



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

September 26, 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: 807133
Sprint Site ID: CT43XC860
50 Rockland Road, Norwalk, CT 06854
Latitude: 41° 4' 54.44" / Longitude: -73° 25' 49.52"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 148-foot level of the existing 180-foot self-support tower at 50 Rockland Road in Norwalk, CT. The tower and property is owned by Crown Castle. Sprint now intends to install three (3) antennas, one (1) hybrid, and three (3) new RRHs.

This facility was approved by the by the Connecticut Siting Council in Docket No. 73 on April 1, 1987. This approval included the conditions that:

1. The Norwalk Tower, including antennas, shall be no taller than necessary to provide the proposed service, and in no event shall exceed 193 feet.
2. A fence not lower than eight feet shall surround the Norwalk tower.
3. Unless necessary to comply with condition number four, below, no light shall be installed on the Norwalk tower.
4. The facilities shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Harry Rilling, Mayor, City of Norwalk, Planning and Zoning, , and Crown Castle is 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.

The Foundation for a Wireless World.

CrownCastle.com

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3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments:

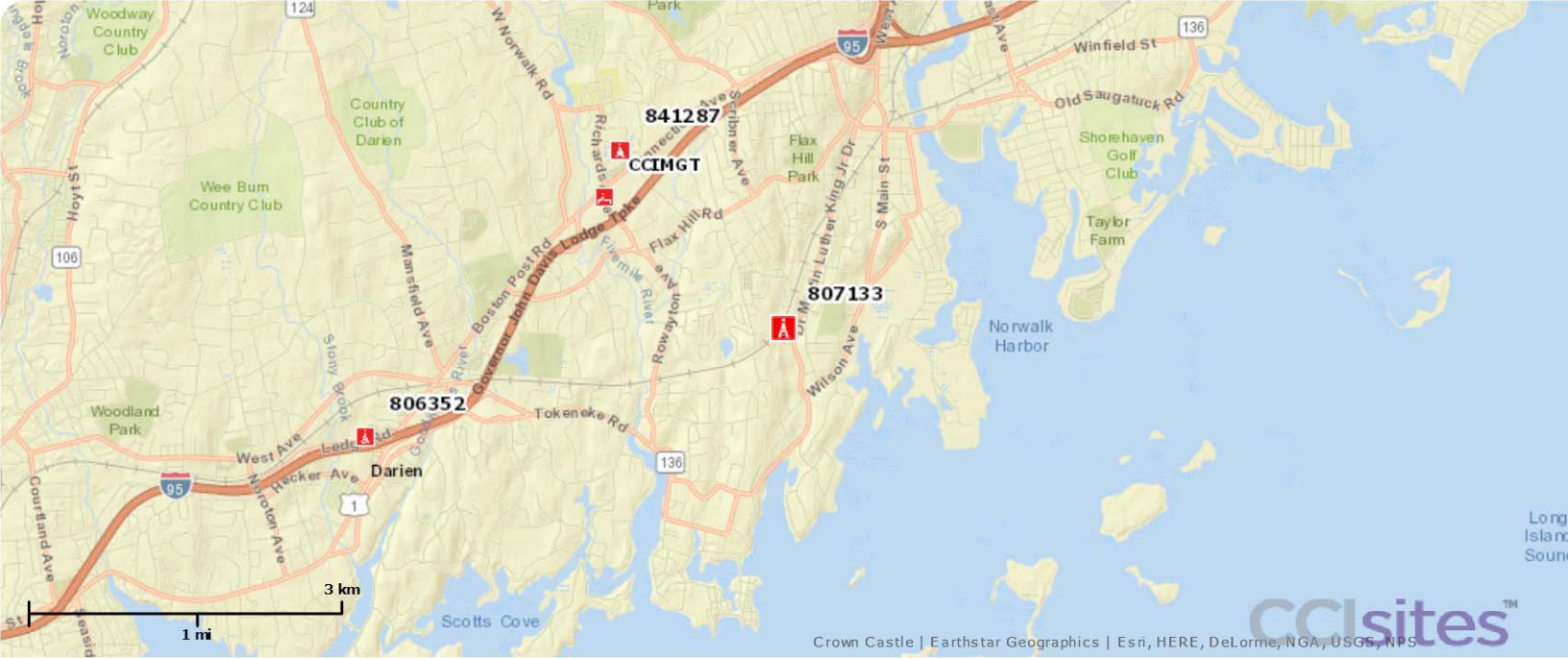
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Harry Rilling, Mayor
City of Norwalk
125 East Avenue PO Box 5125
Norwalk, CT 06856

Planning and Zoning
125 East Avenue Room 223
Norwalk, CT 06856



50 ROCKLAND RD

Location 50 ROCKLAND RD

Mblu 5/ 82/ 58/ 0/

Acct# 25665

Owner CROWN ATLANTIC COMPANY
LLC

Assessment \$1,007,240

Appraisal \$1,438,900

PID 25665

Building Count 1

Assessing Distr...

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$991,370	\$447,530	\$1,438,900
Assessment			
Valuation Year	Improvements	Land	Total
2015	\$693,970	\$313,270	\$1,007,240

Owner of Record

Owner CROWN ATLANTIC COMPANY LLC
Co-Owner
Address PMB 353
4017 WASHINGTON RD
McMURRAY, PA 15317-0000

Sale Price \$1,600,000
Certificate
Book & Page 3701/331
Sale Date 04/16/1999

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CROWN ATLANTIC COMPANY LLC	\$1,600,000		3701/331	04/16/1999
CELLCO PARTNERSHIP, DEVIVO MARIO + WENCHE	\$1,020,000 \$0		3489/348 0/0	04/03/1998

Building Information

Building 1 : Section 1

Year Built: 1987
Living Area: 21,115
Replacement Cost: \$1,084,957
Building Percent Good: 47
Replacement Cost Less Depreciation: \$509,930

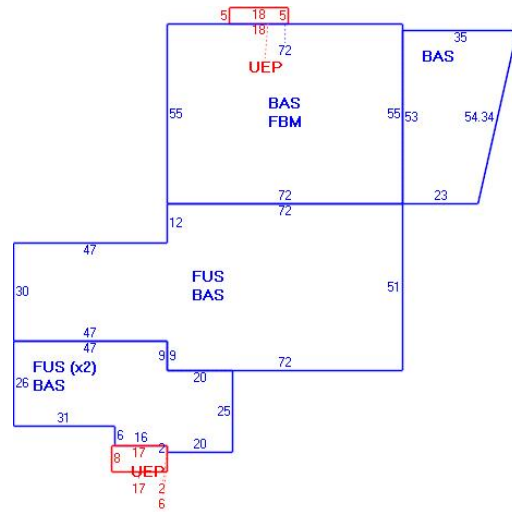
Building Photo

Building Attributes	
Field	Description
STYLE	Light Indust
MODEL	Industrial
Stories:	3.00
Occupancy	1.00
Exterior Wall 1	Concrete
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Concrete
Heating Fuel	Gas
Heating Type	Forced Air
AC Percent	60
Heat Percent	100
Bldg Use	Industrial
Total Rooms	0
Bedrooms	0
FBM Area	
Heat/AC	Heat/AC Pkg
Frame	Masonry
Plumbing	Average
Foundation	Slab
Partitions	Average
Wall Height	13.00
% Sprinkler	40.00



(<http://images.vgsi.com/photos/NorwalkCTPhotos//00\00\72\74.jpg>)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	12,397	12,397
FUS	Finished Upper Story	8,718	8,718
FBM	Finished Basement	3,960	0
UEP	Utility Enclosed Porch	226	0
		25,301	21,115

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
ELV1	Pass Elevator	1.00 UNITS	\$21,150	1
A/C	Air Conditioning	12669.00 S.F.	\$14,890	1
SPR	Sprinklers	8446.00 S.F.	\$7,940	1
ELVS	Elevator per stop	1.00 UNITS	\$3,760	1

Land

Land Use

Use Code 301
Description Industrial
Zone RI
Neighborhood C530

Land Line Valuation

Size (Acres) 0.82
Frontage
Depth
Assessed Value \$313,270
Appraised Value \$447,530

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph.			16900.00 S.F.	\$17,750	1
FN6	Fence 6'			450.00 L.F.	\$3,150	1
SHD4	Cell Equip	FR	Frame	128.00 S.F.	\$6,400	1
CEL1	Cell Tower			5.00 UNITS	\$400,000	1
SHD4	Cell Equip	FR	Frame	128.00 S.F.	\$6,400	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$991,370	\$447,530	\$1,438,900
2013	\$991,370	\$447,530	\$1,438,900
2012	\$560,200	\$461,300	\$1,021,500

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$693,970	\$313,270	\$1,007,240
2013	\$693,970	\$313,270	\$1,007,240
2012	\$392,140	\$322,910	\$715,050

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DOCKET NO. 73

AN APPLICATION OF METRO MOBILE CTS OF
FAIRFIELD COUNTY, INC., FOR CERTIFICATES
OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC
NEED FOR THE CONSTRUCTION, MAINTENANCE,
AND OPERATION OF THREE FACILITIES
CONSISTING OF TELECOMMUNICATIONS TOWERS
AND ASSOCIATED EQUIPMENT FOR THE PURPOSE
OF PROVIDING DOMESTIC PUBLIC CELLULAR
RADIO TELECOMMUNICATIONS SERVICE IN THE
TOWN OF GREENWICH AND IN THE CITIES OF
NORWALK AND STAMFORD, CONNECTICUT.

: CONNECTICUT SITING
COUNCIL

:
April 1, 1987

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Metro Mobile CTS of Fairfield County, Inc., for the construction, operation, and maintenance of cellular mobile telecommunications equipment in the Town of Greenwich, and the Cities of Norwalk and Stamford, Connecticut.

The facilities shall be constructed, operated, and maintained as specified in the Council's record on this matter, and subject to the following conditions.

1. The Norwalk tower, including antennas, shall be no taller than necessary to provide the proposed service, and in no event shall exceed 193 feet.
2. A fence not lower than eight feet shall surround the Norwalk tower.
3. Unless necessary to comply with condition number four, below, no lights shall be installed on the Norwalk tower.
4. The facilities shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

5. The certificate holder shall prepare a development and management (D&M) plan for the Norwalk site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall provide for evergreen screening around the perimeter of the fence at this site, and for other landscaping to improve the appearance of the facility.
6. The receive antennas at the Greenwich and Stamford sites shall be mounted below the high points of the facades of their respective buildings to minimize their visibility.
7. No construction activities shall take place outside the hours of 7:00 A.M. to 7:00 P.M., Monday through Saturday.
8. The certificate holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in this application is added to these facilities.
9. The certificate holder or its successor shall permit public or private entities to share space on the Norwalk tower, for due consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
10. If these facilities do not provide or permanently cease to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

11. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision.
12. The certificate holder shall comply with any future radio frequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this Decision shall continue to be in compliance with such standards.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of the issuance shall be published in the Stamford Advocate, the Greenwich Times, the Norwalk Hour, and the Bridgeport Post.

The parties to the proceeding are:

Mr. Armand Mascioli
General Manager
Metro Mobile CTS of Fairfield
County, Inc.
5 Eversley Avenue
Norwalk, Connecticut 06855

(Applicant)

Howard L. Slater, Esquire
Byrne, Slater, Sandler,
Shulman & Rouse, P.C.
330 Main Street
P.O. Box 3216
Hartford, Connecticut 06103

(its attorney)

Richard Rubin, Esquire
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D.C. 20036

(its attorney)

Southern New England
Telephone Company

(its attorney)

Mr. Peter J. Tyrrell
Senior Attorney
Southern New England
Telephone Company
227 Church Street
New Haven, Connecticut 06506

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:


Dated at New Britain, Connecticut, this 1st day of April, 1987.

<u>Council Members</u>	<u>Vote Cast</u>
<u>Gloria Dibble Pond</u>) Gloria Dibble Pond Chairperson	Yes
<u>[Signature]</u>) Commissioner John Downey Designee: Commissioner Peter G. Boucher	Yes
<u>Brian J. Emerick</u>) Acting Commissioner John Anderson Designee: Brian Emerick	Yes
<u>Gwen L. Clark</u>) Gwen L. Clark	Yes
<u>Fred J. Doocy</u>) Fred J. Doocy	Yes
<u>Mortimer A. Gelston</u>) Mortimer A. Gelston	Yes
<u>James G. Horsfall</u>) James G. Horsfall	Absent
<u>William H. Smith</u>) William H. Smith	Absent
<u>Colin C. Tait</u>) Colin C. Tait	Yes

STATE OF CONNECTICUT)
 :
COUNTY OF HARTFORD) ss. New Britain, April 1, 1987

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.


ATTEST:



John C. Kelly
Executive Director
Connecticut Siting Council

I certify that a copy of the opinion and decision and order have been forwarded by mail to all parties of record on April 3, 1987.

ATTEST:



Robert K. Erling
Siting Analyst
Connecticut Siting Council

Confirm azimuths with final RFDS - RFDS supersedes CD's



2.5 EQUIPMENT DEPLOYMENT

SITE NUMBER:
CT43XC860

SITE NAME:

SOUTH NORWALK-CROWN TOWER

SITE ADDRESS:

50 ROCKLAND ROAD
NORWALK, CT 06854

APPROVED

By Craig Koppang at 3:04 pm, Aug 14, 2017

APPROVED

By Susan Vale at 3:15 pm, Feb 11, 2015

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



TECTONIC

TECTONIC Engineering & Surveying
Consultants P.C.

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

www.tectonicengineering.com

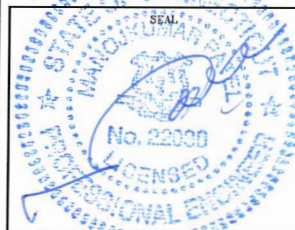
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SUBMITTALS

PROJECT NO: 7225.CT43XC860

NO	DATE	DESCRIPTION	BY
0	7/8/14	FOR COMMENT	JT
1	7/17/14	PER COMMENTS	MP
2	2/4/15	FOR CONSTRUCTION	DC
3	2/11/15	PER COMMENTS	MP

DATE	REVIEWED BY
2/11/15	JMQ



SITE NUMBER:
CT43XC860

SITE NAME:
SOUTH NORWALK-CROWN
TOWER

SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-1

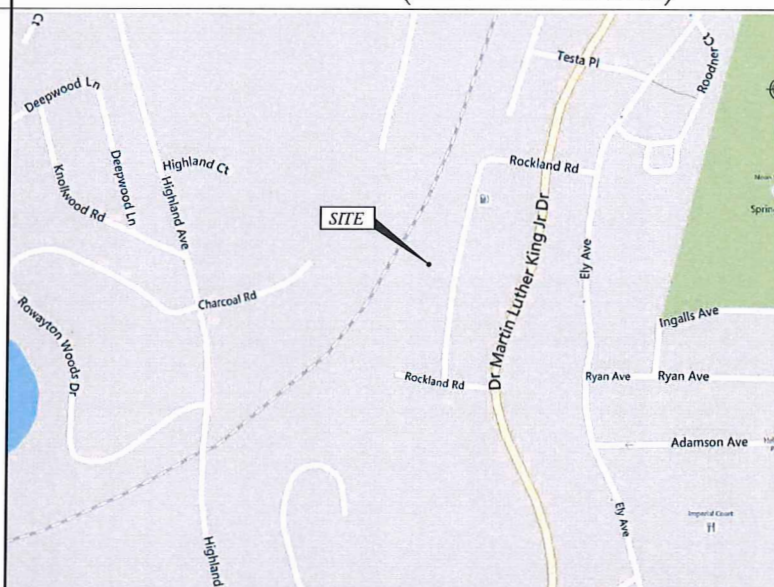
CROWN ID#: 807133

CROWN SITE NAME: BRG 134 943057

SHEET INFORMATION

SITE NUMBER:	CT43XC860	LANDLORD:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
SITE NAME:	SOUTH NORWALK-CROWN TOWER	LOCAL POWER COMPANY:	CONNECTICUT LIGHT AND POWER CONTACT CUSTOMER SERVICE (800) 286-2000
SITE ADDRESS:	50 ROCKLAND ROAD NORWALK, CT 06854	APPLICANT:	SPRINT 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251
COUNTY:	FAIRFIELD	ENGINEER:	JAMES QUICKSELL (845) 567-6656 EXT. 2835 JQuicksell@tectonicengineering.com
COORDINATES: (NAD 83)	41° 4' 54.44" N 73° 25' 49.52" W	SPRINT CM:	PETER CULBERT (603) 203-6446 Peter.Culbert@sprint.com
GROUND ELEV:	49'± AMSL	CROWN CM:	JASON D'AMICO (860) 209-0104 jason.d'amico@crowncastle.com
STRUCTURE TYPE:	SELF SUPPORT TOWER	AAV:	AT&T
STRUCTURE HEIGHT:	180'-0"± AGL		
STRUCTURE RAD CENTER:	145'-0"± AGL (EXIST) 148'-0"± AGL (PROPOSED)		
ZONING CLASSIFICATION:	OS60		
PARCEL ID:	025-036		

VICINITY MAP (NOT TO SCALE)



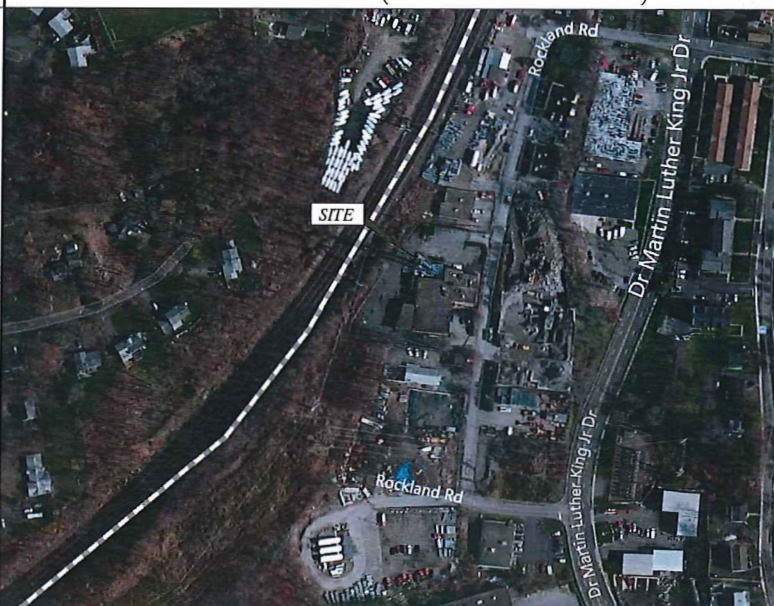
SHEET INDEX

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

GENERAL NOTES

- 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.
 - BUILDING CODE OF CONNECTICUT, LATEST EDITION.
 - 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 ALU 9929 EXPANSION CABINET.
- (3) NEW RFS APXVTM14-C-120 ANTENNAS.
- (3) NEW TD-RRH8x20-25 RRH.
- (1) NEW 5/8" FIBER CABLE.
- (3) NEW SITE PRO VFA12-U ANTENNA MOUNTS.



DIVISION 01000—GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED TO CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATION OF ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER.
14. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
16. THE CONTRACTOR SHALL NOTIFY THE THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SWEEP TESTS.
17. THE CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS-BUILT DRAWINGS TO THE CLIENT REPRESENTATIVE.
18. REFER TO: CONSTRUCTION STANDARDS—SPRINT DOCUMENT EXHIBIT A—STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV. 4.0— 02.15.2011.DOCM.
19. REFER TO: WEATHER PROOFING SPECS: EXCERPT EXH A—WHRPRF—STD CONSTR SPECS...157201110421855492.DOCM.
20. REFER TO: COLOR CODING—SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF
21. REFER TO LATEST DOCUMENTATION REVISION.

DIVISION 03000—CONCRETE

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

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ARCHITECT/ENGINEER AS DIRECTED BY THE CLIENT'S REPRESENTATIVE.
- 3.04 SURFACE FINISHES
 - A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.
 - B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINS AND THE FILLING HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.
 - C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSED TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OR SURFACES SUCH AS STAIR TREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 1/4" PER FOOT.
 - D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.
 - E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREENED, FLOATED, AND STEEL TROWELED. HAND OR POWER-DRIVEN EQUIPMENT MAY BE USED FOR FLOATING. FLOATING SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. OPERATIONS. ALL EDGES MUST HAVE A 3/4" CHAMFER.
- 1.04 QUALITY ASSURANCE CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.
- 3.05 PATCHING

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

THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.
- 3.07 PROTECTION
 - A. IMMEDIATELY AFTER PLACEMENT. THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.
 - B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
 - C. ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE (LATEST EDITION)

DIVISION 05000 — METALS

- PART 1 — GENERAL
 - 1.01 WORK INCLUDED
 - A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED, AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDING ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK AND ALL ITEMS INCIDENTAL AS SPECIFIED AND AS SHOWN ON THE DRAWINGS:
 1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.
 2. WELDING AND BOLTING OF ATTACHMENTS.
- 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 SLIP CRITICAL JOINTS WITH CLASS A SURFACE CONDITIONS, UNLESS OTHERWISE NOTED.
 - J. EPOXY ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

BASE MATERIAL	ANCHOR SYSTEM
CONCRETE	HILTI HIT-HY 200
HOLLOW & GROUTED CMU OR BRICK	HILTI HIT-HY 70
- 2.04 FABRICATION
 - A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS

- 2.05 FINISH
 - A. STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. (LATEST EDITION) UNLESS OTHERWISE NOTED.
- 2.06 PROTECTION
 - A. UPON COMPLETION OF ERECTION, INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS OR GALVANIZED BREAKS WITH (2) COATS OF ZINC-RICH COLD GALVANIZING PAINT.
- PART 3 — ERECTION
 - A. PROVIDE ALL ERECTION, EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION, BUT ARE NECESSARY FOR ITS PROPER ERECTION.
 - B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING
 - C. TEMPORARY BRACING, GUYING, AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SET AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.



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SUBMITTALS			
PROJECT NO: 7225-CT43XC860			
NO	DATE	DESCRIPTION	BY
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2	2/4/15	FOR CONSTRUCTION	DC
3	2/11/15	PER COMMENTS	MP

DATE	REVIEWED BY
2/11/15	SMC



SITE NUMBER:
CT43XC860

SITE NAME:
SOUTH NORWALK—CROWN TOWER

SITE ADDRESS:
**50 ROCKLAND ROAD
NORWALK, CT 06854**

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-IH, CONSTRUCTION MARKING AND LIGHTING.
3. FCC - FEDERAL COMMUNICATION COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES
4. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION FOR STRUCTURAL JOINTS USING ASTM 1325 OR A490 BOLTS.
5. NEC - NATIONAL ELECTRIC CODE - ON TOWER LIGHTING KITS.
6. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
7. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
8. LIFE SAFETY CODE NFPA, LATEST EDITION.

DIVISION 13000-EARTHWORK

PART 1 GENERAL

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

1.02 RELATED WORK

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

PART 2 PRODUCTS

2.01 MATERIALS

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

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

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

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

MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS.

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

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

2.02 EQUIPMENT

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

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

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

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

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

3.03 INSTALLATION

A. THE SITE AND TURNAROUND AREAS SHALL BE AT THE SUB-BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS. GRADE OR FILL THE SITE AND ACCESS ROAD AS REQUIRED TO PRODUCE EVEN DISTRIBUTION OF SPOILS RESULTING FROM FOUNDATION EXCAVATIONS. THE RESULTING GRADE SHALL CORRESPOND WITH SAID SUB-BASE COURSE, ELEVATIONS ARE TO BE CALCULATED 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 THOROUGHFARE IS INCLUDED IN SCOPE OF WORK UNLESS OTHERWISE INDICATED.

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

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

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

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

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

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

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

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

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

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

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

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

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

3.04 FIELD QUALITY CONTROL

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

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

3.05 PROTECTION

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

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

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

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

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2.5 EQUIPMENT DEPLOYMENT
6580 SPRINT PARKWAY
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SUBMITTALS

PROJECT NO: 7225-CT43XC860

NO	DATE	DESCRIPTION	BY
0	7/8/14	FOR COMMENT	JT
1	7/17/14	PER COMMENTS	MP
2	2/4/15	FOR CONSTRUCTION	DC
3	2/11/15	PER COMMENTS	MP

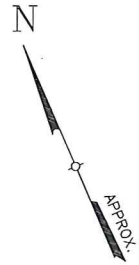
DATE: 2/11/15 REVIEWED BY: SMC



SITE NUMBER:
CT43XC860
SITE NAME:
SOUTH NORWALK-CROWN TOWER
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

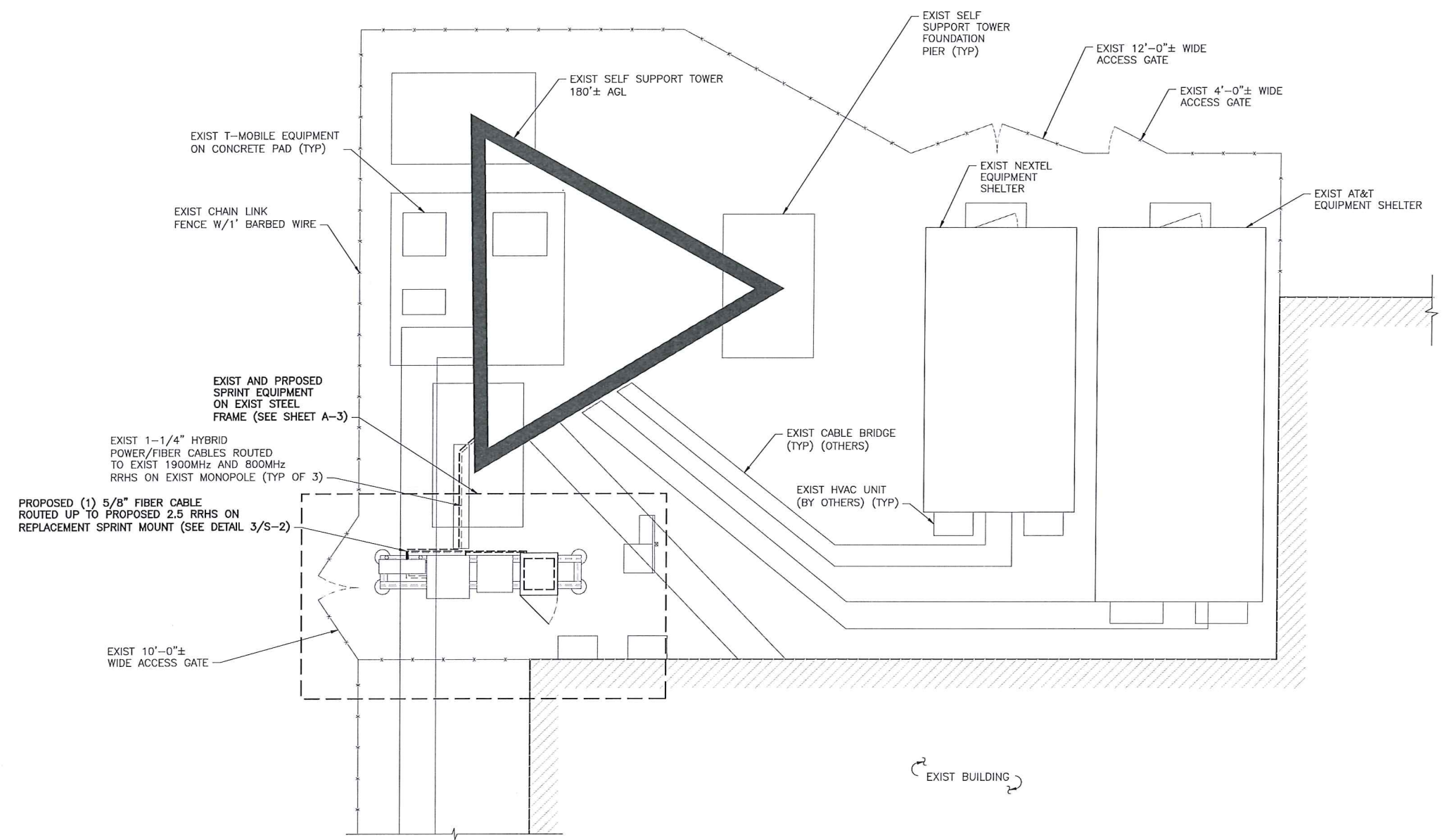
SHEET TITLE:
GENERAL NOTES

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-2



EXIST BUILDING

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

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 2.5 EQUIPMENT DEPLOYMENT
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 OVERLAND PARK, KANSAS 66251

CROWN CASTLE

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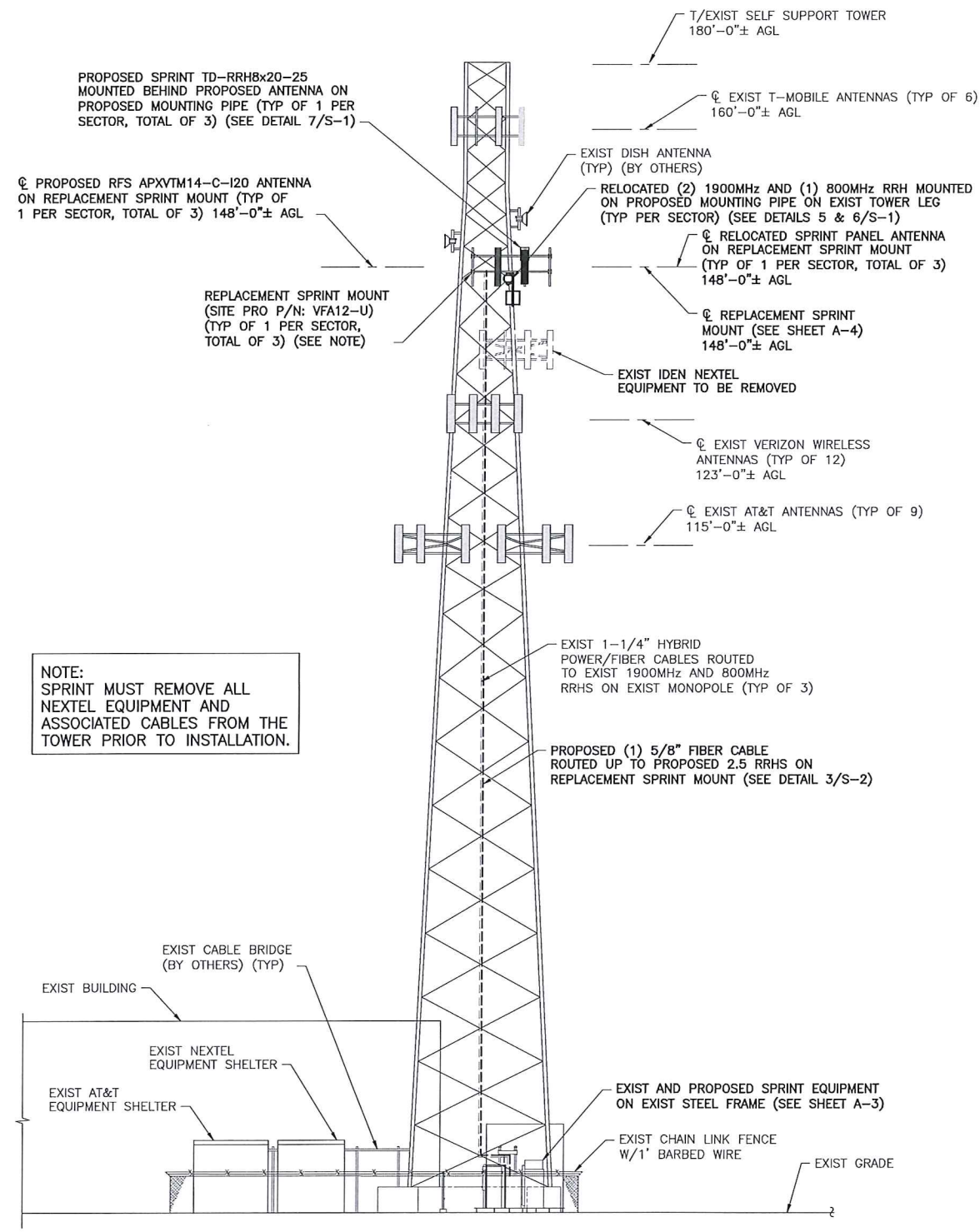
DATE	REVIEWED BY
2/11/15	SMO



SITE NUMBER:
 CT43XC860
 SITE NAME:
 SOUTH NORWALK-CROWN TOWER
 SITE ADDRESS:
 50 ROCKLAND ROAD
 NORWALK, CT 06854

SHEET TITLE:
 SITE PLAN

SHEET NO:
 A-1



1
A-2 ELEVATION
SCALE: 3/32" = 1'-0"

THE EXISTING SELF SUPPORT TOWER 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 ONCE PROPOSED MODIFICATIONS HAVE BEEN COMPLETED AS DETAILED IN THE STRUCTURAL ANALYSIS EVALUATION LETTER DATED 2/4/15.



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2.5 EQUIPMENT DEPLOYMENT
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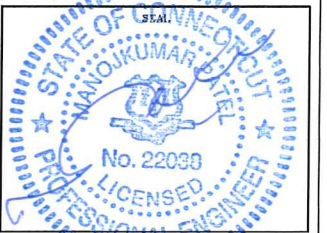
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2/11/15	JMQ



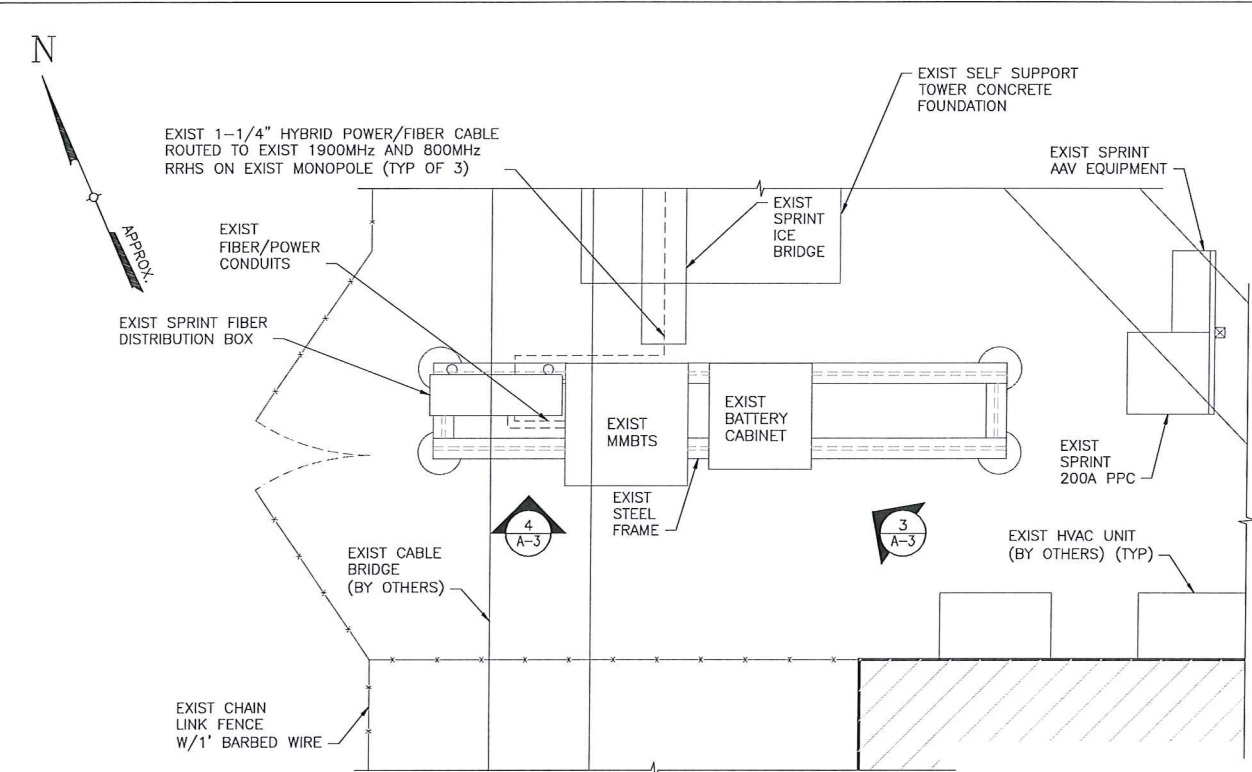
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CT43XC860

SITE NAME:
SOUTH NORWALK-CROWN TOWER

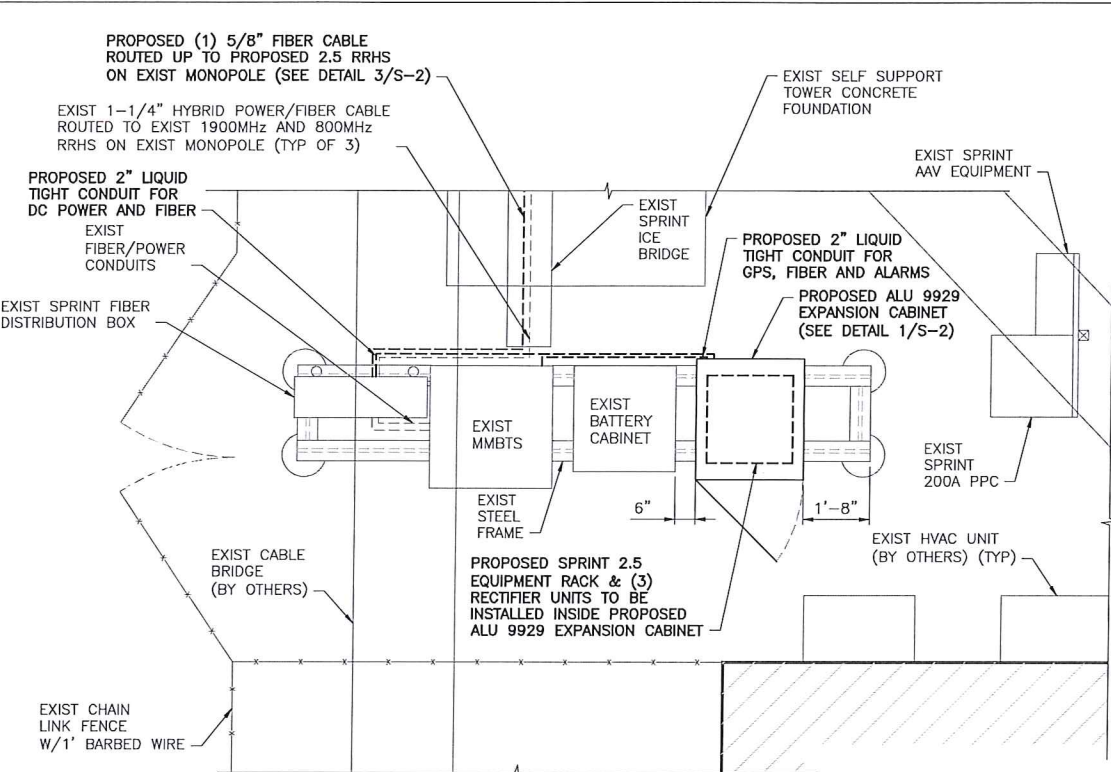
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

SHEET TITLE:
ELEVATION

SHEET NO:
A-2



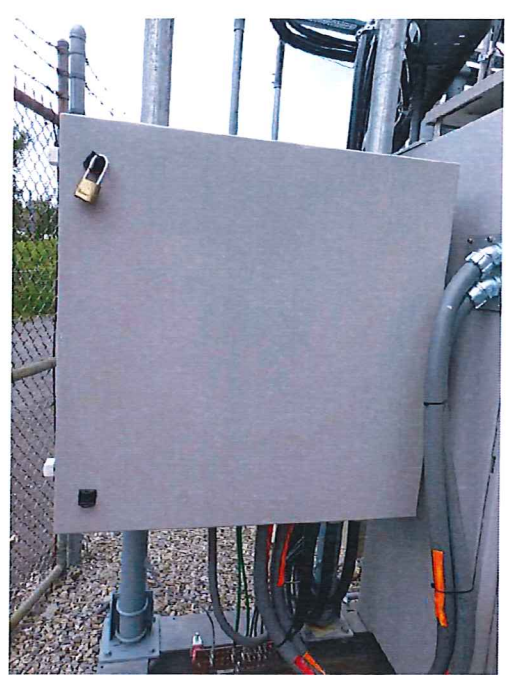
1 EQUIPMENT PLAN (EXIST)
A-3 SCALE: 1/2" = 1'-0"



2 EQUIPMENT PLAN (FINAL)
A-3 SCALE: 1/2" = 1'-0"



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



4 EXIST FIBER DISTRIBUTION BOX
A-3 SCALE: N.T.S.

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

CROWN CASTLE

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

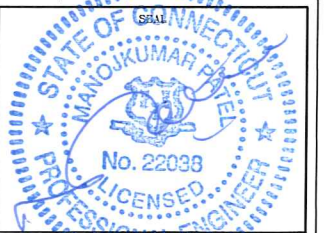
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SUBMITTALS

PROJECT NO: 7225.CT43XC860

NO	DATE	DESCRIPTION	BY
0	7/8/14	FOR COMMENT	JT
1	7/17/14	PER COMMENTS	MP
2	2/4/15	FOR CONSTRUCTION	DC
3	2/11/15	PER COMMENTS	MP

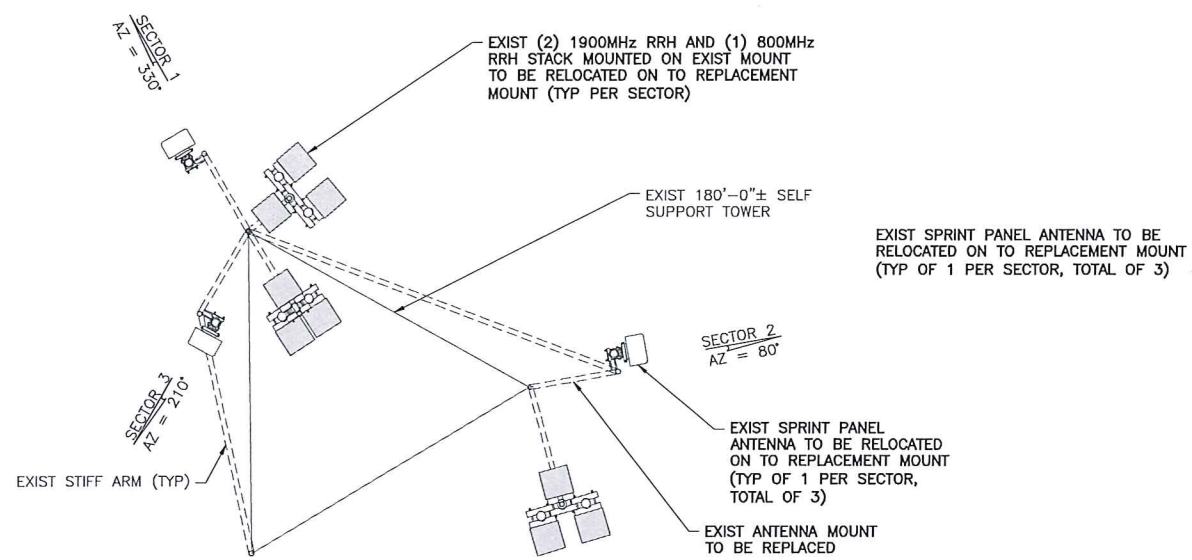
DATE: 2/11/15
REVIEWED BY: JMQ



SITE NUMBER: CT43XC860
SITE NAME: SOUTH NORWALK-CROWN TOWER
SITE ADDRESS: 50 ROCKLAND ROAD NORWALK, CT 06854

SHEET TITLE: ENLARGED EQUIPMENT LAYOUT PLANS

SHEET NO: A-3



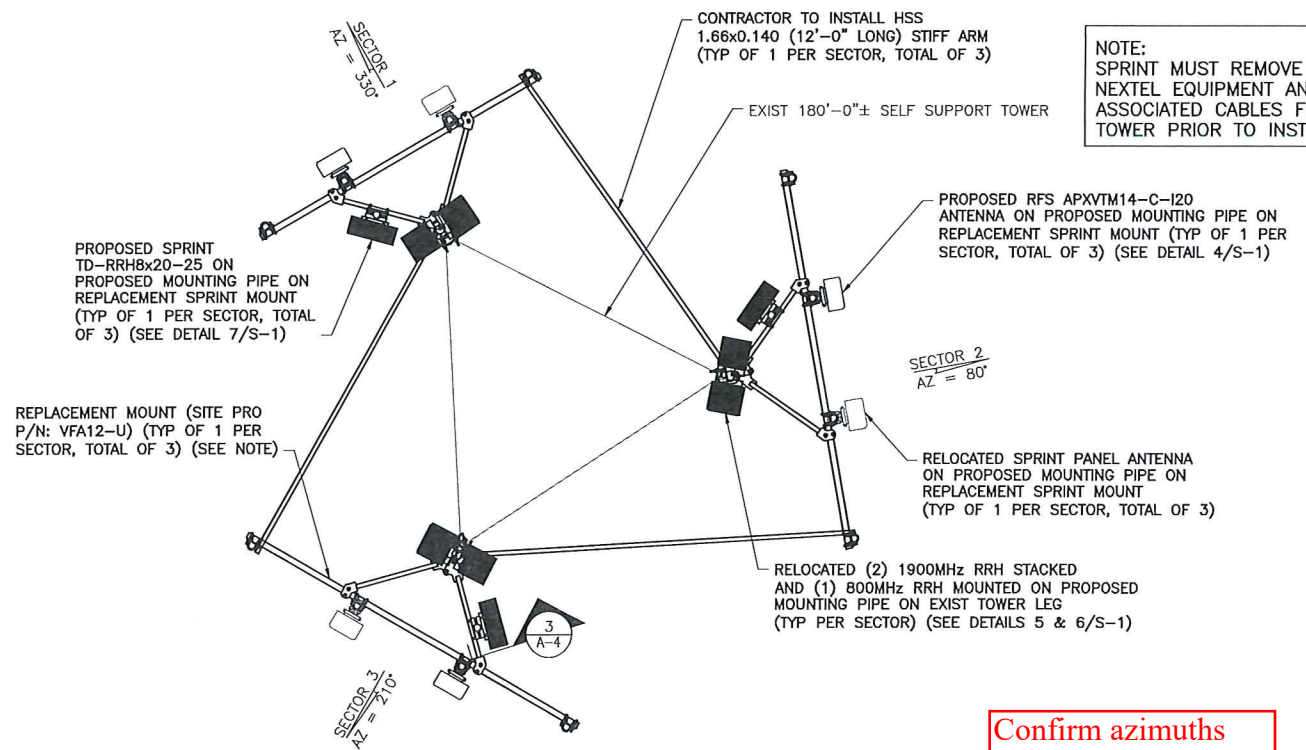
1 ANTENNA LAYOUT PLAN (EXIST)
SCALE: 3/8" = 1'-0"



THE EXISTING SELF SUPPORT TOWER 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 ONCE PROPOSED MODIFICATIONS HAVE BEEN COMPLETED AS DETAILED IN THE STRUCTURAL ANALYSIS EVALUATION LETTER DATED 2/4/15.

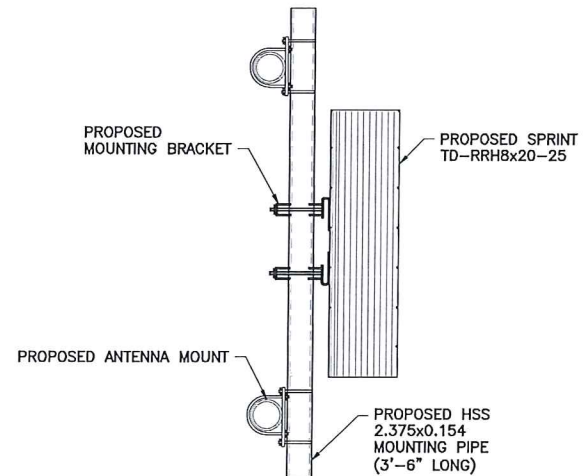
EXIST (2) 1900MHz RRH AND (1) 800MHz RRH STACK MOUNTED ON EXIST MOUNT TO BE RELOCATED (TYP PER SECTOR)



2 ANTENNA LAYOUT PLAN (FINAL)
SCALE: 3/8" = 1'-0"

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

Confirm azimuths with final RFDS - RFDS supersedes CD's



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

ANTENNA DATA

Status	Exist	Proposed
Antenna Manufacturer	RFS-CELWAVE	RFS-CELWAVE
Antenna Model Number	APXVSP18-C-A20	APXVTM14-C-I20
Number of Antennas	3	3
Antenna RAD Center	148'	148'
Antenna Azimuth	330/80/210	330/80/210
Antenna RRH Model Number	800MHz/1900MHz	TD-RRHx20-25
Number of RRH	9	3

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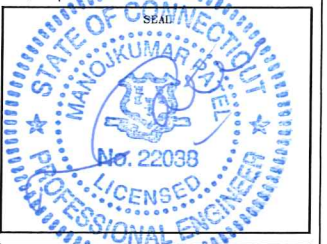
TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
1279 Route 300
Newburgh, NY 12550
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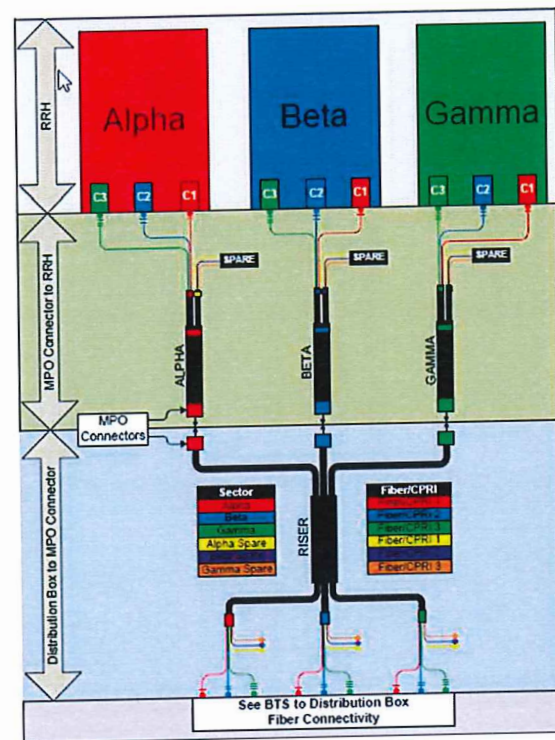
DATE	REVIEWED BY
2/11/15	JMQ



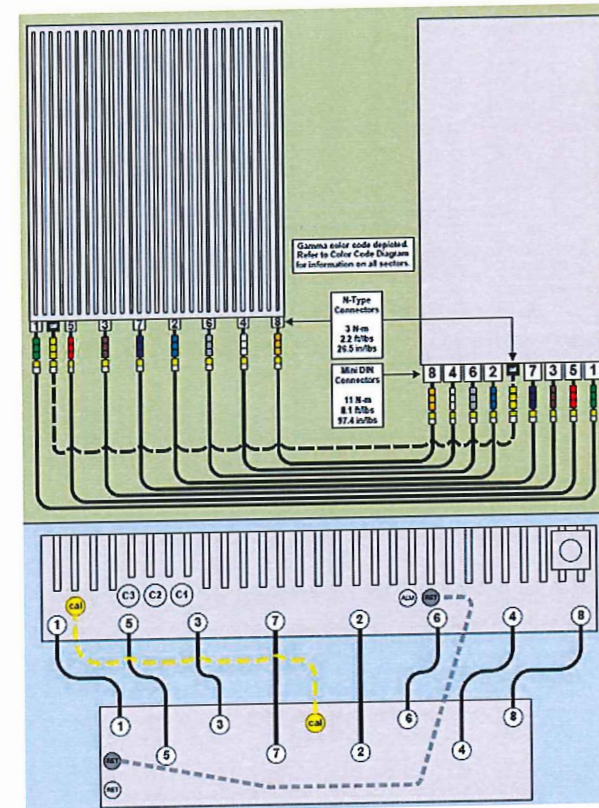
SITE NUMBER: CT43XC860
SITE NAME: SOUTH NORWALK-CROWN TOWER
SITE ADDRESS: 50 ROCKLAND ROAD NORWALK, CT 06854

SHEET TITLE: ANTENNA LAYOUT PLANS

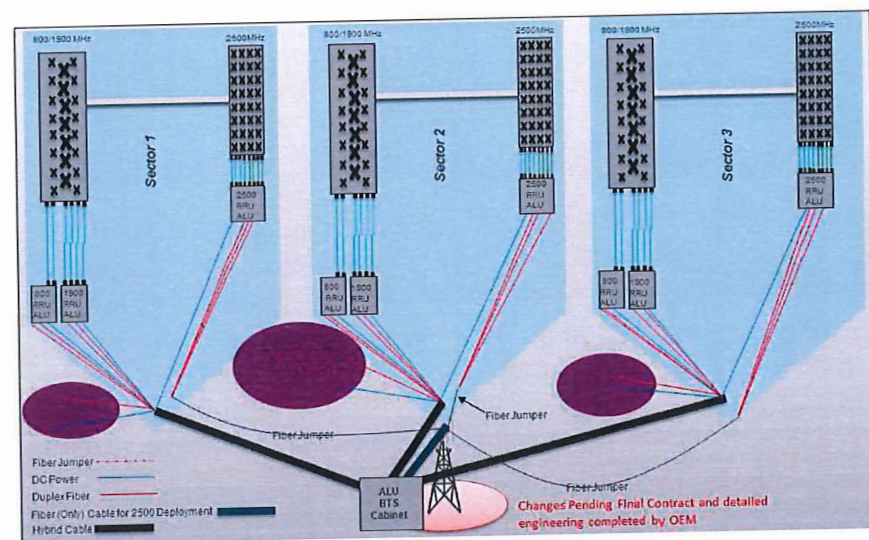
SHEET NO: A-4



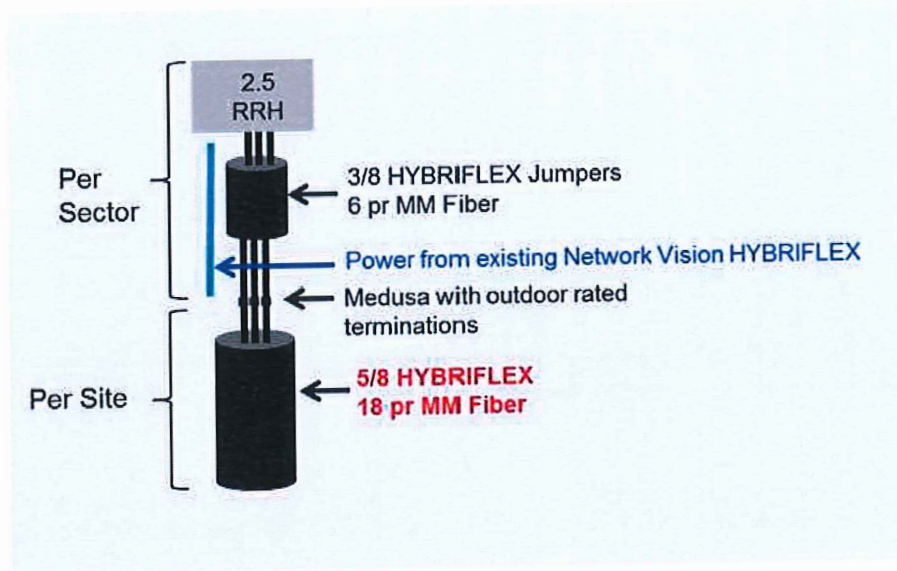
1 2.5 CABLE COLOR CODING
A-5 SCALE: N.T.S.



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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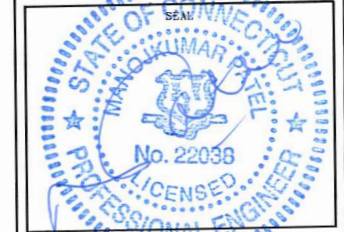
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DATE: 2/11/15
REVIEWED BY: JMA



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CT43XC860
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SOUTH NORWALK-CROWN TOWER
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

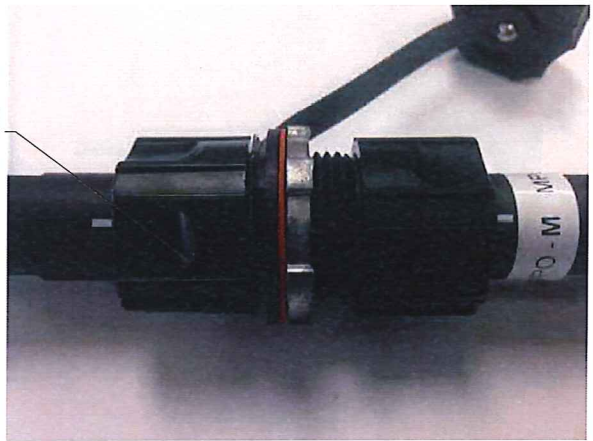
SHEET TITLE:
RAN WIRING DIAGRAM

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

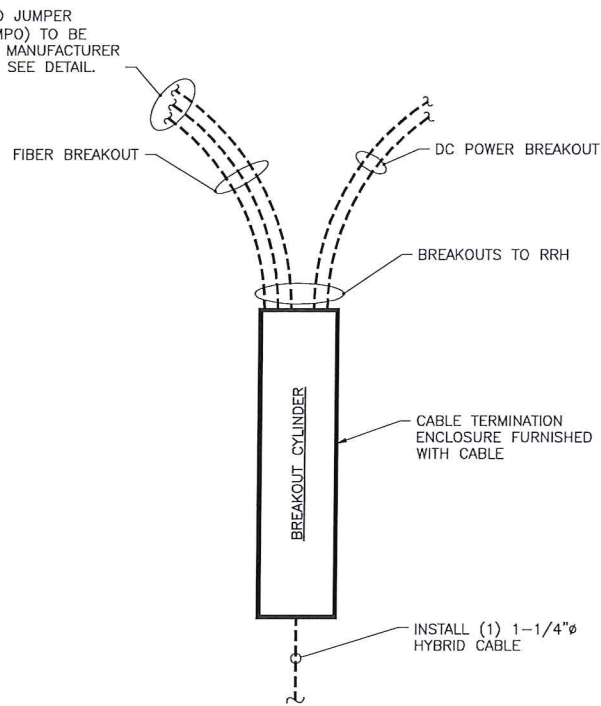


IMPORTANT!! ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL A CLICK SOUND IS HEARD TO ESURE A GOOD CONNECTION

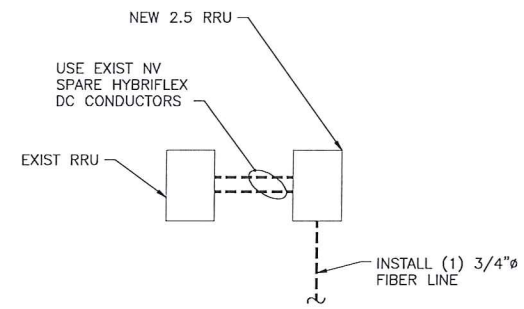


1 HYBRIFLEX RISER/JUMPER CONNECTION DETAILS
A-6 SCALE: N.T.S.

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)
A-6 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 BTS OR TRANSMITTER BUILDING.
- ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" BANDS ON EACH END OF THE BOTTOM JUMPER.
- ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
- EACH COLOR BAND SHALL HAVE A MINIMUM OF (3) WRAPS AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT AS TO AVOID UNRAVELING.
- X-POLE ANTENNAS SHOULD USE "XX-1" FOR THE "+45" PORT, "XX-2" FOR THE "-45" PORT.
- COLOR BAND #4 REFERS TO THE FREQUENCY BAND: ORANGE=850, VIOLET=1900. USED ON JUMPERS ONLY.
- RF FEEDLINE SHALL BE IDENTIFIED WITH A METAL TAG (STAINLESS OR BRASS) AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER.
- ANTENNAS MUST BE IDENTIFIED, USING THE SECTOR LETTER AND ANTENNA NUMBER, WITH A BLACK MARKER PRIOR TO INSTALLATION.

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SUBMITTALS

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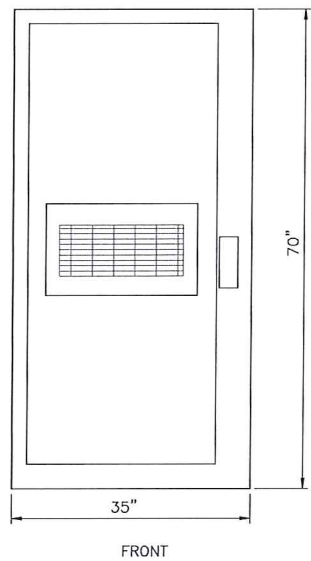
DATE	REVIEWED BY
2/11/15	JMO



SITE NUMBER:
CT43XC860
SITE NAME:
SOUTH NORWALK-CROWN TOWER
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

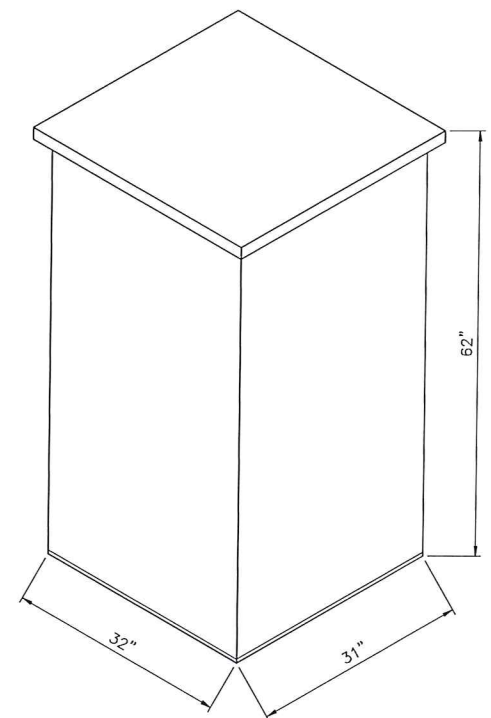
SHEET TITLE:
CABLE DETAILS

SHEET NO:
A-6



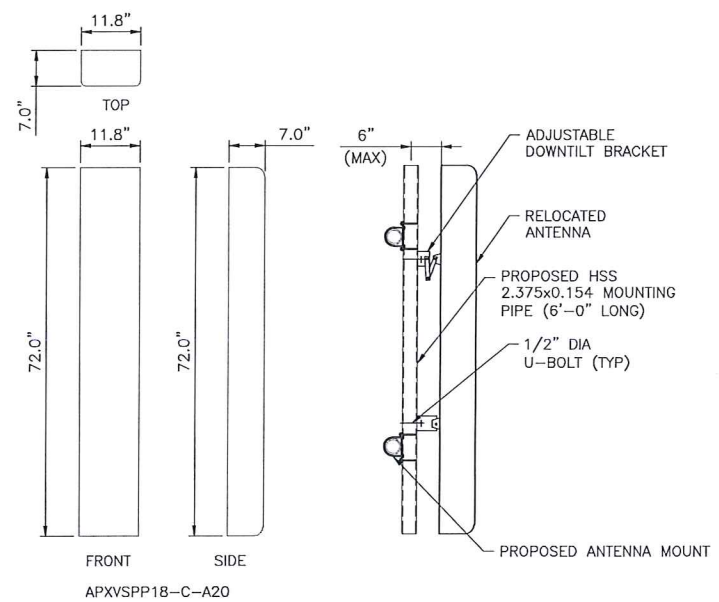
CABINET FRONT 9928 MMBTS MODULAR CELL	
SPECIFICATIONS:	
HEIGHT:	70"
WIDTH:	35"
DEPTH:	37.8"
WEIGHT:	1090 LBS.

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

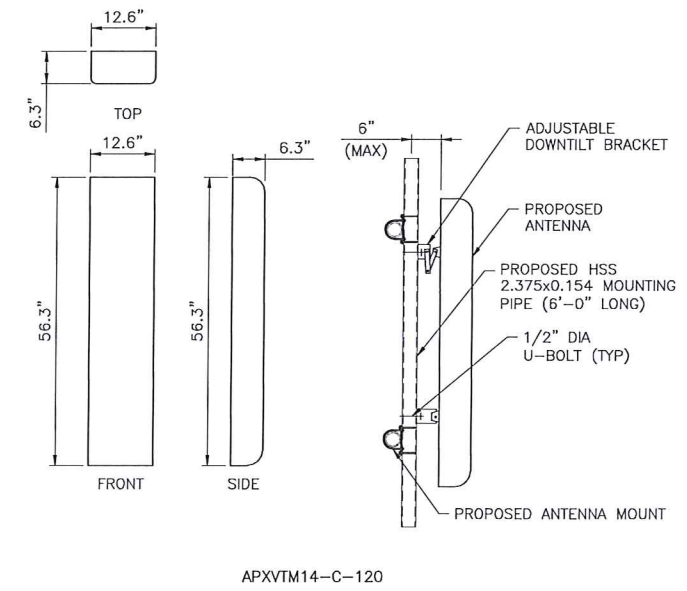


ANDREW 60ECv2	
SPECIFICATIONS:	
HEIGHT:	60"
WIDTH:	31"
DEPTH:	30"
WEIGHT:	2430 LBS.

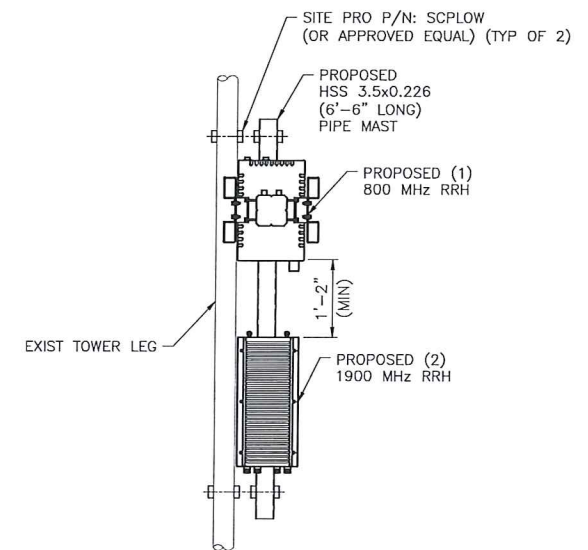
2 (EXIST) BATTERY CABINET
S-1 SCALE: 1" = 1'-0"



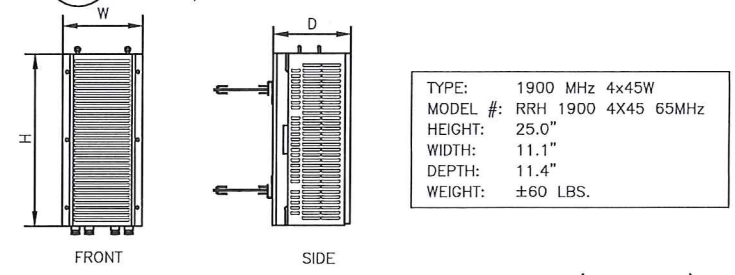
3 (EXIST) ANTENNA DETAIL
S-1 SCALE: 3/4"=1'-0"



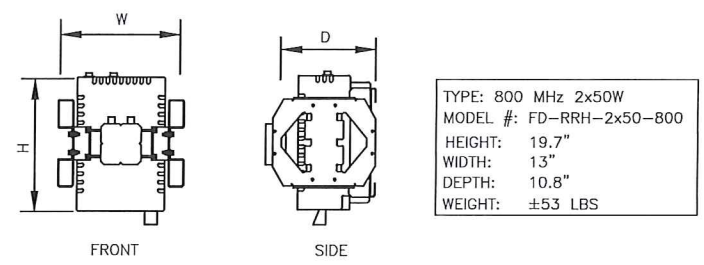
4 (PROPOSED) ANTENNA DETAIL
S-1 SCALE: 3/4"=1'-0"



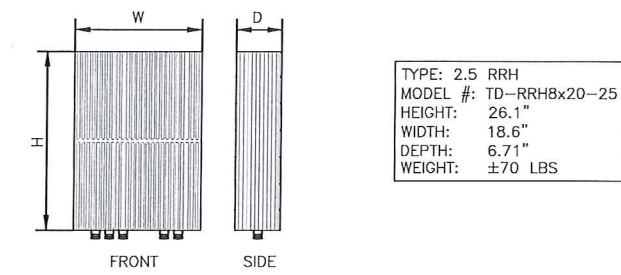
5 RRH MOUNTING DETAIL
S-1 SCALE: 3/4"=1'-0"



6 (EXIST) RRH DETAILS
S-1 SCALE: 1 1/2"=1'-0"



7 (PROPOSED) RRH DETAIL
S-1 SCALE: N.T.S.



7 (PROPOSED) RRH DETAIL
S-1 SCALE: N.T.S.

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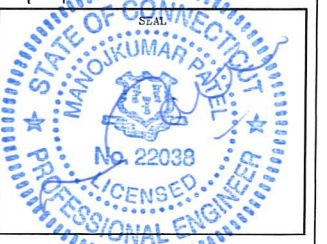
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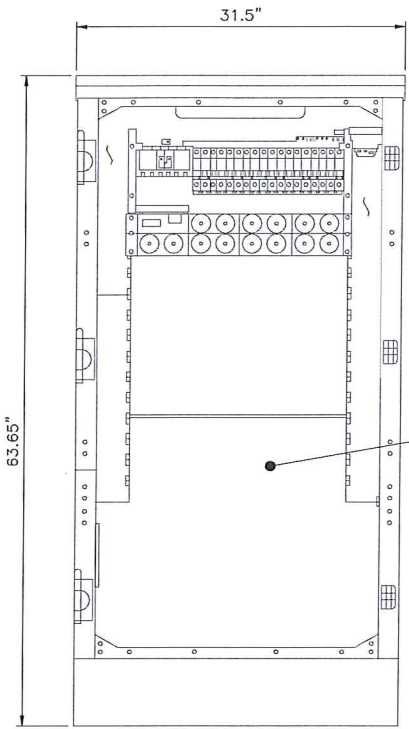
SITE NUMBER:
CT43XC860

SITE NAME:
SOUTH NORWALK-CROWN TOWER

SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

SHEET TITLE:
EQUIPMENT DETAILS

SHEET NO:
S-1



9929 EXPANSION CABINET	
CABINET SPECIFICATIONS	
EXPANSION CABINET:	
- HEIGHT -	63.65"
- WIDTH -	31.5"
- DEPTH -	35.5"
WEIGHT: 1,600 LBS.	

INSTALL NEW 2.5 EQUIPMENT IN PROPOSED 9929 EXPANSION CABINET INCLUDING BUT NOT LIMITED TO BASE BAND UNIT, CELL SITE ROUTER AND SURGE ARRESTORS. GROUND EQUIPMENT TO PROPOSED INTERIOR CABINET GROUND BAR

FRONT ELEVATION (CABINET INTERIOR)

1 9929 INTERIOR DETAIL
S-2 SCALE: N.T.S.

RFS HYBRIFLEX RISER CABLES SCHEDULE

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

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

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

4 AWG Power	Hybrid cable MN: HB114-21U3M12-225F 3x 4 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225ft	325 ft
	MN: HB114-21U3M12-250F	350 ft
	MN: HB114-21U3M12-275F	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

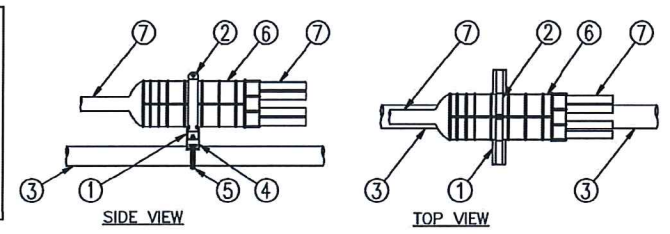
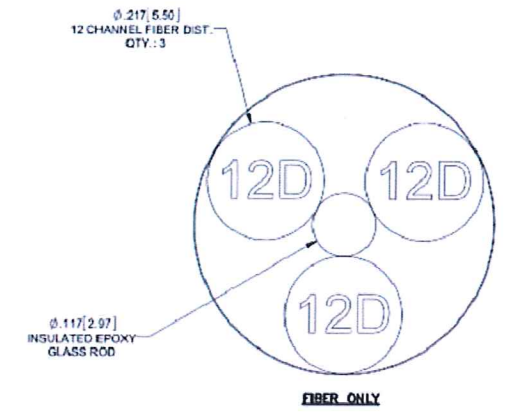
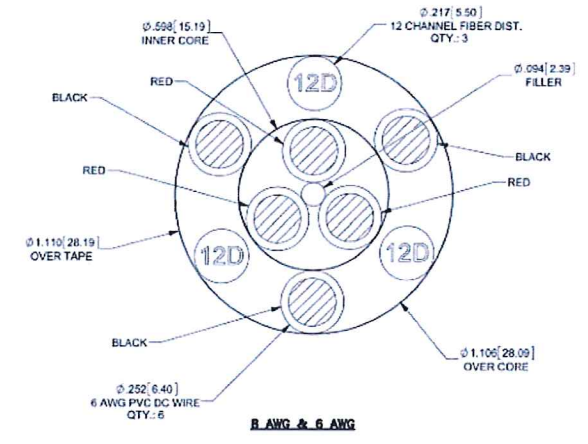
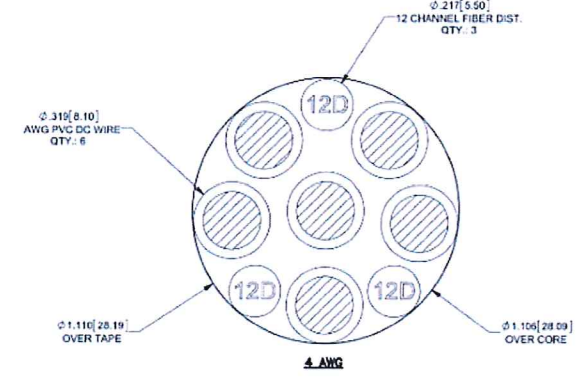
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft

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	VARIABLES	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"



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

2 MEDUSA HEAD DETAIL
S-2 SCALE: NTS

3 2.5 HYBRID CABLE X-SECTION AND DATA
S-2 SCALE: NTS



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DATE	REVIEWED BY
2/11/15	JMA



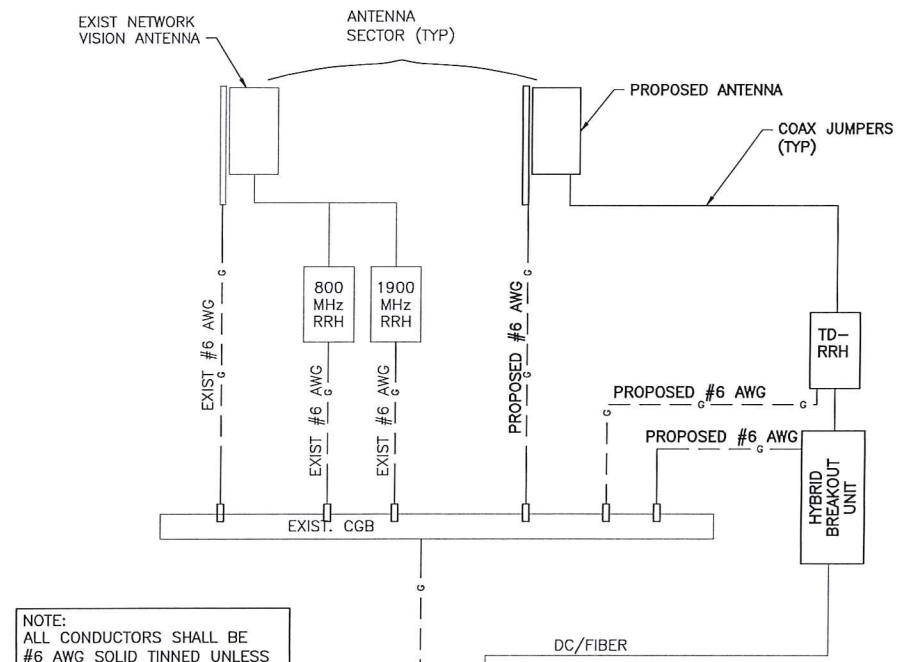
SITE NUMBER:
CT43XC860

SITE NAME:
SOUTH NORWALK-CROWN TOWER

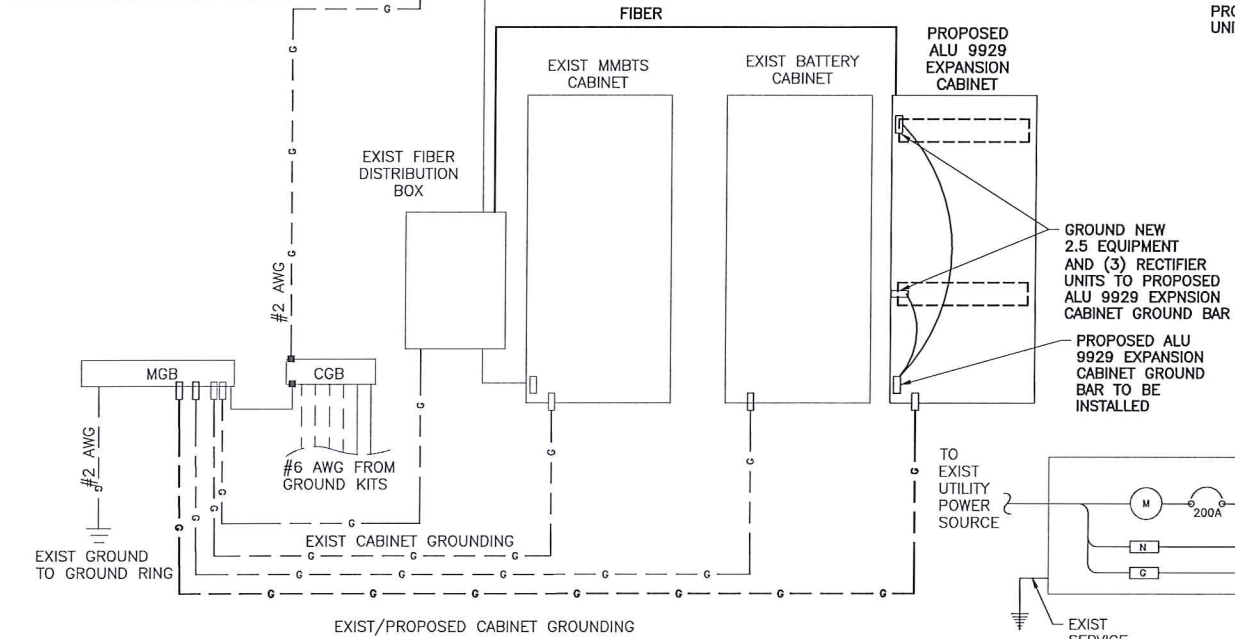
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

SHEET TITLE:
EQUIPMENT SCHEMATIC DETAILS

SHEET NO:
S-2

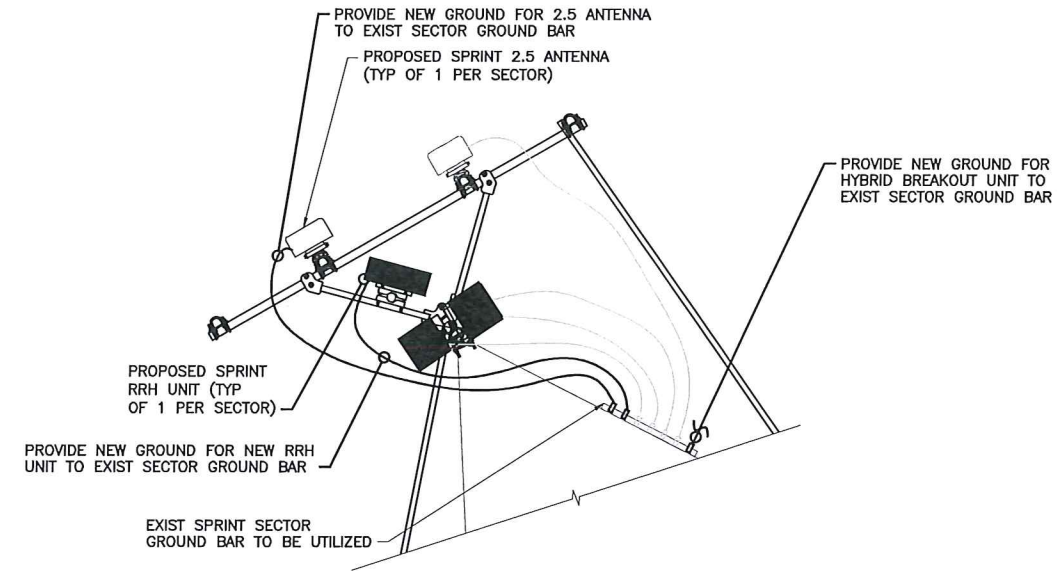


NOTE:
ALL CONDUCTORS SHALL BE #6 AWG SOLID TINNED UNLESS OTHERWISE NOTED.

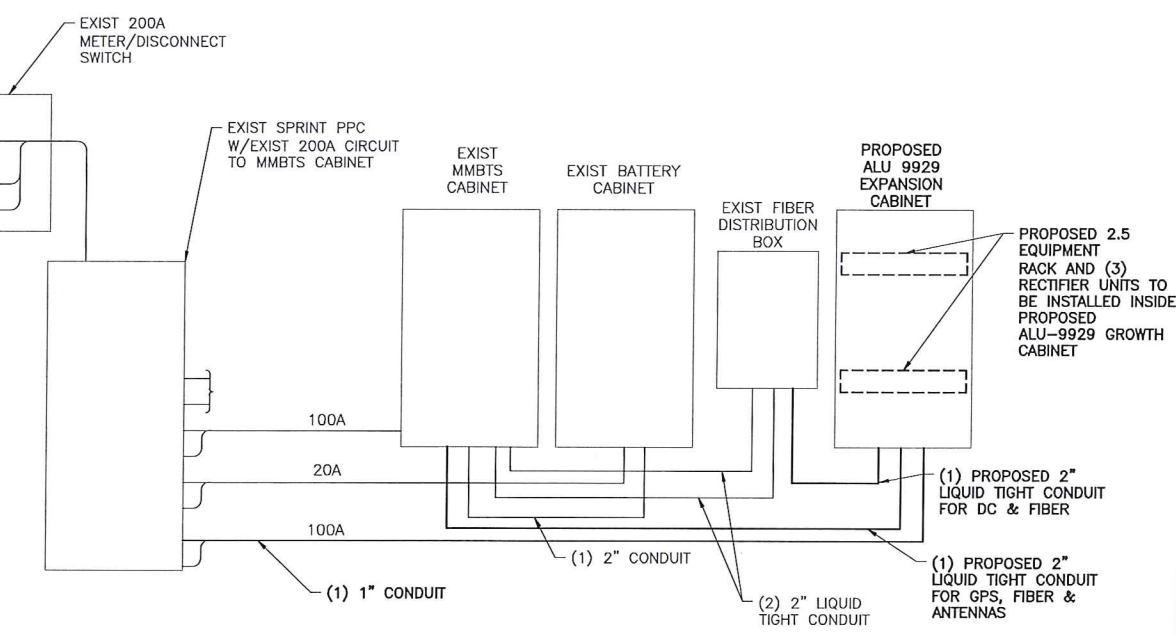


LEGEND
 ■ CADWELD CONNECTION
 □ MECHANICAL CONNECTION
 ● COMPRESSION CONNECTION

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



2 TYPICAL ANTENNA GROUNDING PLAN
E-1 SCALE: NTS



3 TYPICAL ELECTRICAL & TELCO PLAN
E-1 SCALE: NTS
NOTE: FINAL ELECTRICAL DESIGN TO BE DETERMINED BY OTHER.



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 1279 Route 300
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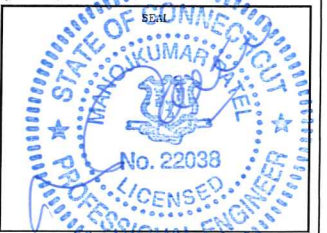
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SUBMITTALS

PROJECT NO: 7225.CT43XC860

NO	DATE	DESCRIPTION	BY
0	7/8/14	FOR COMMENT	JT
1	7/17/14	PER COMMENTS	MP
2	2/4/15	FOR CONSTRUCTION	DC
3	2/11/15	PER COMMENTS	MP

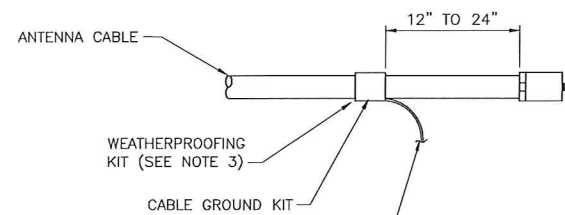
DATE: 2/11/15
 REVIEWED BY: JMQ



SITE NUMBER: CT43XC860
 SITE NAME: SOUTH NORWALK-CROWN TOWER
 SITE ADDRESS: 50 ROCKLAND ROAD NORWALK, CT 06854

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

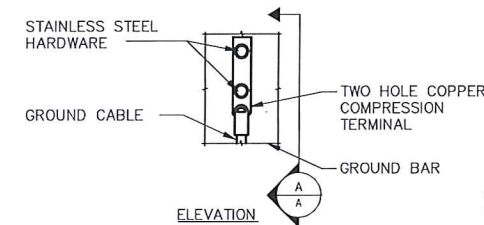
NOTES:

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

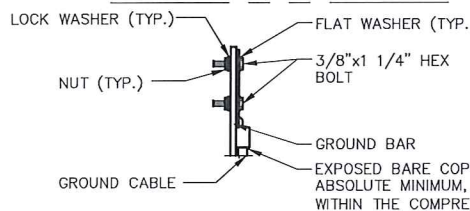
GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

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

1 CABLE GROUNDING KIT DETAIL
E-2 SCALE: N.T.S.

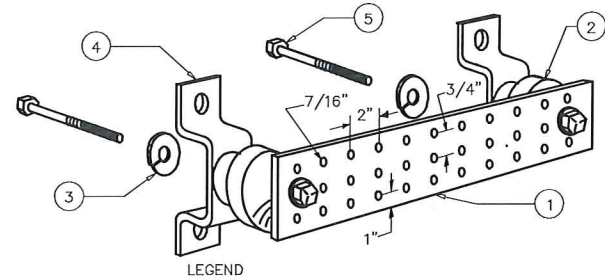


NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.



SECTION "A-A"

2 GROUNDING BAR CONN. DETAIL
E-2 SCALE: NTS

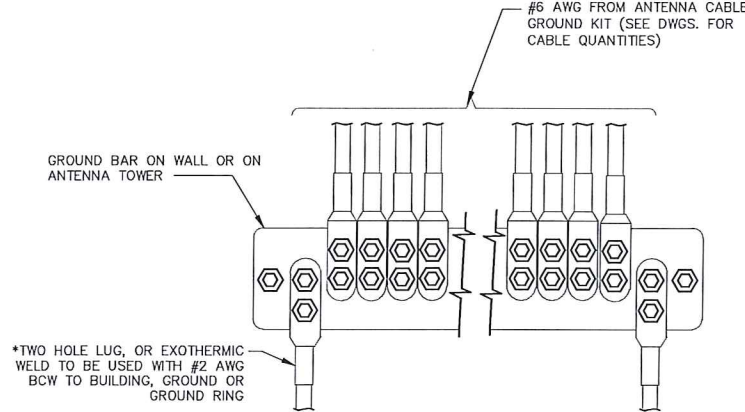


LEGEND

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

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

3 GROUNDING BAR DETAIL
E-2 SCALE: NTS



* 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
E-2 SCALE: NTS

GROUNDING NOTES:

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

PROTECTIVE GROUNDING SYSTEM GENERAL NOTES:

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

ELECTRICAL AND GROUNDING NOTES

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

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

CROWN CASTLE

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SUBMITTALS

PROJECT NO: 7225.CT43XC860

NO	DATE	DESCRIPTION	BY
0	7/8/14	FOR COMMENT	JT
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2	2/4/15	FOR CONSTRUCTION	DC
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DATE	REVIEWED BY
2/11/15	JMQ

STATE OF CONNECTICUT
MANOJKUMAR BAPTEL
No. 22038
LICENSED PROFESSIONAL ENGINEER

SITE NUMBER:
CT43XC860

SITE NAME:
SOUTH NORWALK-CROWN TOWER

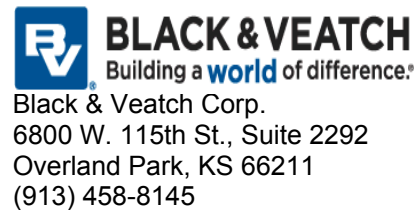
SITE ADDRESS:
50 ROCKLAND ROAD
NORWALK, CT 06854

SHEET TITLE:
GROUNDING DETAILS & NOTES

SHEET NO:
E-2

Date: **August 04, 2017**

Marianne Dunst
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277



Subject: **Structural Analysis Report**

Carrier Designation: **Sprint PCS Co-Locate**
Carrier Site Number: CT43XC860
Carrier Site Name: CT43XC860

Crown Castle Designation: **Crown Castle BU Number:** 807133
Crown Castle Site Name: BRG 134 943057
Crown Castle JDE Job Number: 444140
Crown Castle Work Order Number: 1435151
Crown Castle Application Number: 395037 Rev. 2

Engineering Firm Designation: **Black & Veatch Corp. Project Number:** 194393

Site Data: **50 Rockland Roadnorwalk Ofc - Mtso,
So Norwalk, Fairfield County, CT
Latitude 41° 4' 54.44", Longitude -73° 25' 49.52"
180 Foot - Self Support Tower**

Dear Marianne Dunst,

Black & Veatch Corp. 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 1062469, in accordance with application 395037, revision 2.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 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 C with a maximum topographic factor, K_{zt} , of 1.000 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on Site Class D with spectral response factors S_s of 0.236g and S_1 of 0.068g.

We at *Black & Veatch Corp.* 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: Sanyukta R. Arvikar / Sumit Bhujbal

Respectfully submitted by:

Ping Jiang, P.E.

Professional Engineer

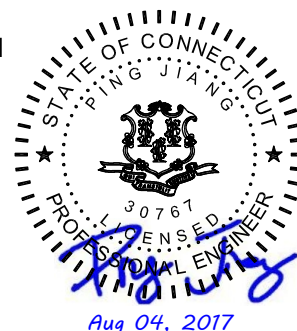


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1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by ROHN in July of 1987. The tower was originally designed for E.I.A. Zone A.

This tower has been modified per reinforcement drawings prepared by Vertical Structures, Inc. in November of 2004. The modifications consist of installation of additional diagonal reinforcement to existing diagonal member from 0' to 20' and 60' to 70' and installation of end bolts for diagonal 20' to 40'. These modifications are considered effective per passing Post Modification Inspection Report prepared by All-Points Technology Corporation, P.C. in January of 2005.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas 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 C with topographic category 1 and crest height of 0 feet. Seismic forces have been evaluated based on Site Class D with spectral response factors S_S of 0.236g and S_1 of 0.068g.

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
148.0	148.0	1	Site Pro	VFA12-U w/ 12' Stiff Arm [SM 502-3]	4	1 1/4	1
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ 2X50W RRH			
		6	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		3	alcatel lucent	TD-RRH8x20-25			
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Note:

- 1) Refer Appendix B for Detailed Coax Layout

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
178.0	178.0	2	cci tower mounts	Side Arm Mount [SO 305-1]	-	-	1
176.0	178.0	1	lcom	HG2409U-PRO	1	1 5/8	2
	176.0	1	cci tower mounts	Side Arm Mount [SO 305-1]			
170.0	173.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	7/8	2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
		3	commscope	LNx-6515DS-VTM w/ Mount Pipe	13	1 5/8	1	
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe				
		1	ericsson	KRY 112 144/1				
		3	ericsson	RRUS 11 B12				
		172.0	2	ericsson				KRY 112 144/1
		170.0	1	cci tower mounts				Sector Mount [SM 702-3]
157.0	157.0	2	andrew	VHLP2-18	2	7983A	1	
		2	cci tower mounts	Side Arm Mount [SO 203-1]				
143.0	145.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1 1/4	3	
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz				
		3	alcatel lucent	TME-800MHZ 2X50W RRH				
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe				
	143.0	1	cci tower mounts	Side Arm Mount [SO 312-3]				
		9	rfs celwave	ACU-A20-N				
142.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz					
134.0	135.0	1	andrew	VHLP2-23	6 1	5/16 1/2	1	
		3	argus technologies	LLPX310R w/ Mount Pipe				
		3	samsung telecommunications	RRH-2WB				
	134.0	1	cci tower mounts	Sector Mount [SM 504-3]				
126.0	128.0	130.0	1	gps	GPS_A	19 1	1 5/8 1/2	1
		3	alcatel lucent	RRH2X40-AWS				
		2	andrew	LNx-6514DS-T4M w/ Mount Pipe				
		1	commscope	HBX-6516DS-VTM w/ Mount Pipe				
		6	decibel	DB844G65ZAXY w/ Mount Pipe				
		1	powerwave technologies	P65.16.XL.2 w/ Mount Pipe				
		1	rfs celwave	DB-T1-6Z-8AB-0Z				
	2	rymsa wireless	MG D3-800TV w/ Mount Pipe					
126.0	1	cci tower mounts	Sector Mount [SM 410-3]					
112.0	112.0	1	cci tower mounts	Sector Mount [SM 104-3]	6	1 5/8	1	
		3	kathrein	800 10504 w/ Mount Pipe				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
102.0	102.0	6	cci antennas	TPX-070821	1 2	3/8 5/8	2
		1	raycap	DC6-48-60-18-8F			
		3	ericsson	RRUS 32			
		3	quintel technology	QS66512-2 w/ Mount Pipe			
		3	ericsson	RRUS 32 B2	2 1 12	5/8 3/8 1-5/8	1
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP2140X			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		3	ericsson	RRUS 11 B2			
		1	cci tower mounts	Sector Mount [SM 301-3]			
48.0	48.0	2	cci tower mounts	Side Arm Mount [SO 701-1]	2	1/2	1
		1	gps	GPS_A			
	47.0	1	gps	GPS_A			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
217	217	4	celwave	PD10017	-	-
207	207	6	celwave	PD1132	-	-
180	180	3	unknown	8' Dish	-	-
170	170	1	unknown	8' Dish	-	-
156	156	1	unknown	8' Dish	-	-
150	150	1	unknown	8' Dish	-	-
130	130	1	celwave	PD1109	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	2311843	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford and Company	821566	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn	392878	CCISITES

Document	Remarks	Reference	Source
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Structures, Inc.	1257479	CCISITES
4-POST-MODIFICATION INSPECTION	All Points Technology Corp.	4065020	CCISITES
4- EXPOSURE & TOPOGRAPHIC CATEGORY	Crown Castle, Inc.	5966534	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	FDH Velocitel, Inc.	6568908	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) The wind loading Exposure Category / Topographic Category for this site has/have been analyzed and determined by the tower owner. Black & Veatch does not assume any responsibility for its accuracy.
- 5) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked. Refer to crown document PRC-10012, Base Plate Grout Inspection & Classification.
- 6) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	ROHN 3 EH	2	-10.29	110.61	9.3	Pass
T2	160 - 153.333	Leg	ROHN 4 EH	35	-15.26	159.91	9.5	Pass
T3	153.333 - 146.667	Leg	ROHN 4 EH	44	-22.56	159.91	14.1	Pass
T4	146.667 - 140	Leg	ROHN 4 EH	56	-30.63	159.91	19.2	Pass
T5	140 - 120	Leg	ROHN 5 EH	68	-62.94	239.38	26.3	Pass
T6	120 - 100	Leg	ROHN 6 EHS	89	-103.11	274.78	37.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T7	100 - 80	Leg	ROHN 6 EH	110	-143.16	303.72	47.1	Pass
T8	80 - 70	Leg	ROHN 8 EHS	125	-164.57	386.39	42.6	Pass
T9	70 - 60	Leg	ROHN 8 EHS	134	-186.63	386.39	48.3	Pass
T10	60 - 40	Leg	ROHN 8 EHS	143	-230.56	386.40	59.7	Pass
T11	40 - 20	Leg	ROHN 8 EH	158	-274.45	505.56	54.3	Pass
T12	20 - 0	Leg	ROHN 8 EH	173	-317.95	505.56	62.9	Pass
T1	180 - 160	Diagonal	L2x2x3/16	13	-2.27	7.58	30.0 34.0 (b)	Pass
T2	160 - 153.333	Diagonal	L2 1/2x2 1/2x1/4	39	-2.82	14.85	19.0 26.2 (b)	Pass
T3	153.333 - 146.667	Diagonal	L2 1/2x2 1/2x1/4	52	-3.55	13.43	26.4 31.9 (b)	Pass
T4	146.667 - 140	Diagonal	L2 1/2x2 1/2x1/4	63	-4.74	12.19	38.9 44.4 (b)	Pass
T5	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	72	-7.01	9.37	74.7	Pass
T6	120 - 100	Diagonal	L3x3x1/4	94	-8.93	13.19	67.7 76.2 (b)	Pass
T7	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	112	-11.17	14.20	78.7 79.5 (b)	Pass
T8	80 - 70	Diagonal	L3 1/2x3 1/2x1/4	127	-11.84	13.25	89.4	Pass
T9	70 - 60	Diagonal	2L3 1/2x3 1/2x1/4x3/8	136	-12.79	55.97	22.9 62.4 (b)	Pass
T10	60 - 40	Diagonal	L4x4x1/4	145	-13.56	15.48	87.6 93.9 (b)	Pass
T11	40 - 20	Diagonal	L4x4x5/16	160	-14.43	16.21	89.1	Pass
T12	20 - 0	Diagonal	2L4x4x5/16x3/8	175	-15.41	68.74	22.4 75.1 (b)	Pass
T1	180 - 160	Top Girt	L2x2x1/8	5	-0.08	3.17	2.6	Pass
T3	153.333 - 146.667	Top Girt	L2x2x1/8	48	-0.18	1.54	11.9	Pass
T4	146.667 - 140	Top Girt	L2x2x1/8	59	0.22	12.74	1.7 4.8 (b)	Pass
T1	180 - 160	Mid Girt	L2x2x1/8	8	-0.46	2.32	19.6	Pass
							Summary	
							Leg (T12)	62.9 Pass
							Diagonal (T10)	93.9 Pass
							Top Girt (T3)	11.9 Pass
							Mid Girt (T1)	19.6 Pass
							Bolt Checks	93.9 Pass
							Rating =	93.9 Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.0	Pass
1	Base Foundation	0	60.9	Pass

4.2) Seismic Results

Tower and foundation have been analyzed based on the seismic criteria outlined in section 2 of this report. Based on the analysis, seismic loading is not governing the tower and foundation stress. Wind loading is governing the tower and foundation stress.

Structure Rating (max from all components) =	93.9%
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Notes:

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

4.3) Recommendations

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



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

SPRINT Existing Facility

Site ID: CT43XC860

South Norwalk-Crown Tower
50 Rockland Road
Norwalk, CT 06854

September 16, 2017

EBI Project Number: 6217004102

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	14.57 %



September 16, 2017

SPRINT

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

Emissions Analysis for Site: **CT43XC860 – South Norwalk-Crown Tower**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **50 Rockland Road, Norwalk, 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 **50 Rockland Road, Norwalk, 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 **148 feet** above ground level (AGL) for **Sector A**, **148 feet** above ground level (AGL) for **Sector B** and **148 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):	148 feet	Height (AGL):	148 feet	Height (AGL):	148 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%	1.52 %	Antenna B1 MPE%	1.52 %	Antenna C1 MPE%	1.52 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	148 feet	Height (AGL):	148 feet	Height (AGL):	148 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	1.11 %	Antenna B2 MPE%	1.11 %	Antenna C2 MPE%	1.11 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.63 %
AT&T	5.86 %
MetroPCS	1.56 %
Verizon Wireless	2.17 %
T-Mobile	2.35 %
Site Total MPE %:	14.57 %

SPRINT Sector A Total:	2.63 %
SPRINT Sector B Total:	2.63 %
SPRINT Sector C Total:	2.63 %
Site Total:	14.57 %

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	148	0.78	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	437.55	148	1.56	850 MHz	567	0.28%
Sprint 1900 MHz (PCS) CDMA	5	622.47	148	5.55	1900 MHz (PCS)	1000	0.55%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	148	5.55	1900 MHz (PCS)	1000	0.55%
Sprint 2500 MHz (BRS) LTE	8	778.09	148	11.10	2500 MHz (BRS)	1000	1.11%
						Total:	2.63%



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:	2.63 %
Sector B:	2.63 %
Sector C:	2.63 %
SPRINT Maximum Total (per sector):	2.63 %
Site Total:	14.57 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **14.57 %** 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.