



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

October 6, 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: 876376
Sprint Site ID: CT33XC111
123 Campville Hill Road, Harwinton, CT 06791
Latitude: 41° 44' 12.40" / Longitude: -73° 5' 49.40"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 177-foot level of the existing 177-foot monopole at 123 Campville Hill Road in Harwinton, CT. The tower is owned by Crown Castle. The property is owned by the Harwinton Rod and Gun Club, Inc. Sprint intends to install three (3) antennas, three (3) RRHs, and one (1) hybrid cable.

A request for original zoning documents was sent to the Town of Harwinton but has not been answered.

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 Mr. Michael R. Criss, First Selectman, Town of Harwinton, the Planning Commission, as well 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.

Melanie A. Bachman

October 6, 2017

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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: Mr. Michael R. Criss, First Selectman
Town of Harwinton
100 Bentley Drive, PO Box 66
Harwinton CT, 06791

Planning Commission
100 Bentley Drive, PO Box 66
Harwinton CT, 06791

Harwinton Rod and Gun Club, Inc
P.O. Box 181
Harwinton, CT 06791

Town of Harwinton

Assessor


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[Field Definitions](#)
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Owner and Parcel Information

Owner Name	HARWINTON ROD & GUN CLUB	Today's Date	October 3, 2017
Mailing Address	PO BOX 181	Parcel ID	1225 (Account #: 2581)
	HARWINTON, CT 06791		
Location Address	123 CAMPVILLE HILL	Census Tract	298400000000
Map / Block / Lot	A4 / 05 / 0002	Acreage	49.00
Use Class / Description	1-1 RES LAND		
Assessing Neighborhood	0001A	Utilities	

Current Appraised Value Information

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
\$ 205,400	\$ 0	\$ 0	\$ 391,460		\$ 596,860	\$ 596,860	\$ 220,070

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	\$ 143,780	0	\$ 76,290	\$ 220,070
2016	\$ 143,780	0	\$ 76,290	\$ 220,070
2015	\$ 143,780	0	\$ 76,290	\$ 220,070

Land Information

Use	Class	Zoning	Area	Value
RES LAND	R	CR2	2 AC	\$ 100,060
FOREST LD	R		47 AC	\$ 291,400

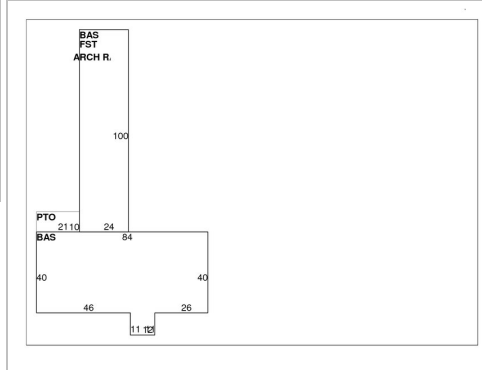
Residential Building Information

Style	Year Built	Eff Year Built	Living Area	Stories	Grade	Exterior Wall	Interior Wall	Fireplaces
Camp	1977	1980	5,892	1	Average	Wood on Sheath	Wall Brd/Wood	
Roof Cover	Roof Structure	Floor Type	Heat Type	Heat Fuel	AC	Bedrooms/Full Baths/Half Baths/Total Rooms	Basement	Basement Garages
Asph/F Gls/Cmp	Gable/Hip	Average	Oil	Forced Air-Duc	None	0 / 1 / 0 / 2		

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	5,892	5,892	
FST	Utility Storage	0	2,400	
PTO	Patio	0	210	
	Totals	5,892	8,502	7,113

Building Sketch [Enlarge](#)



Building Photo [Enlarge](#)



Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
No Out Building/Misc Information available for this parcel.				

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
12/30/1997	\$ 50,000	0152/0053				HARWINTON ROD & GUN CLUB
07/08/1957		0049/0488	Unqualified		Improved	SLATE ALICE

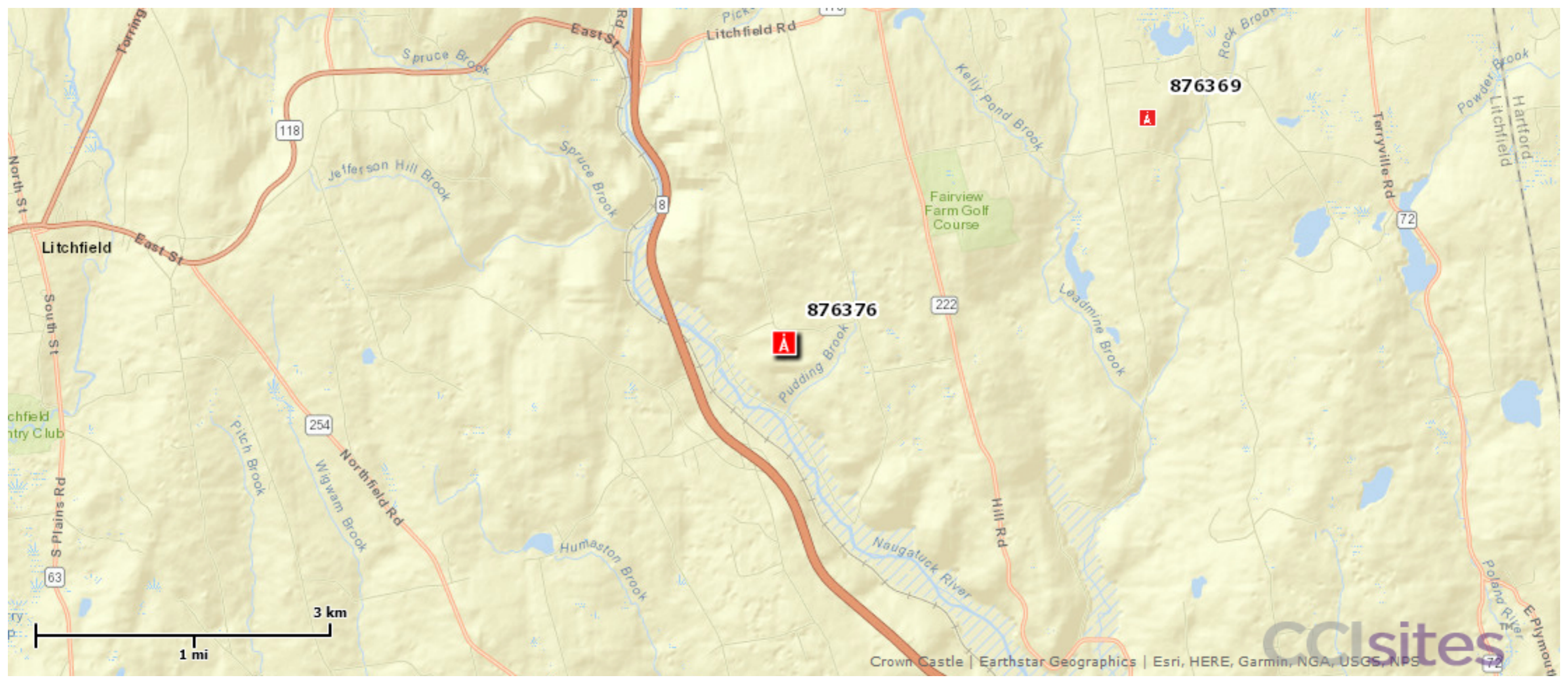
Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
176CA	02/06/2017	CO	CO ISSUED			100		T-MOBILE
16146B	08/02/2016		CONCRETE PATIO 30X30	\$ 6,175		0		
1647E	03/08/2016	EL	Electric	\$ 2,500		0		
9416	10/24/2014		MODIFICATIONS	\$ 20,000		0		
8760	01/17/2013		FACILITY MODIFICATIO	\$ 25,000		0		
8757	01/02/2013		ANTENNA SWAP	\$ 10,000		0		

8704	11/21/2012		ANTENNAS	\$ 12,000		0	
8339	01/13/2012			\$ 92		0	REPLACING 6 ANTENNAS WITH NEWER MODELS
7560	09/28/2009	DE	Demolish	\$ 1,500		0	
0000	09/10/2009	CO	CO ISSUED			0	
7495	07/14/2009	EL	Electric	\$ 3,000		0	
7486	07/01/2009	AD	Addition	\$ 31,395		0	CEL TOWER
	03/17/2009	EL	Electric			0	INSTALLING ANTENNAS & RADIO
7201	07/09/2008			\$ 28,000		0	NEW VINYL SIDING
6437	06/21/2008	EL	Electric	\$ 8,000		0	

Recent Sales in Neighborhood	Previous Parcel	Next Parcel	Field Definitions	Return to Main Search Page	Harwinton Home
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The Town of Harwinton Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. Website Updated: October 1, 2017



876369

876376

CCISites

Crown Castle | Earthstar Geographics | Esri, HERE, Garmin, NGA, USGS, NPS

Sprint

2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:
CT33XC111

SITE NAME:

SCOVILLE HILL/HARWINTON ROD & GUN

SITE ADDRESS:

123 CAMPVILLE HILL RD
HARWINTON, CT 06791

CROWN ID#: 876376
CROWN SITE NAME: SCOVILLE HILL/HARWINTON ROD

APPROVED
By Jeff Barbadora at 10:40 pm, Aug 02, 2014

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

CROWN CASTLE

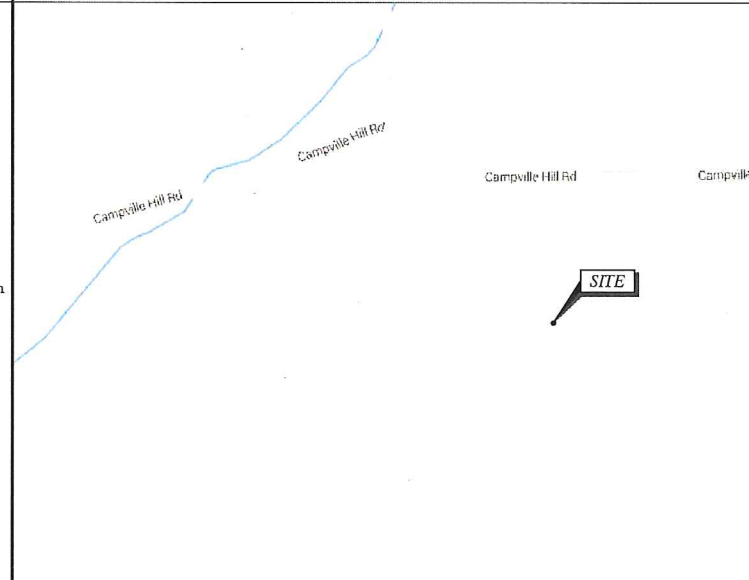
TECTONIC PLANNING
ENGINEERING
SURVEYING
CONSTRUCTION
MANAGEMENT
TECTONIC Engineering & Surveying
Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703
www.tectonicengineering.com

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SHEET INFORMATION

SITE NUMBER:	CT33XC111	LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
SITE NAME:	SCOVILLE HILL/HARWINTON ROD & GUN	LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 286-2000
SITE ADDRESS:	123 CAMPVILLE HILL RD HARWINTON, CT 06791	APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251
COUNTY:	LITCHFIELD	ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 jquicksell@tectonicengineering.com
COORDINATES: (NAD 83)	41° 44' 12.12" N 73° 5' 50.86" W	SPRINT CM:	GARY WOOD (860) 940-9168 gary.wood@sprint.com
GROUND ELEV:	737'± AMSL	CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico @crownncastle.com
STRUCTURE TYPE:	MONOPOLE	AAV:	CHARTER
STRUCTURE HEIGHT:	177'-0"± AGL		
STRUCTURE RAD CENTER:	177'-0"± AGL		
ZONING CLASSIFICATION:	1-1 RES LAND		
PARCEL INFO:	A4/05/0002		

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

SUBMITTALS

PROJECT NO: 7225.CT33XC111

NO	DATE	DESCRIPTION	BY
0	06/17/14	FOR COMMENT	JT
1	07/28/14	FOR CONSTRUCTION	MP
2	08/01/14	PER COMMENTS	MP

DATE	REVIEWED BY
8/1/14	JMG

GENERAL NOTES

- 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.
- 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.
- 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.

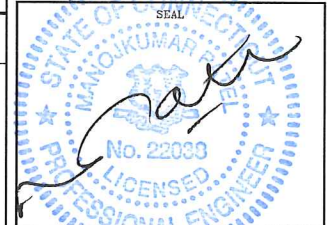
AERIAL VIEW (NOT TO SCALE)



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: _____



PROJECT DESCRIPTION

- (1) NEW 2.5 EQUIPMENT RACK INSIDE EXIST MMBTS CABINET.
- (3) NEW RFS APXYTM14-C-120 ANTENNAS.
- (3) NEW TD-RRH6x20-25 RRH.
- (1) NEW 1-1/4" HYBRID CABLE.

SITE NUMBER:
CT33XC111
 SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
 SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1



DIVISION 01000—GENERAL NOTES

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

18. REFER TO: CONSTRUCTION STANDARDS—SPRINT DOCUMENT EXHIBIT A—STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0— 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A—WIHRPRF—STD CONSTR SPECS.—157201110421855492.DOCM.
20. REFER TO: COLOR CODING—SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000—CONCRETE

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

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.
- 3.04 SURFACE FINISHES
 - A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.
 - B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINIS 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.



2.5 EQUIPMENT DEPLOYMENT

**6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251**




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SUBMITTALS			
PROJECT NO: 7225.CT33XC111			
NO	DATE	DESCRIPTION	BY
0	06/17/14	FOR COMMENT	JT
1	07/28/14	FOR CONSTRUCTION	MP
2	08/01/14	PER COMMENTS	MP

DATE	REVIEWED BY
8/1/14	JMG



SITE NUMBER:
CT33XC111

SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN

SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

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 OTHER 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 70/7480-1H, 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 FROM 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 THROUGHFARE 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
— — — — O — — — — O —	OVERHEAD WIRE
— — — — — — — — — —	PROPERTY LINE
- X — — — X — — — X — — —	CHAIN LINK FENCE
A-1	ANTENNA MARK
(E)	EXISTING
(P)	PROPOSED DETAIL
	REFERENCE
	SURFACE ELEVATION

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OVERLAND PARK, KANSAS 66251

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SUBMITTALS

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NO	DATE	DESCRIPTION	BY
0	06/17/14	FOR COMMENT	JT
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2	08/01/14	PER COMMENTS	MP

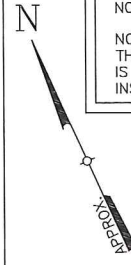
DATE: 8/1/14
REVIEWED BY: JMQ



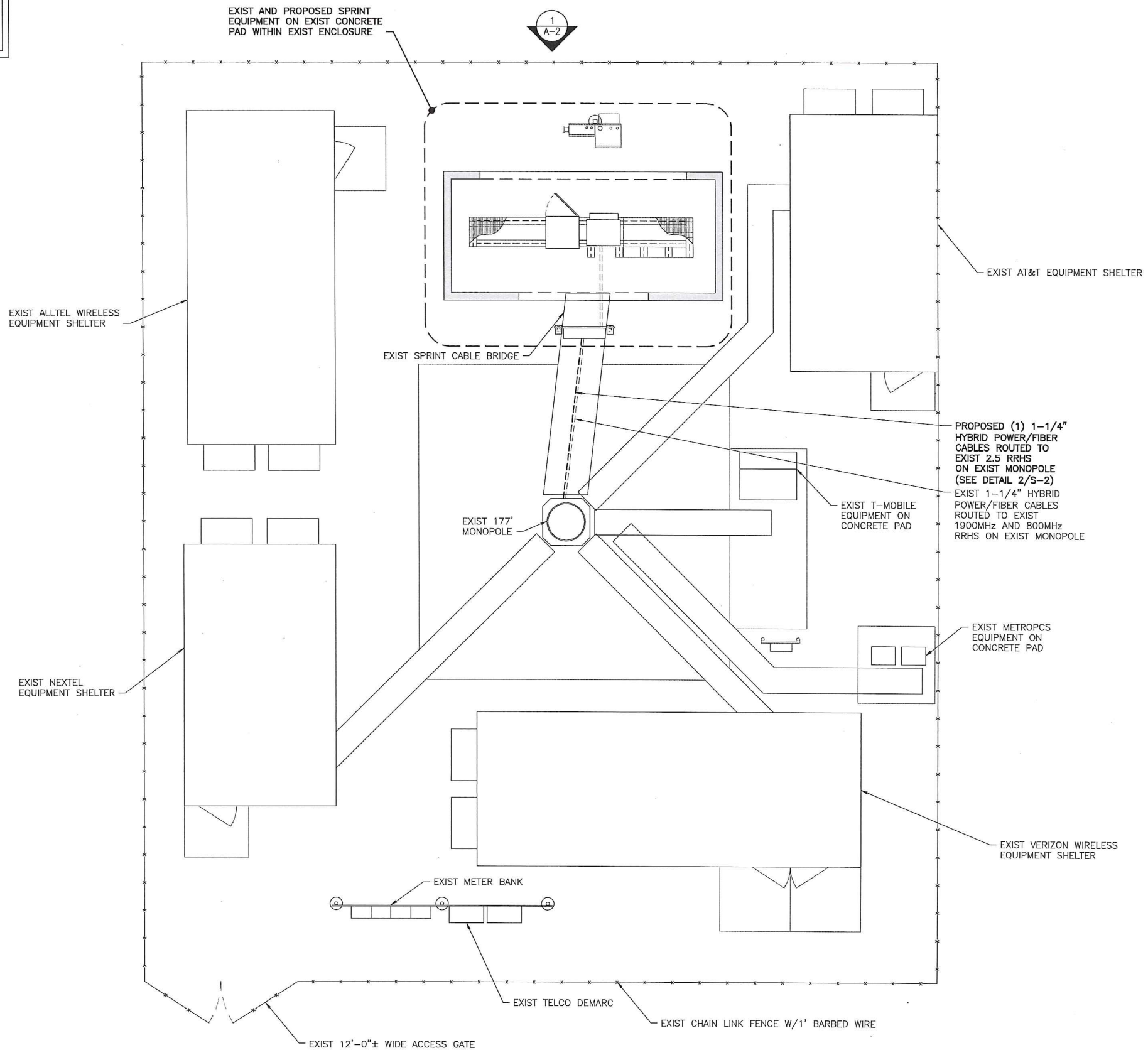
SITE NUMBER:
CT33XC111
SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

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"

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

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PROJECT NO: 7225.CT33XCIII

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DATE	REVIEWED BY
8/1/14	JMG



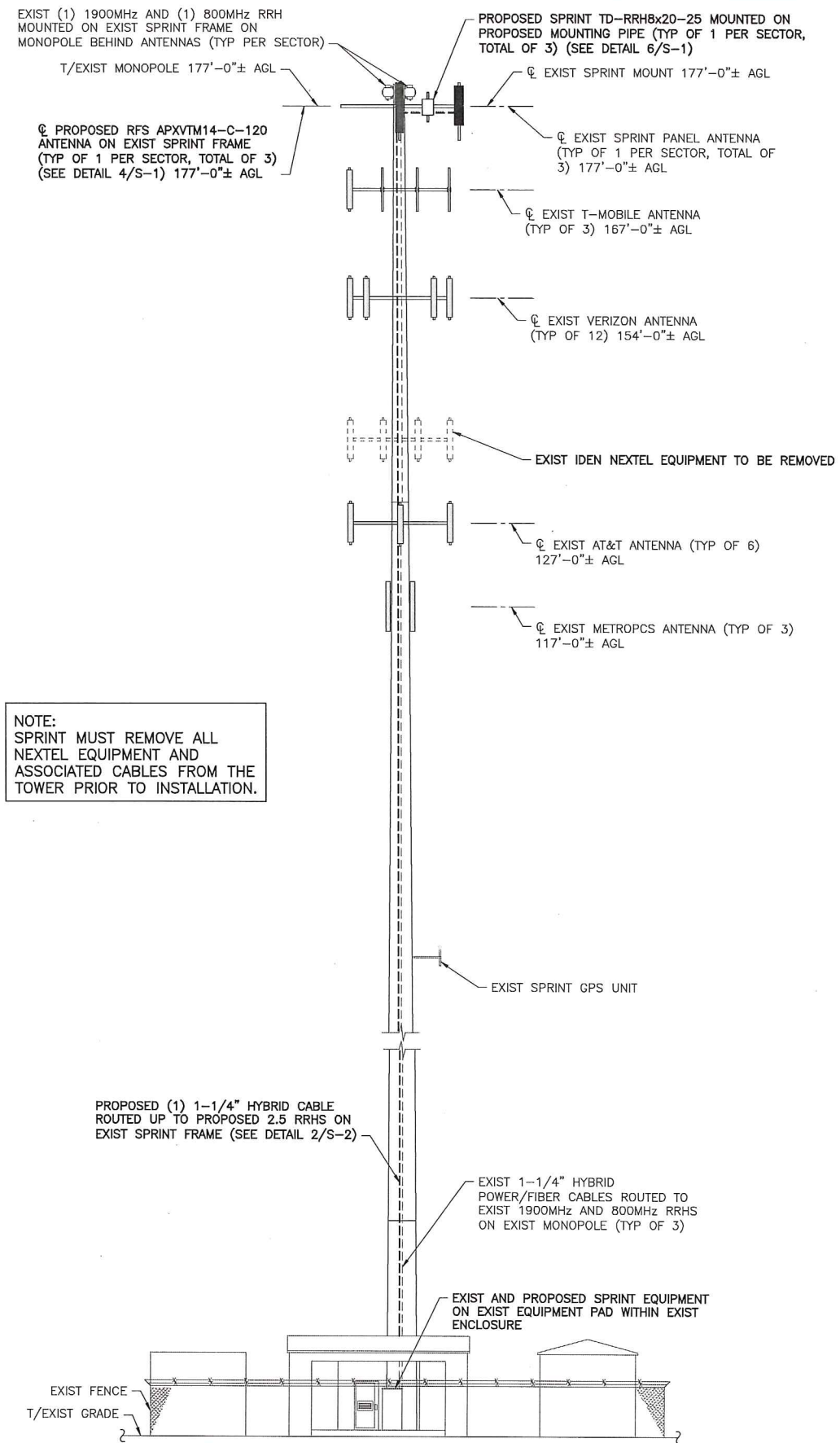
SITE NUMBER:
 CT33XC111
SITE NAME:
 SCOVILLE HILL/HARWINTON
 ROD & GUN
SITE ADDRESS:
 123 CAMPVILLE RD
 HARWINTON, CT 06791

SHEET TITLE:
 SITE PLAN

SHEET NO:
 A-1

THE 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 07/28/14.



NOTE:
SPRINT MUST REMOVE ALL NEXTEL EQUIPMENT AND ASSOCIATED CABLES FROM THE TOWER PRIOR TO INSTALLATION.

1 ELEVATION
A-2 SCALE: 3/16" = 1'-0"

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

CROWN CASTLE

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HARWINTON, CT 06791

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ELEVATION

SHEET NO:
A-2

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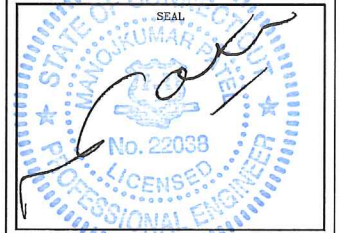
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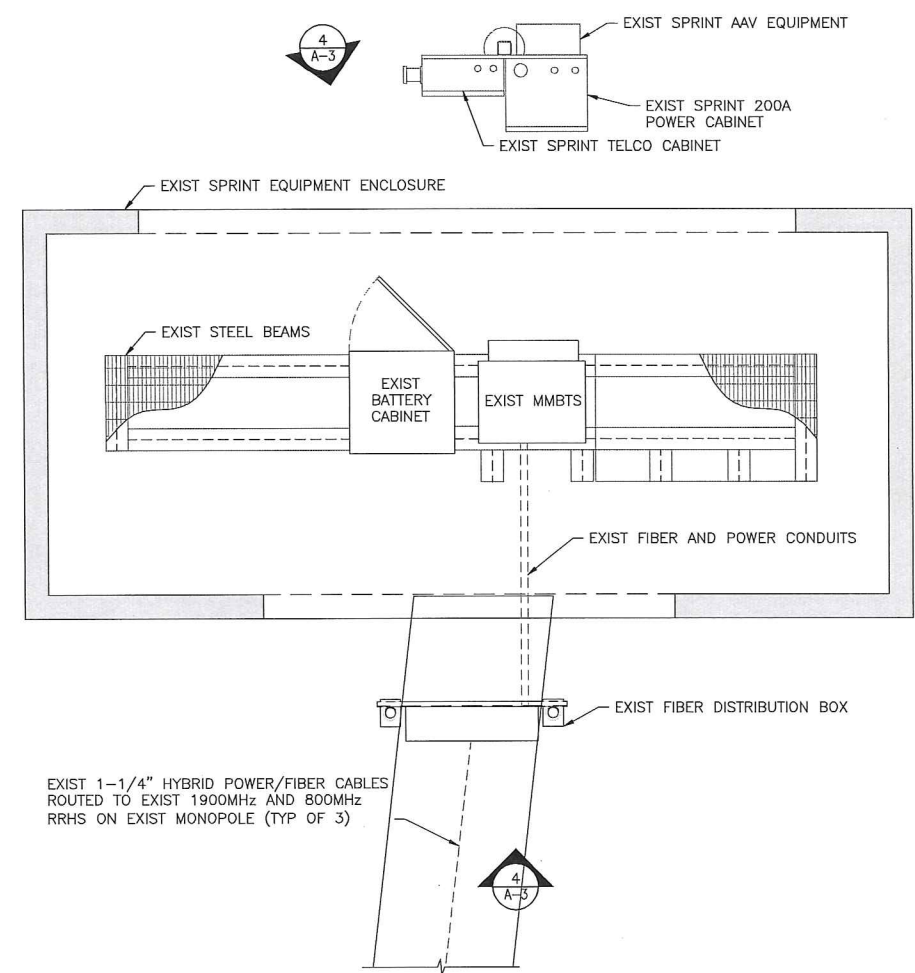
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ROD & GUN

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HARWINTON, CT 06791

SHEET TITLE:
ENLARGED EQUIPMENT
LAYOUT PLANS

SHEET NO:
A-3

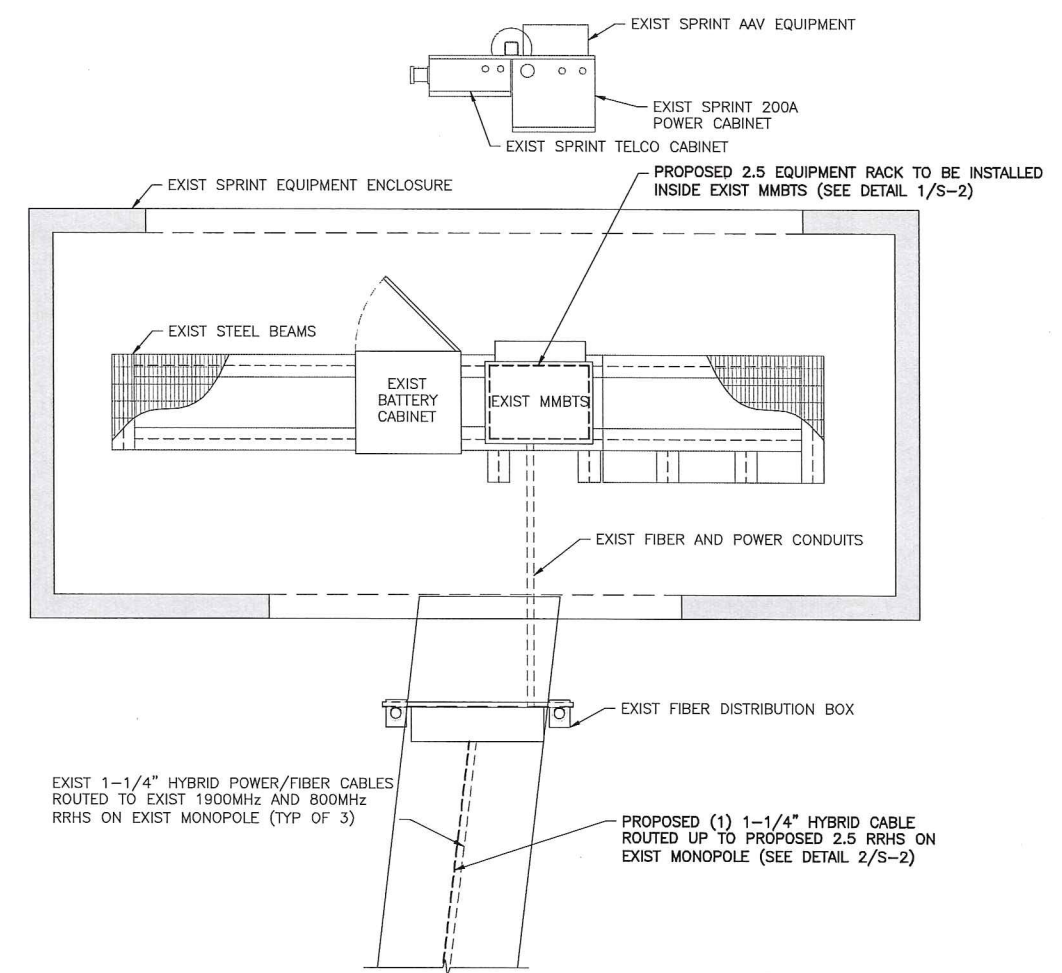
NORTH NOTE:
 NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



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



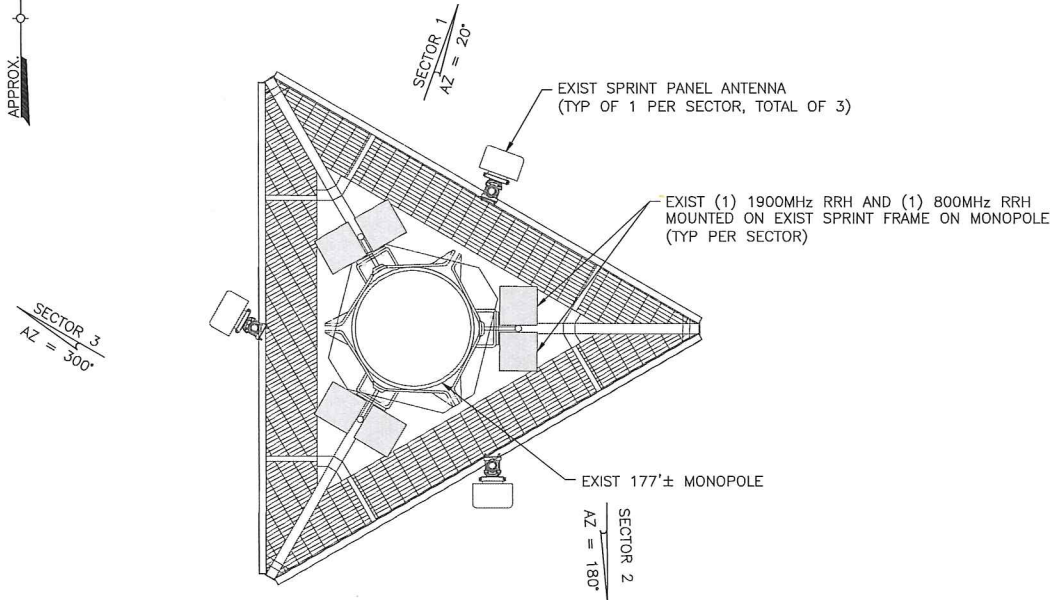
3 EXIST EQUIPMENT ENCLOSURE
 SCALE: NTS



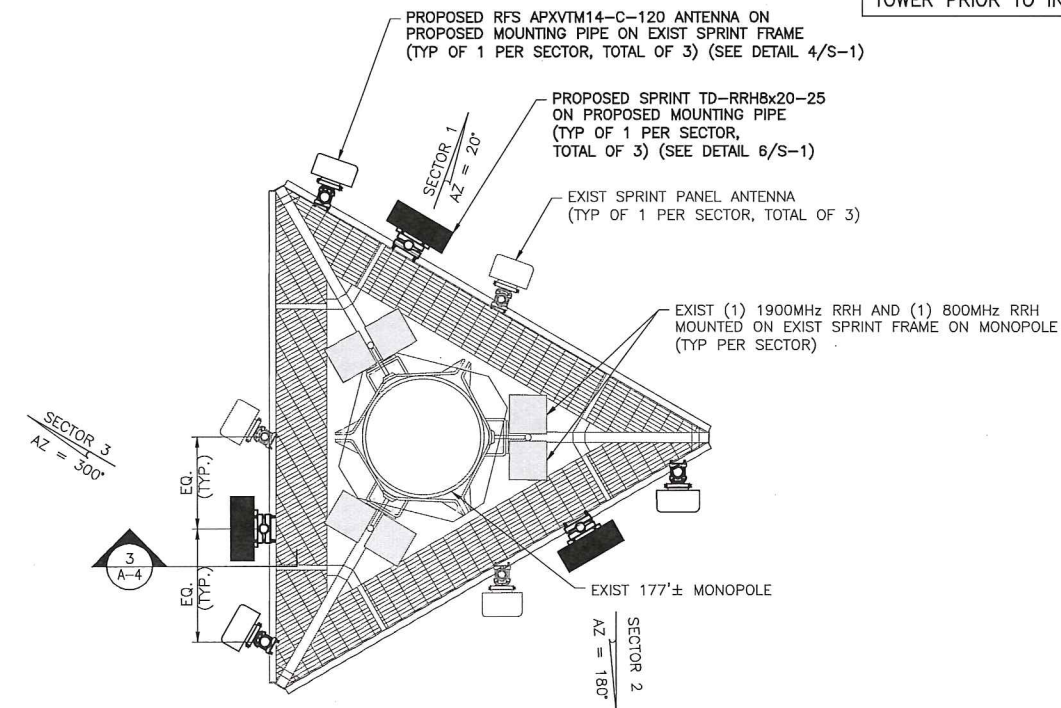
2 ENLARGED EQUIP. LAYOUT PLAN (FINAL)
 SCALE: 1/2" = 1'-0"



4 EXIST FIBER DISTRIBUTION BOX
 SCALE: NTS

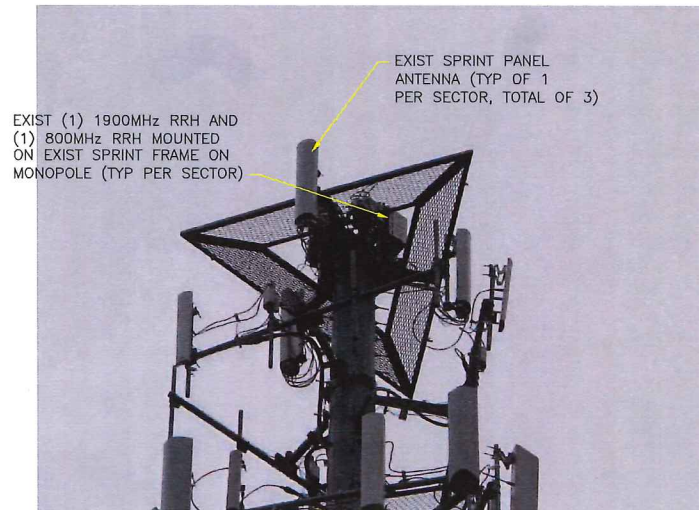


1 ANTENNA LAYOUT PLAN (EXIST)
A-4 SCALE: 1/2" = 1'-0"



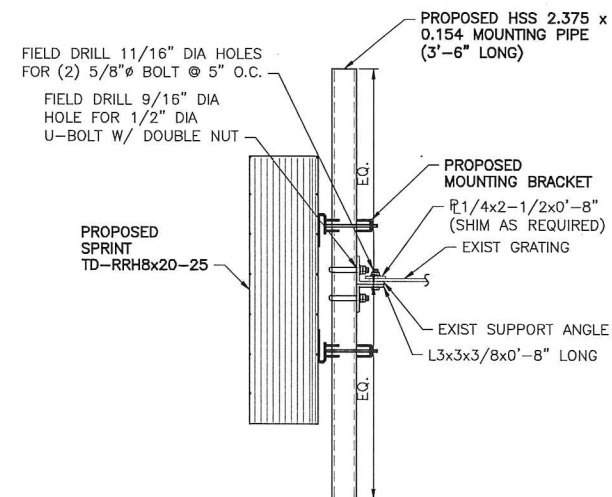
2 ANTENNA LAYOUT PLAN (FINAL)
A-4 SCALE: 1/2" = 1'-0"

NOTE:
SPRINT MUST REMOVE ALL
NEXTEL EQUIPMENT AND
ASSOCIATED CABLES FROM THE
TOWER PRIOR TO INSTALLATION.



EXIST (1) 1900MHz RRH AND
(1) 800MHz RRH MOUNTED
ON EXIST SPRINT FRAME ON
MONOPOLE (TYP PER SECTOR)

EXIST SPRINT PANEL
ANTENNA (TYP OF 1
PER SECTOR, TOTAL OF 3)



3 RRH MOUNTING DETAIL
A-4 SCALE: 1 1/2" = 1'-0"

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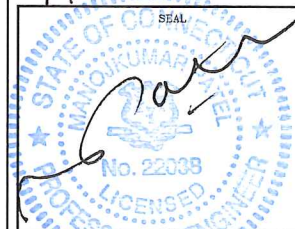
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SITE NUMBER:
CT33XC111

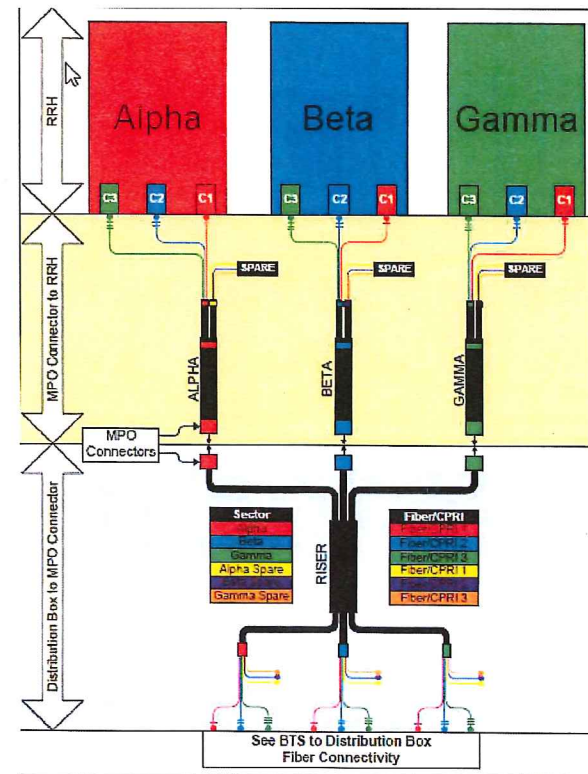
SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
ANTENNA LAYOUT PLANS

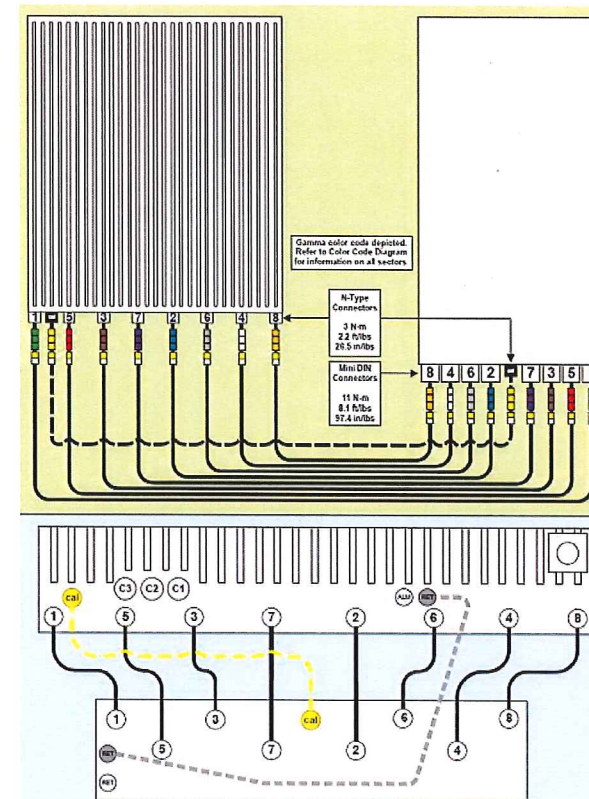
SHEET NO:
A-4

ANTENNA DATA

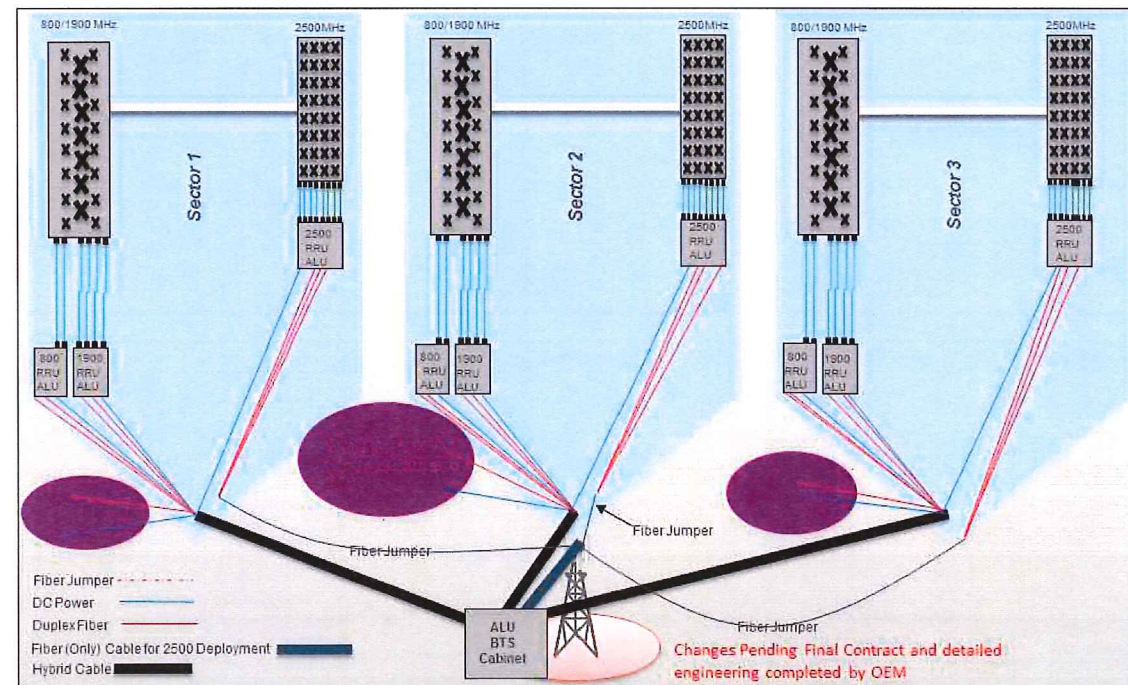
Status	Exist	Proposed
Antenna Manufacturer	RFS-CEL WAVE	RFS-CEL WAVE
Antenna Model Number	APXVSP18C-A20	APXVTM14-C-120
Number of Antennas	3	3
Antenna RAD Center	177'	177'
Antenna Azimuth	20/180/300	20/180/300
Antenna RRH Model Number	1900MHz/800MHz RRHS	TD-RRH8x20-25
Number of RRH	6	3



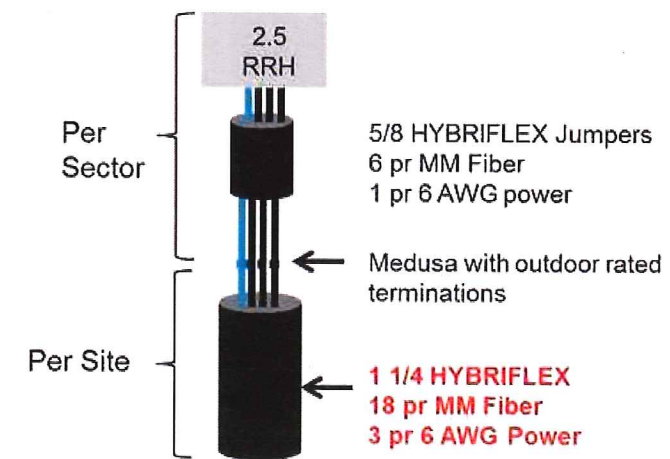
1 2.5 CABLE COLOR CODING
A-5 SCALE: N.T.S.



2 RRH CONNECTIVITY
A-5 SCALE: N.T.S.



3 RAN WIRING
A-5 SCALE: N.T.S.



4 CABLE SCENARIO
A-5 SCALE: N.T.S.

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SUBMITTALS

PROJECT NO: 7225.CT33XC111

NO	DATE	DESCRIPTION	BY
0	06/17/14	FOR COMMENT	JT
1	07/28/14	FOR CONSTRUCTION	MP
2	08/01/14	PER COMMENTS	MP

DATE: 8/1/14 REVIEWED BY: JMA



SITE NUMBER: CT33XC111
SITE NAME: SCOVILLE HILL/HARWINTON ROD & GUN
SITE ADDRESS: 123 CAMPVILLE RD HARWINTON, CT 06791

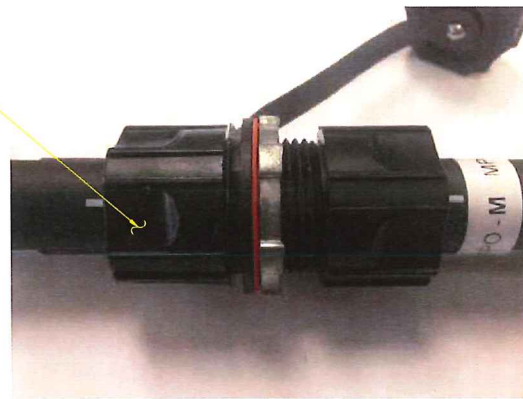
SHEET TITLE: RAN WIRING DIAGRAM

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

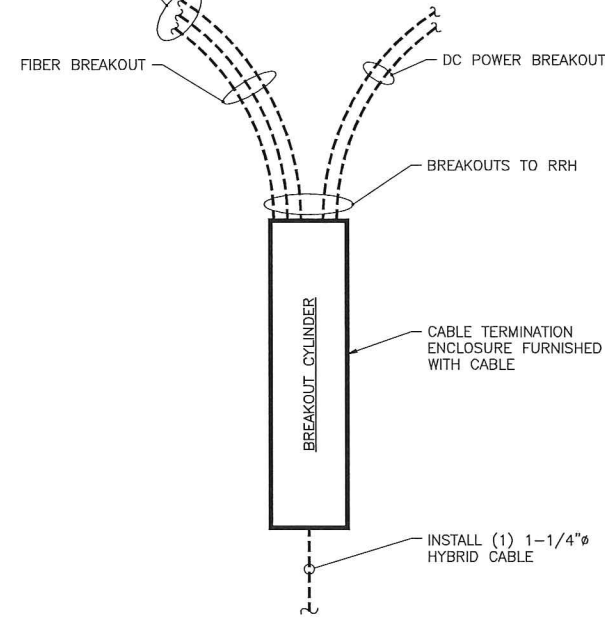


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ENSURE A GOOD CONNECTION

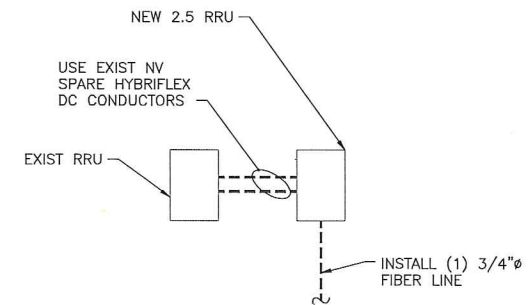


1 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS
SCALE: N.T.S.

TRUNK-LINE TO JUMPER CONNECTION (MPO) TO BE INSTALLED PER MANUFACTURER REQUIREMENTS. SEE DETAIL.



2.5 HYBRID CABLE W/FIBER & DC FEEDERS



FIBER ONLY TRUNK LINES

2 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 CODED 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 BITS 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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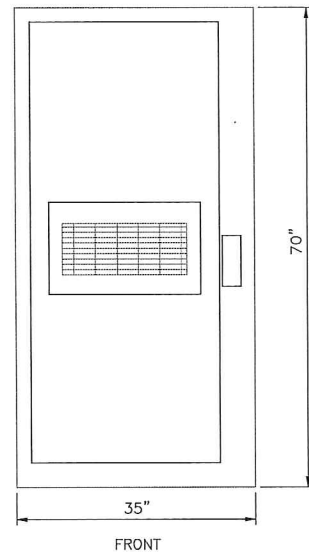
DATE	REVIEWED BY
8/1/14	SMA



SITE NUMBER:
CT33XC111
SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
CABLE DETAILS

SHEET NO:
A-6

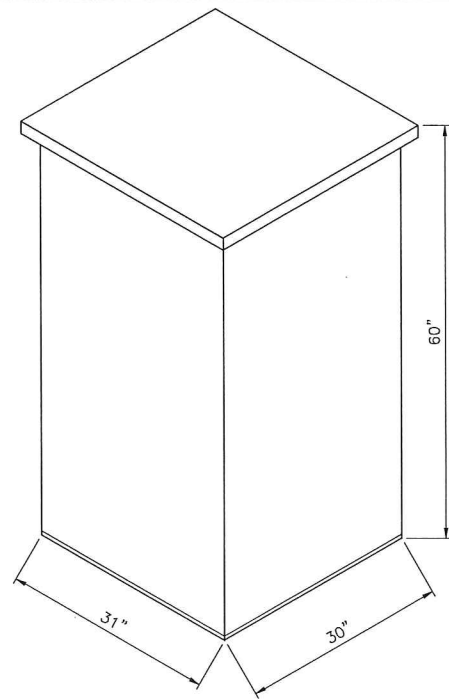


CABINET FRONT
9928 MMBTS MODULAR CELL

SPECIFICATIONS:

HEIGHT: 70"
WIDTH: 35"
DEPTH: 37.8"
WEIGHT: 1090 LBS.

1 (EXIST) MMBTS CABINET
S-1 SCALE: 1" = 1'-0"

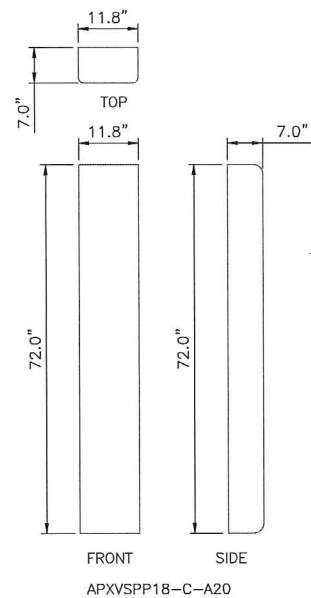


ANDREW 60ECv2

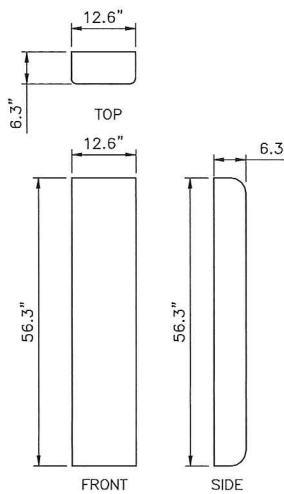
SPECIFICATIONS:

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

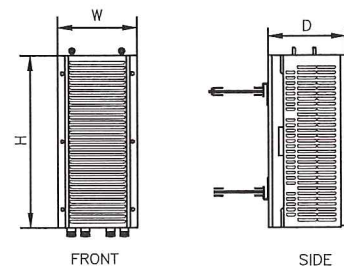
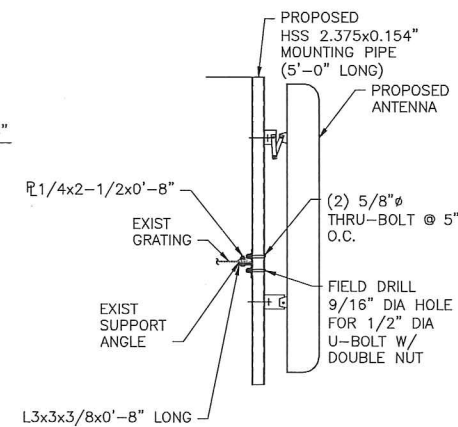
2 (EXIST) BATTERY CABINET
S-1 SCALE: 1" = 1'-0"



3 (EXIST) ANTENNA DETAIL
S-1 SCALE: 3/4" = 1'-0"

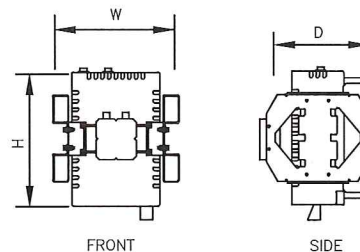


4 (PROPOSED) ANTENNA DETAIL
S-1 SCALE: 3/4" = 1'-0"



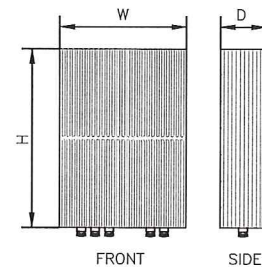
TYPE: 1900 MHz 4x45W
MODEL #: RRH 1900 4X45 65MHz
HEIGHT: 25.0"
WIDTH: 11.1"
DEPTH: 11.4"
WEIGHT: ±60 LBS.

5 (EXIST) RRH DETAILS
S-1 SCALE: 1" = 1'-0"



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

6 (PROPOSED) RRH DETAIL
S-1 SCALE: 1" = 1'-0"



TYPE: 2.5 RRH
MODEL #: TD-RRHx20-25
HEIGHT: 26.1"
WIDTH: 18.6"
DEPTH: 6.7"
WEIGHT: ±70 LBS

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SUBMITTALS

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SITE NUMBER: CT33XC111

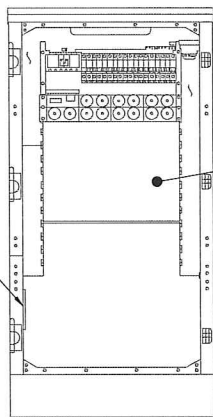
SITE NAME: SCOVILLE HILL/HARWINTON ROD & GUN

SITE ADDRESS: 123 CAMPVILLE RD HARWINTON, CT 06791

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.



EXIST GROUND
BAR TO BE UTILIZED

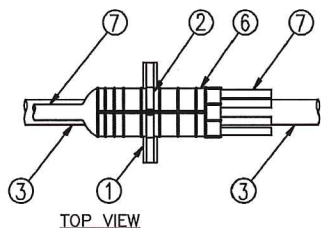
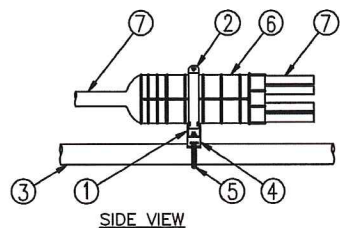
INSTALL NEW 2.5
EQUIPMENT IN EXIST MMBTS
CABINET INCLUDING BUT
NOT LIMITED TO BASE BAND
UNIT, CELL SITE ROUTER
AND SURGE ARRESTORS.
GROUND EQUIPMENT TO
EXIST INTERIOR CABINET
GROUND BAR

FRONT ELEVATION
(CABINET INTERIOR)

1 MMBTS INTERIOR DETAIL

S-2 SCALE: N.T.S.

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



3 MEDUSA HEAD DETAIL

S-2 SCALE: NTS

RFS HYBRIFLEX RISER CABLES SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable	
	MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft

8 AWG Power	Hybrid cable	
	MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft

6 AWG Power	Hybrid cable	
	MN: HB114-13U3M12-225F 3x 6 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft

4 AWG Power	Hybrid cable	
	MN: HB114-21U3M12-225F 3x 4 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

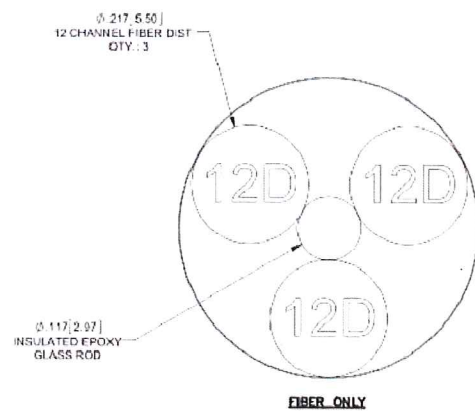
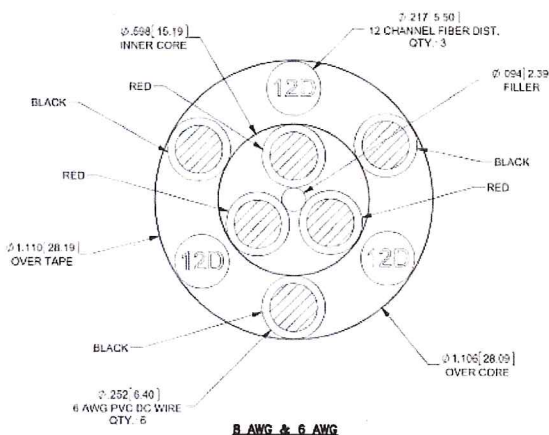
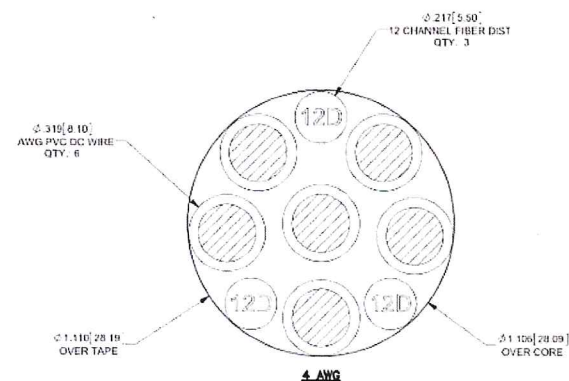
8 AWG Power	Hybrid Jumper cable	
	MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft

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"



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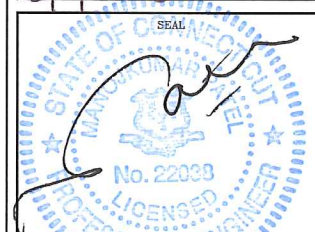
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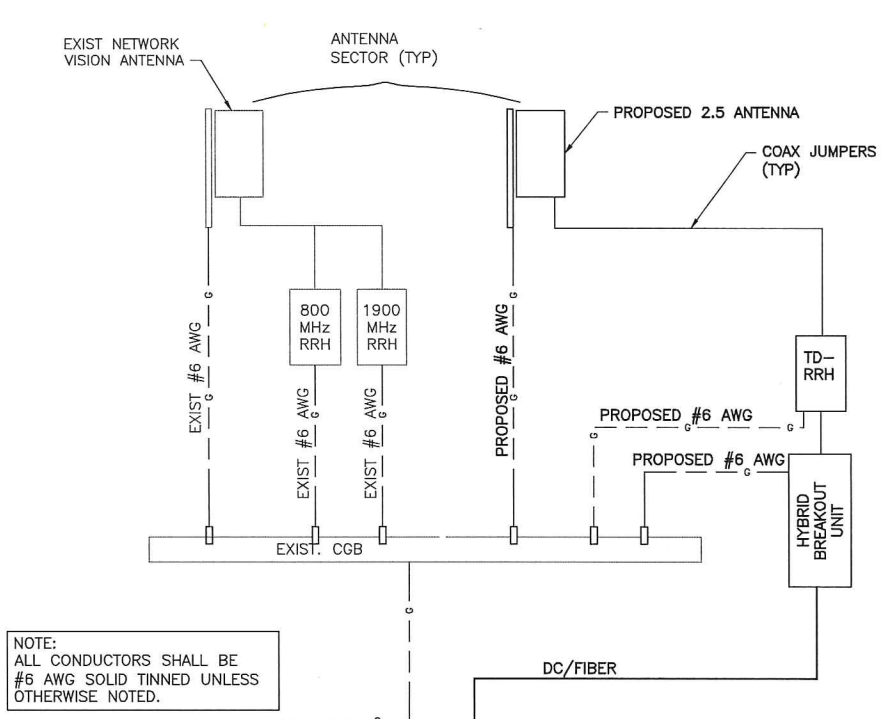
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SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
EQUIPMENT
SCHEMATIC DETAILS

SHEET NO:
S-2

2 2.5 HYBRID CABLE X-SECTION AND DATA

S-2 SCALE: NTS

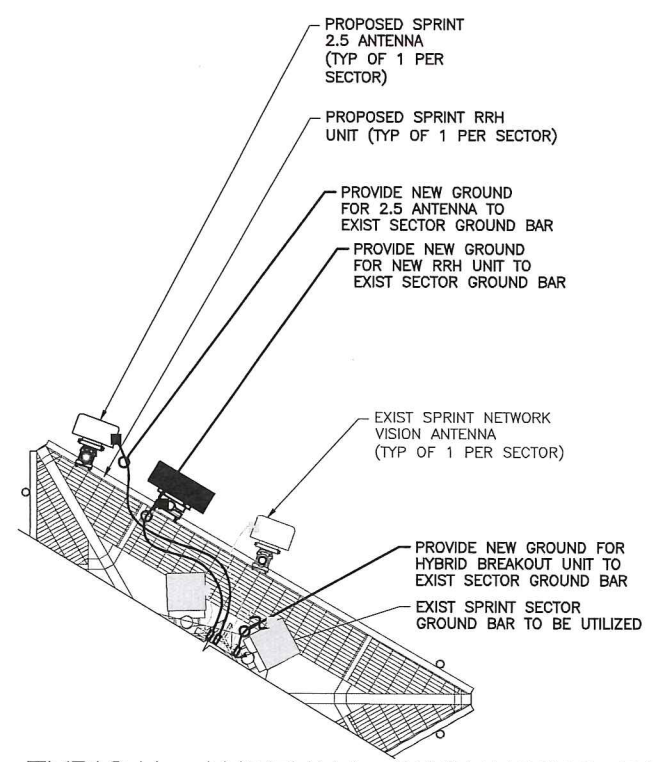


NOTE:
ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.

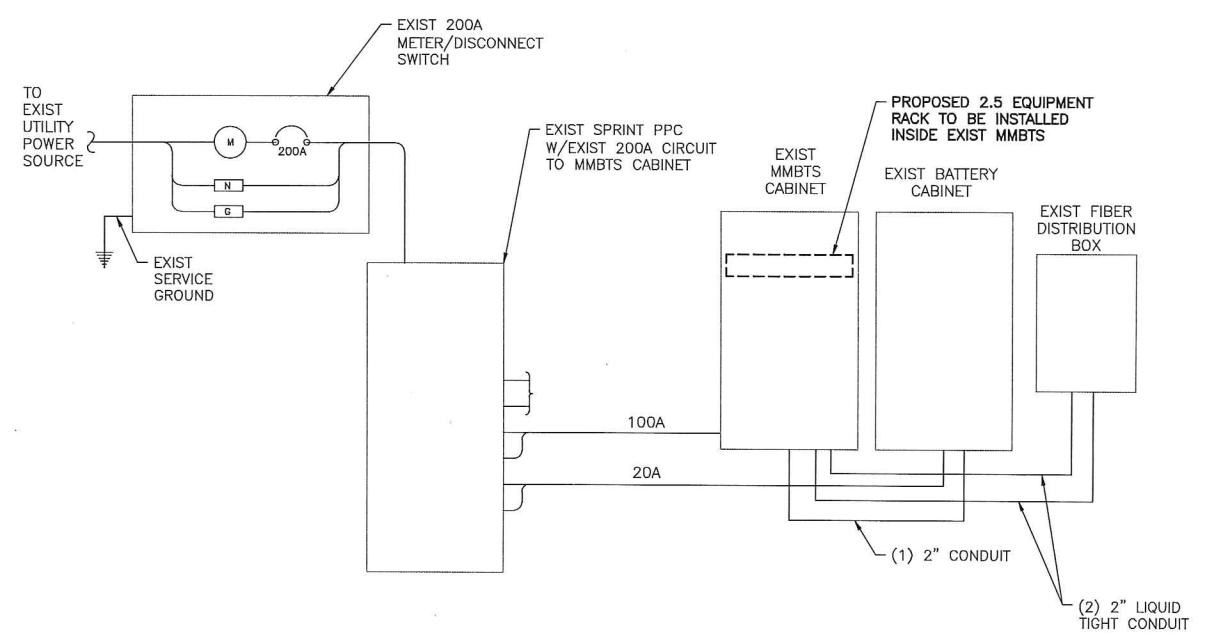
LEGEND

- CADWELD CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION

1
E-1
TYPICAL GROUNDING ONE LINE DIAGRAM
SCALE: NTS



2
E-1
TYPICAL ANTENNA GROUNDING PLAN
SCALE: NTS



3
E-1
TYPICAL ELECTRICAL & TELCO PLAN
SCALE: NTS

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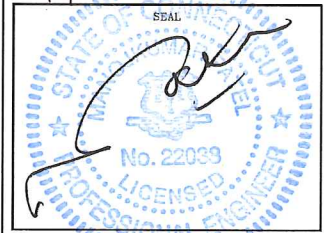
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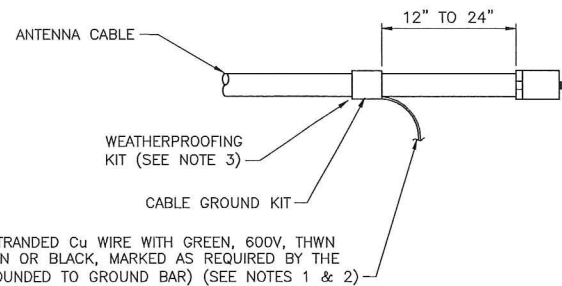
DATE	REVIEWED BY
8/1/14	JMA



SITE NUMBER:
CT33XC111
SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
ELECTRICAL & GROUNDING
PLANS

SHEET NO:
E-1



6 AWG STRANDED Cu WIRE WITH GREEN, 600V, THWN INSULATION OR BLACK, MARKED AS REQUIRED BY THE NEC (GROUNDED TO GROUND BAR) (SEE NOTES 1 & 2)

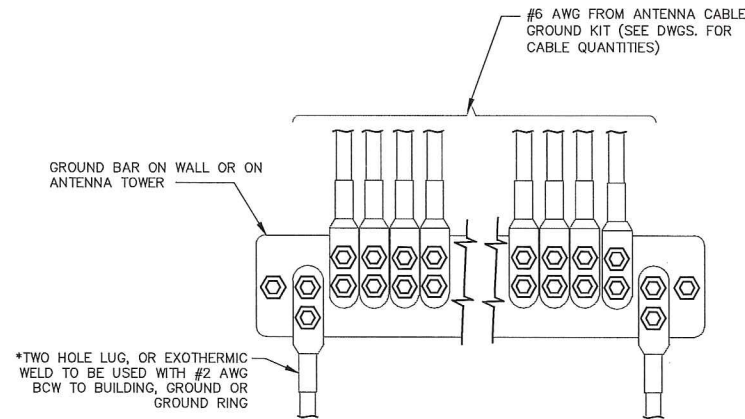
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

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.



*TWO HOLE LUG, OR EXOTHERMIC WELD TO BE USED WITH #2 AWG BCW TO BUILDING, GROUND OR GROUND RING

* - 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 ANTENNA GROUND BAR DETAIL

SCALE: NTS

ELECTRICAL AND GROUNDING NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- 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.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.
- 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.
- 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.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- GROUNDING SHALL COMPLY WITH NEC ART. 250.
- GROUND HYBRID CABLE SHIELDS AT 3 LOCATIONS USING MANUFACTURER'S HYBRID CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- 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.
- 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.
- 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.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, HYBRID CABLE GROUND KITS, AND RRRs TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S AND MGB TO GROUND RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULT FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, HYBRID CABLES, GPS COAX AND RRR RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
- 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.
- 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.
- 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.

GROUNDING NOTES:

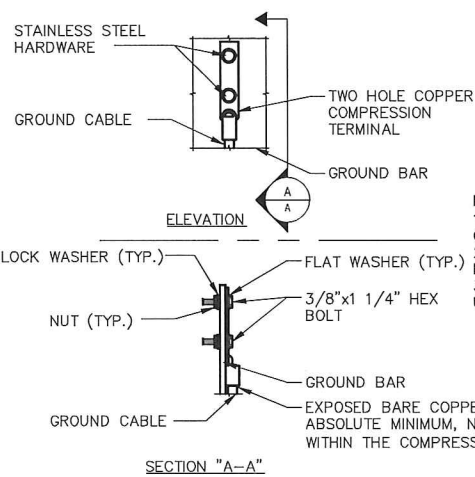
- GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
- ALL GROUND WIRES SHALL BE #2 AWG UNLESS NOTED OTHERWISE.
- ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
- EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
- THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
- ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL AND SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
- WHEN CABLE LENGTH IS OVER 20' THE MANUFACTURERS GROUND KIT MUST BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS.
- REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUNDING.
- 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:

- 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.
- 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.
- ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH PROJECT MANAGER.
- ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
- INSTALL GROUND BUSHING ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
- 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.
- GROUND HYBRID CABLE SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

1 CABLE GROUNDING KIT DETAIL

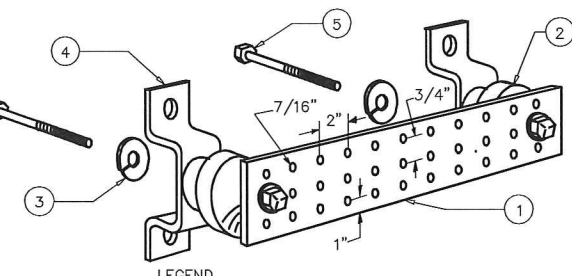
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NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

2 GROUNDING BAR CONN. DETAIL

SCALE: NTS



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

SCALE: NTS

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

CROWN CASTLE

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• ENGINEERING
• SURVEYING
• CONSTRUCTION MANAGEMENT
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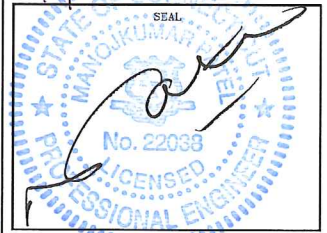
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SUBMITTALS

PROJECT NO: 7225.CT33XC111

NO	DATE	DESCRIPTION	BY
0	06/17/14	FOR COMMENT	JT
1	07/28/14	FOR CONSTRUCTION	MP
2	08/01/14	PER COMMENTS	MP

DATE	REVIEWED BY
8/1/14	JMQ



SITE NUMBER:
CT33XC111
SITE NAME:
SCOVILLE HILL/HARWINTON
ROD & GUN
SITE ADDRESS:
123 CAMPVILLE RD
HARWINTON, CT 06791

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2



September 01, 2017

Marianne Dunst
Crown Castle
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Charlotte, NC 28277
(704) 405-6580

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

Subject: Structural Analysis Report

Carrier Designation: **Sprint PCS Co-Locate**
Carrier Site Number: CT33XC111
Carrier Site Name: CT33XC111

Crown Castle Designation: **Crown Castle BU Number:** 876376
Crown Castle Site Name: Scoville Hill / Harwinton Rod
Crown Castle JDE Job Number: 450666
Crown Castle Work Order Number: 1436702
Crown Castle Application Number: 399364 Rev. 0

Engineering Firm Designation: **B+T Group Project Number:** 83609.007.01

Site Data: 123 Campville Hill Rd., HARWINTON, Litchfield County, CT
Latitude 41° 44' 12.4", Longitude -73° 5' 49.4"
177 Foot - Monopole Tower

Dear Marianne Dunst,

B+T Group is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1064249, in accordance with application 399364, revision 0.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by: Jennifer Tillson, E.I.

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2018

Chad E. Tuttle, P.E.

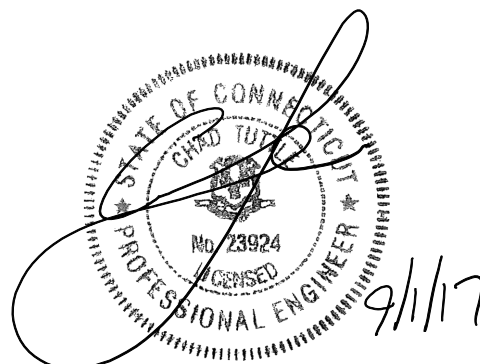


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1) INTRODUCTION

This tower is a 177 ft. Monopole tower designed by Summit in August of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower has been modified several times and those modifications were incorporated in this analysis. Modification by Hutter Trankina Engineering from 0' to 80' modification found to be ineffective.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	177.0	3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	--
		3	RFS Celwave	APXVTM14-C-120			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	179.0	3	Alcatel Lucent	1900MHz RRH (65MHz)	3	1-1/4	1
		3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER			
		3	Alcatel Lucent	800MHZ RRH			
	177.0	9	RFS Celwave	ACU-A20-N			
		3	RFS Celwave	APXVSP18-C-A20			
		1	--	Platform Mount [LP 712-1]			
167.0	169.0	3	Ericsson	KRY 112 75/1	12	1-5/8	1
	167.0	3	Commscope	LNx-6515DS-A1M			
		3	RFS Celwave	APXV18-206516S-C-A20			
		1	--	T-Arm Mount [TA 602-3]			
154.0	156.0	1	Antel	BXA-171063-8BF-EDIN-2	12	1-5/8	1
		2	Antel	BXA-171085-8BF-EDIN-2			
		3	Antel	BXA-70063-6CF-2			
		2	Antel	LPA-80063/6CF			
		4	Antel	LPA-80080/6CF			
	154.0	6	RFS Celwave	FD9R6004/2C-3L			
		1	--	Platform Mount [LP 303-1]			
127.0	130.0	3	Ericsson	RRUS 11 B12	12 2 1	1-5/8 5/8 3/8	1
		1	Raycap	DC6-48-60-18-8F			
	129.0	1	Kmw Com.	AM-X-CD-14-65-00T-RET			
		1	Kmw Com.	AM-X-CD-16-65-00T-RET			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	127.0	1	Kathrein	800 10764			
		6	Kathrein	AP14/17-880/1940/065D/ADT/XXP			
		1	--	Platform Mount [LP 303-1]			
	126.0	3	Powerwave Tech.	LGP13519			
		3	Powerwave Tech.	LGP21401			
	125.0	3	Powerwave Tech.	LGP13519			
		3	Powerwave Tech.	LGP21401			
117.0	117.0	3	Rfs Celwave	APXV18-206517S-C	6	1-5/8	1
79.0	80.0	1	Spectracom	8225	1	1/2	1
	79.0	1	--	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
177	177	1	--	14' Low Profile Platform	--	--
		12	DAPA	48000		
167	167	1	--	14' Clamp On Low Profile Platform	--	--
		12	DAPA	48000		
157	157	1	--	14' Clamp On Low Profile Platform	--	--
		12	DAPA	48000		
75	75	1	--	GPS Antenna W/ Mount	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	Sprint PCS Co-locate Rev # 0	399364	CCI Sites
Tower Manufacturing Drawings	Summit Manufacturing LLC, Job No: 10633	1613568	CCI Sites
Tower Modification Drawing	Semaan Engineering Solutions, Inc, Site ID CT33XC111	1595751	CCI Sites
Tower Modification Drawing	Hutter Trankina Engineering, Project No:04073	1634507	CCI Sites
Post Modification Inspection	GLOBAL SIGNAL SITE No: 3017696	2176310	CCI Sites
Tower Modification Drawing	B&T Engineering, Inc Project No: 80185	2461486	CCI Sites
Post Modification Inspection	B&T Engineering, Inc Project No: 80185	2461484	CCI Sites
Tower Modification Drawing	TEP Project No: 131001.876376	3384748	CCI Sites
Post Modification Inspection	TEP Project No: 131001.876376	3841069	CCI Sites
Legacy Modification Inspection	TEP, Date: 08/29/2017	7041633	CCI Sites
Foundation Drawings	Summit Manufacturing LLC, Job No: 10633	1613623	CCI Sites

Document	Remarks	Reference	Source
Geotech Report	Criscuolo Shepard Associates File No.99900.24	1531965	CCI Sites
Antenna Configuration	Crown CAD Package	Date:07/28/2017	CCI Sites

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.
- 4) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	177 - 129.75	Pole	TP30.268x22x0.219	1	-9.124	1385.780	49.8	Pass
L2	129.75 - 118.583	Pole	TP31.785x29.174x0.25	2	-13.640	1737.500	57.8	Pass
L3	118.583 - 106.417	Pole	TP33.913x31.785x0.38	3	-17.197	2007.170	63.9	Pass
L4	106.417 - 84	Pole	TP37.836x33.913x0.25	4	-25.284	1911.670	87.7	Pass
L5	84 - 39.25	Pole	TP45.167x36.505x0.313	5	-69.098	2905.090	96.1	Pass
L6	39.25 - 0	Pole	TP51.41x43.536x0.375	6	-111.860	4105.250	93.8	Pass
							Summary	
						Pole (L5)	96.1	Pass
						Rating =	96.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	72.2	Pass
1	Base Plate	Base	66.3	Pass
1	Base Foundation (Structural)	Base	60.4	Pass
1	Base Foundation (Soil Interaction)	Base	89.3	Pass
Structure Rating (max from all components) =				96.1%

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Capacities up to 100% are considered acceptable based on analysis methods used.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configurations. No modifications are required at this time.

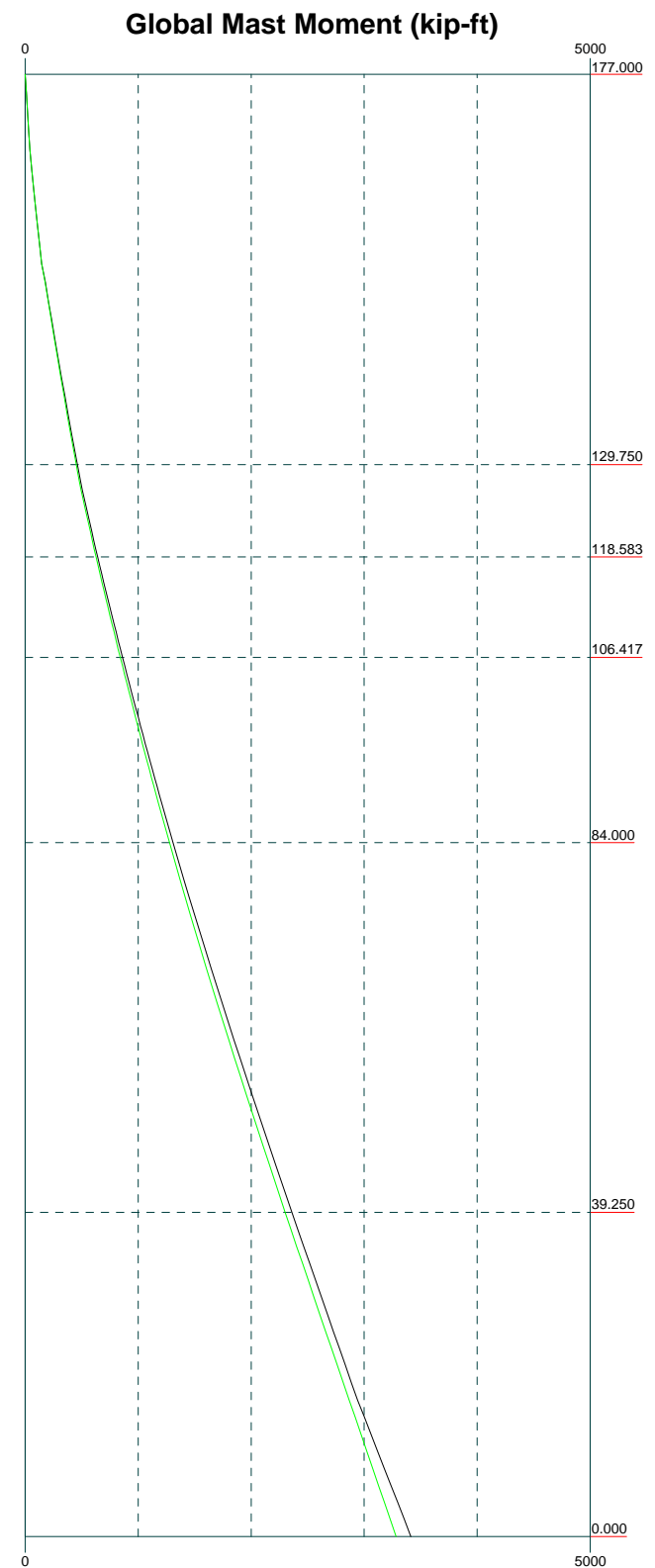
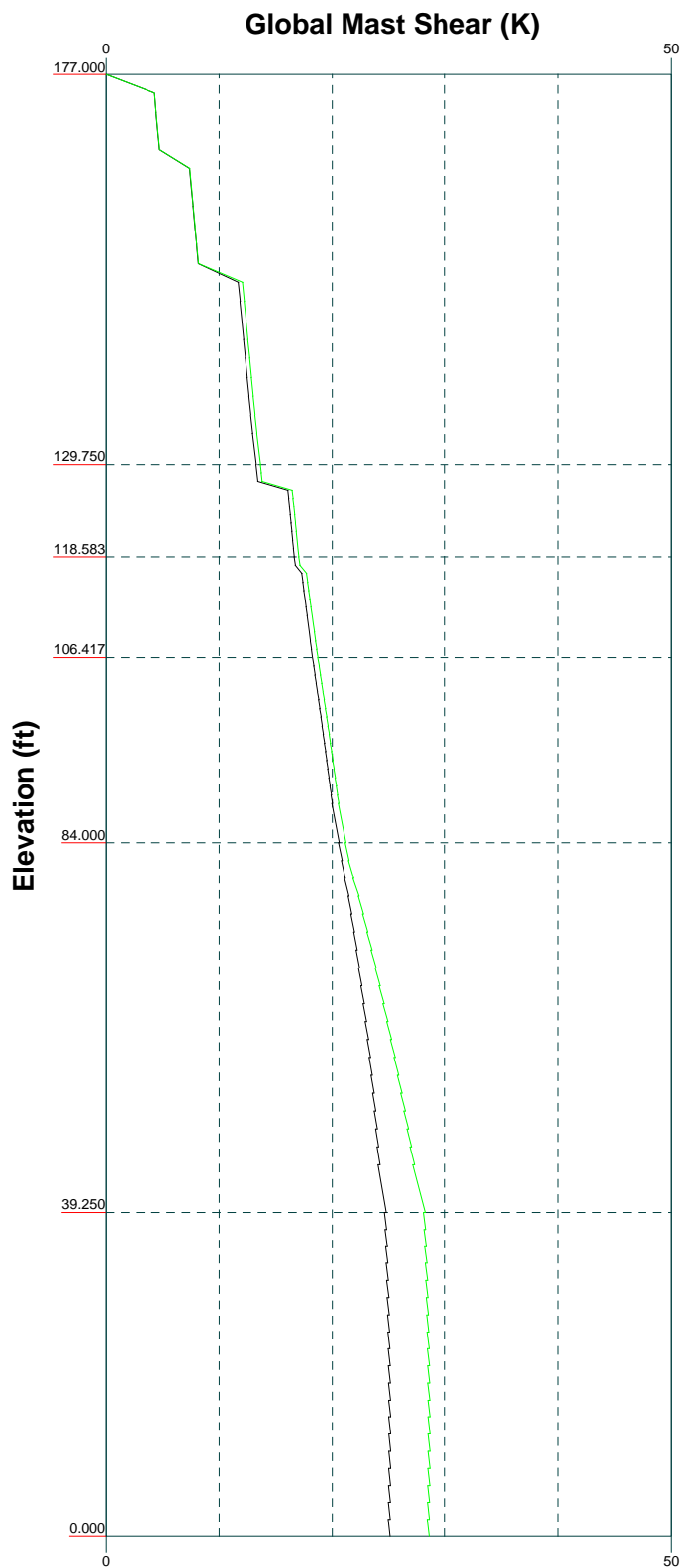
APPENDIX A
TNXTOWER OUTPUT

Vx

Vz

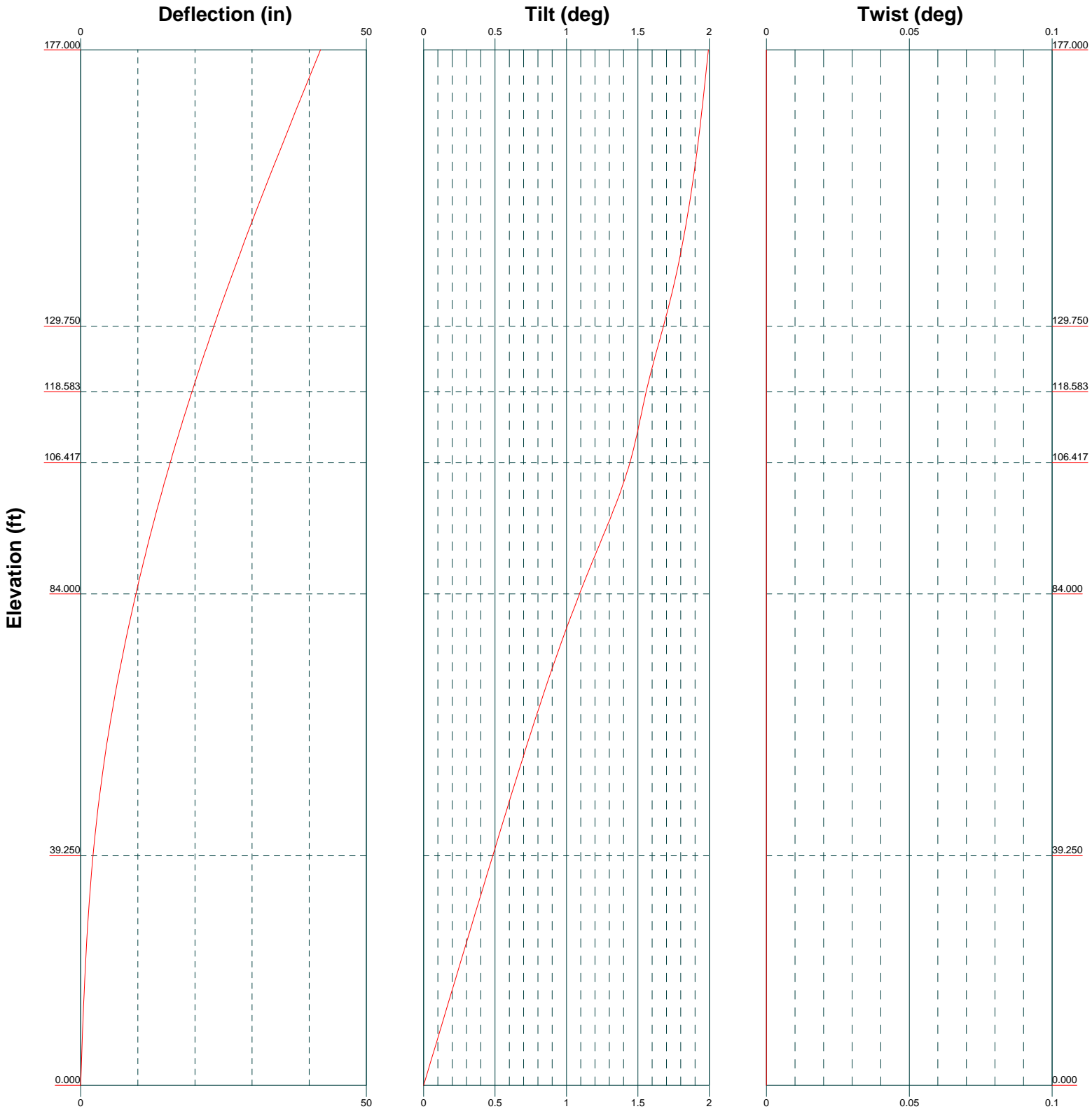
Mx

Mz



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

Job: 83609.007.01 - Scoville Hill/Harwinton Rod, CT (BU# 87637)		
Project:		
Client: Crown Castle	Drawn by: Sunil Kamath	App'd:
Code: TIA-222-G	Date: 09/01/17	Scale: NTS
Path:	Dwg No. E-4	



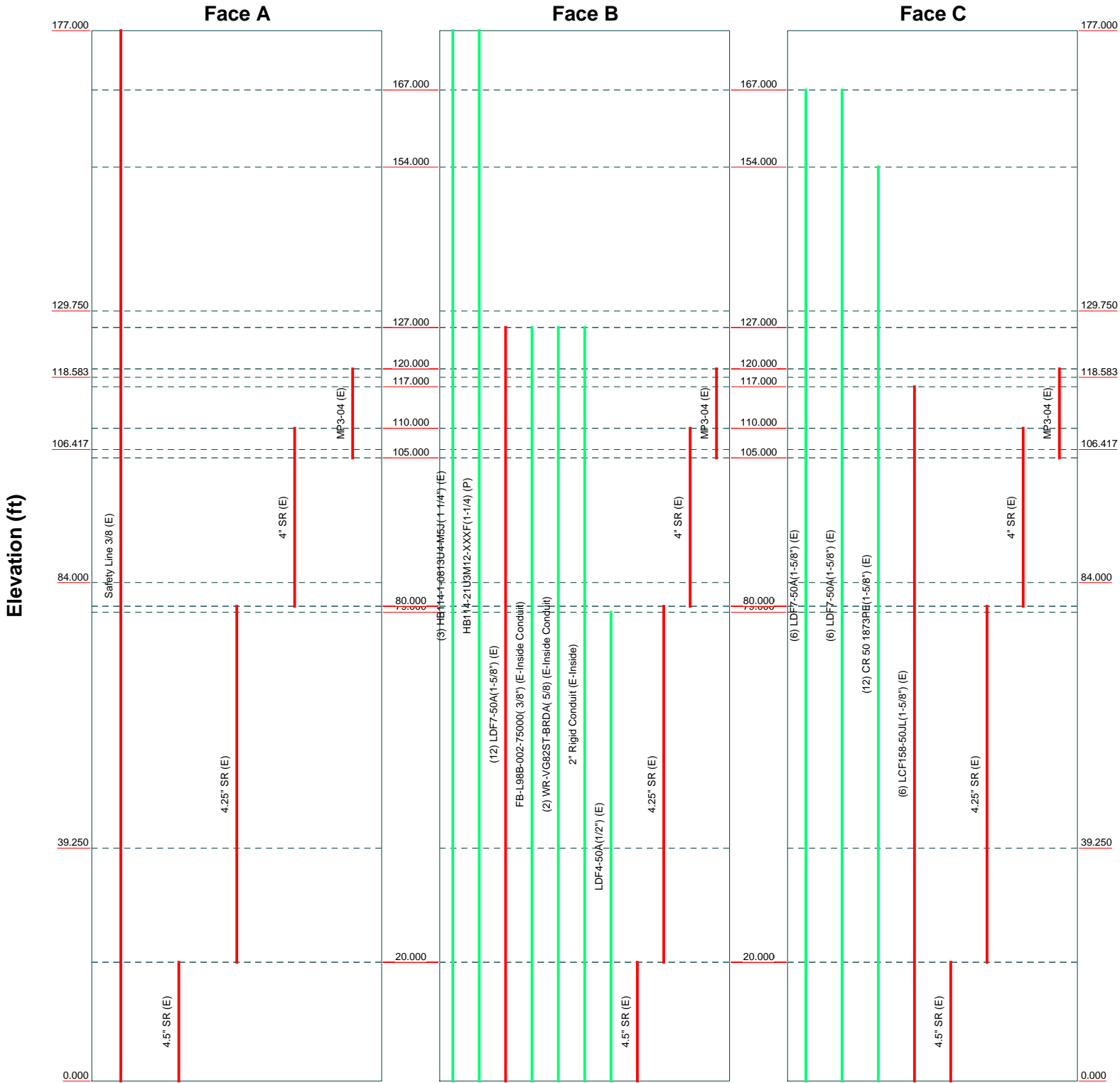
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 FAX: (918) 295-0265

Job: 83609.007.01 - Scoville Hill/Harwinton Rod, CT (BU# 87637)		
Project:		
Client: Crown Castle	Drawn by: Sunil Kamath	App'd:
Code: TIA-222-G	Date: 09/01/17	Scale: NTS
Path:	Dwg No. E-5	

Feed Line Distribution Chart

0' - 177'

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



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Job: 83609.007.01 - Scoville Hill/Harwinton Rod, CT (BU# 87637)		
Project:		
Client: Crown Castle	Drawn by: Sunil Kamath	App'd:
Code: TIA-222-G	Date: 09/01/17	Scale: NTS
Path:	Dwg No. E-7	

tnxTower B+T Group 717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 83609.007.01 - Scoville Hill/Harwinton Rod, CT (BU# 876376)	Page 2 of 19
	Project	Date 20:06:04 09/01/17
	Client Crown Castle	Designed by Sunil Kamath

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
L3	118.583-106.417	12.166	0.000	18	31.785	33.913	0.380	1.521	43.377852ksi (43 ksi)
L4	106.417-84.000	22.417	4.750	18	33.913	37.836	0.250	1.000	A607-65 (65 ksi)
L5	84.000-39.250	49.500	5.750	18	36.505	45.167	0.313	1.250	A607-65 (65 ksi)
L6	39.250-0.000	45.000		18	43.536	51.410	0.375	1.500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.339	15.123	906.444	7.732	11.176	81.106	1814.080	7.563	3.487	15.941
	30.735	20.864	2380.090	10.667	15.376	154.791	4763.311	10.434	4.942	22.593
L2	30.291	22.951	2425.903	10.268	14.821	163.685	4854.998	11.478	4.695	18.779
	32.275	25.023	3143.720	11.195	16.147	194.699	6291.578	12.514	5.154	20.616
L3	32.275	37.913	4723.862	11.148	16.147	292.562	9453.940	18.960	4.925	12.947
	34.437	40.483	5751.131	11.904	17.228	333.825	11509.830	20.245	5.299	13.933
L4	34.437	26.712	3824.353	11.951	17.228	221.985	7653.739	13.358	5.529	22.115
	38.420	29.824	5323.077	13.343	19.221	276.945	10653.157	14.915	6.219	24.877
L5	37.912	35.898	5940.787	12.848	18.544	320.354	11889.390	17.953	5.875	18.8
	45.864	44.490	11308.694	15.923	22.945	492.864	22632.268	22.249	7.399	23.678
L6	45.229	51.372	12090.485	15.322	22.116	546.681	24196.880	25.691	7.002	18.673
	52.203	60.744	19988.490	18.117	26.116	765.365	40003.282	30.378	8.388	22.368

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 177.000-129.750				1	1	1			
L2 129.750-118.583				1	1	1			
L3 118.583-106.417				1	1	0.966635			
L4 106.417-84.000				1	1	1			
L5 84.000-39.250				1	1	1			
L6 39.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
S LDF7-50A(1-5/8") (E)	B	Surface Ar (CaAa)	127.000 - 0.000	12	6	0.220 0.470	1.980		0.001
S LCF158-50JL(1-5/8") (E)	C	Surface Ar (CaAa)	117.000 - 0.000	6	6	0.030 0.300	1.980		0.001
S Safety Line 3/8 (E)	A	Surface Ar (CaAa)	177.000 - 0.000	1	1	0.000 0.000	0.375		0.000
S 4.5" SR (E)	A	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.000 0.000	4.500		0.090
4.5" SR (E)	B	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.000 0.000	4.500		0.090
4.5" SR (E)	C	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.000 0.000	4.500		0.090
4.25" SR (E)	A	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.000 0.000	4.250		0.241
4.25" SR (E)	B	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.000 0.000	4.250		0.241
4.25" SR (E)	C	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.000 0.000	4.250		0.241
4" SR (E)	A	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.000 0.000	4.000		0.080
4" SR (E)	B	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.000 0.000	4.000		0.080
4" SR (E)	C	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.000 0.000	4.000		0.080
MP3-04 (E)	A	Surface Af (CaAa)	120.000 - 105.000	1	1	0.000 0.000	4.780	12.780	0.000
MP3-04 (E)	B	Surface Af (CaAa)	120.000 - 105.000	1	1	0.000 0.000	4.780	12.780	0.000
MP3-04 (E)	C	Surface Af (CaAa)	120.000 - 105.000	1	1	0.000 0.000	4.780	12.780	0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		CAAA ft ² /ft	Weight klf
HB114-1-0813U4-M5J(1 1/4") (E)	B	No	Inside Pole	177.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
HB114-21U3M12-XXX F(1-1/4) (P)	B	No	Inside Pole	177.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
S LDF7-50A(1-5/8") (E)	C	No	Inside Pole	167.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	167.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
S CR 50 1873PE(1-5/8") (E)	C	No	Inside Pole	154.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
S								
FB-L98B-002-75000(3/8") (E-Inside Conduit)	B	No	Inside Pole	127.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
WR-VG82ST-BRDA(5/8) (E-Inside Conduit)	B	No	Inside Pole	127.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
2" Rigid Conduit (E-Inside)	B	No	Inside Pole	127.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.003 0.003 0.003
S								
LDF4-50A(1/2") (E)	B	No	Inside Pole	79.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
S								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	177.000-129.750	A	0.000	0.000	1.772	0.000	0.010
		B	0.000	0.000	0.000	0.000	0.228
		C	0.000	0.000	0.000	0.000	0.608
L2	129.750-118.583	A	0.000	0.000	1.548	0.000	0.002
		B	0.000	0.000	11.128	0.000	0.166
		C	0.000	0.000	1.129	0.000	0.221
L3	118.583-106.417	A	0.000	0.000	11.582	0.000	0.289
		B	0.000	0.000	25.579	0.000	0.507
		C	0.000	0.000	23.698	0.000	0.561
L4	106.417-84.000	A	0.000	0.000	10.936	0.000	1.798
		B	0.000	0.000	36.727	0.000	2.200
		C	0.000	0.000	36.727	0.000	2.307
L5	84.000-39.250	A	0.000	0.000	20.597	0.000	10.166
		B	0.000	0.000	72.082	0.000	10.974
		C	0.000	0.000	72.082	0.000	11.182
L6	39.250-0.000	A	0.000	0.000	18.653	0.000	6.459
		B	0.000	0.000	63.810	0.000	7.168
		C	0.000	0.000	63.810	0.000	7.350

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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	177.000-129.750	A	1.748	0.000	0.000	18.290	0.000	0.225
		B		0.000	0.000	0.000	0.000	0.228
		C		0.000	0.000	0.000	0.000	0.608
L2	129.750-118.583	A	1.712	0.000	0.000	5.923	0.000	0.072
		B		0.000	0.000	17.777	0.000	0.456
		C		0.000	0.000	1.600	0.000	0.240
L3	118.583-106.417	A	1.696	0.000	0.000	20.853	0.000	0.538
		B		0.000	0.000	39.495	0.000	1.085
		C		0.000	0.000	36.473	0.000	0.993
L4	106.417-84.000	A	1.667	0.000	0.000	26.338	0.000	2.168

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L5	84.000-39.250	B		0.000	0.000	60.656	0.000	3.168
		C		0.000	0.000	60.656	0.000	3.075
		A	1.596	0.000	0.000	50.442	0.000	10.890
L6	39.250-0.000	B		0.000	0.000	118.948	0.000	12.893
		C		0.000	0.000	118.948	0.000	12.700
		A	1.421	0.000	0.000	43.716	0.000	7.068
		B		0.000	0.000	103.663	0.000	8.792
		C		0.000	0.000	103.663	0.000	8.628

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	177.000-129.750	-0.048	-0.028	-0.384	-0.222
L2	129.750-118.583	0.988	0.187	0.888	0.093
L3	118.583-106.417	0.489	0.678	0.405	0.637
L4	106.417-84.000	0.567	0.940	0.441	0.849
L5	84.000-39.250	0.606	1.017	0.482	0.941
L6	39.250-0.000	0.637	1.080	0.525	1.036

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	21	Safety Line 3/8	129.75 - 177.00	1.0000	1.0000
L1	12	LDF7-50A(1-5/8")	129.75 - 127.00	1.0000	1.0000
L1	32	MP3-04	129.75 - 120.00	1.0000	1.0000
L1	33	MP3-04	129.75 - 120.00	1.0000	1.0000
L1	34	MP3-04	129.75 - 120.00	1.0000	1.0000
L3	12	LDF7-50A(1-5/8")	106.42 - 118.58	1.0000	1.0000
L3	17	LCF158-50JL(1-5/8")	106.42 - 117.00	1.0000	1.0000
L3	21	Safety Line 3/8	106.42 - 118.58	1.0000	1.0000
L3	29	4" SR	106.42 - 110.00	1.0000	1.0000
L3	30	4" SR	106.42 - 110.00	1.0000	1.0000
L3	31	4" SR	106.42 - 110.00	1.0000	1.0000
L3	32	MP3-04	106.42 - 118.58	1.0000	1.0000
L3	33	MP3-04	106.42 - 118.58	1.0000	1.0000

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	<p>Client Crown Castle</p>	<p>Designed by Sunil Kamath</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L3	34	MP3-04	106.42 - 118.58	1.0000	1.0000
L4	12	LDF7-50A(1-5/8")	84.00 - 106.42	1.0000	1.0000
L4	17	LCF158-50JL(1-5/8")	84.00 - 106.42	1.0000	1.0000
L4	21	Safety Line 3/8	84.00 - 106.42	1.0000	1.0000
L4	29	4" SR	84.00 - 106.42	1.0000	1.0000
L4	30	4" SR	84.00 - 106.42	1.0000	1.0000
L4	31	4" SR	84.00 - 106.42	1.0000	1.0000
L4	32	MP3-04	105.00 - 106.42	1.0000	1.0000
L4	33	MP3-04	105.00 - 106.42	1.0000	1.0000
L4	34	MP3-04	105.00 - 106.42	1.0000	1.0000
L4	26	4.25" SR	84.00 - 80.00	1.0000	1.0000
L4	27	4.25" SR	84.00 - 80.00	1.0000	1.0000
L4	28	4.25" SR	84.00 - 80.00	1.0000	1.0000
L5	12	LDF7-50A(1-5/8")	39.25 - 84.00	1.0000	1.0000
L5	17	LCF158-50JL(1-5/8")	39.25 - 84.00	1.0000	1.0000
L5	21	Safety Line 3/8	39.25 - 84.00	1.0000	1.0000
L5	23	4.5" SR	39.25 - 20.00	1.0000	1.0000
L5	24	4.5" SR	39.25 - 20.00	1.0000	1.0000
L5	25	4.5" SR	39.25 - 20.00	1.0000	1.0000
L5	26	4.25" SR	39.25 - 80.00	1.0000	1.0000
L5	27	4.25" SR	39.25 - 80.00	1.0000	1.0000
L5	28	4.25" SR	39.25 - 80.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	K	
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
800 EXTERNAL NOTCH FILTER (E)	A	From Leg	2.000 0.000 2.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER (E)	B	From Leg	2.000 0.000 2.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER (E)	C	From Leg	2.000 0.000 2.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
1900MHz RRH (65MHz)	A	From Leg	2.000	0.000	177.000	No Ice	2.313	2.375	0.060

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
(E)			0.000						
			2.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
1900MHz RRH (65MHz)	B	From Leg	2.000	0.000	177.000	No Ice	2.313	2.375	0.060
(E)			0.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
1900MHz RRH (65MHz)	C	From Leg	2.000	0.000	177.000	No Ice	2.313	2.375	0.060
(E)			0.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
800MHZ RRH	A	From Leg	2.000	0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
800MHZ RRH	B	From Leg	2.000	0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
800MHZ RRH	C	From Leg	2.000	0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
(3) ACU-A20-N	A	From Leg	2.000	0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	2.000	0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	C	From Leg	2.000	0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	177.000	No Ice	6.580	4.959	0.077
(P)			0.000			1/2" Ice	7.031	5.754	0.131
			0.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	177.000	No Ice	6.580	4.959	0.077
(P)			0.000			1/2" Ice	7.031	5.754	0.131
			0.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	177.000	No Ice	6.580	4.959	0.077
(P)			0.000			1/2" Ice	7.031	5.754	0.131
			0.000			1" Ice	7.473	6.472	0.193
TD-RRH8x20-25	A	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
(P)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	B	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
(P)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	C	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
(P)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
6' x 2' Mount Pipe	A	From Leg	1.000	0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2' Mount Pipe	B	From Leg	1.000	0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2' Mount Pipe	C	From Leg	1.000	0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
Platform Mount [LP 712-1] (E-12')	C	None		0.000	177.000	No Ice	24.530	24.530	1.335
						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
LNX-6515DS-A1M w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	167.000	No Ice	11.683	9.842	0.083
			0.000				1/2" Ice	12.404	11.366	0.173
			0.000				1" Ice	13.135	12.914	0.273
LNX-6515DS-A1M w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	167.000	No Ice	11.683	9.842	0.083
			0.000				1/2" Ice	12.404	11.366	0.173
			0.000				1" Ice	13.135	12.914	0.273
LNX-6515DS-A1M w/ Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	167.000	No Ice	11.683	9.842	0.083
			0.000				1/2" Ice	12.404	11.366	0.173
			0.000				1" Ice	13.135	12.914	0.273
APXV18-206516S-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073
			0.000				1" Ice	4.674	4.672	0.113
APXV18-206516S-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073
			0.000				1" Ice	4.674	4.672	0.113
APXV18-206516S-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073
			0.000				1" Ice	4.674	4.672	0.113
KRY 112 75/1 (E)	A	From Leg	4.000	0.000	0.000	167.000	No Ice	1.104	0.424	0.025
			0.000				1/2" Ice	1.235	0.515	0.034
			2.000				1" Ice	1.374	0.614	0.044
KRY 112 75/1 (E)	B	From Leg	4.000	0.000	0.000	167.000	No Ice	1.104	0.424	0.025
			0.000				1/2" Ice	1.235	0.515	0.034
			2.000				1" Ice	1.374	0.614	0.044
KRY 112 75/1 (E)	C	From Leg	4.000	0.000	0.000	167.000	No Ice	1.104	0.424	0.025
			0.000				1/2" Ice	1.235	0.515	0.034
			2.000				1" Ice	1.374	0.614	0.044
(2) 6' x 2" Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	167.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	167.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	167.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
T-Arm Mount [TA 602-3] (E)	C	None		0.000	0.000	167.000	No Ice	11.590	11.590	0.774
							1/2" Ice	15.440	15.440	0.990
							1" Ice	19.290	19.290	1.206
g										
(2) LPA-80063/6CF w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	154.000	No Ice	9.831	10.215	0.052
			0.000				1/2" Ice	10.400	11.384	0.145
			2.000				1" Ice	10.933	12.269	0.246
(2) LPA-80080/6CF w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	154.000	No Ice	4.564	10.259	0.046
			0.000				1/2" Ice	5.105	11.427	0.113
			2.000				1" Ice	5.612	12.312	0.187
(2) LPA-80080/6CF w/ Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	154.000	No Ice	4.564	10.259	0.046
			0.000				1/2" Ice	5.105	11.427	0.113
			2.000				1" Ice	5.612	12.312	0.187
BXA-70063-6CF-2 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	154.000	No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103
			2.000				1" Ice	8.872	7.819	0.171
BXA-70063-6CF-2 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	154.000	No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103
			2.000				1" Ice	8.872	7.819	0.171
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	154.000	No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
(E)			2.000						
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice 8.872	7.819	0.171
			0.000				No Ice 3.179	3.353	0.029
			0.000				1/2" Ice 3.555	3.971	0.061
(E)			2.000				1" Ice 3.930	4.595	0.099
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.000		0.000	154.000	No Ice 3.179	3.353	0.029
			0.000				1/2" Ice 3.555	3.971	0.061
			0.000				1" Ice 3.930	4.595	0.099
(E)			2.000				No Ice 3.179	3.353	0.029
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.000		0.000	154.000	1/2" Ice 3.555	3.971	0.061
			0.000				1" Ice 3.930	4.595	0.099
(E)			2.000				No Ice 3.179	3.353	0.029
(2) FD9R6004/2C-3L	A	From Leg	4.000		0.000	154.000	1/2" Ice 3.555	3.971	0.061
			0.000				1" Ice 3.930	4.595	0.099
(E)			0.000				No Ice 0.314	0.076	0.003
(2) FD9R6004/2C-3L	B	From Leg	4.000		0.000	154.000	1/2" Ice 0.386	0.119	0.005
			0.000				1" Ice 0.466	0.169	0.009
(E)			0.000				No Ice 0.314	0.076	0.003
(2) FD9R6004/2C-3L	C	From Leg	4.000		0.000	154.000	1/2" Ice 0.386	0.119	0.005
			0.000				1" Ice 0.466	0.169	0.009
(E)			0.000				No Ice 0.314	0.076	0.003
Platform Mount [LP 303-1]	C	None			0.000	154.000	1/2" Ice 18.870	18.870	1.481
(E)							1" Ice 23.080	23.080	1.713
s									
s									
(2)	A	From Leg	4.000		0.000	127.000	No Ice 5.051	3.750	0.056
AP14/17-880/1940/065D/AD T/XXP w/ Mount Pipe			0.000				1/2" Ice 5.452	4.421	0.098
(E)			0.000				1" Ice 5.855	5.074	0.146
(2)	B	From Leg	4.000		0.000	127.000	No Ice 5.051	3.750	0.056
AP14/17-880/1940/065D/AD T/XXP w/ Mount Pipe			0.000				1/2" Ice 5.452	4.421	0.098
(E)			0.000				1" Ice 5.855	5.074	0.146
(2)	C	From Leg	4.000		0.000	127.000	No Ice 5.051	3.750	0.056
AP14/17-880/1940/065D/AD T/XXP w/ Mount Pipe			0.000				1/2" Ice 5.452	4.421	0.098
(E)			0.000				1" Ice 5.855	5.074	0.146
(2)	A	From Leg	4.000		0.000	127.000	No Ice 5.232	4.015	0.035
AM-X-CD-14-65-00T-RET w/ Mount Pipe			0.000				1/2" Ice 5.618	4.633	0.080
(E)			2.000				1" Ice 6.012	5.257	0.131
(2)	B	From Leg	4.000		0.000	127.000	No Ice 8.262	6.304	0.074
AM-X-CD-16-65-00T-RET w/ Mount Pipe			0.000				1/2" Ice 8.822	7.479	0.139
(E)			2.000				1" Ice 9.346	8.368	0.212
800 10764 w/ Mount Pipe	C	From Leg	4.000		0.000	127.000	No Ice 5.712	4.294	0.064
(E)			0.000				1/2" Ice 6.127	4.992	0.112
			0.000				1" Ice 6.543	5.662	0.166
RRUS 11 B12	A	From Leg	4.000		0.000	127.000	No Ice 2.833	1.182	0.051
(E)			0.000				1/2" Ice 3.043	1.330	0.072
			3.000				1" Ice 3.259	1.485	0.095
RRUS 11 B12	B	From Leg	4.000		0.000	127.000	No Ice 2.833	1.182	0.051
(E)			0.000				1/2" Ice 3.043	1.330	0.072
			3.000				1" Ice 3.259	1.485	0.095
RRUS 11 B12	C	From Leg	4.000		0.000	127.000	No Ice 2.833	1.182	0.051
(E)			0.000				1/2" Ice 3.043	1.330	0.072
			3.000				1" Ice 3.259	1.485	0.095
LGP21401	A	From Leg	4.000		0.000	127.000	No Ice 1.104	0.207	0.014
(E)			0.000				1/2" Ice 1.239	0.274	0.021
			-2.000				1" Ice 1.381	0.348	0.030

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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

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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	177 - 129.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-24.199	0.036	1.069
			Max. Mx	8	-9.313	-402.427	0.038
			Max. My	2	-9.232	0.001	411.194
			Max. Vy	8	12.958	-402.427	0.038
			Max. Vx	14	13.336	-0.029	-411.062
L2	129.75 - 118.583	Pole	Max. Torque	30			0.033
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-33.735	-0.700	0.381
			Max. Mx	8	-13.871	-627.205	-0.344
			Max. My	14	-13.785	-0.293	-641.737
			Max. Vy	8	16.645	-627.205	-0.344
L3	118.583 - 106.417	Pole	Max. Vx	14	17.048	-0.293	-641.737
			Max. Torque	19			0.352
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.139	-1.403	-0.193
			Max. Mx	8	-17.557	-841.823	-0.556
			Max. My	14	-17.468	-0.604	-861.588
L4	106.417 - 84	Pole	Max. Vy	8	18.264	-841.823	-0.556
			Max. Vx	14	18.738	-0.604	-861.588
			Max. Torque	17			0.521
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.142	-2.463	-1.179
			Max. Mx	8	-25.754	-1180.421	-0.890
L5	84 - 39.25	Pole	Max. My	14	-25.672	-1.079	-1209.212
			Max. Vy	8	20.023	-1180.421	-0.890
			Max. Vx	14	20.587	-1.079	-1209.212
			Max. Torque	17			0.932
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.505	-4.906	-4.225
L6	39.25 - 0	Pole	Max. Mx	8	-69.548	-2160.515	-2.327
			Max. My	14	-69.502	-2.605	-2216.594
			Max. Vy	8	24.216	-2160.515	-2.327
			Max. Vx	16	27.276	1210.002	-2137.723
			Max. Torque	17			1.840
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-152.423	-7.849	-7.044
			Max. Mx	8	-111.872	-3282.060	-3.830
			Max. My	16	-111.860	1936.046	-3413.457
			Max. Vy	8	25.162	-3023.101	-3.497
			Max. Vx	16	28.632	1734.662	-3059.884
			Max. Torque	17			1.982

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	34	152.423	4.477	-7.822
	Max. H _x	20	111.893	25.006	0.020
	Max. H _z	4	111.893	-16.242	28.457
	Max. M _x	4	3410.061	-16.242	28.457

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. M _z	8	3282.060	-25.006	-0.020
	Max. Torsion	17	1.979	16.242	-28.457
	Min. Vert	19	83.920	20.701	-12.117
	Min. H _x	8	111.893	-25.006	-0.020
	Min. H _z	16	111.893	16.242	-28.457
	Min. M _x	16	-3413.456	16.242	-28.457
	Min. M _z	20	-3277.175	25.006	0.020
	Min. Torsion	5	-1.931	-16.242	28.457

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	93.244	0.000	0.000	1.307	-1.881	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	111.893	-0.020	-25.551	-3361.703	-0.333	-0.037
0.9 Dead+1.6 Wind 0 deg - No Ice	83.920	-0.020	-25.551	-3277.007	0.277	-0.038
1.2 Dead+1.6 Wind 30 deg - No Ice	111.893	16.242	-28.457	-3410.061	-1940.893	1.927
0.9 Dead+1.6 Wind 30 deg - No Ice	83.920	16.242	-28.457	-3328.208	-1893.570	1.931
1.2 Dead+1.6 Wind 60 deg - No Ice	111.893	20.701	-12.117	-1628.113	-2775.354	0.299
0.9 Dead+1.6 Wind 60 deg - No Ice	83.920	20.701	-12.117	-1586.890	-2703.882	0.303
1.2 Dead+1.6 Wind 90 deg - No Ice	111.893	25.006	0.020	3.830	-3282.060	0.392
0.9 Dead+1.6 Wind 90 deg - No Ice	83.920	25.006	0.020	3.327	-3198.347	0.397
1.2 Dead+1.6 Wind 120 deg - No Ice	111.893	20.772	12.180	1638.236	-2782.725	0.383
0.9 Dead+1.6 Wind 120 deg - No Ice	83.920	20.772	12.180	1595.963	-2711.110	0.387
1.2 Dead+1.6 Wind 150 deg - No Ice	111.893	12.575	22.067	2902.225	-1648.183	0.255
0.9 Dead+1.6 Wind 150 deg - No Ice	83.920	12.575	22.067	2828.269	-1605.889	0.257
1.2 Dead+1.6 Wind 180 deg - No Ice	111.893	0.020	25.551	3365.120	-4.571	0.041
0.9 Dead+1.6 Wind 180 deg - No Ice	83.920	0.020	25.551	3279.510	-3.874	0.041
1.2 Dead+1.6 Wind 210 deg - No Ice	111.893	-16.242	28.457	3413.456	1936.047	-1.977
0.9 Dead+1.6 Wind 210 deg - No Ice	83.920	-16.242	28.457	3330.694	1890.014	-1.979
1.2 Dead+1.6 Wind 240 deg - No Ice	111.893	-20.701	12.117	1631.541	2770.463	-0.346
0.9 Dead+1.6 Wind 240 deg - No Ice	83.920	-20.701	12.117	1589.400	2700.294	-0.349
1.2 Dead+1.6 Wind 270 deg - No Ice	111.893	-25.006	-0.020	-0.409	3277.175	-0.396
0.9 Dead+1.6 Wind 270 deg - No Ice	83.920	-25.006	-0.020	-0.823	3194.763	-0.401
1.2 Dead+1.6 Wind 300 deg - No Ice	111.893	-20.772	-12.180	-1634.824	2777.836	-0.339

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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
0.9 Dead+1.6 Wind 300 deg - No Ice	83.920	-20.772	-12.180	-1593.465	2707.523	-0.344
1.2 Dead+1.6 Wind 330 deg - No Ice	111.893	-12.575	-22.067	-2898.816	1643.284	-0.206
0.9 Dead+1.6 Wind 330 deg - No Ice	83.920	-12.575	-22.067	-2825.773	1602.295	-0.210
1.2 Dead+1.0 Ice+1.0 Temp	152.423	0.000	0.000	7.044	-7.849	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	152.423	-0.005	-8.673	-1160.534	-7.574	-0.041
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	152.423	4.477	-7.822	-1030.664	-600.520	0.347
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	152.423	6.674	-3.886	-544.402	-952.739	0.055
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	152.423	8.271	0.005	7.685	-1149.659	0.089
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	152.423	6.818	3.975	568.322	-968.237	0.099
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	152.423	4.313	7.526	1019.201	-586.118	0.081
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	152.423	0.005	8.673	1174.960	-8.514	0.041
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	152.423	-4.477	7.822	1045.091	584.439	-0.351
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	152.423	-6.674	3.886	558.835	936.657	-0.059
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	152.423	-8.271	-0.005	6.744	1133.581	-0.089
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	152.423	-6.818	-3.975	-553.898	952.158	-0.097
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	152.423	-4.313	-7.526	-1004.779	570.034	-0.079
Dead+Wind 0 deg - Service	93.244	-0.005	-5.947	-770.299	-1.531	-0.009
Dead+Wind 30 deg - Service	93.244	3.781	-6.624	-782.224	-447.269	0.038
Dead+Wind 60 deg - Service	93.244	4.818	-2.820	-372.444	-638.090	0.076
Dead+Wind 90 deg - Service	93.244	5.821	0.005	1.900	-754.397	0.094
Dead+Wind 120 deg - Service	93.244	4.835	2.835	376.814	-639.792	0.087
Dead+Wind 150 deg - Service	93.244	2.927	5.136	666.908	-379.623	0.056
Dead+Wind 180 deg - Service	93.244	0.005	5.947	773.124	-2.505	0.009
Dead+Wind 210 deg - Service	93.244	-3.781	6.624	785.049	443.233	-0.041
Dead+Wind 240 deg - Service	93.244	-4.818	2.820	375.269	634.054	-0.078
Dead+Wind 270 deg - Service	93.244	-5.821	-0.005	0.925	750.362	-0.094
Dead+Wind 300 deg - Service	93.244	-4.835	-2.835	-373.989	635.757	-0.085
Dead+Wind 330 deg - Service	93.244	-2.927	-5.136	-664.084	375.587	-0.053

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-93.244	0.000	0.000	93.244	0.000	0.000%
2	-0.020	-111.893	-25.551	0.020	111.893	25.551	0.000%
3	-0.020	-83.920	-25.551	0.020	83.920	25.551	0.000%
4	16.242	-111.893	-28.457	-16.242	111.893	28.457	0.000%
5	16.242	-83.920	-28.457	-16.242	83.920	28.457	0.000%
6	20.701	-111.893	-12.117	-20.701	111.893	12.117	0.000%
7	20.701	-83.920	-12.117	-20.701	83.920	12.117	0.000%
8	25.006	-111.893	0.020	-25.006	111.893	-0.020	0.000%
9	25.006	-83.920	0.020	-25.006	83.920	-0.020	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
10	20.772	-111.893	12.180	-20.772	111.893	-12.180	0.000%
11	20.772	-83.920	12.180	-20.772	83.920	-12.180	0.000%
12	12.575	-111.893	22.067	-12.575	111.893	-22.067	0.000%
13	12.575	-83.920	22.067	-12.575	83.920	-22.067	0.000%
14	0.020	-111.893	25.551	-0.020	111.893	-25.551	0.000%
15	0.020	-83.920	25.551	-0.020	83.920	-25.551	0.000%
16	-16.242	-111.893	28.457	16.242	111.893	-28.457	0.000%
17	-16.242	-83.920	28.457	16.242	83.920	-28.457	0.000%
18	-20.701	-111.893	12.117	20.701	111.893	-12.117	0.000%
19	-20.701	-83.920	12.117	20.701	83.920	-12.117	0.000%
20	-25.006	-111.893	-0.020	25.006	111.893	0.020	0.000%
21	-25.006	-83.920	-0.020	25.006	83.920	0.020	0.000%
22	-20.772	-111.893	-12.180	20.772	111.893	12.180	0.000%
23	-20.772	-83.920	-12.180	20.772	83.920	12.180	0.000%
24	-12.575	-111.893	-22.067	12.575	111.893	22.067	0.000%
25	-12.575	-83.920	-22.067	12.575	83.920	22.067	0.000%
26	0.000	-152.423	0.000	-0.000	152.423	-0.000	0.000%
27	-0.005	-152.423	-8.673	0.005	152.423	8.673	0.000%
28	4.477	-152.423	-7.822	-4.477	152.423	7.822	0.000%
29	6.674	-152.423	-3.886	-6.674	152.423	3.886	0.000%
30	8.271	-152.423	0.005	-8.271	152.423	-0.005	0.000%
31	6.818	-152.423	3.975	-6.818	152.423	-3.975	0.000%
32	4.313	-152.423	7.526	-4.313	152.423	-7.526	0.000%
33	0.005	-152.423	8.673	-0.005	152.423	-8.673	0.000%
34	-4.477	-152.423	7.822	4.477	152.423	-7.822	0.000%
35	-6.674	-152.423	3.886	6.674	152.423	-3.886	0.000%
36	-8.271	-152.423	-0.005	8.271	152.423	0.005	0.000%
37	-6.818	-152.423	-3.975	6.818	152.423	3.975	0.000%
38	-4.313	-152.423	-7.526	4.313	152.423	7.526	0.000%
39	-0.005	-93.244	-5.947	0.005	93.244	5.947	0.000%
40	3.781	-93.244	-6.624	-3.781	93.244	6.624	0.000%
41	4.818	-93.244	-2.820	-4.818	93.244	2.820	0.000%
42	5.821	-93.244	0.005	-5.821	93.244	-0.005	0.000%
43	4.835	-93.244	2.835	-4.835	93.244	-2.835	0.000%
44	2.927	-93.244	5.136	-2.927	93.244	-5.136	0.000%
45	0.005	-93.244	5.947	-0.005	93.244	-5.947	0.000%
46	-3.781	-93.244	6.624	3.781	93.244	-6.624	0.000%
47	-4.818	-93.244	2.820	4.818	93.244	-2.820	0.000%
48	-5.821	-93.244	-0.005	5.821	93.244	0.005	0.000%
49	-4.835	-93.244	-2.835	4.835	93.244	2.835	0.000%
50	-2.927	-93.244	-5.136	2.927	93.244	5.136	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00019933
3	Yes	5	0.00000001	0.00007739
4	Yes	7	0.00000001	0.00041086
5	Yes	7	0.00000001	0.00010048
6	Yes	7	0.00000001	0.00032511
7	Yes	7	0.00000001	0.00008284
8	Yes	5	0.00000001	0.00038213
9	Yes	5	0.00000001	0.00018314
10	Yes	7	0.00000001	0.00032932

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11	Yes	7	0.0000001	0.00008389
12	Yes	7	0.0000001	0.00033833
13	Yes	7	0.0000001	0.00008561
14	Yes	5	0.0000001	0.00025844
15	Yes	5	0.0000001	0.00010926
16	Yes	7	0.0000001	0.00040033
17	Yes	7	0.0000001	0.00009748
18	Yes	7	0.0000001	0.00032761
19	Yes	7	0.0000001	0.00008358
20	Yes	5	0.0000001	0.00029847
21	Yes	5	0.0000001	0.00013898
22	Yes	7	0.0000001	0.00032639
23	Yes	7	0.0000001	0.00008316
24	Yes	7	0.0000001	0.00033782
25	Yes	7	0.0000001	0.00008562
26	Yes	4	0.0000001	0.00021278
27	Yes	7	0.0000001	0.00025426
28	Yes	7	0.0000001	0.00063960
29	Yes	7	0.0000001	0.00056484
30	Yes	7	0.0000001	0.00025251
31	Yes	7	0.0000001	0.00058970
32	Yes	7	0.0000001	0.00061849
33	Yes	7	0.0000001	0.00025629
34	Yes	7	0.0000001	0.00062427
35	Yes	7	0.0000001	0.00056684
36	Yes	7	0.0000001	0.00024960
37	Yes	7	0.0000001	0.00056832
38	Yes	7	0.0000001	0.00059840
39	Yes	4	0.0000001	0.00044507
40	Yes	5	0.0000001	0.00063432
41	Yes	5	0.0000001	0.00045082
42	Yes	4	0.0000001	0.00045988
43	Yes	5	0.0000001	0.00046703
44	Yes	5	0.0000001	0.00048296
45	Yes	4	0.0000001	0.00044894
46	Yes	5	0.0000001	0.00062216
47	Yes	5	0.0000001	0.00046185
48	Yes	4	0.0000001	0.00045317
49	Yes	5	0.0000001	0.00045144
50	Yes	5	0.0000001	0.00047767

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 129.75	41.983	46	1.996	0.001
L2	133.5 - 118.583	24.641	46	1.721	0.001
L3	118.583 - 106.417	19.486	46	1.559	0.000
L4	106.417 - 84	15.659	46	1.444	0.000
L5	88.75 - 39.25	10.822	46	1.167	0.000
L6	45 - 0	2.756	46	0.557	0.000

Critical Deflections and Radius of Curvature - Service Wind

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSP18-C-A20 w/ Mount Pipe	46	41.983	1.996	0.001	42493
167.000	LNx-6515DS-A1M w/ Mount Pipe	46	37.828	1.952	0.001	21246
154.000	(2) LPA-80063/6CF w/ Mount Pipe	46	32.519	1.885	0.001	9237
127.000	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe	46	22.332	1.649	0.000	5207
117.000	APXV18-206517S-C w/ Mount Pipe	46	18.968	1.544	0.000	5381
79.000	8225	46	8.522	1.011	0.000	4160

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 129.75	182.129	16	8.684	0.006
L2	133.5 - 118.583	107.082	16	7.492	0.006
L3	118.583 - 106.417	84.735	16	6.787	0.006
L4	106.417 - 84	68.127	16	6.289	0.006
L5	88.75 - 39.25	47.111	16	5.083	0.004
L6	45 - 0	12.005	16	2.428	0.002

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSP18-C-A20 w/ Mount Pipe	16	182.129	8.684	0.006	10169
167.000	LNx-6515DS-A1M w/ Mount Pipe	16	164.155	8.496	0.006	5083
154.000	(2) LPA-80063/6CF w/ Mount Pipe	16	141.187	8.204	0.007	2206
127.000	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe	16	97.076	7.179	0.006	1232
117.000	APXV18-206517S-C w/ Mount Pipe	16	82.488	6.724	0.006	1268
79.000	8225	16	37.109	4.407	0.004	970

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	177 - 129.75 (1)	TP30.268x22x0.219	47.250	0.000	0.0	20.408	-9.124	1385.780	0.007
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	14.917	0.000	0.0	25.023	-13.640	1737.500	0.008

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L3	118.583 - 106.417 (3)	TP33.913x31.785x0.38	12.166	0.000	0.0	40.483	-17.197	2007.170	0.009
L4	106.417 - 84 (4)	TP37.836x33.913x0.25	22.417	0.000	0.0	29.165	-25.284	1911.670	0.013
L5	84 - 39.25 (5)	TP45.167x36.505x0.313	49.500	0.000	0.0	43.492	-69.098	2905.090	0.024
L6	39.25 - 0 (6)	TP51.41x43.536x0.375	45.000	0.000	0.0	60.744	-111.860	4105.250	0.027

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	177 - 129.75 (1)	TP30.268x22x0.219	411.546	837.933	0.491	0.000	837.933	0.000
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	642.373	1126.608	0.570	0.000	1126.608	0.000
L3	118.583 - 106.417 (3)	TP33.913x31.785x0.38	869.167	1379.275	0.630	0.000	1379.275	0.000
L4	106.417 - 84 (4)	TP37.836x33.913x0.25	1249.150	1446.358	0.864	0.000	1446.358	0.000
L5	84 - 39.25 (5)	TP45.167x36.505x0.313	2456.417	2621.325	0.937	0.000	2621.325	0.000
L6	39.25 - 0 (6)	TP51.41x43.536x0.375	3924.275	4310.425	0.910	0.000	4310.425	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	177 - 129.75 (1)	TP30.268x22x0.219	13.331	692.888	0.019	0.023	1677.917	0.000
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	17.119	868.749	0.020	0.344	2255.975	0.000
L3	118.583 - 106.417 (3)	TP33.913x31.785x0.38	19.840	1003.590	0.020	0.519	2761.925	0.000
L4	106.417 - 84 (4)	TP37.836x33.913x0.25	23.189	955.834	0.024	0.930	2896.250	0.000
L5	84 - 39.25 (5)	TP45.167x36.505x0.313	31.388	1452.540	0.022	1.838	5249.050	0.000
L6	39.25 - 0 (6)	TP51.41x43.536x0.375	32.879	2052.620	0.016	1.977	8631.417	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	177 - 129.75 (1)	0.007	0.491	0.000	0.019	0.000	0.498	1.000	4.8.2 ✓

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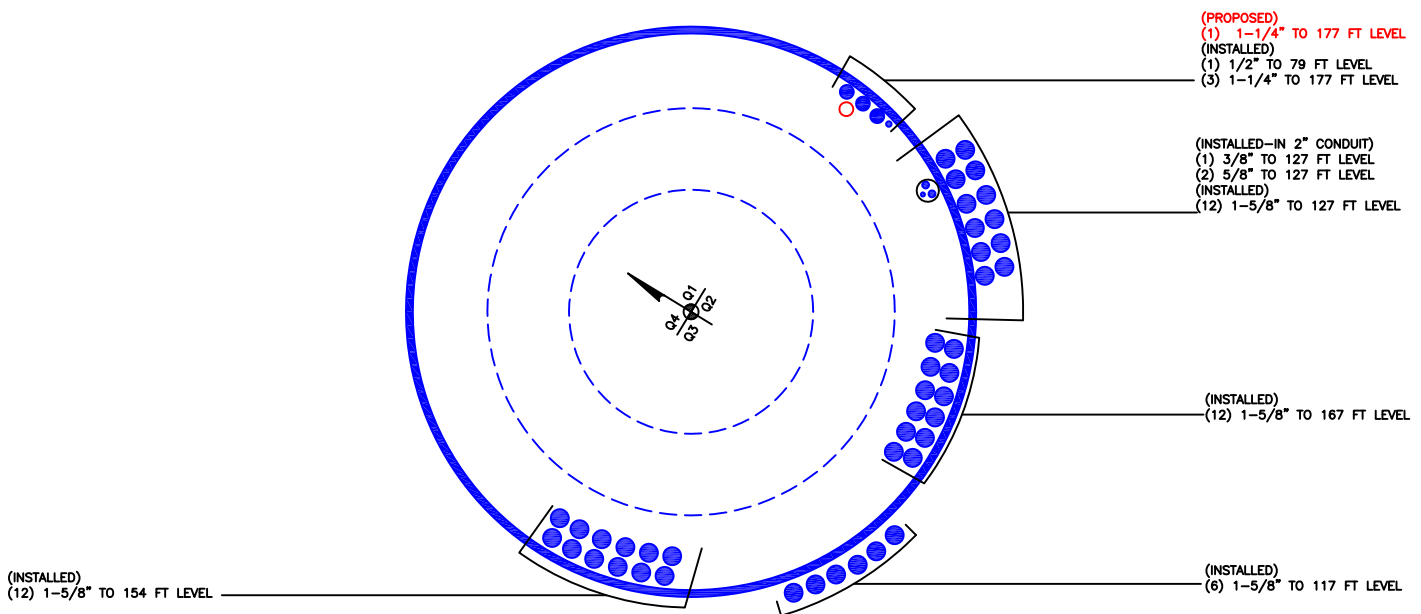
Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L2	129.75 - 118.583 (2)	0.008	0.570	0.000	0.020	0.000	0.578	1.000	4.8.2 ✓
L3	118.583 - 106.417 (3)	0.009	0.630	0.000	0.020	0.000	0.639	1.000	4.8.2 ✓
L4	106.417 - 84 (4)	0.013	0.864	0.000	0.024	0.000	0.877	1.000	4.8.2 ✓
L5	84 - 39.25 (5)	0.024	0.937	0.000	0.022	0.000	0.961	1.000	4.8.2 ✓
L6	39.25 - 0 (6)	0.027	0.910	0.000	0.016	0.000	0.938	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	177 - 129.75	Pole	TP30.268x22x0.219	1	-9.124	1385.780	**	**
L2	129.75 - 118.583	Pole	TP31.785x29.174x0.25	2	-13.640	1737.500	**	**
L3	118.583 - 106.417	Pole	TP33.913x31.785x0.38	3	-17.197	2007.170	**	**
L4	106.417 - 84	Pole	TP37.836x33.913x0.25	4	-25.284	1911.670	**	**
L5	84 - 39.25	Pole	TP45.167x36.505x0.313	5	-69.098	2905.090	**	**
L6	39.25 - 0	Pole	TP51.41x43.536x0.375	6	-111.860	4105.250	**	**
Summary								
Pole (L5)							**	**
RATING =							**	**

** See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 876376

APPENDIX C
ADDITIONAL CALCULATIONS

Reinforcement 1						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
106.417	118.583	3	MP304	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

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

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

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Section				Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.	Bottom Elevation Failure	Top Elevation Failure	Section Failure %		
																Top Height	Length	Lap Splice	# of Sides								
129.7500	177.0000	0.2188	65	80	49.8%										49.8%	177.0000	47.2500	3.7500	18	22.0000	30.2680	0.2188	65.0	1.00			
118.5830	133.5000	0.2500	65	80	57.8%										57.8%	133.5000	14.9170	0.0000	18	29.1743	31.7845	0.2500	65.0	1.00			
106.4170	118.5830	0.2500	65	80	53.7%	3	MP304	63.9%							63.9%	118.5830	12.1660	0.0000	18	31.7845	33.9134	0.3804	42.1	0.97			
84.0000	106.4170	0.2500	65	80	87.7%										87.7%	106.4170	22.4170	4.7500	18	33.9134	37.8360	0.2500	65.0	1.00			
39.2500	88.7500	0.3125	65	80	96.1%										96.1%	88.7500	49.5000	5.7500	18	36.5048	45.1670	0.3125	65.0	1.00			
0.0000	45.0000	0.3750	65	80	93.8%										93.8%	45.0000	45.0000	0.0000	18	43.5358	51.4100	0.3750	65.0	1.00			

Reinforcement Capacity



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720-304-6882

Dimensions and Properties														Compression				Axial				
Model	Weight (lb/ft)	Area (in ²)	Moment of Inertia (in ⁴)	Moment of Inertia (in ⁴)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
<i>Model</i>	<i>Wt</i>	<i>A</i>	<i>I_x</i>	<i>I_y</i>	<i>Y</i>	<i>X</i>	<i>T_w</i>	<i>W</i>	<i>W_f</i>	<i>T_f</i>	<i>D_h</i>	<i>F_y</i>	<i>F_u</i>	<i>K_x</i>	<i>L_x</i>	<i>K_y</i>	<i>L_y</i>	<i>P_{all}</i>	<i>P_{all,inc}</i>	<i>P_{type,ASD}</i>	<i>phiP_n</i>	<i>P_{type,LRFD}</i>
MP304	14.1	4.13	0.91	11.86	0.61	0	0.43	4.78	1.61	0.84	1.21875	65	80	0.80	18	1.00	18	137.3	183.1	Rupture	206.0	Rupture
4-1/2" SR	54.1	15.90	20.13	20.13	3	0	0	4.5				50	65	0.80	33	1.00	33	433.2	577.5	Compress.	672.1	Compress.
4-1/4" SR Lu=33"	48.3	14.19	16.0	16.0	3.0	0	0	4.25				50	65	0.80	33	1.00	33	383.3	511.1	Compress.	594.9	Compress.
4-1/4" SR Lu=66"	48.3	14.19	16.0	16.0	3.0	0	0	4.25				50	65	0.80	66	1.00	66	317.1	422.8	Compress.	481.5	Compress.
4" SR	42.8	12.57	12.6	12.6	3	0	0	4				50	65	0.80	66	1.00	66	272.3	363.0	Compress.	314.8	Yielding

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

Site Information	
ID:	876376
Name:	SCOVILLE HILL - HARWINTON ROD
App. #:	399364 Revision # 0



Base Reactions	
Moment:	3924 ft-kip
Axial:	112 kip
Shear:	33 kip
Base Plate Type:	Square

Design Information	
TIA Code:	G
ASIF:	1.000
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data	
Quantity:	16
Diameter:	2.25 in
Material:	A615 GR 75
Bolt Circle:	58.0 in
Bolt Spacing:	6 in
Bolt Group Area:	63.62 in ²
Bolt Group MOIx:	26751 in ⁴
<u>Reactions Seen by Original AR Group</u>	
Moment:	3409.6 kip-ft
Axial:	111.9 kip
Shear:	32.9 kip
<u>Original AR Capacity Check</u>	
Combined Load:	187.5 kip
Allowable load:	259.8 kip
AR Capacity:	72.2% Pass

First Added Anchor Rod Data	
Quantity:	3
Diameter:	1.75 in
Material:	A772
Bolt Circle:	66.9 in
Bolt Group Area:	7.22 in ²
Bolt Group MOIx:	4038 in ⁴
<u>Reactions Seen by First Added AR Group</u>	
Moment:	514.7 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>First Added AR Capacity Check</u>	
Combined Load:	122.4 kip
Allowable load:	227.9 kip
AR Capacity:	53.7% Pass

Second Added Anchor Rod Data	
Quantity:	
Diameter:	
Material:	
Bolt Circle:	
Bolt Group Area:	0.00 in ²
Bolt Group MOIx:	0 in ⁴
<u>Reactions Seen by Second Added AR Group</u>	
Moment:	0.0 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>Second Added AR Capacity Check</u>	
Combined Load:	0.0 kip
Allowable load:	0.0 kip
AR Capacity:	0.0%

Third Added Anchor Rod Data	
Quantity:	
Diameter:	
Material:	
Bolt Circle:	
Bolt Group Area:	0.00 in ²
Bolt Group MOIx:	0 in ⁴
<u>Reactions Seen by Second Added AR Group</u>	
Moment:	0.0 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>Second Added AR Capacity Check</u>	
Combined Load:	0.0 kip
Allowable load:	0.0 kip
AR Capacity:	0.0%

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

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

Site Data

BU#:	876376
Site Name:	SCOVILLE HILL - HARWIN
App #:	399364 Revision # 0

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

Plate Data

W=Side:	57	in
Thick:	2.75	in
Grade:	55	ksi
Clip Distance:	12	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened
Weld Type:	**
Groove Depth:	in **
Groove Angle:	degrees
Fillet H. Weld:	<-- Disregard
Fillet V. Weld:	in
Width:	in
Height:	in
Thick:	in
Notch:	in
Grade:	ksi
Weld str.:	ksi

Pole Data

Diam:	51.41	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, M_u :	3409.59393	ft-kips
Factored Axial, P_u :	111.8595	kips
Factored Shear, V_u :	32.878884	kips

Anchor Rod Results

TIA G --> Max Rod ($C_u + V_u/\eta$):	187.5 Kips
Axial Design Strength, $\Phi * F_u * A_{net}$:	260.0 Kips
Anchor Rod Stress Ratio:	72.1% Pass

Base Plate Results

Base Plate Stress:	32.8 ksi
PL Design Bending Strength, $\Phi * F_y$:	49.5 ksi
Base Plate Stress Ratio:	66.3% Pass

Flexural Check

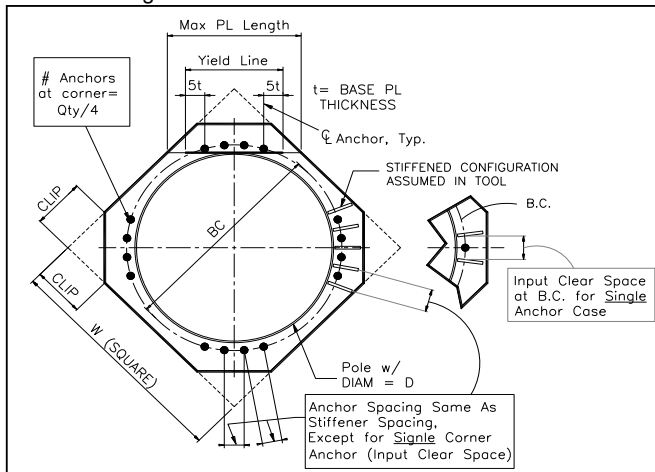
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$:	N/A
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A
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** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PROJECT	876376 - Scoville Hill/Harwinton Rod, CT		
SUBJECT	Foundation Analysis		
DATE	09-01-17	PAGE	1 OF 1

Monopole Pad & Pier Foundation Analysis

Rev. Type: **G**

Design Loads:

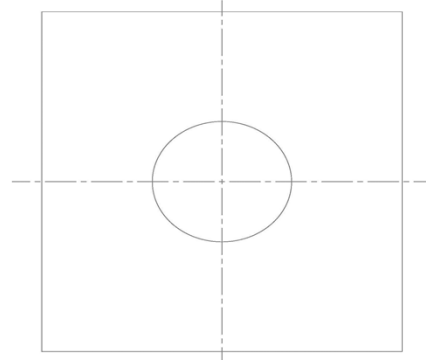
Input factored loads

Shear:	<u>33.0</u>	kips
Moment:	<u>3,924.0</u>	ft-kips
Tower Height:	<u>177.0</u>	ft
Tower Weight:	<u>112.0</u>	kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	<u>51.41</u>	in
Bearing Depth:	<u>3.5</u>	ft
Pad Width:	<u>24.5</u>	ft
Neglected Depth:	<u>3.3</u>	ft
Thickness:	<u>4.0</u>	ft

24.5 FT



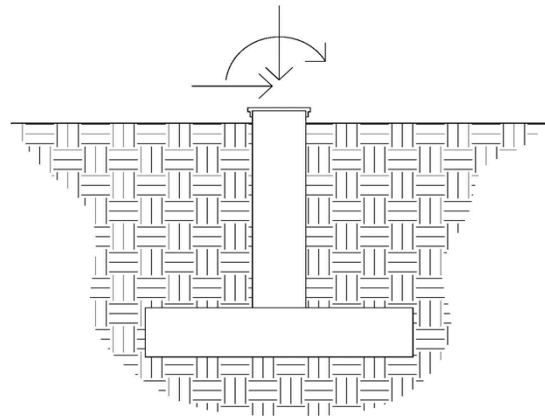
24.5 FT

BP Dist. Above Pier:	<u>3.0</u>	in
Clear Cover:	<u>3.0</u>	in

Pad Rebar Size:	<u>9</u>
Pad Rebar Quantity:	<u>26</u>

Rebar Yield Strength:	<u>60000</u>	psi
Concrete Strength:	<u>3000</u>	psi
Concrete Unit Weight:	<u>0.15</u>	kcf

Elevation Overview



Soil Data:

Allowable Values

Soil Unit Weight:	<u>0.125</u>	kcf
Ult. Bearing Capacity:	<u>40.000</u>	ksf
Angle of Friction:	<u>30.000</u>	deg
Cohesion:	<u>0.000</u>	ksf
Passive Pressure:	<u>0.000</u>	ksf
Base Friction:	<u>0.700</u>	

** Notes:

Summary of Results

Overturning	89.3%
Shear Capacity	14.4%
Bearing	9.7%
Pad Shear - 1-way	40.5%
Pad Shear - 2-way	11.0%
Pad Moment Capacity	60.4%



[ASCE 7 Windspeed](#)
[ASCE 7 Ground Snow Load](#)
[Related Resources](#)
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[About ATC](#)
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Search Results

Query Date: Tue Aug 01 2017

Latitude: 41.7368

Longitude: -73.0971

**ASCE 7-10 Windspeeds
(3-sec peak gust in mph*):**

Risk Category I: 107

Risk Category II: 118

Risk Category III-IV: 126

MRI 10-Year:** 76

MRI 25-Year:** 85

MRI 50-Year:** 90

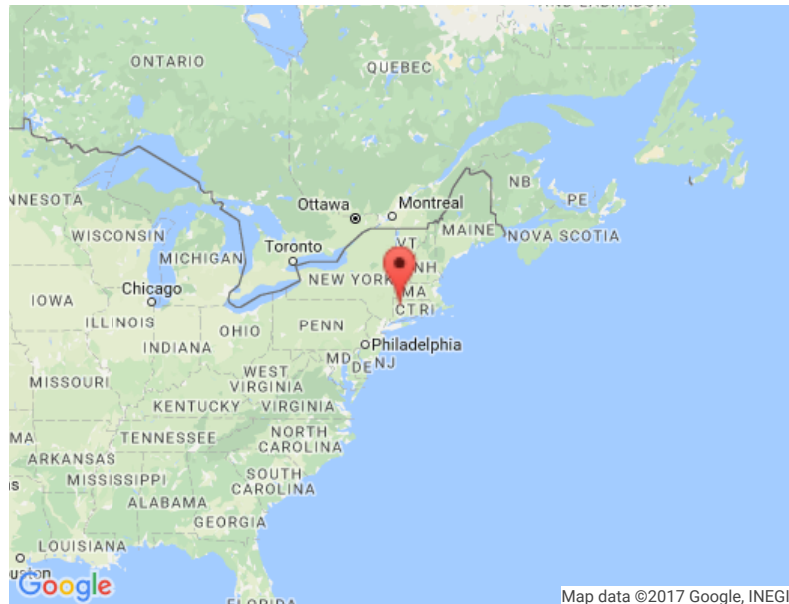
MRI 100-Year:** 96

ASCE 7-05 Windspeed:

96 (3-sec peak gust in mph)

ASCE 7-93 Windspeed:

77 (fastest mile in mph)



*Miles per hour

**Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.



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

SPRINT Existing Facility

Site ID: CT33XC111

Scoville Hill/Harwinton Rod & Gun
123 Campville Hill Road
Harwinton, CT 06791

September 21, 2017

EBI Project Number: 6217004142

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	7.40 %



September 21, 2017

SPRINT

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

Emissions Analysis for Site: **CT33XC111 – Scoville Hill/Harwinton Rod & Gun**

EBI Consulting was directed to analyze the existing and proposed SPRINT facility located at **123 Campville Hill Road, Harwinton, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is $1000 \mu\text{W}/\text{cm}^2$. 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 **123 Campville Hill Road, Harwinton, 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 APXVSP18-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 **177 feet** above ground level (AGL) for **Sector A**, **177 feet** above ground level (AGL) for **Sector B** and **177 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 APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 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%	1.05 %	Antenna B1 MPE%	1.05 %	Antenna C1 MPE%	1.05 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 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%	0.77 %	Antenna B2 MPE%	0.77 %	Antenna C2 MPE%	0.77 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	1.82 %
MetroPCS	0.55 %
T-Mobile	0.89 %
Verizon Wireless	2.01 %
AT&T	2.13 %
Site Total MPE %:	7.40 %

SPRINT Sector A Total:	1.82 %
SPRINT Sector B Total:	1.82 %
SPRINT Sector C Total:	1.82 %
Site Total:	7.40 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	177	0.54	850 MHz	567	0.09%
Sprint 850 MHz LTE	2	437.55	177	1.08	850 MHz	567	0.19%
Sprint 1900 MHz (PCS) CDMA	5	622.47	177	3.83	1900 MHz (PCS)	1000	0.38%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	177	3.83	1900 MHz (PCS)	1000	0.38%
Sprint 2500 MHz (BRS) LTE	8	778.09	177	7.65	2500 MHz (BRS)	1000	0.77%
						Total:*	1.82%

*NOTE: Totals may vary by 0.01% due to summing of remainders



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:	1.82 %
Sector B:	1.82 %
Sector C:	1.82 %
SPRINT Maximum Total (per sector):	1.82 %
Site Total:	7.40 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **7.40 %** 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.