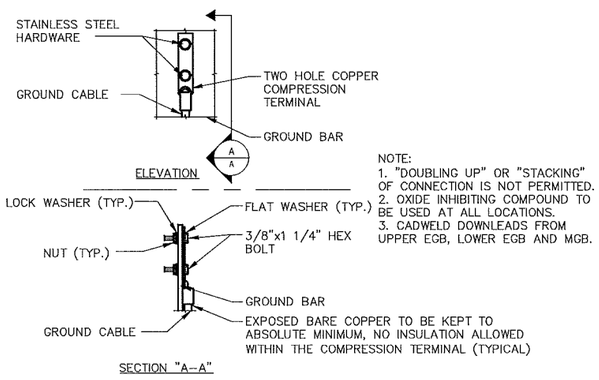
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

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

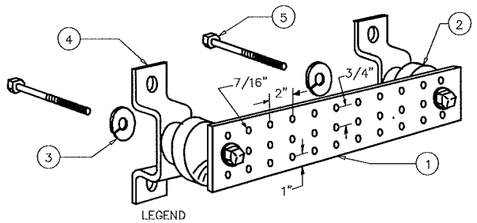
SCALE: N.T.S.



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



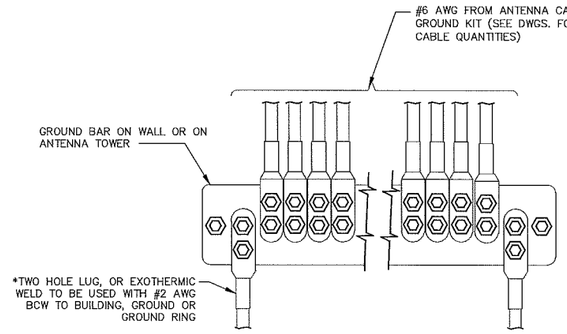
LEGEND

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

PJF PAUL J. FORD & COMPANY

Date: **August 10, 2017**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6607

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
nmiller@pjfweb.com
614-221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT33XC515
	Carrier Site Name:	CT33XC515
Crown Castle Designation:	**Crown Castle BU Number:**	841295
	Crown Castle Site Name:	BETHANY
	Crown Castle JDE Job Number:	447377
	Crown Castle Work Order Number:	1440119
	Crown Castle Application Number:	396924 Rev. 4
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37517-0759.003.7805
Site Data:	**719 AMITY ROAD, BETHANY, New Haven County, CT**	
	Latitude *41° 26' 33.93"*, Longitude *-72° 59' 32.86"*	
	151 Foot - Monopole Tower	

Dear Charles McGuirt,

Paul J. Ford and Company 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 1067159, in accordance with application 396924, revision 4.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

We at *Paul J. Ford and Company* 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:

Nathan C. Miller

Nathan C. Miller
Structural Designer

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

AUG 11 2017

tnxTower Report - version 7.0.5.1

PAUL J. FORD & COMPANY

Date: **August 10, 2017**

Charles McGuirt
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3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6607

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nmiller@pjfweb.com
614-221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT33XC515
	Carrier Site Name:	CT33XC515
Crown Castle Designation:	**Crown Castle BU Number:**	841295
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Respectfully submitted by:

Nathan C. Miller
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 151 ft Monopole tower mapped by FDH in March of 2016.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

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 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	160.0	1	dbspectra	DS1F03F36D-N	2	7/8	2
	149.0	6	adc	CG-1900DD-FULL-DIN	2 2 12	3/8 5/8 1-5/8	1
		6	communication components inc.	DTMABP7819VG12A			
		6	ericsson	RRUS-11			
		3	kathrein	800 10121 w/ Mount Pipe			
		3	kathrein	860 10025			
		6	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		12	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
	148.0	1	tower mounts	Platform Mount [LP 602-1]			
140.0	140.0	3	alcatel lucent	RRH2x60-700	1	1-5/8	2
		3	alcatel lucent	RRH4X45-AWS4 B66			
		6	andrew	SBNHH-1D65B w/ Mount Pipe			
		3	decibel	DB854DG65ESX w/ Mount Pipe	12	1-5/8	1
		1	rfs celwave	DB-T1-6Z-8AB-0Z	---	---	2
		1	tower mounts	Platform Mount [LP 303-1]	---	---	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
132.0	132.0	1	tower mounts	Pipe Mount [PM 601-3]	---	---	1
	131.0	3	alcatel lucent	TME-1900MHz RRH			
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ 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 w/ Mount Pipe			
		1	tower mounts	T-Arm Mount [TA 602-3]			
122.0	122.0	1	tower mounts	T-Arm Mount [TA 702-3]	13	1-5/8	1
	120.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			

Notes:
1) Existing Equipment
2) Reserved Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
---	---	---	---	---	---	---

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 15BBNL1600, 2/18/2016	6133952	CCISITES
4-POST-MODIFICATION INSPECTION	B+T, 83154.004, 8/3/2012	5135928	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH, 16BBMT1500, 2/17/2016	6133920	CCISITES
4-TOWER MAPPING	FDH, 16BBMW1500, 3/11/2016	6133951	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T, 84427.0002, 7/19/2012	4945157	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company 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	151 - 125.25	Pole	TP22.4079x17.59x0.2188	1	-8.19	1093.26	59.2	Pass
L2	125.25 - 118.5	Pole	TP23.6708x22.4079x0.3502	2	-10.13	1260.17	71.4	Pass
L3	118.5 - 117.75	Pole	TP23.8112x23.6708x0.6321	3	-10.30	2198.20	43.2	Pass
L4	117.75 - 97.5	Pole	TP27.6x23.8112x0.4541	4	-13.58	1813.76	85.5	Pass
L5	97.5 - 95	Pole	TP27.6303x26.0525x0.546	5	-15.48	2231.87	80.4	Pass
L6	95 - 92.5	Pole	TP28.0981x27.6303x0.7826	6	-16.29	3226.76	59.3	Pass
L7	92.5 - 87.75	Pole	TP28.9869x28.0981x0.5331	7	-17.47	2291.92	89.1	Pass
L8	87.75 - 84	Pole	TP29.6885x28.9869x0.8388	8	-18.82	3658.26	60.5	Pass
L9	84 - 63.25	Pole	TP33.571x29.6885x0.5695	9	-24.87	2893.18	98.3	Pass
L10	63.25 - 56.75	Pole	TP34.7872x33.571x0.5589	10	-26.89	2950.13	103.2	Pass[2]
L11	56.75 - 47.5	Pole	TP36.518x34.7872x0.6274	11	-28.55	3594.19	89.1	Pass
L12	47.5 - 34.25	Pole	TP38.372x34.4211x0.6672	12	-36.56	4118.71	92.4	Pass
L13	34.25 - 26.75	Pole	TP39.7752x38.372x0.6551	13	-39.57	4200.93	95.8	Pass
L14	26.75 - 16.75	Pole	TP41.6461x39.7752x0.6406	14	-43.69	4313.28	99.9	Pass
L15	16.75 - 14.25	Pole	TP42.1139x41.6461x0.7269	15	-44.85	4737.72	92.8	Pass
L16	14.25 - 0	Pole	TP44.78x42.1139x0.6927	16	-51.48	4866.66	98.3	Pass
							Summary	
						Pole (L10)	103.2	Pass[2]
						Rating =	103.2	Pass[2]

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	83.7	Pass
1	Base Plate	0	87.8	Pass
1	Base Foundation Structural Steel	0	57.6	Pass
1	Base Foundation Soil Interaction	0	4.8	Pass

Structure Rating (max from all components) =	103.2%[2]

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97.00 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 0.7500 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 50.00 mph is used in combination with ice.
12) Temperature drop of 50.00 °F.
13) Deflections calculated using a wind speed of 60.00 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) 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	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

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	151.00-125.25	25.75	0.00	12	17.5900	22.4079	0.2188	0.8752	A572-65 (65 ksi)
L2	125.25-118.50	6.75	0.00	12	22.4079	23.6708	0.3502	1.4007	Reinf 42.26 ksi (42 ksi)
L3	118.50-117.75	0.75	0.00	12	23.6708	23.8112	0.6321	2.5283	Reinf 41.09 ksi (41 ksi)
L4	117.75-97.50	20.25	3.42	12	23.8112	27.6000	0.4541	1.8163	Reinf 41.27 ksi (41 ksi)
L5	97.50-95.00	5.92	0.00	12	26.0525	27.6303	0.5460	2.1841	Reinf 41.33 ksi (41 ksi)
L6	95.00-92.50	2.50	0.00	12	27.6303	28.0981	0.7826	3.1302	Reinf 41.34 ksi (41 ksi)
L7	92.50-87.75	4.75	0.00	12	28.0981	28.9869	0.5331	2.1324	Reinf 41.38 ksi (41 ksi)
L8	87.75-84.00	3.75	0.00	12	28.9869	29.6885	0.8388	3.3552	Reinf 41.40 ksi (41 ksi)
L9	84.00-63.25	20.75	0.00	12	29.6885	33.5710	0.5695	2.2779	Reinf 42.16 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
									(42 ksi)
L10	63.25-56.75	6.50	0.00	12	33.5710	34.7872	0.5589	2.2358	Reinf 42.23 ksi (42 ksi)
L11	56.75-47.50	9.25	4.50	12	34.7872	36.5180	0.6274	2.5098	Reinf 44.76 ksi (45 ksi)
L12	47.50-34.25	17.75	0.00	12	34.4211	38.3720	0.6672	2.6686	Reinf 44.84 ksi (45 ksi)
L13	34.25-26.75	7.50	0.00	12	38.3720	39.7752	0.6551	2.6205	Reinf 44.89 ksi (45 ksi)
L14	26.75-16.75	10.00	0.00	12	39.7752	41.6461	0.6406	2.5623	Reinf 44.97 ksi (45 ksi)
L15	16.75-14.25	2.50	0.00	12	41.6461	42.1139	0.7269	2.9075	Reinf 43.13 ksi (43 ksi)
L16	14.25-0.00	14.25		12	42.1139	44.7800	0.6927	2.7709	Reinf 43.64 ksi (44 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	18.2105	12.2386	471.3881	6.2189	9.1116	51.7348	955.1601	6.0235	4.1277	18.865
	23.1984	15.6330	982.4449	7.9437	11.6073	84.6403	1990.6997	7.6941	5.4189	24.767
L2	23.1984	24.8718	1544.5964	7.8967	11.6073	133.0712	3129.7711	12.2412	5.0668	14.469
	24.5059	26.2959	1825.3900	8.3488	12.2615	148.8717	3698.7351	12.9420	5.4053	15.436
L3	24.5059	46.8900	3176.7634	8.2479	12.2615	259.0845	6436.9839	23.0778	4.6498	7.357
	24.6511	47.1756	3235.1670	8.2981	12.3342	262.2927	6555.3255	23.2184	4.6874	7.416
L4	24.6511	34.1505	2378.0522	8.3618	12.3342	192.8017	4818.5786	16.8079	5.1645	11.374
	28.5736	39.6902	3733.1789	9.7182	14.2968	261.1199	7564.4326	19.5343	6.1799	13.61
L5	27.9149	44.8460	3724.0108	9.1313	13.4952	275.9506	7545.8555	22.0718	5.5187	10.107
	28.6050	47.6200	4458.7250	9.6962	14.3125	311.5265	9034.5858	23.4371	5.9416	10.881
L6	28.6050	67.6521	6224.2014	9.6115	14.3125	434.8785	12611.9195	33.2963	5.3077	6.782
	29.0893	68.8309	6555.2437	9.7790	14.5548	450.3831	13282.7009	33.8765	5.4330	6.943
L7	29.0893	47.3167	4588.9869	9.8683	14.5548	315.2899	9298.5317	23.2878	6.1016	11.446
	30.0094	48.8423	5047.3312	10.1864	15.0152	336.1483	10227.2615	24.0387	6.3398	11.893
L8	30.0094	76.0270	7688.6548	10.0770	15.0152	512.0583	15579.2991	37.4182	5.5205	6.581
	30.7358	77.9221	8278.0830	10.3282	15.3787	538.2840	16773.6405	38.3509	5.7085	6.805
L9	30.7358	53.3954	5778.8880	10.4246	15.3787	375.7733	11709.5938	26.2796	6.4303	11.292
	34.7553	60.5147	8412.3257	11.8146	17.3898	483.7508	17045.6526	29.7835	7.4709	13.119
L10	34.7553	59.4147	8264.6806	11.8183	17.3898	475.2604	16746.4835	29.2421	7.4991	13.417
	36.0144	61.6036	9212.1924	12.2537	18.0198	511.2264	18666.3994	30.3194	7.8250	14
L11	36.0144	69.0150	10279.2158	12.2292	18.0198	570.4404	20828.4780	33.9671	7.6414	12.179
	37.8062	72.5117	11922.1540	12.8488	18.9163	630.2574	24157.5163	35.6881	8.1053	12.918
L12	36.6723	72.5121	10544.9956	12.0839	17.8301	591.4139	21367.0199	35.6883	7.4369	11.147
	39.7256	80.9995	14698.1186	13.4983	19.8767	739.4656	29782.3731	39.8655	8.4957	12.734
L13	39.7256	79.5644	14446.9065	13.5026	19.8767	726.8271	29273.3493	39.1592	8.5279	13.017
	41.1783	82.5245	16120.0919	14.0050	20.6035	782.3942	32663.6765	40.6160	8.9040	13.591
L14	41.1783	80.7217	15779.6692	14.0102	20.6035	765.8716	31973.8879	39.7288	8.9430	13.961
	43.1153	84.5808	18152.7923	14.6800	21.5727	841.4706	36782.4787	41.6281	9.4444	14.744
L15	43.1153	95.7724	20468.3200	14.6491	21.5727	948.8066	41474.3656	47.1363	9.2132	12.675

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
	43.5995	96.8672	21178.2818	14.8165	21.8150	970.8133	42912.9406	47.6751	9.3385	12.848
L16	43.5995	92.3936	20233.5588	14.8288	21.8150	927.5071	40998.6756	45.4733	9.4300	13.613
	46.3597	98.3407	24397.5063	15.7832	23.1960	1051.7962	49435.9623	48.4003	10.1445	14.644

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	Double Angle Stitch Bolt Spacing Redundants in
L1 151.00-125.25				1	1	1			
L2 125.25-118.50				1	1	1			
L3 118.50-117.75				1	1	1			
L4 117.75-97.50				1	1	1			
L5 97.50-95.00				1	1	1			
L6 95.00-92.50				1	1	1			
L7 92.50-87.75				1	1	1			
L8 87.75-84.00				1	1	1			
L9 84.00-63.25				1	1	1			
L10 63.25-56.75				1	1	1			
L11 56.75-47.50				1	1	1			
L12 47.50-34.25				1	1	1			
L13 34.25-26.75				1	1	1			
L14 26.75-16.75				1	1	1			
L15 16.75-14.25				1	1	1			
L16 14.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	38.70 - 0.00	2	No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	90.50 - 38.70	1	No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
1 1/4" Flat	C	No	CaAa (Out Of	67.50 - 52.50	1	No Ice	0.21	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Reinforcement			Face)			1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	120.50 - 90.50	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	97.00 - 82.00	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
***								
Aero MP3-03	C	No	CaAa (Out Of Face)	126.50 - 116.50	1	No Ice	0.26	0.00
						1/2" Ice	0.37	0.00
						1" Ice	0.48	0.00
***								
***								
***								
LDF2-50(3/8)	C	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF7-50A(1-5/8)	C	No	Inside Pole	148.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
9776(5/8)	C	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.28
						1/2" Ice	0.00	0.28
						1" Ice	0.00	0.28
810921-001(7/8)	C	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.40
						1/2" Ice	0.00	0.40
						1" Ice	0.00	0.40
***								
LDF7-50A(1-5/8)	C	No	Inside Pole	140.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
***								
LDF4-50A(1/2)	C	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8)	C	No	Inside Pole	130.00 - 0.00	3	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB114-21U3M12-XXXF(1-1/4)	C	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	1.22
						1/2" Ice	0.00	1.22
						1" Ice	0.00	1.22
***								
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	C	No	Inside Pole	122.00 - 0.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	122.00 - 0.00	2	No Ice	0.20	0.52
						1/2" Ice	0.30	2.02
						1" Ice	0.40	4.14
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	122.00 - 0.00	10	No Ice	0.00	0.52
						1/2" Ice	0.00	2.02
						1" Ice	0.00	4.14

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	151.00-125.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.328	0.44
L2	125.25-118.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.477	0.20
L3	118.50-117.75	A	0.000	0.000	0.000	0.000	0.00

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
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.616	0.03
L4	117.75-97.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.641	0.68
L5	97.50-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.730	0.08
L6	95.00-92.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.813	0.08
L7	92.50-87.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.560	0.16
L8	87.75-84.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.876	0.13
L9	84.00-63.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	13.675	0.70
L10	63.25-56.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.256	0.22
L11	56.75-47.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.438	0.31
L12	47.50-34.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.881	0.45
L13	34.25-26.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.065	0.25
L14	26.75-16.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.087	0.34
L15	16.75-14.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.022	0.08
L16	14.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.523	0.48

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	151.00-125.25	A	1.730	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.809	0.44
L2	125.25-118.50	A	1.709	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.194	0.54
L3	118.50-117.75	A	1.704	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.695	0.10
L4	117.75-97.50	A	1.688	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	33.377	2.57
L5	97.50-95.00	A	1.669	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.106	0.32
L6	95.00-92.50	A	1.665	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.329	0.31
L7	92.50-87.75	A	1.659	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

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
		C		0.000	0.000	0.000	10.212	0.59
L8	87.75-84.00	A	1.651	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.103	0.47
L9	84.00-63.25	A	1.625	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	36.911	2.54
L10	63.25-56.75	A	1.592	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.997	0.78
L11	56.75-47.50	A	1.570	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.958	1.10
L12	47.50-34.25	A	1.532	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	23.378	1.57
L13	34.25-26.75	A	1.488	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.490	0.84
L14	26.75-16.75	A	1.438	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	20.234	1.09
L15	16.75-14.25	A	1.391	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.958	0.26
L16	14.25-0.00	A	1.285	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	26.992	1.39

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	151.00-125.25	-0.0177	0.0102	-0.0371	0.0214
L2	125.25-118.50	-0.5169	0.2985	-0.9418	0.5438
L3	118.50-117.75	-0.7355	0.4246	-1.2648	0.7303
L4	117.75-97.50	-0.5717	0.3301	-1.1041	0.6375
L5	97.50-95.00	-0.6714	0.3876	-1.2906	0.7451
L6	95.00-92.50	-0.6992	0.4037	-1.3358	0.7712
L7	92.50-87.75	-0.7211	0.4163	-1.3589	0.7846
L8	87.75-84.00	-0.7386	0.4264	-1.3816	0.7977
L9	84.00-63.25	-0.6673	0.3853	-1.2767	0.7371
L10	63.25-56.75	-0.7963	0.4597	-1.4844	0.8570
L11	56.75-47.50	-0.7109	0.4105	-1.3659	0.7886
L12	47.50-34.25	-0.6967	0.4022	-1.3567	0.7833
L13	34.25-26.75	-0.8184	0.4725	-1.5368	0.8873
L14	26.75-16.75	-0.8248	0.4762	-1.5440	0.8914
L15	16.75-14.25	-0.8291	0.4787	-1.5427	0.8907
L16	14.25-0.00	-0.8346	0.4819	-1.5211	0.8782

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	5.74 6.34 6.86	4.95 6.02 6.81	0.07 0.12 0.18
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	5.74 6.34 6.86	4.95 6.02 6.81	0.07 0.12 0.18
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	5.74 6.34 6.86	4.95 6.02 6.81	0.07 0.12 0.18
(2) CG-1900DD-FULL-DIN	A	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	1.10 1.23 1.37	0.29 0.37 0.46	0.01 0.02 0.03
(2) CG-1900DD-FULL-DIN	B	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	1.10 1.23 1.37	0.29 0.37 0.46	0.01 0.02 0.03
(2) CG-1900DD-FULL-DIN	C	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	1.10 1.23 1.37	0.29 0.37 0.46	0.01 0.02 0.03
(4) LGP21901	A	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(4) LGP21901	B	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(4) LGP21901	C	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) DTMABP7819VG12A	A	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.98 1.10 1.23	0.34 0.42 0.51	0.02 0.03 0.04
(2) DTMABP7819VG12A	B	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.98 1.10 1.23	0.34 0.42 0.51	0.02 0.03 0.04
(2) DTMABP7819VG12A	C	From Leg	4.00 0.00 1.00			0.00	148.00	No Ice 1/2" Ice 1" Ice	0.98 1.10 1.23	0.34 0.42 0.51	0.02 0.03 0.04
860 10025	A	From Leg	4.00 0.00			0.00	148.00	No Ice 1/2"	0.14 0.19	0.12 0.17	0.00 0.00

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
			1.00					Ice	0.25	0.23	0.01
								1" Ice			
860 10025	B	From Leg	4.00			0.00	148.00	No Ice	0.14	0.12	0.00
			0.00					1/2"	0.19	0.17	0.00
			1.00					Ice	0.25	0.23	0.01
								1" Ice			
860 10025	C	From Leg	4.00			0.00	148.00	No Ice	0.14	0.12	0.00
			0.00					1/2"	0.19	0.17	0.00
			1.00					Ice	0.25	0.23	0.01
								1" Ice			
(2) RRUS-11	A	From Leg	4.00			0.00	148.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			1.00					Ice	3.21	1.50	0.09
								1" Ice			
(2) RRUS-11	B	From Leg	4.00			0.00	148.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			1.00					Ice	3.21	1.50	0.09
								1" Ice			
(2) RRUS-11	C	From Leg	4.00			0.00	148.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			1.00					Ice	3.21	1.50	0.09
								1" Ice			
DC6-48-60-18-8F	A	From Leg	4.00			0.00	148.00	No Ice	0.92	0.92	0.02
			0.00					1/2"	1.46	1.46	0.04
			1.00					Ice	1.64	1.64	0.06
								1" Ice			
DS1F03F36D-N	A	From Leg	4.00			0.00	148.00	No Ice	6.69	6.69	0.06
			0.00					1/2"	8.95	8.95	0.11
			12.00					Ice	11.23	11.23	0.17
								1" Ice			
Platform Mount [LP 602-1]	C	None				0.00	148.00	No Ice	32.03	32.03	1.34
								1/2"	38.71	38.71	1.80
								Ice	45.39	45.39	2.26
								1" Ice			
***											
DB854DG65ESX w/ Mount Pipe	A	From Leg	4.00			0.00	140.00	No Ice	5.55	4.10	0.04
			0.00					1/2"	5.94	4.73	0.08
			0.00					Ice	6.34	5.36	0.14
								1" Ice			
DB854DG65ESX w/ Mount Pipe	B	From Leg	4.00			0.00	140.00	No Ice	5.55	4.10	0.04
			0.00					1/2"	5.94	4.73	0.08
			0.00					Ice	6.34	5.36	0.14
								1" Ice			
DB854DG65ESX w/ Mount Pipe	C	From Leg	4.00			0.00	140.00	No Ice	5.55	4.10	0.04
			0.00					1/2"	5.94	4.73	0.08
			0.00					Ice	6.34	5.36	0.14
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00			0.00	140.00	No Ice	8.42	7.42	0.08
			0.00					1/2"	8.96	8.45	0.15
			0.00					Ice	9.48	9.35	0.23
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00			0.00	140.00	No Ice	8.42	7.42	0.08
			0.00					1/2"	8.96	8.45	0.15
			0.00					Ice	9.48	9.35	0.23
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00			0.00	140.00	No Ice	8.42	7.42	0.08
			0.00					1/2"	8.96	8.45	0.15
			0.00					Ice	9.48	9.35	0.23
								1" Ice			
RRH4X45-AWS4 B66	A	From Leg	4.00			0.00	140.00	No Ice	2.66	1.59	0.06
			0.00					1/2"	2.88	1.77	0.08
			0.00					Ice	3.10	1.96	0.11
								1" Ice			
RRH4X45-AWS4 B66	B	From Leg	4.00			0.00	140.00	No Ice	2.66	1.59	0.06
			0.00					1/2"	2.88	1.77	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				Ice	3.10	1.96	0.11
							1" Ice			
RRH4X45-AWS4 B66	C	From Leg	4.00		0.00	140.00	No Ice	2.66	1.59	0.06
			0.00				1/2"	2.88	1.77	0.08
			0.00				Ice	3.10	1.96	0.11
							1" Ice			
RRH2x60-700	A	From Leg	4.00		0.00	140.00	No Ice	3.50	1.82	0.06
			0.00				1/2"	3.76	2.05	0.08
			0.00				Ice	4.03	2.29	0.11
							1" Ice			
RRH2x60-700	B	From Leg	4.00		0.00	140.00	No Ice	3.50	1.82	0.06
			0.00				1/2"	3.76	2.05	0.08
			0.00				Ice	4.03	2.29	0.11
							1" Ice			
RRH2x60-700	C	From Leg	4.00		0.00	140.00	No Ice	3.50	1.82	0.06
			0.00				1/2"	3.76	2.05	0.08
			0.00				Ice	4.03	2.29	0.11
							1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.00		0.00	140.00	No Ice	4.80	2.00	0.04
			0.00				1/2"	5.07	2.19	0.08
			0.00				Ice	5.35	2.39	0.12
							1" Ice			
2.375" OD x 6' Mount Pipe	A	None			0.00	140.00	No Ice	1.43	1.43	0.03
							1/2"	1.92	1.92	0.04
							Ice	2.29	2.29	0.05
							1" Ice			
2.375" OD x 6' Mount Pipe	B	None			0.00	140.00	No Ice	1.43	1.43	0.03
							1/2"	1.92	1.92	0.04
							Ice	2.29	2.29	0.05
							1" Ice			
2.375" OD x 6' Mount Pipe	C	None			0.00	140.00	No Ice	1.43	1.43	0.03
							1/2"	1.92	1.92	0.04
							Ice	2.29	2.29	0.05
							1" Ice			
Platform Mount [LP 303-1]	C	None			0.00	140.00	No Ice	14.66	14.66	1.25
							1/2"	18.87	18.87	1.48
							Ice	23.08	23.08	1.71
							1" Ice			
***										
1900MHz RRH	A	From Leg	4.00		0.00	132.00	No Ice	2.49	3.26	0.04
			0.00				1/2"	2.70	3.48	0.08
			-1.00				Ice	2.91	3.72	0.11
							1" Ice			
1900MHz RRH	B	From Leg	4.00		0.00	132.00	No Ice	2.49	3.26	0.04
			0.00				1/2"	2.70	3.48	0.08
			-1.00				Ice	2.91	3.72	0.11
							1" Ice			
1900MHz RRH	C	From Leg	4.00		0.00	132.00	No Ice	2.49	3.26	0.04
			0.00				1/2"	2.70	3.48	0.08
			-1.00				Ice	2.91	3.72	0.11
							1" Ice			
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00		0.00	132.00	No Ice	0.66	0.32	0.01
			0.00				1/2"	0.76	0.40	0.02
			-1.00				Ice	0.87	0.48	0.02
							1" Ice			
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00		0.00	132.00	No Ice	0.66	0.32	0.01
			0.00				1/2"	0.76	0.40	0.02
			-1.00				Ice	0.87	0.48	0.02
							1" Ice			
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00		0.00	132.00	No Ice	0.66	0.32	0.01
			0.00				1/2"	0.76	0.40	0.02
			-1.00				Ice	0.87	0.48	0.02
							1" Ice			
800MHZ RRH	A	From Leg	4.00		0.00	132.00	No Ice	2.13	1.77	0.05
			0.00				1/2"	2.32	1.95	0.07

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
			-1.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	B	From Leg	4.00	0.00	132.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			-1.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	C	From Leg	4.00	0.00	132.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			-1.00			Ice	2.51	2.13	0.10
						1" Ice			
Pipe Mount [PM 601-3]	C	None		0.00	132.00	No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice			
***									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.00	130.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.00	130.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.00	130.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
GPS-TMG-HR-26NCM	A	From Leg	4.00	0.00	130.00	No Ice	0.13	0.13	0.00
			0.00			1/2"	0.18	0.18	0.00
			3.00			Ice	0.24	0.24	0.01
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.00	130.00	No Ice	6.58	4.96	0.08
			0.00			1/2"	7.03	5.75	0.13
			0.00			Ice	7.47	6.47	0.19
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.00	130.00	No Ice	6.58	4.96	0.08
			0.00			1/2"	7.03	5.75	0.13
			0.00			Ice	7.47	6.47	0.19
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.00	130.00	No Ice	6.58	4.96	0.08
			0.00			1/2"	7.03	5.75	0.13
			0.00			Ice	7.47	6.47	0.19
						1" Ice			
TD-RRH8x20-25	A	From Leg	4.00	0.00	130.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8x20-25	B	From Leg	4.00	0.00	130.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8x20-25	C	From Leg	4.00	0.00	130.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
2.375" OD x 6' Mount Pipe	A	None		0.00	130.00	No Ice	1.43	1.43	0.03
						1/2"	1.92	1.92	0.04
						Ice	2.29	2.29	0.05
						1" Ice			
2.375" OD x 6' Mount Pipe	B	None		0.00	130.00	No Ice	1.43	1.43	0.03
						1/2"	1.92	1.92	0.04
						Ice	2.29	2.29	0.05
						1" Ice			
2.375" OD x 6' Mount Pipe	C	None		0.00	130.00	No Ice	1.43	1.43	0.03
						1/2"	1.92	1.92	0.04

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
						Ice	2.29	2.29	0.05
						1" Ice			
T-Arm Mount [TA 602-3]	C	None		0.00	130.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
***									
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.32	5.63	0.11
						1/2" Ice	6.76	6.42	0.17
						1" Ice	7.20	7.12	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.32	5.63	0.11
						1/2" Ice	6.76	6.42	0.17
						1" Ice	7.20	7.12	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.32	5.63	0.11
						1/2" Ice	6.76	6.42	0.17
						1" Ice	7.20	7.12	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.00	122.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
T-Arm Mount [TA 702-3]	C	None		0.00	122.00	No Ice	5.64	5.64	0.34
						1/2" Ice	6.55	6.55	0.43
						1" Ice	7.46	7.46	0.52

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 151.00-125.25	137.61	1.354	30.97	44.428	A	0.000	44.428	44.428	100.00	0.000	0.000
					B	0.000	44.428		100.00	0.000	0.000
					C	0.000	44.428		100.00	0.000	0.328
L2 125.25-118.50	121.84	1.319	30.19	13.417	A	0.000	13.417	13.417	100.00	0.000	0.000
					B	0.000	13.417		100.00	0.000	0.000
					C	0.000	13.417		100.00	0.000	3.477
L3 118.50-117.75	118.12	1.311	29.99	1.536	A	0.000	1.536	1.536	100.00	0.000	0.000
					B	0.000	1.536		100.00	0.000	0.000
					C	0.000	1.536		100.00	0.000	0.616
L4 117.75-97.50	107.38	1.285	29.40	44.908	A	0.000	44.908	44.908	100.00	0.000	0.000
					B	0.000	44.908		100.00	0.000	0.000
					C	0.000	44.908		100.00	0.000	11.641
L5 97.50-95.00	96.24	1.255	28.73	5.887	A	0.000	5.887	5.887	100.00	0.000	0.000
					B	0.000	5.887		100.00	0.000	0.000
					C	0.000	5.887		100.00	0.000	1.730
L6 95.00-92.50	93.75	1.249	28.57	6.010	A	0.000	6.010	6.010	100.00	0.000	0.000
					B	0.000	6.010		100.00	0.000	0.000
					C	0.000	6.010		100.00	0.000	1.813
L7 92.50-87.75	90.11	1.238	28.33	11.697	A	0.000	11.697	11.697	100.00	0.000	0.000
					B	0.000	11.697		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	11.697		100.00	0.000	3.560
L8 87.75-84.00	85.87	1.226	28.05	9.491	A	0.000	9.491	9.491	100.00	0.000	0.000
					B	0.000	9.491		100.00	0.000	0.000
					C	0.000	9.491		100.00	0.000	2.876
L9 84.00-63.25	73.41	1.186	27.14	56.623	A	0.000	56.623	56.623	100.00	0.000	0.000
					B	0.000	56.623		100.00	0.000	0.000
					C	0.000	56.623		100.00	0.000	13.675
L10 63.25-56.75	59.98	1.136	26.01	19.167	A	0.000	19.167	19.167	100.00	0.000	0.000
					B	0.000	19.167		100.00	0.000	0.000
					C	0.000	19.167		100.00	0.000	5.256
L11 56.75-47.50	52.09	1.103	25.24	28.452	A	0.000	28.452	28.452	100.00	0.000	0.000
					B	0.000	28.452		100.00	0.000	0.000
					C	0.000	28.452		100.00	0.000	6.438
L12 47.50-34.25	40.79	1.048	23.98	42.178	A	0.000	42.178	42.178	100.00	0.000	0.000
					B	0.000	42.178		100.00	0.000	0.000
					C	0.000	42.178		100.00	0.000	8.881
L13 34.25-26.75	30.48	0.986	22.55	25.282	A	0.000	25.282	25.282	100.00	0.000	0.000
					B	0.000	25.282		100.00	0.000	0.000
					C	0.000	25.282		100.00	0.000	6.065
L14 26.75-16.75	21.71	0.918	21.00	35.122	A	0.000	35.122	35.122	100.00	0.000	0.000
					B	0.000	35.122		100.00	0.000	0.000
					C	0.000	35.122		100.00	0.000	8.087
L15 16.75-14.25	15.50	0.855	19.56	9.033	A	0.000	9.033	9.033	100.00	0.000	0.000
					B	0.000	9.033		100.00	0.000	0.000
					C	0.000	9.033		100.00	0.000	2.022
L16 14.25-0.00	7.05	0.85	19.45	53.413	A	0.000	53.413	53.413	100.00	0.000	0.000
					B	0.000	53.413		100.00	0.000	0.000
					C	0.000	53.413		100.00	0.000	11.523

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 151.00-125.25	137.61	1.354	8.23	1.7302	51.854	A	0.000	51.854	51.854	100.00	0.000	0.000
						B	0.000	51.854		100.00	0.000	0.000
						C	0.000	51.854		100.00	0.000	0.809
L2 125.25-118.50	121.84	1.319	8.02	1.7093	15.340	A	0.000	15.340	15.340	100.00	0.000	0.000
						B	0.000	15.340		100.00	0.000	0.000
						C	0.000	15.340		100.00	0.000	9.194
L3 118.50-117.75	118.12	1.311	7.97	1.7040	1.749	A	0.000	1.749	1.749	100.00	0.000	0.000
						B	0.000	1.749		100.00	0.000	0.000
						C	0.000	1.749		100.00	0.000	1.695
L4 117.75-97.50	107.38	1.285	7.81	1.6878	50.605	A	0.000	50.605	50.605	100.00	0.000	0.000
						B	0.000	50.605		100.00	0.000	0.000
						C	0.000	50.605		100.00	0.000	33.377
L5 97.50-95.00	96.24	1.255	7.63	1.6695	6.591	A	0.000	6.591	6.591	100.00	0.000	0.000
						B	0.000	6.591		100.00	0.000	0.000
						C	0.000	6.591		100.00	0.000	5.106
L6 95.00-92.50	93.75	1.249	7.59	1.6651	6.704	A	0.000	6.704	6.704	100.00	0.000	0.000
						B	0.000	6.704		100.00	0.000	0.000
						C	0.000	6.704		100.00	0.000	5.329
L7 92.50-87.75	90.11	1.238	7.53	1.6585	13.010	A	0.000	13.010	13.010	100.00	0.000	0.000
						B	0.000	13.010		100.00	0.000	0.000
						C	0.000	13.010		100.00	0.000	10.212
L8 87.75-84.00	85.87	1.226	7.45	1.6505	10.523	A	0.000	10.523	10.523	100.00	0.000	0.000
						B	0.000	10.523		100.00	0.000	0.000
						C	0.000	10.523		100.00	0.000	8.103
L9 84.00-63.25	73.41	1.186	7.21	1.6249	62.242	A	0.000	62.242	62.242	100.00	0.000	0.000
						B	0.000	62.242		100.00	0.000	0.000
						C	0.000	62.242		100.00	0.000	36.911
L10 63.25-56.75	59.98	1.136	6.91	1.5924	20.892	A	0.000	20.892	20.892	100.00	0.000	0.000
						B	0.000	20.892		100.00	0.000	0.000
						C	0.000	20.892		100.00	0.000	13.997

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L11 56.75-47.50	52.09	1.103	6.71	1.5700	30.872	A	0.000	30.872	30.872	100.00	0.000	0.000
						B	0.000	30.872		100.00	0.000	0.000
						C	0.000	30.872		100.00	0.000	16.958
L12 47.50-34.25	40.79	1.048	6.37	1.5321	45.645	A	0.000	45.645	45.645	100.00	0.000	0.000
						B	0.000	45.645		100.00	0.000	0.000
						C	0.000	45.645		100.00	0.000	23.378
L13 34.25-26.75	30.48	0.986	5.99	1.4881	27.143	A	0.000	27.143	27.143	100.00	0.000	0.000
						B	0.000	27.143		100.00	0.000	0.000
						C	0.000	27.143		100.00	0.000	15.490
L14 26.75-16.75	21.71	0.918	5.58	1.4385	37.520	A	0.000	37.520	37.520	100.00	0.000	0.000
						B	0.000	37.520		100.00	0.000	0.000
						C	0.000	37.520		100.00	0.000	20.234
L15 16.75-14.25	15.50	0.855	5.20	1.3908	9.612	A	0.000	9.612	9.612	100.00	0.000	0.000
						B	0.000	9.612		100.00	0.000	0.000
						C	0.000	9.612		100.00	0.000	4.958
L16 14.25-0.00	7.05	0.85	5.17	1.2855	56.466	A	0.000	56.466	56.466	100.00	0.000	0.000
						B	0.000	56.466		100.00	0.000	0.000
						C	0.000	56.466		100.00	0.000	26.992

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 151.00-125.25	137.61	1.354	10.60	44.428	A	0.000	44.428	44.428	100.00	0.000	0.000
					B	0.000	44.428		100.00	0.000	0.000
					C	0.000	44.428		100.00	0.000	0.328
L2 125.25-118.50	121.84	1.319	10.34	13.417	A	0.000	13.417	13.417	100.00	0.000	0.000
					B	0.000	13.417		100.00	0.000	0.000
					C	0.000	13.417		100.00	0.000	3.477
L3 118.50-117.75	118.12	1.311	10.27	1.536	A	0.000	1.536	1.536	100.00	0.000	0.000
					B	0.000	1.536		100.00	0.000	0.000
					C	0.000	1.536		100.00	0.000	0.616
L4 117.75-97.50	107.38	1.285	10.06	44.908	A	0.000	44.908	44.908	100.00	0.000	0.000
					B	0.000	44.908		100.00	0.000	0.000
					C	0.000	44.908		100.00	0.000	11.641
L5 97.50-95.00	96.24	1.255	9.83	5.887	A	0.000	5.887	5.887	100.00	0.000	0.000
					B	0.000	5.887		100.00	0.000	0.000
					C	0.000	5.887		100.00	0.000	1.730
L6 95.00-92.50	93.75	1.249	9.78	6.010	A	0.000	6.010	6.010	100.00	0.000	0.000
					B	0.000	6.010		100.00	0.000	0.000
					C	0.000	6.010		100.00	0.000	1.813
L7 92.50-87.75	90.11	1.238	9.70	11.697	A	0.000	11.697	11.697	100.00	0.000	0.000
					B	0.000	11.697		100.00	0.000	0.000
					C	0.000	11.697		100.00	0.000	3.560
L8 87.75-84.00	85.87	1.226	9.60	9.491	A	0.000	9.491	9.491	100.00	0.000	0.000
					B	0.000	9.491		100.00	0.000	0.000
					C	0.000	9.491		100.00	0.000	2.876
L9 84.00-63.25	73.41	1.186	9.29	56.623	A	0.000	56.623	56.623	100.00	0.000	0.000
					B	0.000	56.623		100.00	0.000	0.000
					C	0.000	56.623		100.00	0.000	13.675
L10 63.25-56.75	59.98	1.136	8.90	19.167	A	0.000	19.167	19.167	100.00	0.000	0.000
					B	0.000	19.167		100.00	0.000	0.000
					C	0.000	19.167		100.00	0.000	5.256
L11 56.75-47.50	52.09	1.103	8.64	28.452	A	0.000	28.452	28.452	100.00	0.000	0.000
					B	0.000	28.452		100.00	0.000	0.000
					C	0.000	28.452		100.00	0.000	6.438
L12 47.50-34.25	40.79	1.048	8.21	42.178	A	0.000	42.178	42.178	100.00	0.000	0.000
					B	0.000	42.178		100.00	0.000	0.000
					C	0.000	42.178		100.00	0.000	8.881
L13 34.25-26.75	30.48	0.986	7.72	25.282	A	0.000	25.282	25.282	100.00	0.000	0.000
					B	0.000	25.282		100.00	0.000	0.000
					C	0.000	25.282		100.00	0.000	6.065
L14 26.75-	21.71	0.918	7.19	35.122	A	0.000	35.122	35.122	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
16.75					B	0.000	35.122		100.00	0.000	0.000
					C	0.000	35.122		100.00	0.000	8.087
L15 16.75-14.25	15.50	0.855	6.70	9.033	A	0.000	9.033	9.033	100.00	0.000	0.000
					B	0.000	9.033		100.00	0.000	0.000
					C	0.000	9.033		100.00	0.000	2.022
L16 14.25-0.00	7.05	0.85	6.66	53.413	A	0.000	53.413	53.413	100.00	0.000	0.000
					B	0.000	53.413		100.00	0.000	0.000
					C	0.000	53.413		100.00	0.000	11.523

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	151 - 125.25	Pole	Max Tension	21	0.00	-0.00	-0.00
			Max. Compression	26	-24.51	0.14	3.03
			Max. Mx	20	-8.22	285.13	0.46
			Max. My	2	-8.19	0.04	287.69
			Max. Vy	20	-18.23	285.13	0.46
			Max. Vx	2	-18.36	0.04	287.69
			Max. Torque	9			2.40
L2	125.25 - 118.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.03	0.51	2.87
			Max. Mx	20	-10.15	415.59	0.48
			Max. My	2	-10.13	0.07	418.98
			Max. Vy	20	-21.26	415.59	0.48
			Max. Vx	2	-21.39	0.07	418.98
			Max. Torque	9			2.40
L3	118.5 - 117.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.32	0.59	2.84
			Max. Mx	20	-10.33	431.59	0.49
			Max. My	2	-10.30	0.07	435.07
			Max. Vy	20	-21.40	431.59	0.49
			Max. Vx	2	-21.53	0.07	435.07
			Max. Torque	9			2.31
L4	117.75 - 97.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.05	2.35	1.93
			Max. Mx	20	-13.60	815.94	0.48
			Max. My	2	-13.58	0.19	821.39
			Max. Vy	20	-24.30	815.94	0.48
			Max. Vx	2	-24.43	0.19	821.39
			Max. Torque	9			2.29
L5	97.5 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.06	2.99	1.59
			Max. Mx	20	-15.51	963.22	0.48
			Max. My	2	-15.48	0.24	969.38
			Max. Vy	20	-25.46	963.22	0.48
			Max. Vx	2	-25.59	0.24	969.38
			Max. Torque	7			2.08
L6	95 - 92.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.24	3.27	1.45
			Max. Mx	20	-16.32	1027.48	0.47
			Max. My	2	-16.29	0.26	1033.92
			Max. Vy	20	-25.95	1027.48	0.47
			Max. Vx	2	-26.08	0.26	1033.92
			Max. Torque	7			2.08
L7	92.5 - 87.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.10	3.81	1.16
			Max. Mx	20	-17.49	1152.82	0.47
			Max. My	2	-17.47	0.29	1159.83
			Max. Vy	20	-26.84	1152.82	0.47
			Max. Vx	2	-26.97	0.29	1159.83
			Max. Torque	7			2.07
L8	87.75 - 84	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.01	4.24	0.93
			Max. Mx	20	-18.84	1254.86	0.46
			Max. My	2	-18.82	0.32	1262.31
			Max. Vy	20	-27.59	1254.86	0.46
			Max. Vx	2	-27.72	0.32	1262.31
			Max. Torque	7			2.07
L9	84 - 63.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.92	6.76	-0.44
			Max. Mx	20	-24.88	1866.31	0.40
			Max. My	2	-24.87	0.50	1876.16
			Max. Vy	20	-31.39	1866.31	0.40
			Max. Vx	2	-31.52	0.50	1876.16
			Max. Torque	5			2.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	63.25 - 56.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.81	7.58	-0.89
			Max. Mx	20	-26.91	2074.21	0.37
			Max. My	2	-26.89	0.55	2084.80
			Max. Vy	20	-32.60	2074.21	0.37
			Max. Vx	2	-32.73	0.55	2084.80
			Max. Torque	5			2.51
L11	56.75 - 47.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.11	8.19	-1.23
			Max. Mx	20	-28.56	2231.05	0.35
			Max. My	2	-28.55	0.60	2242.18
			Max. Vy	20	-33.46	2231.05	0.35
			Max. Vx	2	-33.59	0.60	2242.18
			Max. Torque	5			2.62
L12	47.5 - 34.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.85	10.50	-2.52
			Max. Mx	20	-36.57	2854.21	0.27
			Max. My	2	-36.56	0.77	2867.34
			Max. Vy	20	-36.65	2854.21	0.27
			Max. Vx	2	-36.78	0.77	2867.34
			Max. Torque	15			-3.15
L13	34.25 - 26.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.80	11.44	-3.06
			Max. Mx	20	-39.58	3133.67	0.23
			Max. My	2	-39.57	0.85	3147.63
			Max. Vy	20	-37.90	3133.67	0.23
			Max. Vx	2	-38.02	0.85	3147.63
			Max. Torque	15			-3.48
L14	26.75 - 16.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.09	12.65	-3.76
			Max. Mx	20	-43.70	3520.12	0.17
			Max. My	2	-43.69	0.95	3535.16
			Max. Vy	20	-39.42	3520.12	0.17
			Max. Vx	2	-39.54	0.95	3535.16
			Max. Torque	15			-3.92
L15	16.75 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.54	12.94	-3.93
			Max. Mx	20	-44.86	3619.09	0.15
			Max. My	2	-44.85	0.98	3634.40
			Max. Vy	20	-39.78	3619.09	0.15
			Max. Vx	2	-39.91	0.98	3634.40
			Max. Torque	15			-4.03
L16	14.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.60	14.53	-4.86
			Max. Mx	20	-51.48	4200.26	0.06
			Max. My	2	-51.48	1.13	4217.08
			Max. Vy	20	-41.81	4200.26	0.06
			Max. Vx	2	-41.93	1.13	4217.08
			Max. Torque	15			-4.64

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	86.60	-0.00	-0.00
	Max. H_x	20	51.49	41.79	0.00
	Max. H_z	3	38.62	0.00	41.91
	Max. M_x	2	4217.08	0.00	41.91
	Max. M_z	8	4197.96	-41.79	0.00
	Max. Torsion	3	4.64	0.00	41.91
	Min. Vert	21	38.62	41.79	0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_x	8	51.49	-41.79	0.00
	Min. H_z	15	38.62	0.00	-41.91
	Min. M_x	14	-4216.93	0.00	-41.91
	Min. M_z	20	-4200.26	41.79	0.00
	Min. Torsion	15	-4.64	0.00	-41.91

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	42.91	0.00	0.00	-0.04	0.93	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	51.49	-0.00	-41.91	-4217.08	1.13	-4.64
0.9 Dead+1.6 Wind 0 deg - No Ice	38.62	-0.00	-41.91	-4170.06	0.84	-4.64
1.2 Dead+1.6 Wind 30 deg - No Ice	51.49	20.90	-36.30	-3652.36	-2098.52	-3.86
0.9 Dead+1.6 Wind 30 deg - No Ice	38.62	20.90	-36.30	-3611.55	-2075.39	-3.87
1.2 Dead+1.6 Wind 60 deg - No Ice	51.49	36.19	-20.96	-2108.74	-3635.61	-2.05
0.9 Dead+1.6 Wind 60 deg - No Ice	38.62	36.19	-20.96	-2085.17	-3595.32	-2.06
1.2 Dead+1.6 Wind 90 deg - No Ice	51.49	41.79	-0.00	-0.06	-4197.96	0.31
0.9 Dead+1.6 Wind 90 deg - No Ice	38.62	41.79	-0.00	-0.04	-4151.29	0.30
1.2 Dead+1.6 Wind 120 deg - No Ice	51.49	36.19	20.96	2108.61	-3635.60	2.60
0.9 Dead+1.6 Wind 120 deg - No Ice	38.62	36.19	20.96	2085.09	-3595.32	2.59
1.2 Dead+1.6 Wind 150 deg - No Ice	51.49	20.90	36.30	3652.22	-2098.51	4.18
0.9 Dead+1.6 Wind 150 deg - No Ice	38.62	20.90	36.30	3611.46	-2075.38	4.18
1.2 Dead+1.6 Wind 180 deg - No Ice	51.49	-0.00	41.91	4216.93	1.13	4.64
0.9 Dead+1.6 Wind 180 deg - No Ice	38.62	-0.00	41.91	4169.97	0.84	4.64
1.2 Dead+1.6 Wind 210 deg - No Ice	51.49	-20.90	36.30	3652.24	2100.79	3.86
0.9 Dead+1.6 Wind 210 deg - No Ice	38.62	-20.90	36.30	3611.48	2077.07	3.87
1.2 Dead+1.6 Wind 240 deg - No Ice	51.49	-36.19	20.96	2108.63	3637.90	2.05
0.9 Dead+1.6 Wind 240 deg - No Ice	38.62	-36.19	20.96	2085.10	3597.02	2.06
1.2 Dead+1.6 Wind 270 deg - No Ice	51.49	-41.79	-0.00	-0.06	4200.26	-0.31
0.9 Dead+1.6 Wind 270 deg - No Ice	38.62	-41.79	-0.00	-0.04	4153.01	-0.30
1.2 Dead+1.6 Wind 300 deg - No Ice	51.49	-36.19	-20.96	-2108.76	3637.91	-2.59
0.9 Dead+1.6 Wind 300 deg - No Ice	38.62	-36.19	-20.96	-2085.18	3597.03	-2.58
1.2 Dead+1.6 Wind 330 deg - No Ice	51.49	-20.90	-36.30	-3652.38	2100.80	-4.18
0.9 Dead+1.6 Wind 330 deg - No Ice	38.62	-20.90	-36.30	-3611.57	2077.07	-4.17
1.2 Dead+1.0 Ice+1.0 Temp	86.60	0.00	0.00	4.86	14.53	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.60	0.00	-9.91	-1079.92	14.72	-2.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.60	4.94	-8.58	-934.58	-525.94	-1.58
1.2 Dead+1.0 Wind 60	86.60	8.56	-4.96	-537.51	-921.73	-0.69

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.60	9.89	0.00	4.89	-1066.60	0.39
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.60	8.56	4.96	547.30	-921.73	1.36
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	86.60	4.94	8.58	944.36	-525.94	1.97
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	86.60	0.00	9.91	1089.70	14.72	2.05
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	86.60	-4.94	8.58	944.36	555.38	1.58
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	86.60	-8.56	4.96	547.30	951.17	0.69
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	86.60	-9.89	0.00	4.89	1096.04	-0.39
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	86.60	-8.56	-4.96	-537.51	951.17	-1.37
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	86.60	-4.94	-8.58	-934.58	555.38	-1.97
Dead+Wind 0 deg - Service	42.91	0.00	-8.97	-897.53	0.96	-0.00
Dead+Wind 30 deg - Service	42.91	4.47	-7.76	-777.30	-445.86	-0.26
Dead+Wind 60 deg - Service	42.91	7.74	-4.48	-448.86	-773.05	-0.45
Dead+Wind 90 deg - Service	42.91	8.94	0.00	-0.07	-892.68	-0.52
Dead+Wind 120 deg - Service	42.91	7.74	4.48	448.67	-772.95	-0.45
Dead+Wind 150 deg - Service	42.91	4.47	7.77	777.26	-445.91	-0.26
Dead+Wind 180 deg - Service	42.91	0.00	8.97	897.40	0.96	0.00
Dead+Wind 210 deg - Service	42.91	-4.47	7.77	777.26	447.83	0.26
Dead+Wind 240 deg - Service	42.91	-7.74	4.48	448.67	774.87	0.45
Dead+Wind 270 deg - Service	42.91	-8.94	0.00	-0.07	894.60	0.52
Dead+Wind 300 deg - Service	42.91	-7.74	-4.48	-448.86	774.97	0.45
Dead+Wind 330 deg - Service	42.91	-4.47	-7.76	-777.30	447.78	0.26

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-42.91	0.00	-0.00	42.91	-0.00	0.000%
2	0.00	-51.49	-41.91	0.00	51.49	41.91	0.003%
3	0.00	-38.62	-41.91	0.00	38.62	41.91	0.003%
4	20.90	-51.49	-36.30	-20.90	51.49	36.30	0.000%
5	20.90	-38.62	-36.30	-20.90	38.62	36.30	0.000%
6	36.19	-51.49	-20.96	-36.19	51.49	20.96	0.000%
7	36.19	-38.62	-20.96	-36.19	38.62	20.96	0.000%
8	41.79	-51.49	0.00	-41.79	51.49	0.00	0.003%
9	41.79	-38.62	0.00	-41.79	38.62	0.00	0.006%
10	36.19	-51.49	20.96	-36.19	51.49	-20.96	0.000%
11	36.19	-38.62	20.96	-36.19	38.62	-20.96	0.000%
12	20.90	-51.49	36.30	-20.90	51.49	-36.30	0.000%
13	20.90	-38.62	36.30	-20.90	38.62	-36.30	0.000%
14	0.00	-51.49	41.91	0.00	51.49	-41.91	0.003%
15	0.00	-38.62	41.91	0.00	38.62	-41.91	0.003%
16	-20.90	-51.49	36.30	20.90	51.49	-36.30	0.000%
17	-20.90	-38.62	36.30	20.90	38.62	-36.30	0.000%
18	-36.19	-51.49	20.96	36.19	51.49	-20.96	0.000%
19	-36.19	-38.62	20.96	36.19	38.62	-20.96	0.000%
20	-41.79	-51.49	0.00	41.79	51.49	0.00	0.003%
21	-41.79	-38.62	0.00	41.79	38.62	0.00	0.006%
22	-36.19	-51.49	-20.96	36.19	51.49	20.96	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
23	-36.19	-38.62	-20.96	36.19	38.62	20.96	0.000%
24	-20.90	-51.49	-36.30	20.90	51.49	36.30	0.000%
25	-20.90	-38.62	-36.30	20.90	38.62	36.30	0.000%
26	0.00	-86.60	0.00	-0.00	86.60	-0.00	0.001%
27	0.00	-86.60	-9.91	-0.00	86.60	9.91	0.001%
28	4.94	-86.60	-8.58	-4.94	86.60	8.58	0.001%
29	8.56	-86.60	-4.96	-8.56	86.60	4.96	0.001%
30	9.89	-86.60	0.00	-9.89	86.60	-0.00	0.001%
31	8.56	-86.60	4.96	-8.56	86.60	-4.96	0.001%
32	4.94	-86.60	8.58	-4.94	86.60	-8.58	0.001%
33	0.00	-86.60	9.91	-0.00	86.60	-9.91	0.001%
34	-4.94	-86.60	8.58	4.94	86.60	-8.58	0.001%
35	-8.56	-86.60	4.96	8.56	86.60	-4.96	0.001%
36	-9.89	-86.60	0.00	9.89	86.60	-0.00	0.001%
37	-8.56	-86.60	-4.96	8.56	86.60	4.96	0.001%
38	-4.94	-86.60	-8.58	4.94	86.60	8.58	0.001%
39	0.00	-42.91	-8.97	-0.00	42.91	8.97	0.004%
40	4.47	-42.91	-7.77	-4.47	42.91	7.76	0.004%
41	7.74	-42.91	-4.48	-7.74	42.91	4.48	0.002%
42	8.94	-42.91	0.00	-8.94	42.91	-0.00	0.004%
43	7.74	-42.91	4.48	-7.74	42.91	-4.48	0.004%
44	4.47	-42.91	7.77	-4.47	42.91	-7.77	0.002%
45	0.00	-42.91	8.97	-0.00	42.91	-8.97	0.004%
46	-4.47	-42.91	7.77	4.47	42.91	-7.77	0.002%
47	-7.74	-42.91	4.48	7.74	42.91	-4.48	0.004%
48	-8.94	-42.91	0.00	8.94	42.91	-0.00	0.004%
49	-7.74	-42.91	-4.48	7.74	42.91	4.48	0.002%
50	-4.47	-42.91	-7.77	4.47	42.91	7.76	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	17	0.00003615	0.00013815
3	Yes	17	0.00002382	0.00010663
4	Yes	22	0.00000001	0.00009542
5	Yes	21	0.00000001	0.00013915
6	Yes	22	0.00000001	0.00009942
7	Yes	21	0.00000001	0.00014528
8	Yes	17	0.00003619	0.00009326
9	Yes	16	0.00004946	0.00014421
10	Yes	22	0.00000001	0.00009728
11	Yes	21	0.00000001	0.00014204
12	Yes	22	0.00000001	0.00009646
13	Yes	21	0.00000001	0.00014077
14	Yes	17	0.00003616	0.00013811
15	Yes	17	0.00002382	0.00010661
16	Yes	22	0.00000001	0.00009988
17	Yes	21	0.00000001	0.00014593
18	Yes	22	0.00000001	0.00009558
19	Yes	21	0.00000001	0.00013943
20	Yes	17	0.00003619	0.00009329
21	Yes	16	0.00004945	0.00014426
22	Yes	22	0.00000001	0.00009760
23	Yes	21	0.00000001	0.00014247
24	Yes	22	0.00000001	0.00009873
25	Yes	21	0.00000001	0.00014412
26	Yes	12	0.00000001	0.00004356
27	Yes	19	0.00000001	0.00008857
28	Yes	19	0.00000001	0.00012228
29	Yes	19	0.00000001	0.00012595
30	Yes	19	0.00000001	0.00008619
31	Yes	19	0.00000001	0.00012483
32	Yes	19	0.00000001	0.00012271
33	Yes	19	0.00000001	0.00008849
34	Yes	19	0.00000001	0.00013106

35	Yes	19	0.00000001	0.00012655
36	Yes	19	0.00000001	0.00008841
37	Yes	19	0.00000001	0.00012741
38	Yes	19	0.00000001	0.00013031
39	Yes	15	0.00012710	0.00004473
40	Yes	15	0.00012689	0.00014911
41	Yes	16	0.00000001	0.00009526
42	Yes	15	0.00012707	0.00005730
43	Yes	15	0.00012685	0.00014235
44	Yes	16	0.00000001	0.00009069
45	Yes	15	0.00012705	0.00004463
46	Yes	16	0.00000001	0.00009110
47	Yes	15	0.00012685	0.00014293
48	Yes	15	0.00012707	0.00005741
49	Yes	16	0.00000001	0.00009566
50	Yes	15	0.00012688	0.00014995

Maximum Tower Deflections - Service Wind

Section No.	*Elevation ft*	*Horz. Deflection in*	*Gov. Load Comb.*	*Tilt °*	*Twist °*
L1	151 - 125.25	28.03	39	1.71	0.01
L2	125.25 - 118.5	19.18	39	1.49	0.00
L3	118.5 - 117.75	17.13	39	1.41	0.00
L4	117.75 - 97.5	16.91	39	1.40	0.00
L5	100.917 - 95	12.34	39	1.18	0.00
L6	95 - 92.5	10.90	39	1.13	0.00
L7	92.5 - 87.75	10.32	39	1.10	0.00
L8	87.75 - 84	9.25	39	1.04	0.00
L9	84 - 63.25	8.45	39	1.00	0.00
L10	63.25 - 56.75	4.70	39	0.72	0.00
L11	56.75 - 47.5	3.77	39	0.63	0.00
L12	52 - 34.25	3.17	39	0.58	0.00
L13	34.25 - 26.75	1.35	39	0.39	0.00
L14	26.75 - 16.75	0.81	39	0.30	0.00
L15	16.75 - 14.25	0.31	39	0.18	0.00
L16	14.25 - 0	0.23	39	0.15	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	*Appurtenance*	*Gov. Load Comb.*	*Deflection in*	*Tilt °*	*Twist °*	*Radius of Curvature ft*
148.00	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	39	26.95	1.69	0.01	18054
140.00	DB854DG65ESX w/ Mount Pipe	39	24.12	1.64	0.01	8206
132.00	1900MHz RRH	39	21.37	1.57	0.00	4750
130.00	APXVSPP18-C-A20 w/ Mount Pipe	39	20.71	1.55	0.00	4298
122.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	39	18.17	1.45	0.00	4171

Maximum Tower Deflections - Design Wind

Section No.	*Elevation ft*	*Horz. Deflection in*	*Gov. Load Comb.*	*Tilt °*	*Twist °*
L1	151 - 125.25	131.40	2	8.00	0.04
L2	125.25 - 118.5	90.02	2	7.01	0.02
L3	118.5 - 117.75	80.41	2	6.61	0.01
L4	117.75 - 97.5	79.38	2	6.58	0.01
L5	100.917 - 95	57.94	2	5.56	0.01
L6	95 - 92.5	51.20	2	5.29	0.01
L7	92.5 - 87.75	48.46	2	5.18	0.01
L8	87.75 - 84	43.47	2	4.87	0.01

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L9	84 - 63.25	39.71	2	4.71	0.01
L10	63.25 - 56.75	22.08	2	3.40	0.00
L11	56.75 - 47.5	17.74	2	2.98	0.00
L12	52 - 34.25	14.91	2	2.71	0.00
L13	34.25 - 26.75	6.33	2	1.82	0.00
L14	26.75 - 16.75	3.80	2	1.40	0.00
L15	16.75 - 14.25	1.47	2	0.84	0.00
L16	14.25 - 0	1.06	2	0.71	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	126.38	7.92	0.03	4037
140.00	DB854DG65ESX w/ Mount Pipe	2	113.11	7.69	0.03	1833
132.00	1900MHz RRH	2	100.28	7.38	0.02	1059
130.00	APXVSPP18-C-A20 w/ Mount Pipe	2	97.18	7.28	0.02	957
122.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	2	85.32	6.80	0.01	921

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	151 - 125.25 (1)	TP22.4079x17.59x0.2188	25.75	0.00	0.0	15.6330	-8.19	1093.26	0.007
L2	125.25 - 118.5 (2)	TP23.6708x22.4079x0.3502	6.75	0.00	0.0	26.2959	-10.13	1260.17	0.008
L3	118.5 - 117.75 (3)	TP23.8112x23.6708x0.6321	0.75	0.00	0.0	47.1756	-10.30	2198.20	0.005
L4	117.75 - 97.5 (4)	TP27.6x23.8112x0.4541	20.25	0.00	0.0	38.7554	-13.58	1813.76	0.007
L5	97.5 - 95 (5)	TP27.6303x26.0525x0.546	5.92	0.00	0.0	47.6200	-15.48	2231.87	0.007
L6	95 - 92.5 (6)	TP28.0981x27.6303x0.7826	2.50	0.00	0.0	68.8309	-16.29	3226.76	0.005
L7	92.5 - 87.75 (7)	TP28.9869x28.0981x0.5331	4.75	0.00	0.0	48.8423	-17.47	2291.92	0.008
L8	87.75 - 84 (8)	TP29.6885x28.9869x0.8388	3.75	0.00	0.0	77.9221	-18.82	3658.26	0.005
L9	84 - 63.25 (9)	TP33.571x29.6885x0.5695	20.75	0.00	0.0	60.5147	-24.87	2893.18	0.009
L10	63.25 - 56.75 (10)	TP34.7872x33.571x0.5589 4.8.2 (1.03 CR) - 10	6.50	0.00	0.0	61.6036	-26.89	2950.13	0.009
L11	56.75 - 47.5 (11)	TP36.518x34.7872x0.6274	9.25	0.00	0.0	70.8106	-28.55	3594.19	0.008
L12	47.5 - 34.25 (12)	TP38.372x34.4211x0.6672	17.75	0.00	0.0	80.9995	-36.56	4118.71	0.009
L13	34.25 - 26.75 (13)	TP39.7752x38.372x0.6551	7.50	0.00	0.0	82.5245	-39.57	4200.93	0.009
L14	26.75 - 16.75 (14)	TP41.6461x39.7752x0.6406	10.00	0.00	0.0	84.5808	-43.69	4313.28	0.010
L15	16.75 - 14.25 (15)	TP42.1139x41.6461x0.7269	2.50	0.00	0.0	96.8672	-44.85	4737.72	0.009
L16	14.25 - 0 (16)	TP44.78x42.1139x0.6927	14.25	0.00	0.0	98.3407	-51.48	4866.66	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	151 - 125.25 (1)	TP22.4079x17.59x0.2188	287.69	493.26	0.583	0.00	493.26	0.000
L2	125.25 - 118.5 (2)	TP23.6708x22.4079x0.3502	418.98	594.53	0.705	0.00	594.53	0.000
L3	118.5 - 117.75 (3)	TP23.8112x23.6708x0.6321	435.07	1018.48	0.427	0.00	1018.48	0.000
L4	117.75 - 97.5 (4)	TP27.6x23.8112x0.4541	821.39	970.58	0.846	0.00	970.58	0.000
L5	97.5 - 95 (5)	TP27.6303x26.0525x0.546	969.38	1216.72	0.797	0.00	1216.72	0.000
L6	95 - 92.5 (6)	TP28.0981x27.6303x0.7826	1033.93	1759.48	0.588	0.00	1759.48	0.000
L7	92.5 - 87.75 (7)	TP28.9869x28.0981x0.5331	1159.83	1314.47	0.882	0.00	1314.47	0.000
L8	87.75 - 84 (8)	TP29.6885x28.9869x0.8388	1262.31	2105.93	0.599	0.00	2105.93	0.000
L9	84 - 63.25 (9)	TP33.571x29.6885x0.5695	1876.16	1927.33	0.973	0.00	1927.33	0.000
L10	63.25 - 56.75 (10)	TP34.7872x33.571x0.5589	2084.80	2040.17	1.022	0.00	2040.17	0.000
L11	56.75 - 47.5 (11)	TP36.518x34.7872x0.6274	2242.18	2541.21	0.882	0.00	2541.21	0.000
L12	47.5 - 34.25 (12)	TP38.372x34.4211x0.6672	2867.34	3133.40	0.915	0.00	3133.40	0.000
L13	34.25 - 26.75 (13)	TP39.7752x38.372x0.6551	3147.63	3319.00	0.948	0.00	3319.00	0.000
L14	26.75 - 16.75 (14)	TP41.6461x39.7752x0.6406	3535.16	3575.97	0.989	0.00	3575.97	0.000
L15	16.75 - 14.25 (15)	TP42.1139x41.6461x0.7269	3634.40	3956.82	0.919	0.00	3956.82	0.000
L16	14.25 - 0 (16)	TP44.78x42.1139x0.6927	4217.07	4337.58	0.972	0.00	4337.58	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	151 - 125.25 (1)	TP22.4079x17.59x0.2188	18.36	546.63	0.034	0.01	1000.18	0.000
L2	125.25 - 118.5 (2)	TP23.6708x22.4079x0.3502	21.39	630.09	0.034	0.17	1205.52	0.000
L3	118.5 - 117.75 (3)	TP23.8112x23.6708x0.6321	21.53	1099.10	0.020	0.19	2065.17	0.000
L4	117.75 - 97.5 (4)	TP27.6x23.8112x0.4541	24.43	906.88	0.027	0.65	1968.04	0.000
L5	97.5 - 95 (5)	TP27.6303x26.0525x0.546	25.59	1115.93	0.023	0.83	2467.13	0.000
L6	95 - 92.5 (6)	TP28.0981x27.6303x0.7826	26.08	1613.38	0.016	0.92	3567.68	0.000
L7	92.5 - 87.75 (7)	TP28.9869x28.0981x0.5331	26.97	1145.96	0.024	1.10	2665.35	0.000
L8	87.75 - 84 (8)	TP29.6885x28.9869x0.8388	27.72	1829.13	0.015	1.25	4270.17	0.000
L9	84 - 63.25 (9)	TP33.571x29.6885x0.5695	31.52	1446.59	0.022	1.99	3908.01	0.001
L10	63.25 - 56.75 (10)	TP34.7872x33.571x0.5589	32.73	1475.06	0.022	2.28	4136.82	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L11	56.75 - 47.5 (11)	TP36.518x34.7872x0.6274	33.59	1797.10	0.019	2.47	5152.78	0.000
L12	47.5 - 34.25 (12)	TP38.372x34.4211x0.6672	36.78	2059.35	0.018	3.14	6353.55	0.000
L13	34.25 - 26.75 (13)	TP39.7752x38.372x0.6551	38.02	2100.47	0.018	3.48	6729.89	0.001
L14	26.75 - 16.75 (14)	TP41.6461x39.7752x0.6406	39.54	2156.64	0.018	3.92	7250.95	0.001
L15	16.75 - 14.25 (15)	TP42.1139x41.6461x0.7269	39.91	2368.86	0.017	4.02	8023.21	0.001
L16	14.25 - 0 (16)	TP44.78x42.1139x0.6927	41.93	2433.33	0.017	4.64	8795.25	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	151 - 125.25 (1)	0.007	0.583	0.000	0.034	0.000	0.592 ✔	1.000	4.8.2 ✔
L2	125.25 - 118.5 (2)	0.008	0.705	0.000	0.034	0.000	0.714 ✔	1.000	4.8.2 ✔
L3	118.5 - 117.75 (3)	0.005	0.427	0.000	0.020	0.000	0.432 ✔	1.000	4.8.2 ✔
L4	117.75 - 97.5 (4)	0.007	0.846	0.000	0.027	0.000	0.855 ✔	1.000	4.8.2 ✔
L5	97.5 - 95 (5)	0.007	0.797	0.000	0.023	0.000	0.804 ✔	1.000	4.8.2 ✔
L6	95 - 92.5 (6)	0.005	0.588	0.000	0.016	0.000	0.593 ✔	1.000	4.8.2 ✔
L7	92.5 - 87.75 (7)	0.008	0.882	0.000	0.024	0.000	0.891 ✔	1.000	4.8.2 ✔
L8	87.75 - 84 (8)	0.005	0.599	0.000	0.015	0.000	0.605 ✔	1.000	4.8.2 ✔
L9	84 - 63.25 (9)	0.009	0.973	0.000	0.022	0.001	0.983 ✔	1.000	4.8.2 ✔
L10	63.25 - 56.75 (10)	0.009	1.022	0.000	0.022	0.001	1.032	1.000	4.8.2
L11	56.75 - 47.5 (11)	0.008	0.882	0.000	0.019	0.000	0.891 ✔	1.000	4.8.2 ✔
L12	47.5 - 34.25 (12)	0.009	0.915	0.000	0.018	0.000	0.924 ✔	1.000	4.8.2 ✔
L13	34.25 - 26.75 (13)	0.009	0.948	0.000	0.018	0.001	0.958 ✔	1.000	4.8.2 ✔
L14	26.75 - 16.75 (14)	0.010	0.989	0.000	0.018	0.001	0.999 ✔	1.000	4.8.2 ✔
L15	16.75 - 14.25 (15)	0.009	0.919	0.000	0.017	0.001	0.928 ✔	1.000	4.8.2 ✔
L16	14.25 - 0 (16)	0.011	0.972	0.000	0.017	0.001	0.983 ✔	1.000	4.8.2 ✔

Section Capacity Table

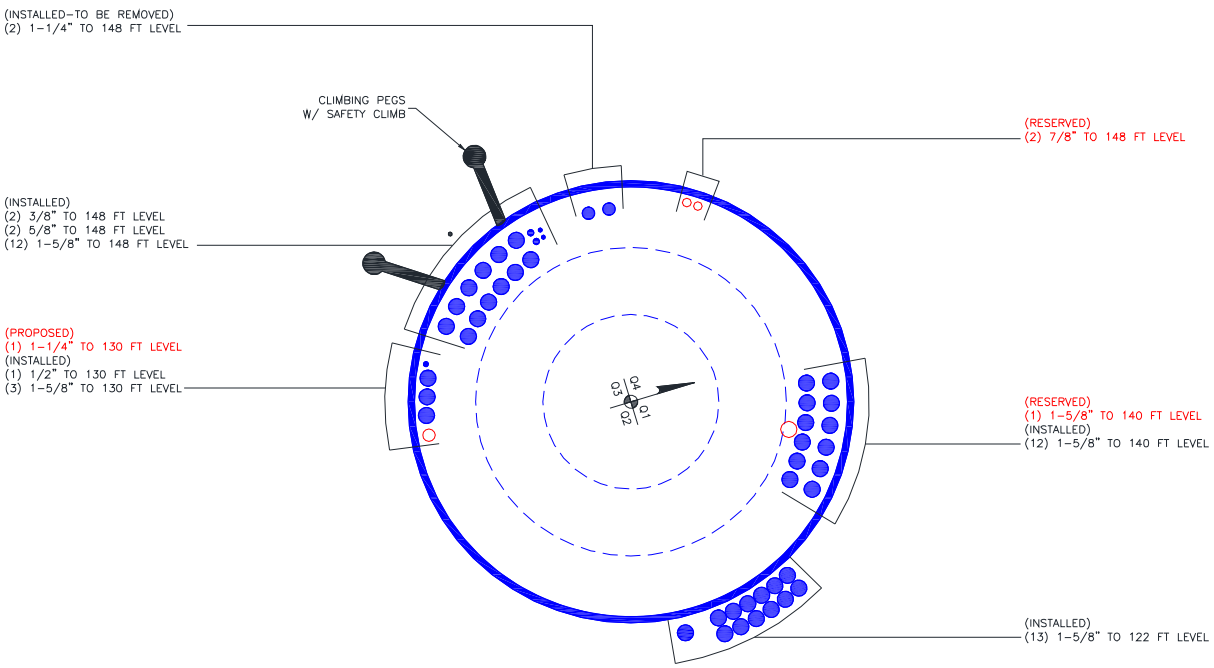
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	151 - 125.25	Pole	TP22.4079x17.59x0.2188	1	-8.19	1093.26	59.2	Pass
L2	125.25 - 118.5	Pole	TP23.6708x22.4079x0.3502	2	-10.13	1260.17	71.4	Pass
L3	118.5 - 117.75	Pole	TP23.8112x23.6708x0.6321	3	-10.30	2198.20	43.2	Pass
L4	117.75 - 97.5	Pole	TP27.6x23.8112x0.4541	4	-13.58	1813.76	85.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L5	97.5 - 95	Pole	TP27.6303x26.0525x0.546	5	-15.48	2231.87	80.4	Pass
L6	95 - 92.5	Pole	TP28.0981x27.6303x0.7826	6	-16.29	3226.76	59.3	Pass
L7	92.5 - 87.75	Pole	TP28.9869x28.0981x0.5331	7	-17.47	2291.92	89.1	Pass
L8	87.75 - 84	Pole	TP29.6885x28.9869x0.8388	8	-18.82	3658.26	60.5	Pass
L9	84 - 63.25	Pole	TP33.571x29.6885x0.5695	9	-24.87	2893.18	98.3	Pass
L10	63.25 - 56.75	Pole	TP34.7872x33.571x0.5589	10	-26.89	2950.13	103.2	Pass*
L11	56.75 - 47.5	Pole	TP36.518x34.7872x0.6274	11	-28.55	3594.19	89.1	Pass
L12	47.5 - 34.25	Pole	TP38.372x34.4211x0.6672	12	-36.56	4118.71	92.4	Pass
L13	34.25 - 26.75	Pole	TP39.7752x38.372x0.6551	13	-39.57	4200.93	95.8	Pass
L14	26.75 - 16.75	Pole	TP41.6461x39.7752x0.6406	14	-43.69	4313.28	99.9	Pass
L15	16.75 - 14.25	Pole	TP42.1139x41.6461x0.7269	15	-44.85	4737.72	92.8	Pass
L16	14.25 - 0	Pole	TP44.78x42.1139x0.6927	16	-51.48	4866.66	98.3	Pass
							Summary	
						Pole (L10)	103.2	Pass*
						RATING =	**103.2**	**Pass***

*See Note 2 of Table 6.

APPENDIX B

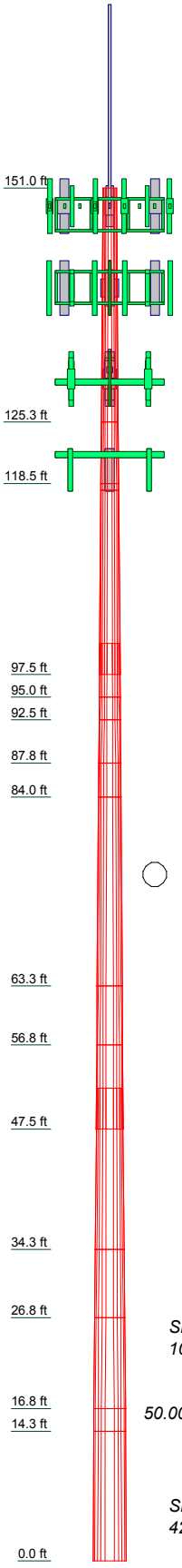
BASE LEVEL DRAWING


(INSTALLED-TO BE REMOVED)
(2) 1-1/4" TO 148 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
(RESERVED)
(2) 7/8" TO 148 FT LEVEL
(INSTALLED)
(2) 3/8" TO 148 FT LEVEL
(2) 5/8" TO 148 FT LEVEL
(12) 1-5/8" TO 148 FT LEVEL
(PROPOSED)
(1) 1-1/4" TO 130 FT LEVEL
(INSTALLED)
(1) 1/2" TO 130 FT LEVEL
(3) 1-5/8" TO 130 FT LEVEL
04
03
01
02
(RESERVED)
(1) 1-5/8" TO 140 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 140 FT LEVEL
(INSTALLED)
(13) 1-5/8" TO 122 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Length (ft)	14.25	2.50	10.00	7.50	17.75	9.25	6.50	20.75	3.75	4.75	2.50	5.92	20.25	0.75	6.75	25.75
Number of Sides	12	12	12	12	12	12	12	12	12	12	12		12	12	12	12
Thickness (in)	0.6927	0.7269	0.6406	0.6551	0.6672	0.6274	0.5589	0.5695	0.8388	0.5330	0.7826		0.4541	0.6320	0.3502	0.2188
Socket Length (ft)						4.50							3.42			
Top Dia (in)	42.1139	41.6461	39.7752	38.3720	34.4211	34.7872	33.5710	29.6885	28.9863	28.0987	27.6260		23.8112	23.6702	22.4079	17.5900
Bot Dia (in)	44.7800	42.1139	41.6461	39.7752	38.3720	36.5180	34.7872	33.5710	29.6885	28.9863	28.0987	27.6260	27.6000	23.8112	23.6702	22.4079
Grade	Reinf 42.26 ksi	Reinf 41.09 ksi	Reinf 44.76 ksi	Reinf 44.84 ksi	Reinf 44.89 ksi	Reinf 44.97 ksi	Reinf 43.13 ksi	Reinf 43.64 ksi	Reinf 41.40 ksi	Reinf 41.38 ksi	Reinf 41.34 ksi	Reinf 41.33 ksi	Reinf 41.27 ksi	Reinf 41.09 ksi	Reinf 42.26 ksi	A572-65
Weight (K)	30.3	4.6	0.8	2.8	2.1	4.6	2.2	1.3	4.0	1.0	0.8	0.6	0.9	2.5	0.1	0.6	1.2



ALL REACTIONS ARE FACTORED

AXIAL 87 K

SHEAR 10 K

MOMENT 1097 kip-ft

TORQUE 2 kip-ft

50.00 mph WIND - 0.7500 in ICE

AXIAL 51 K

SHEAR 42 K

MOMENT 4217 kip-ft

TORQUE 5 kip-ft

REACTIONS - 97.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	148	2.375" OD x 6' Mount Pipe	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	148	2.375" OD x 6' Mount Pipe	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	148	Platform Mount [LP 303-1]	140
800 10121 w/ Mount Pipe	148	1900MHz RRH	132
800 10121 w/ Mount Pipe	148	1900MHz RRH	132
800 10121 w/ Mount Pipe	148	1900MHz RRH	132
(2) CG-1900DD-FULL-DIN	148	800 EXTERNAL NOTCH FILTER	132
(2) CG-1900DD-FULL-DIN	148	800 EXTERNAL NOTCH FILTER	132
(2) CG-1900DD-FULL-DIN	148	800 EXTERNAL NOTCH FILTER	132
(4) LGP21901	148	800MHZ RRH	132
(4) LGP21901	148	800MHZ RRH	132
(4) LGP21901	148	800MHZ RRH	132
(2) DTMABP7819VG12A	148	Pipe Mount [PM 601-3]	132
(2) DTMABP7819VG12A	148	APXVSPP18-C-A20 w/ Mount Pipe	130
(2) DTMABP7819VG12A	148	APXVSPP18-C-A20 w/ Mount Pipe	130
860 10025	148	APXVSPP18-C-A20 w/ Mount Pipe	130
860 10025	148	GPS-TMG-HR-26NCM	130
860 10025	148	APXVTM14-C-120 w/ Mount Pipe	130
(2) RRUS-11	148	APXVTM14-C-120 w/ Mount Pipe	130
(2) RRUS-11	148	APXVTM14-C-120 w/ Mount Pipe	130
(2) RRUS-11	148	TD-RRH8x20-25	130
DC6-48-60-18-8F	148	TD-RRH8x20-25	130
DS1F03F36D-N	148	TD-RRH8x20-25	130
Platform Mount [LP 602-1]	148	2.375" OD x 6' Mount Pipe	130
DB854DG65ESX w/ Mount Pipe	140	2.375" OD x 6' Mount Pipe	130
DB854DG65ESX w/ Mount Pipe	140	2.375" OD x 6' Mount Pipe	130
DB854DG65ESX w/ Mount Pipe	140	T-Arm Mount [TA 602-3]	130
(2) SBNHH-1D65B w/ Mount Pipe	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122
(2) SBNHH-1D65B w/ Mount Pipe	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122
(2) SBNHH-1D65B w/ Mount Pipe	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122
RRH4X45-AWS4 B66	140	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122
RRH4X45-AWS4 B66	140	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122
RRH4X45-AWS4 B66	140	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122
RRH2x60-700	140	T-Arm Mount [TA 702-3]	122
RRH2x60-700	140		
RRH2x60-700	140		
DB-T1-6Z-8AB-0Z	140		
2.375" OD x 6' Mount Pipe	140		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 42.16 ksi	42 ksi	53 ksi
Reinf 42.26 ksi	42 ksi	53 ksi	Reinf 42.23 ksi	42 ksi	53 ksi
Reinf 41.09 ksi	41 ksi	52 ksi	Reinf 44.76 ksi	45 ksi	56 ksi
Reinf 41.27 ksi	41 ksi	52 ksi	Reinf 44.84 ksi	45 ksi	57 ksi
Reinf 41.33 ksi	41 ksi	52 ksi	Reinf 44.89 ksi	45 ksi	57 ksi
Reinf 41.34 ksi	41 ksi	52 ksi	Reinf 44.97 ksi	45 ksi	57 ksi
Reinf 41.38 ksi	41 ksi	52 ksi	Reinf 43.13 ksi	43 ksi	54 ksi
Reinf 41.40 ksi	41 ksi	52 ksi	Reinf 43.64 ksi	44 ksi	55 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 103.2%

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
Phone: 614-221-6679
FAX:

Job:	***151 Ft. Monopole / Bethany, CT***		
Project:	***PJF 37517-07559.003 / BU 841295***		
Client: Crown Castle	Drawn by: nmiller	App'd:	
Code: TIA-222-G	Date: 08/10/17	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2017\37517-0759_841295_Bethany\37517-0759.003_7805_SA_144011\37517-0759.003_Reinforced.eri		Dwg No. E-1	

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 8/10/2017
PJF Project: 37517-0759.003.7805
Client Ref. # BU 841295
Site Name: Bethany
Description: 151' MP
Owner: Crown Castle
Engineer: NCM

Asymmetric Anchor Rod Analysis

Moment =	4217	k-ft	TIA Ref.	G	Location =	Base Plate		
Axial =	51.0	kips	ASIF =	N/A	η =	0.50	for BP, Rev. G Sect. 4.9.9	
Shear =	42.0	kips	Max Ratio =	105.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	18							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
2	2.250	#18J A615 Gr 75	75	100	30.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
3	2.250	#18J A615 Gr 75	75	100	60.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
4	2.250	#18J A615 Gr 75	75	100	90.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
5	2.250	#18J A615 Gr 75	75	100	120.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
6	2.250	#18J A615 Gr 75	75	100	150.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
7	2.250	#18J A615 Gr 75	75	100	180.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
8	2.250	#18J A615 Gr 75	75	100	210.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
9	2.250	#18J A615 Gr 75	75	100	240.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
10	2.250	#18J A615 Gr 75	75	100	270.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
11	2.250	#18J A615 Gr 75	75	100	300.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
12	2.250	#18J A615 Gr 75	75	100	330.0	52.75	0.00	3.98	213.09	207.50	217.69	0.00	260.00	83.7%
13	2.250	Williams R71	127.7	150	45.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
14	2.250	Williams R71	127.7	150	105.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
15	2.250	Williams R71	127.7	150	165.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
16	2.250	Williams R71	127.7	150	225.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
17	2.250	Williams R71	127.7	150	285.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
18	2.250	Williams R71	127.7	150	345.0	52.75	0.00	4.14	221.87	216.05	226.66	0.00	489.60	46.3%
								72.62						

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

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

Site Data	
BU#:	
Site Name:	
App #:	
Pole Manufacturer:	*Other*

Reactions		
Mu:	5829.7981	ft-kips
Axial, Pu:	51	kips
Shear, Vu:	42	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Reactions and anchor quantity adjusted to account for post installed anchors.

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	52.75	in

Plate Data		
Diam:	58.75	in
Thick:	3	in
Grade:	50	ksi
Single-Rod B-eff:	6.00	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:	44.78	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

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

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	226.7	Kips
Allowable Axial, Φ*Fu*Anet:	260.0	Kips

Rigid
AISC LRFD
φ*Tn

See Asymmetric Anchor Rod Analysis for Anchor Capacity Usage.

Base Plate Results Flexural Check

Base Plate Stress:	39.5	ksi
Allowable Plate Stress:	45.0	ksi
Base Plate Stress Ratio:	87.8%	**Pass**

Rigid
AISC LRFD
φ*Fy
Y.L. Length: 27.88

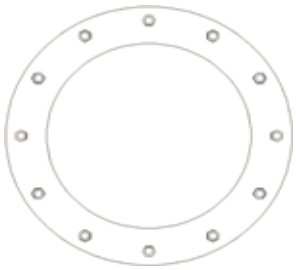
n/a

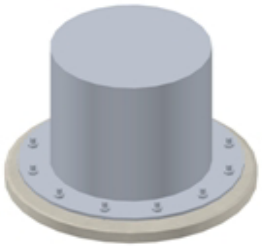
Stiffener Results

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

PJF Job No. **37517-0759.003** Project Name: **BU 841295** Engineer: NCM

Factored Foundation Loads:

	LC1	LC2	
Factored Axial Load (+Comp, -Ten) =	**51**	**38.25**	kips
Factored Horiz. Load at Top of Pier =	**42**	**42**	kips
Factored OTM at Top of Pier =	**4217**	**4217**	kips

LRFD Resistance and Load Factors:

	Φ	Dead Load Factors	
Soil Bearing =	**0.75**		
Soil Weight =	**0.75**	1.2	0.9
Concrete Weight =	**0.75**	1.2	0.9

Soil Properties:

Depth to Water Table = **3.3** ft

Uplift Cone from **Top** of footing

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
2	**110**	**0**	**30**		**2.00**
4	**115**	**0**	**30**		**6.00**
6	**130**	**0**	**30**	**30**	**12.00**

Dimensions:

Pier Shape = **Square**

Pier Width = **6** ft Square

Pier Height above Grade = **0.4** ft

Depth to Bottom of Footing = **6.5** ft

Footing Thickness = **5.5** ft

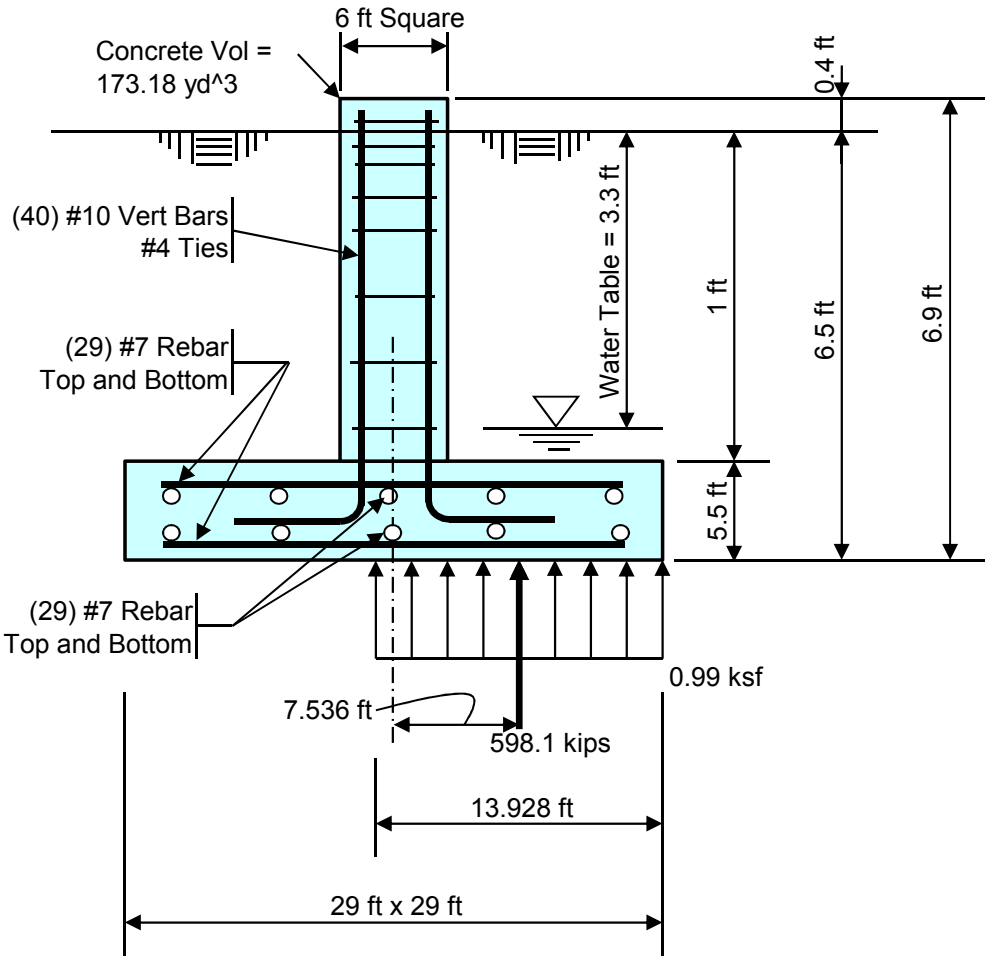
Footing Width, B = **29** ft

Footing Length, L = **29** ft

Concrete:

Concrete Strength = **3** ksi

Rebar Strength = **60** ksi



Total Pad Reinf Stl = **34.80** **in^2 < 41.34 in^2 = Min Stl**

Total Pier Reinf Stl = **50.80** in^2 >= 25.92 in^2 = Min Stl, OK

Footing Thickness = **5.50** ft >= 2.12 ft = Min Ftg Thk, OK

Summary Results:

	Required		Available		
Maximum Net Soil Bearing =	**1.089**	ksf	**22.500**	ksf	Stress Ratio = **4.8%** in Soil Bearing
Uplift =	**0.0**	kips	**469.3**	kips	Stress Ratio = **0.0%** in Uplift
Punching Shear Stress =	**0.017**	ksi	**0.164**	ksi	Stress Ratio = **10.6%** in Punching Shear
Bending Shear Stress =	**191.7**	kips	**1677.9**	kips	Stress Ratio = **11.4%** in Bending Shear
Bending Moment =	**1822**	k-ft	**4549.2**	k-ft	Stress Ratio = **40.1%** in Bending Moment
Conc Pier Reinforcing Steel =	**4275.8**	k-ft	**7428.7**	k-ft	Stress Ratio = **57.6%** in Pier Rebar

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT33XC515

Bethany-Spectrasite Tower
719 Amity Road
Bethany, CT 06524

September 10, 2017

EBI Project Number: 6217003918

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.33 %

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

EBI Consulting
environmental | engineering | due diligence

September 10, 2017

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

Emissions Analysis for Site: **CT33XC515 – Bethany-Spectrasite Tower**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **719 Amity Road, Bethany, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located 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 $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general population 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 population 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 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. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, 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 equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) 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.

7) For the following calculations, the sample point was the top of a 6-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.

8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-120** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. 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.

9) The antenna mounting height centerlines of the proposed antennas are **130 feet** above ground level (AGL) for **Sector A**, **130 feet** above ground level (AGL) for **Sector B** and **130 feet** above ground level (AGL) for Sector C.

10) 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 calculations were done with respect to uncontrolled / general population threshold limits.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**130 feet**	Height (AGL):	**130 feet**	Height (AGL):	**130 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	**2.00 %**	Antenna B1 MPE%	**2.00 %**	Antenna C1 MPE%	**2.00 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**130 feet**	Height (AGL):	**130 feet**	Height (AGL):	**130 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.45 %**	Antenna B2 MPE%	**1.45 %**	Antenna C2 MPE%	**1.45 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**3.45 %**
Beth Fire Dept	0.04 %
Beth Hwy Dept	0.07 %
AT&T	1.86 %
Verizon Wireless	3.88 %
T-Mobile	0.03 %
Site Total MPE %:	**9.33 %**

SPRINT Sector A Total:	3.45 %
SPRINT Sector B Total:	3.45 %
SPRINT Sector C Total:	3.45 %
Site Total:	9.33 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	130	1.02	850 MHz	567	0.18%
Sprint 850 MHz LTE	2	437.55	130	2.05	850 MHz	567	0.36%
Sprint 1900 MHz (PCS) CDMA	5	622.47	130	7.28	1900 MHz (PCS)	1000	0.73%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	130	7.28	1900 MHz (PCS)	1000	0.73%
Sprint 2500 MHz (BRS) LTE	8	778.09	130	14.55	2500 MHz (BRS)	1000	1.45%
						Total:	**3.45%**

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	3.45 %
Sector B:	3.45 %
Sector C:	3.45 %
SPRINT Maximum Total (per sector):	3.45 %
Site Total:	9.33 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.33 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon 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.