



July 31, 2018

City of Cambridge
Board of Zoning Appeals
831 Massachusetts Avenue
Cambridge, MA 02139

RE: Sprint Spectrum Realty, LLC Special Permit Application – 120 Vassar Street, Cambridge

Dear Chair and Members:

Please accept the accompanying material in application for a Special Permit to remove existing telecommunications equipment on the rooftop of the property known locally as 120 Vassar Street and to replace it with upgraded equipment. This structure has hosted telecommunications equipment for several years. As disclosed in the accompanying plans and materials, this proposed removal and replacement will have a very minimal aesthetic or visual impact as there will be very minor noticeable change to the current conditions should this requested zoning relief be granted and the new equipment installed. There will be, however, an enhanced service available to individuals both inside and outside of the surrounding buildings as well as the vehicles passing through the general area, in both emergency and non-emergency situations.

The Applicant submits that the accompanying application materials meet the requirements of the City of Cambridge Zoning Ordinance and respectfully request that the requested relief be granted by the Board of Zoning Appeal.

Simon J. Brighenti, Jr.

Simon J. Brighenti, Jr., JD
Senior Site Acquisition Consultant
750 W. Center Street – Floor 3 |
W. Bridgewater, MA 02379
Phone: (413) 237-1550
sbrighenti@clinellc.com |
www.centerlinecommunications.com

OWNERSHIP CERTIFICATE

Project Address: 120 Vassar Street

Application Date: 10/25/18

This form is to be completed by the property owner, signed, and submitted with the Special Permit Application:

I hereby authorize the following Applicant: T. Ranciato-Viele Centerline Communications LLC
at the following address: 750 W. Center St, W. Bridgewater, MA 02379
to apply for a special permit for: Sprint's proposed modifications at an existing cell site.
on premises located at: 120 Vassar Street
for which the record title stands in the name of: MIT
whose address is: 120 Vassar Street
by a deed duly recorded in the:

Registry of Deeds of County: Book: 49402 Page: 213
OR Registry District of the Land Court, Book: Page: Certificate No.:

[Handwritten signature]

Signature of Land Owner (If authorized Trustee, Officer or Agent, so identify)

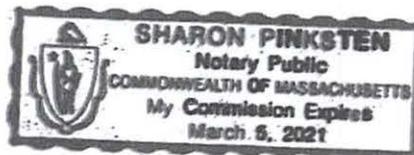
To be completed by Notary Public:

Commonwealth of Massachusetts, County of

The above named Anthony P. Sharon personally appeared before me,
on the month, day and year October 22, 2018 and made oath that the above statement is true.

Notary: Sharon Pinksten

My Commission expires:



**CITY OF CAMBRIDGE, MA • PLANNING BOARD • SPECIAL PERMIT
APPLICATION**

BZA APPLICATION FORM

SUPPORTING STATEMENT FOR A SPECIAL PERMIT

Please describe in complete detail how you meet each of the following criteria referring to the property and proposed changes or uses which are requested in your application. Attach sheets with additional information for special permits which have additional criteria, e.g.; fast food permits, comprehensive permits, etc., which must be met.

Granting the Special Permit requested for 120 Vassar St Cambridge, MA 02139 (location) would not be a detriment to the public interest because:

- A)** Requirements of the Ordinance can or will be met for the following reasons:
Applicant is an FCC licensed carrier and is seeking to replace existing equipment with upgraded similar equipment. The visual impact of the replacement equipment will be minimized due to the presence of existing camouflaging structures. The host building contains non-residential uses and is a long-time host to similar facilities.
- B)** Traffic generated or patterns of access or egress would not cause congestion hazard, or substantial change in established neighborhood character for the following reasons:
There will be no change to the visual appearance or functional operation of the facility, thus there will be no impact on the referenced resources or conditions.
- C)** The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would not be adversely affected by the nature of the proposed use for the following reasons:
There will be no change to the visual appearance or functional operation of the facility, thus there will be no impact on the referenced resources or conditions.
- D)** Nuisance or hazard would not be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City for the following reasons:
There will be no increase in traffic or noise or the introduction of any nuisance by the replacement of the existing equipment with upgraded equipment. Conversely, in fact, the health, safety and welfare of the community will be enhanced by the implementation of the proposed equipment.
- E)** For other reasons, the proposed use would not impair the integrity of the district or adjoining district or otherwise derogate from the intent or purpose of this ordinance for the following reasons:
See attached supplement

BZA APPLICATION FORM

DIMENSIONAL INFORMATION

APPLICANT: Centerline Communications, LLC **PRESENT USE/OCCUPANCY:** Educational/telecom

LOCATION: 120 Vassar St Cambridge, MA 02139 **ZONE:** Residence C-3 Zone

PHONE: _____ **REQUESTED USE/OCCUPANCY:** Educational/telecom

	<u>EXISTING</u> <u>CONDITIONS</u>	<u>REQUESTED</u> <u>CONDITIONS</u>	<u>ORDINANCE</u> <u>REQUIREMENTS</u> ¹	
<u>TOTAL GROSS FLOOR AREA:</u>	NA	NA	NA	(max.)
<u>LOT AREA:</u>	NA	NA	NA	(min.)
<u>RATIO OF GROSS FLOOR AREA</u> <u>TO LOT AREA:</u> ²	NA	NA	NA	(max.)
<u>LOT AREA FOR EACH DWELLING UNIT:</u>	NA	NA	NA	(min.)
<u>SIZE OF LOT:</u> <u>WIDTH</u>	NA	NA	NA	(min.)
<u>DEPTH</u>	NA	NA	NA	
<u>SETBACKS IN FEET:</u> <u>FRONT</u>	NA	NA	NA	(min.)
<u>REAR</u>	NA	NA	NA	(min.)
<u>LEFT SIDE</u>	NA	NA	NA	(min.)
<u>RIGHT SIDE</u>	NA	NA	NA	(min.)
<u>SIZE OF BLDG.:</u> <u>HEIGHT</u>	NA	NA	NA	(max.)
<u>LENGTH</u>	NA	NA	NA	
<u>WIDTH</u>	NA	NA	NA	
<u>RATIO OF USABLE OPEN SPACE</u> <u>TO LOT AREA:</u>	NA	NA	NA	(min.)
<u>NO. OF DWELLING UNITS:</u>	NA	NA	NA	(max.)
<u>NO. OF PARKING SPACES:</u>	NA	NA	NA	(min./max)
<u>NO. OF LOADING AREAS:</u>	NA	NA	NA	(min.)
<u>DISTANCE TO NEAREST BLDG.</u> <u>ON SAME LOT:</u>	NA	NA	NA	(min.)

Describe where applicable, other occupancies on same lot, the size of adjacent buildings on same lot, and type of construction proposed, e.g.; wood frame, concrete, brick, steel, etc.

There will be no impact to any of the referenced resources or structures. Detailed plans included.

1. SEE CAMBRIDGE ZONING ORDINANCE ARTICLE 5.000, SECTION 5.30 (DISTRICT OF DIMENSIONAL REGULATIONS).
2. TOTAL GROSS FLOOR AREA (INCLUDING BASEMENT 7'-0" IN HEIGHT AND ATTIC AREAS GREATER THAN 5') DIVIDED BY LOT AREA.
3. OPEN SPACE SHALL NOT INCLUDE PARKING AREAS, WALKWAYS OR DRIVEWAYS AND SHALL HAVE A MINIMUM DIMENSION OF 15'.



**CITY OF CAMBRIDGE
MASSACHUSETTS
BOARD OF ZONING APPEAL
831 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02139
617 349-6100**

2018 OCT 30 AM 10:50
OFFICE OF THE CITY CLERK
CAMBRIDGE, MASSACHUSETTS

BZA APPLICATION FORM

Plan No: BZA 016980-2018

GENERAL INFORMATION

The undersigned hereby petitions the Board of Zoning Appeal for the following:

Special Permit : v Variance : _____ Appeal : _____

PETITIONER : Sprint Spectrum Realty - C/O Simon Brighenti, Jr, JD Centerline Communicatio

PETITIONER'S ADDRESS : 750 West Center St. Suite 301 West Bridgewater, MA 02379

LOCATION OF PROPERTY : 120 Vassar St Cambridge, MA 02139

TYPE OF OCCUPANCY : Utilities ZONING DISTRICT : Residence C-3 Zone

REASON FOR PETITION :
Other: Remove/replace telecommunications equipment

DESCRIPTION OF PETITIONER'S PROPOSAL :

Replace existing telecommunications equipment with upgraded equipment. There will be no significant change to the operational or visual aspects of the current facility.

SECTIONS OF ZONING ORDINANCE CITED :

- | | |
|-----------------------|--|
| Article <u>4.000</u> | Section <u>4.32.G.1 (Telecommunication Facility).</u> |
| Article <u>4.000</u> | Section <u>Footnote 49 (Telecommunication Facility).</u> |
| Article <u>10.000</u> | Section <u>10.40 (Special Permit).</u> |
| Article <u>6409</u> | Section <u>47 USC Section 6409 (a)</u> |

Original Signature(s) : *Simon Brighenti, Jr.*
(Petitioner(s) / Owner)

Simon Brighenti, JD
(Print Name)

Address : 750 West Center St. Suite 301
West Bridgewater, MA 02379

Tel. No. : 413 - 237 - 1550

E-Mail Address : Sbrighenti@eline-llc.com

Date : 10/25/18

120 Vassar St



Dek

120 Vassar St.

Petitioner

53-54 /57-169 / 59-39
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
OFFICE OF THE TREASURER
238 MAIN ST. - SUITE 200
CAMBRIDGE, MA 02142

54-25-28 /55-16-27 /56-4 /57-170-173 /58-74-95-109
58-120-157-158-161-162-165 / 59-37-40-41
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
C/O MIT INVESTMENTS MANAGEMENT CO
ONE BROADWAY, SUITE 09-200
CAMBRIDGE, MA 02142

CENTERLINE COMMUNICATIONS
C/O SIMON BRIGHENTI, JR., JD
750 WEST CENTER STREET - SUITE 301
WEST BRIDGEWATER, MA 02379

58-163
THETA DEUTERON HOUSE CORP.
C/O EDWING ADLERMAN
40 E. 9TH ST. APT 11G
NEW YORK, NY 10003

58-166
COMMONWEALTH OF MASS
STATE HOUSE
BOSTON, MA 02133

59-32
TAU CHAPTER ASSOCIATION INC
C/O PETER WENDER
10 DANA ST
CAMBRIDGE, MA 02138

59-34
ASSOCIATION OF SIGMA TAU
C/O TODD HIERS
6034 ROSE
HOUSTON, TX 77007

59-35
PHI BETA EPSILON CORPORATION
C/O JOSEPH G. KUBIT, TREASURER
P.O. BOX 1133
NEW LONDON, NH 03257

60-6 / 61-13-14 / 61-17/62-18-34-36-41 /52A-21
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
C/O MIT INVESTMENTS MANAGEMENT CO
ONE BROADWAY, SUITE 09-200
CAMBRIDGE, MA 02142

274-1D
HAROLD WHITWORTH PIERCE BOATHOUSE/MIT
406 MEMORIAL DR
CAMBRIDGE, MA 02139

DEPARTMENT OF CONSERVATION &
RECREATION
251 CAUSEWAY STREET - SUITE 600
BOSTON, MA 02114-2119



CAMBRIDGE HISTORICAL COMMISSION

831 Massachusetts Avenue, 2nd Floor, Cambridge, Massachusetts 02139
Telephone: 617 349 4683 TTY: 617 349 6112
E-mail: histcomm@cambridgema.gov URL: http://www.cambridgema.gov/Historic

Bruce A. Irving, *Chair*; Susannah Barton Tobin, *Vice Chair*; Charles M. Sullivan, *Executive Director*
William G. Barry, Jr., Robert G. Crocker, Joseph V. Ferrara, Chandra Harrington, Jo M. Solet, *Members*
Gavin W. Kleespies, Paula A. Paris, Kyle Sheffield, *Alternates*

Jurisdiction Advice

To the Owner of Property at 120 Vassar Street

The above-referenced property is subject to the jurisdiction of the Cambridge Historical Commission (CHC) by reason of the status referenced below:

- Old Cambridge Historic District
- Fort Washington Historic District
(M.G.L. Ch. 40C, City Code §2.78.050)
- Avon Hill Neighborhood Conservation District
- Half Crown – Marsh Neighborhood Conservation District
- Harvard Square Conservation District
- Mid Cambridge Neighborhood Conservation District
- Designated Landmark
- Property is being studied for designation: _____
(City Code, Ch. 2.78., Article III, and various City Council Orders)
- Preservation Restriction or Easement (as recorded)
- Structure is fifty years or more old and therefore subject to CHC review of any application for a demolition permit, if one is required by ISD. (City Code, Ch. 2.78, Article II). See the back of this page for definition of demolition.
- No jurisdiction: not a designated historic property and the structure is less than fifty years old.
- No local jurisdiction, but the property is listed on the National Register of Historic Places; CHC staff is available for consultation, upon request.
Staff comments: _____

The Board of Zoning Appeal advises applicants to complete Historical Commission or Neighborhood Conservation District Commission reviews before appearing before the Board.

If a line indicating possible jurisdiction is checked, the owner needs to consult with the staff of the Historical Commission to determine whether a hearing will be required.

CHC staff initials SLB

Date August 21, 2018

Received by Uploaded to Energov

Date August 21, 2018

Relationship to project BZA 16980-2018

cc: Applicant
Inspectional Services Commissioner

Demolition Delay Ordinance and Application Information

The Demolition Delay Ordinance (Chapter 2.78, Article II of the Cambridge Municipal Code) was adopted by the City Council in 1979 to afford public review of demolition permit applications for potentially significant buildings. When the Historical Commission determines that a building is significant and should be preserved, demolition will be delayed for up to six months so that solutions can be sought to preserve the building indefinitely. The Ordinance covers all buildings over 50 years old, city-wide. The Historical Commission archives provide dates of construction for all properties in the City.

Demolition is defined in the ordinance as "the act of pulling down, destroying, removing or razing a building or commencing the work of total or substantial destruction with the intent of completing the same." The Inspectional Services Commissioner has provided further guidelines to outline what actions require a demolition permit. **In addition to complete demolition of a building, the following actions may require a demolition permit,**

- **removal of a roof,**
- **removal of one side of a building,**
- **gutting of a building's interior to the point where exterior features (windows, etc.) are impacted, and**
- **removal of more than 25% of a structure.**

Please contact the building inspector or a staff member of the Historical Commission if you have questions about whether a demolition permit is required for a particular project.

Demolition permit applications can be obtained from the Inspectional Services Department. The completed application should be submitted to the Historical Commission, where the staff will review the application. If the Executive Director of the Historical Commission makes an initial determination that the building is significant, a public hearing will be scheduled with Historical Commission. If the staff makes an initial determination that the building is not significant, the application is released for further review by the Building Commissioner.

More information about the demolition permit application procedures is available on the Historical Commission's web site or by calling or dropping by the Historical Commission office.

July 2003

Cambridge Historical Commission
831 Massachusetts Ave., 2nd Fl.
Cambridge, MA 02139
Ph: 617/349-4683 or TTY: 617/349-6112
<http://www.cambridgema.gov/Historic>



Cambridge GIS maps available online at: <http://www.cambridgegis.gov/GIS>

FY 2018



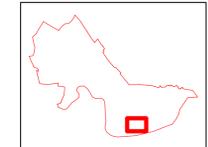
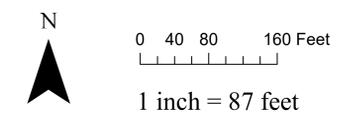
**City of Cambridge
Assessing Department**

795 Massachusetts Ave.
Cambridge, MA 02139

- | | | | |
|---------------|-----------------|------------------------|-----------------------------|
| Buildings | Water | 10 Lot Number | 100 Parcel size in Sq. Ft. |
| Lot Line | Sub-Parcel Line | 57 Block Number | 44.0LC Land Court Dimension |
| Block Line | Easement | 10 Cam Street Number | 65.0 Survey Dimensions |
| City Boundary | Railway | (125.0) Deed Dimension | |

DISCLAIMER:
All Real Property shown on this map was compiled from existing Assessor's Tax Maps dated 1920 to 2017 and maintained by the City Assessor's Office and the Department of Public Works. Subsequent maintenance has been completed using the City of Cambridge Geographic Information System (GIS). Parcels have not been created from survey, and map is suitable for assessing purposes only.

The City of Cambridge assumes no legal responsibility for information shown on this map.



Parcel Block Map
57

SPECIAL CONSTRUCTION NOTE:
 SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
 * COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER OR A&E VENDOR).
 * COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
 * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.



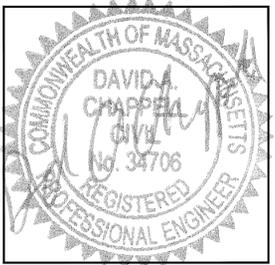
PROJECT: DO MACRO UPGRADE
SITE NAME: MIT WEST
SITE CASCADE: BS73XC160
SITE ADDRESS: 120 VASSAR STREET
 CAMBRIDGE, MA 02139
SITE TYPE: ROOFTOP

NOTE:
 OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

1 INTERNATIONAL BLVD, SUITE 800
 MAHWAH, NJ 07495
 (800) 357-7641

95 RYAN DRIVE, SUITE 1
 RAYNHAM, MA 02767
 (844) 748-8878
 www.centerlinecommunications.com

R.K. EXECUTIVE CENTRE
 201 BOSTON POST ROAD WEST, SUITE 101
 MARLBOROUGH, MA 01752
 (508) 481-7400
 www.chappellengineering.com



THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

SITE INFORMATION

PROPERTY OWNER:
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 238 MAIN STREET
 CAMBRIDGE, MA 02142

LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 N 42° 21' 30.10"
 42.358360°

LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 W 71° 05' 45.78"
 71.096050°

COUNTY:
 MIDDLESEX

ZONING JURISDICTION:
 CITY OF CAMBRIDGE

ZONING DISTRICT:
 RESIDENCE C-3

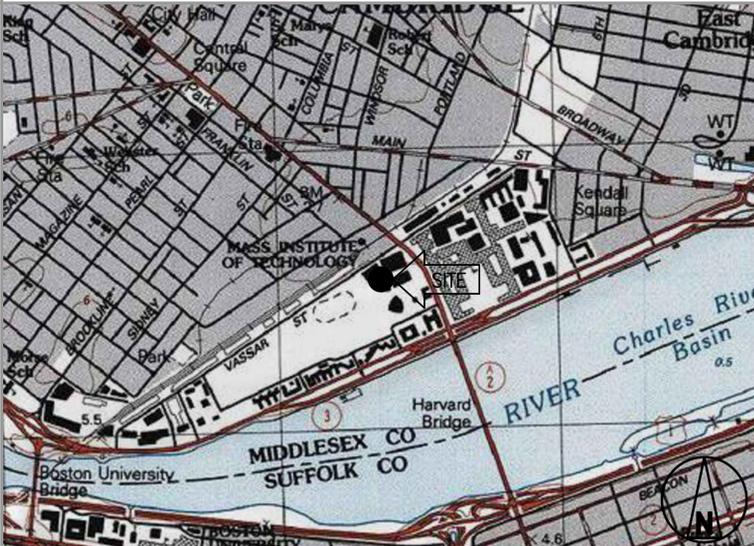
POWER COMPANY:
 NSTAR ELECTRIC
 PHONE: 1-888-633-3797

AAV PROVIDER:
 COMCAST
 PHONE: 1-800-COMCAST

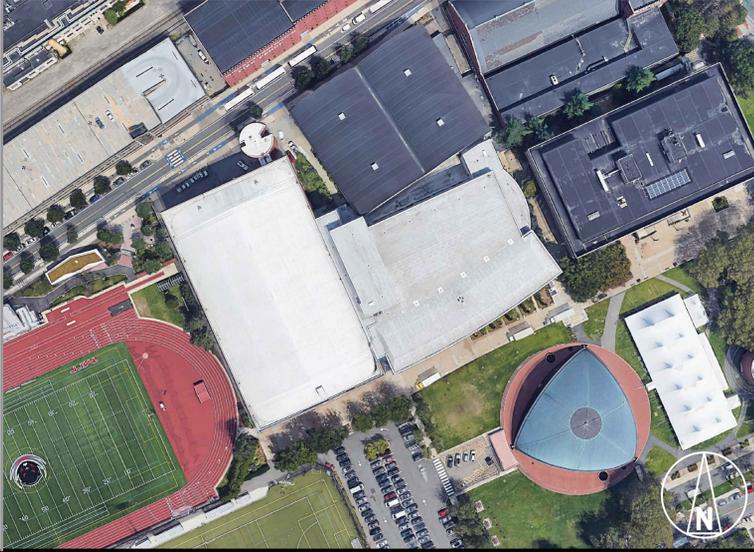
SPRINT CM:
 CHAD WAGNER
 PHONE: 617-529-0973
 Chad.Wagner@sprint.com

EQUIPMENT SUPPLIER:
 ALCATEL-LUCENT
 600 MOUNTAIN AVENUE
 MURRAY HILL, NJ 07974
 (908) 508-8080

AREA MAP



LOCATION MAP - GOOGLE EARTH 2-C CONFIRMATION



PROJECT DESCRIPTION

SPRINT EQUIPMENT MODIFICATIONS REQUIRED TO SUPPORT MODERNIZATION OF AN EXISTING WIRELESS COMMUNICATIONS FACILITY AND UTILIZATION OF FCC BROADBAND SPECTRUM LICENSE FOR 2.5GHz FREQUENCY, INCLUDING INSTALLATION OF:

GROUND-LEVEL RAN EQUIPMENT, CONSISTING OF

- (1) NEW 2.5GHz RETROFIT KIT & RECTIFIERS (AS REQ'D) WITHIN EXISTING MM-BTS EQUIPMENT CABINET & RACK
- (1) ADDITIONAL BATTERY STRING(S) WITHIN EXISTING BATTERY RACK

TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:

- (4) PANEL ANTENNAS TO REPLACE EXISTING (2) PANEL ANTENNAS
- (2) REMOTE RADIO HEADS (RRH)

SPECIAL ZONING NOTE:
 BASED ON INFORMATION PROVIDED BY SPRINT REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, ADMINISTRATIVE REVIEW).

GENERAL NOTES

- THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
 - ADA COMPLIANCE NOT REQUIRED.
 - PORTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
 - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
 - BUILDING CODE: MASSACHUSETTS STATE BUILDING CODE 780-CMR (9TH EDITION)
 - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
 - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811



DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.	CHK.	BY.
T-1	TITLE SHEET	0	JMT	JRV
SP-1	OUTLINE SPECIFICATIONS	0	JMT	JRV
SP-2	OUTLINE SPECIFICATIONS	0	JMT	JRV
SP-3	OUTLINE SPECIFICATIONS	0	JMT	JRV
A-1	ROOF & EQUIPMENT PLANS	0	JMT	JRV
A-2	ELEVATION PLAN	0	JMT	JRV
A-3	ANTENNA PLANS	0	JMT	JRV
A-4	RF DATA SHEET	0	JMT	JRV
A-5	RAN WIRING DIAGRAMS	0	JMT	JRV
A-6	EQUIPMENT DETAILS	0	JMT	JRV
A-7	EQUIPMENT DETAILS	0	JMT	JRV
S-1	STRUCTURAL DETAILS	0	JMT	JRV
E-1	ONE-LINE DIAGRAM & PPC DETAILS	0	JMT	JRV
E-2	GROUNDING DETAILS & NOTES	0	JMT	JRV

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.

SPRINT: _____ DATE: _____

CONSTRUCTION MANAGER: _____ DATE: _____

LEASING/SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/TOWER OWNER: _____ DATE: _____

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/04/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS73XC160

SITE NAME:
MIT WEST

SITE ADDRESS:
 120 VASSAR STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

CONTINUED FROM SP-1:

12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS, TESTS, AND INSPECTIONS

PART 1 - GENERAL

1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 **RELATED DOCUMENTS:**

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 **SUBMITTALS:**

- A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
- B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN.
- C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 **TESTS AND INSPECTIONS:**

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SWEEPS AND FIBER TESTS PER SPRINT TS-0200 CURRENT VERSION ANTENNA LINE ACCEPTANCE STANDARDS.
 2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD
 5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
 6. LIEN WAIVERS
 7. FINAL PAYMENT APPLICATION
 8. REQUIRED FINAL CONSTRUCTION PHOTOS
 9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
 10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 **COMMISSIONING:** PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

1.6 **INTEGRATION:** PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 **REQUIREMENTS FOR TESTING:**

- A. THIRD PARTY TESTING AGENCY: WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
 1. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
 2. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
 3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 **REQUIRED TESTS:**

- A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
 2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
 3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
 4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
 5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.

6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 **REQUIRED INSPECTIONS:**

- A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.
- B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
 4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
 5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
 6. ANTENNA AZIMUTH, DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)
 7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
 8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.), SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
 9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
 10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- F. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 **DELIVERABLES:** TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
 3. SITE RESISTANCE TO EARTH TEST.
 4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
 6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING:
 1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
 2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
 3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
 4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
 6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
 7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
 8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
 9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 500 - PROJECT REPORTING

PART 1 - GENERAL

1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 **RELATED DOCUMENTS:**

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 **WEEKLY REPORTS:**

- A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
- B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 **PROJECT CONFERENCE CALLS:**

- A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 **PROJECT TRACKING IN SMS:**

- A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 **ADDITIONAL REPORTING:**

- A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 **PROJECT PHOTOGRAPHS:**

- A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
 1. SHELTER AND TOWER OVERVIEW.
 2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
 5. PHOTOS OF TOWER SECTION STACKING.
 6. CONCRETE TESTING / SAMPLES.
 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
 11. COAX CABLE ENTRY INTO SHELTER.
 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
 24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
 25. ALL BTS GROUND CONNECTIONS.
 26. ALL GROUND TEST WELLS.
 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
 30. GPS ANTENNAS.
 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
 32. DOGHOUSE/CABLE EXIT FROM ROOF.
 33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
 34. MASTER BUS BAR.
 35. TELCO BOARD AND NIU.
 36. ELECTRICAL DISTRIBUTION WALL.
 37. CABLE ENTRY WITH SURGE SUPPRESSION.
 38. ENTRANCE TO EQUIPMENT ROOM.
 39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
 40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.
 41. ANTENNA AND MAST GROUNDING.
 42. LANDSCAPING - WHERE APPLICABLE.

3.6 **FINAL PROJECT ACCEPTANCE:** COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

SECTION 07 500 - ROOF CUTTING, PATCHING AND REPAIR

SUMMARY:

THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING-MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

1.4 **SUBMITTALS:**

- A. **PRE-CONSTRUCTION ROOF PHOTOS:** COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.
- B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)
- C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.



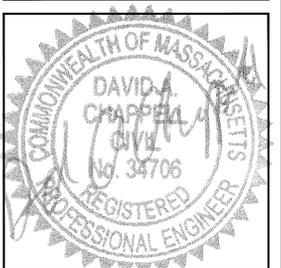
1 INTERNATIONAL BLVD, SUITE 800
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(800) 357-7641



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SUBMITTALS			
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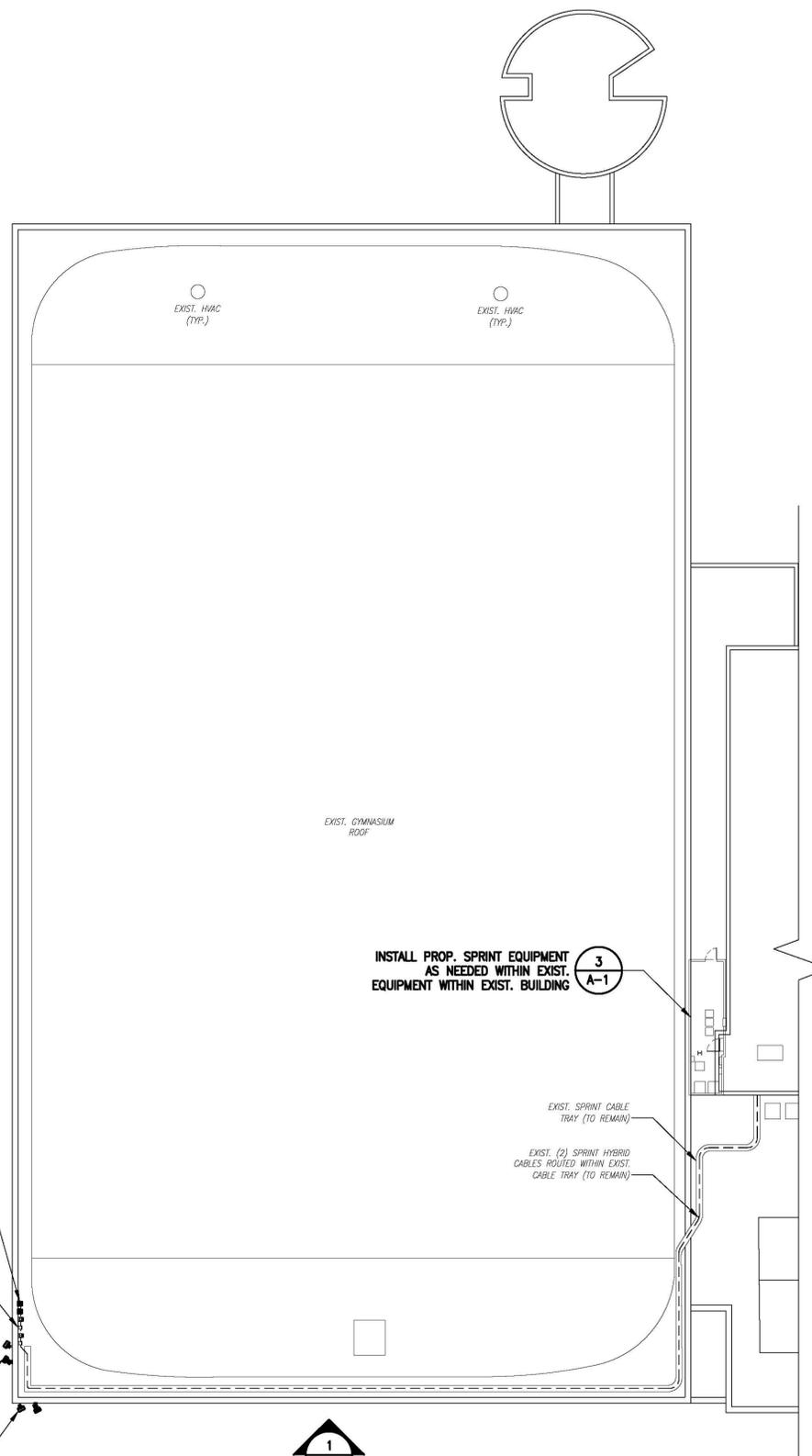
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BS73XC160

SITE NAME:
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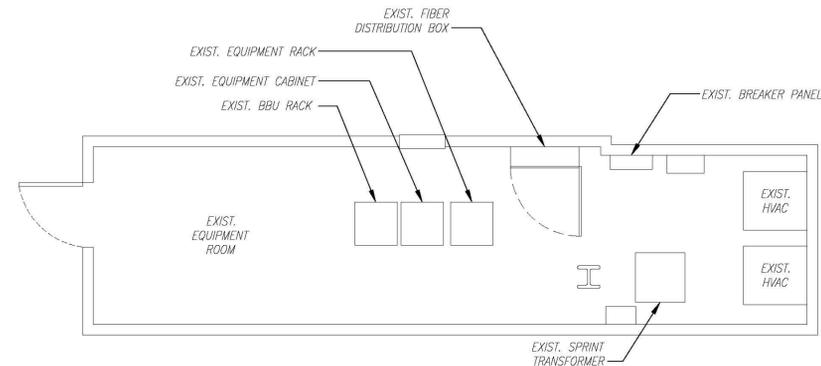
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120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
OUTLINE SPECIFICATIONS

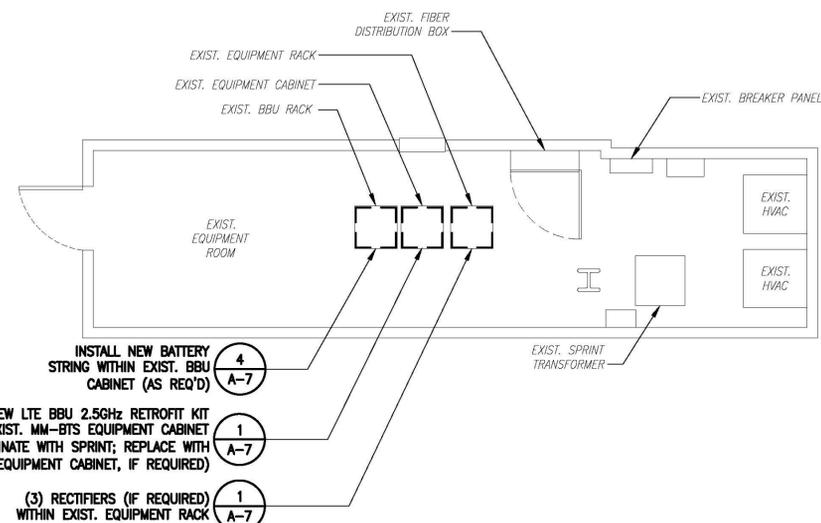
SHEET NUMBER
SP-2



ROOF PLAN
SCALE: 1" = 10'-0"
1
A-1



EXISTING EQUIPMENT PLAN
SCALE: 1/4" = 1'-0"
2
A-1



PROPOSED EQUIPMENT PLAN
SCALE: 1/4" = 1'-0"
3
A-1



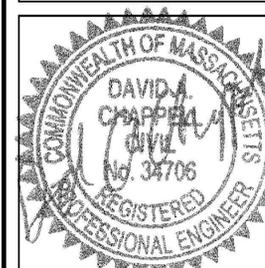
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SITE NUMBER:
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SITE NAME:
MIT WEST
SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
ROOF & EQUIPMENT PLANS

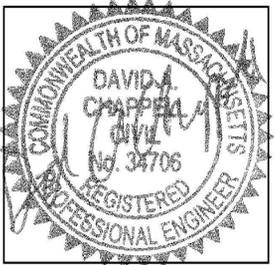
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A-1

SPECIAL CONSTRUCTION NOTE:
 SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
 * COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER OR A&E VENDOR).
 * COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
 * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

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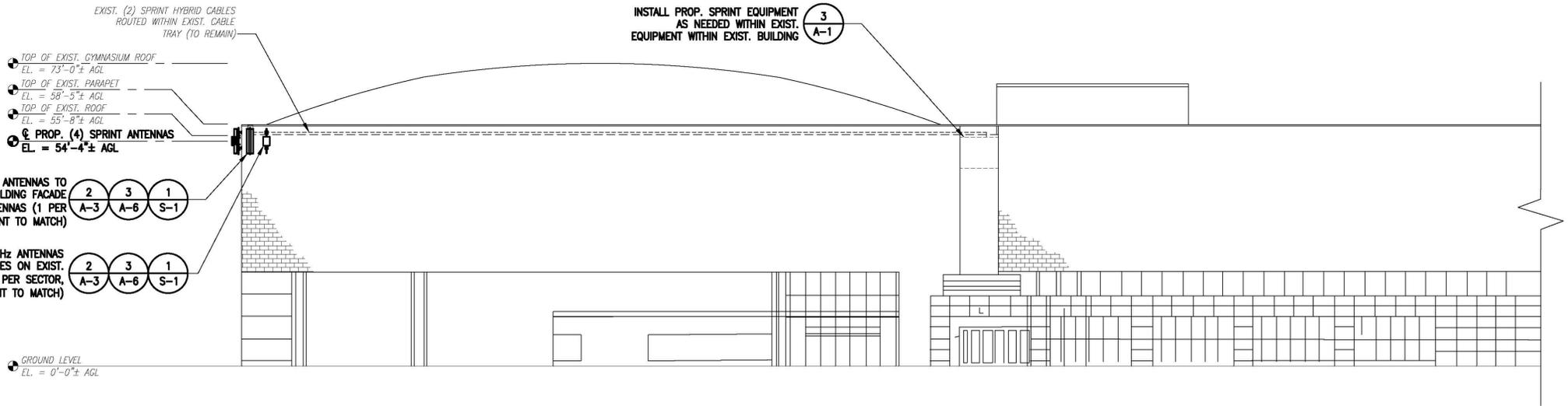
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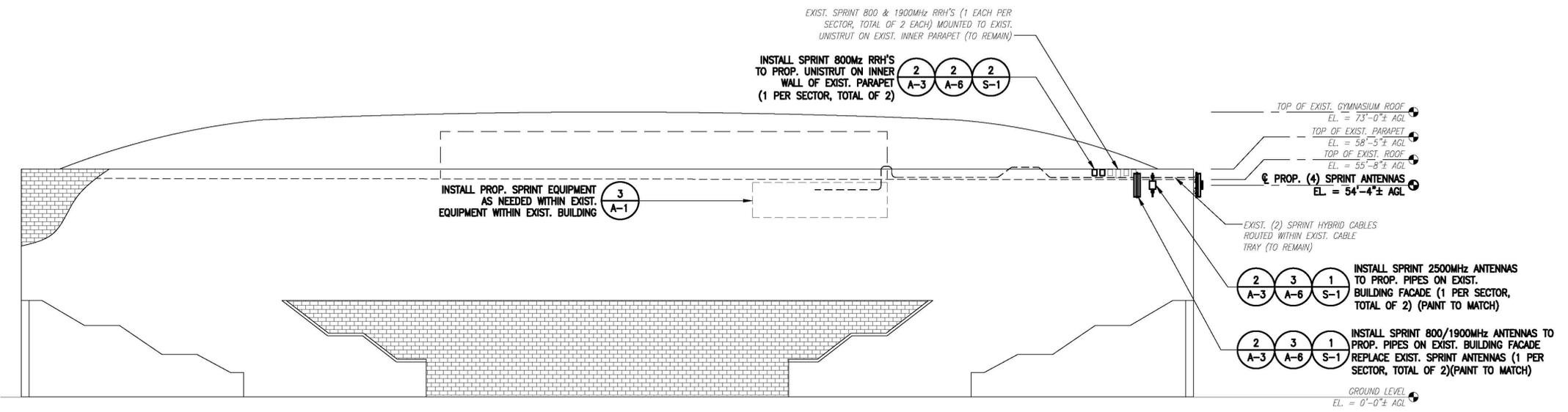
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 BS73XC160
 SITE NAME:
 MIT WEST
 SITE ADDRESS:
 120 VASSAR STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
 ELEVATION

SHEET NUMBER
 A-2



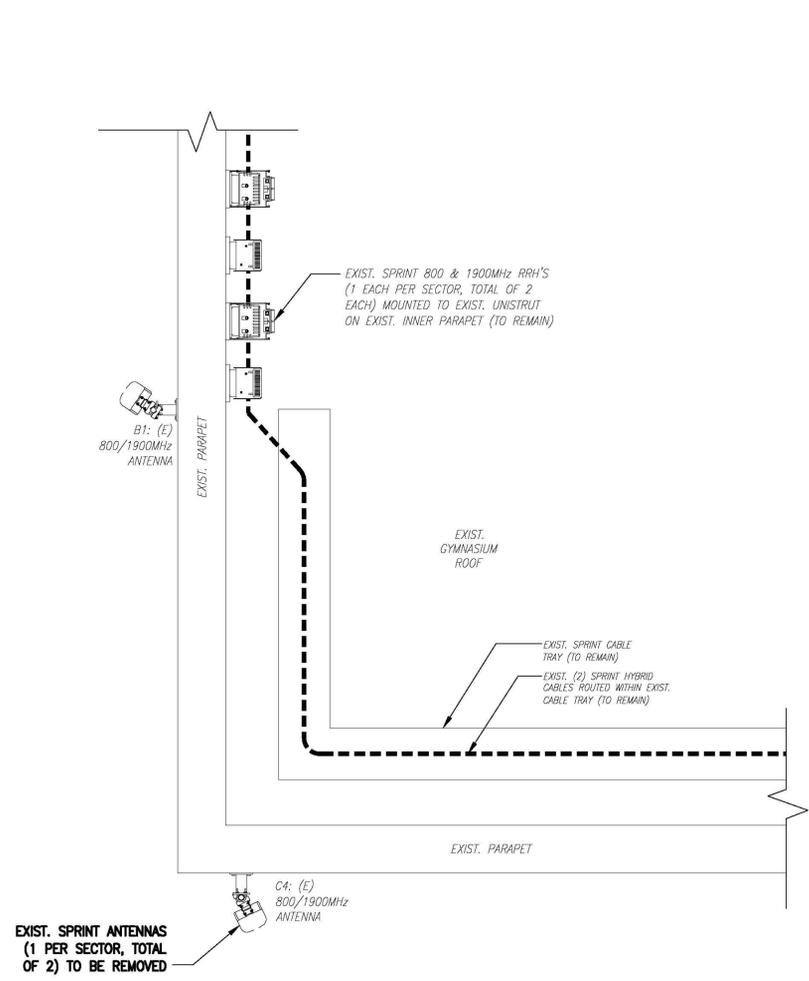
SOUTH ELEVATION
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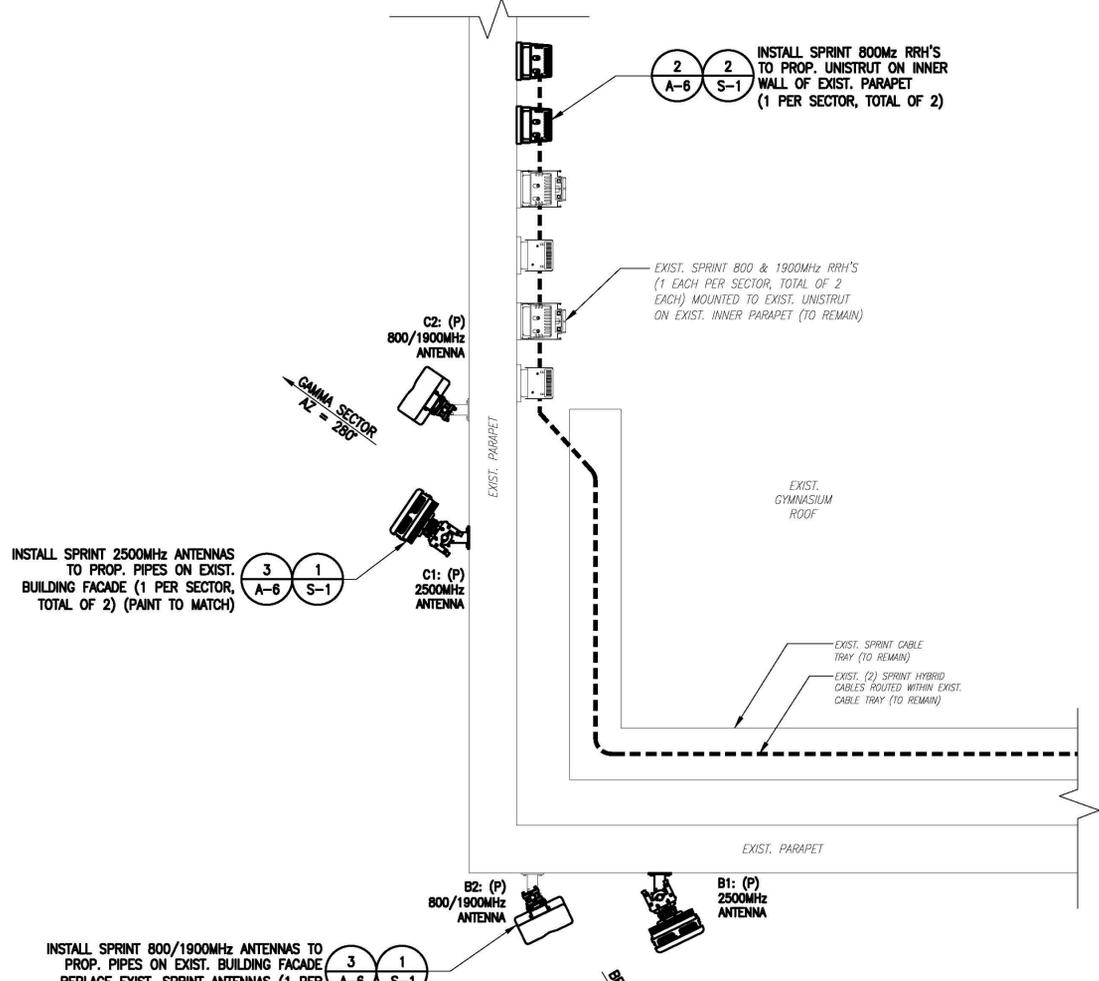
WEST ELEVATION
 SCALE: 1/16" = 1'-0"
 0 16'-0" 32'-0" 48'-0"

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 * COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
 * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

ANTENNA STATUS LEGEND:
 EMPTY - EMPTY PIPE
 (E) - EXISTING
 (P) - INSTALL
 NV - SPRINT ANTENNA
 2.5 - SPRINT ANTENNA



EXISTING ANTENNA PLAN
 SCALE: N.T.S. 1
A-3



PROPOSED ANTENNA PLAN
 SCALE: N.T.S. 2
A-3

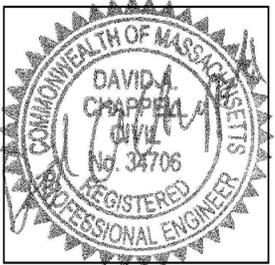
NOTE:
 EXISTING AZIMUTHS FROM
 CEA SITE VISIT, DATED
 4/18/2018.

NOTE:
 VERIFY PROPOSED AZIMUTHS
 WITH RF ENGINEER PRIOR
 TO INSTALLATION.

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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
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 SITE NAME:
 MIT WEST
 SITE ADDRESS:
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 CAMBRIDGE, MA 02139

SHEET TITLE
 ANTENNA PLANS

SHEET NUMBER
 A-3

Site Data	Region: Northeast	Market: Boston	Revision 2.8	Rev Date: 21-Feb-2018
	Cascade ID	BS73XC160	#N/A	RFDS Type: Preliminary
	Augment Import Code: SPDOMU01_DO_Macro_Upgrade	Augment: DO Macro Upgrade	Structure Type: Rooftop	
	Address: 120 Vassar ST, Cambridge, MA, 02139	Sprint Eng. Name: Bill Hastings	Eng. Phone: 978-590-9700	
	Latitude: 42.358077 Longitude: -71.096564	Manager Name: Jonathan Hull	Jonathan.B.Hull@sprint.com	Manager Phone: 617-233-2920
	Detailed RFDS Description:	RFE: Praveen Meesarapu	Praveen.Meesarapu@sprint.com	RFE Phone: 301-728-0006
	Triband final config swap existing antenna to 8-port 800/1900 antenna. Add 2nd 800 RRHs and 2.5 Massive MIMO Antenna System.	Filter Analysis Complete: YES	Border Analysis Complete: YES	Channel Plan Complete: YES
		Alpha	Beta	Gamma
	1900MHz_Azimuth		130	280
	1900MHz_No_of_Antennas		1	1
1900MHz_RADCenter(ft)		54.3	54.3	
1900MHz_AntennaMake		Commscope	Commscope	
1900MHz_AntennaModel		NNVV-65B-R4	NNVV-65B-R4	
1900MHz_Horizontal_Beamwidth		60	60	
1900MHz_Vertical_Beamwidth		6.4	6.4	
1900MHz_AntennaDimensions(in)&Weight(lbs)		72 x 19.6 x 7.8 77.4 (lbs)	72 x 19.6 x 7.8 77.4 (lbs)	
1900MHz_AntennaGain(dBi)		17.7	17.7	
1900MHz_E_Tilt		0	0	
1900MHz_M_Tilt		0	0	
1900MHz_Effective_Tilt		0	0	
1900MHz_Carrier_Forecast_Year_2017				
1900MHz_RRHManufacturer		ALU	ALU	
1900MHz_RRHModel		RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	
1900MHz_RRHCount		1	1	
1900MHz_RRHSpecs		25 x 11.1 x 11.4 (60 lbs)	25 x 11.1 x 11.4 (60 lbs)	
1900MHz_RRHLocation		Top of the Pole/Tower	Top of the Pole/Tower	
1900MHzCombinerModel		No Combiner Required	No Combiner Required	
1900MHzPowerSplitRatio(Main/Split)				
1900MHzSplitterManufacturer				
1900MHzSplitterModel		ok	No Splitter Required	
1900MHzNumberofSplitters		0	0	
1900MHz_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGroundMount,ft)		8	8	
1900MHz_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)		LCF12-50J	LCF12-50J	
1900MHz_Top_Jumper#2_Length(RRHtoCombinerforTTifapplicable,ft)				
1900MHz_Top_Jumper#2_Cable_Model(RRHtoCombinerforTTifapplicable)				
1900MHz_Main_Cable_Length(ft)		79.3	79.3	
1900MHz_Main_Cable_Model		HB114-1-08U4-M5F	HB114-1-08U4-M5F	
1900MHz_Bottom_Jumper#1_Length(GroundbasedRRHtoCombiner-OR-MainCoax,ft)				
1900MHz_Bottom_Jumper#1_Cable_Model(GroundbasedRRHtoCombiner-OR-MainCoax)				
1900MHz_Bottom_Jumper#2_Length(Groundbased-CombinertoMainCoax,ft)				
1900MHz_Bottom_Jumper#2_Cable_Model(Groundbased-CombinertoMainCoax)				

NOTES:
1. COMMENTS IN RED TEXT PROVIDED BY A&E VENDOR.
2. ANTENNA RAD CENTER BASED ON EQUIPMENT DATABASE AND STRUCTURAL ANALYSIS.
3. SPRINT CM SHALL CONFIRM HYBRID CABLE LENGTH, COAX JUMPER LENGTH AND AISG CABLE LENGTH BEFORE PREPARING BOM. A&E RECOMMENDED HYBRID CABLE LENGTH BASED ON NV 2.5 EQUIPMENT AUDIT PLUS 20 FEET FOR (2) 10-FOOT COILS AT EACH END OF THE FIBER TRUNK.

NOTE:
GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RF DATA SHEET IS USED FOR EQUIPMENT INSTALLATION.

SPECIAL WORK NOTE:
JUMPERS (COAX/AISG) FROM THE 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

800	800MHz_Azimuth		130	280
	800MHz_No_of_Antennas		1	1
	800MHz_RADCenter(ft)		54.3	54.3
	800MHz_AntennaMake		NA	NA
	800MHz_AntennaModel		Antenna assigned on a different band	Antenna assigned on a different band
	800MHz_Horizontal_Beamwidth		NA	NA
	800MHz_Vertical_Beamwidth		NA	NA
	800MHz_AntennaDimensions(in)&Weight(lbs)		NA NA	NA NA
	800MHz_AntennaGain(dBi)		NA	NA
	800MHz_E_Tilt		0	0
800MHz_M_Tilt		0	0	
800MHz_Effective_Tilt(degrees)		0	0	
800MHz_RRHManufacturer		ALU	ALU	
800MHzCombinerModel		No Combiner Required	No Combiner Required	
800MHz_RRHModel		RRH 800 MHz 2x50W	RRH 800 MHz 2x50W	
800MHz_RRHSpecs		15.8 x 13.0 x 14.0 (64 lbs)	15.8 x 13.0 x 14.0 (64 lbs)	
800MHz_RRHCount		2	2	
800MHz_RRHLocation		Top of the Pole/Tower	Top of the Pole/Tower	
800MHz_BILT_Border_Filter		na	na	
800MHz_SplitterManufacturer				
800MHz_SplitterModel				
800MHzNumberofSplitters		0	0	
800_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)		8	8	
800_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)		LCF12-50J	LCF12-50J	
800MHz_Main_Cable_Length(ft)		NA	NA	
800MHz_Main_Cable_Model		NA	NA	
800_Bottom_Jumper#1_Length(GroundbasedRRHtoMainCoax)				
800_Bottom_Jumper#1_Cable_Model(GroundbasedRRHtoMainCoax)				
2500	2500MHz_Azimuth		130	280
	2500MHz_No_of_Antennas		1	1
	2500MHz_RADCenter(ft)		54.3	54.3
	2500MHz_AntennaMake		Nokia	Nokia
	2500MHz_AntennaModel		AAHC	AAHC
	2500MHz_Horizontal_Beamwidth		0	0
	2500MHz_Vertical_Beamwidth		0	0
	2500MHz_AntennaHeight(in)		25.6 x 19.7 x 9.9 99.2 (lbs)	25.6 x 19.7 x 9.9 99.2 (lbs)
	2500MHz_AntennaGain(dBi)		0	0
	2500MHz_E_Tilt		0	0
2500MHz_M_Tilt		0	0	
2500MHz_Effective_Tilt(degrees)		0	0	
2500MHz_RRHManufacturer		Nokia	Nokia	
2500MHzCombinerModel		comb model	comb model	
2500MHz_RRHModel		AAHC	AAHC	
2500MHz_RRHCount		1	1	
2500MHz_RRHLocation		Built into Antenna	Built into Antenna	
2500MHzPowerSplitRatio(Main/Split)				
2500MHzSplitterManufacturer				
2500MHzSplitterModel				
2500MHzNumberofSplitters		0	0	
2500_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)		8	8	
2500_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)		LCF12-50J	LCF12-50J	
2500MHz_Main_Cable_Length(ft)		N/A	N/A	
2500MHz_Main_Cable_Model		N/A	N/A	
2500_Bottom_Jumper#1_Length(GroundbasedRRHtoMainCoax)				
2500_Bottom_Jumper#1_Cable_Model(GroundbasedRRHtoMainCoax)				



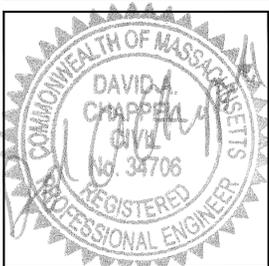
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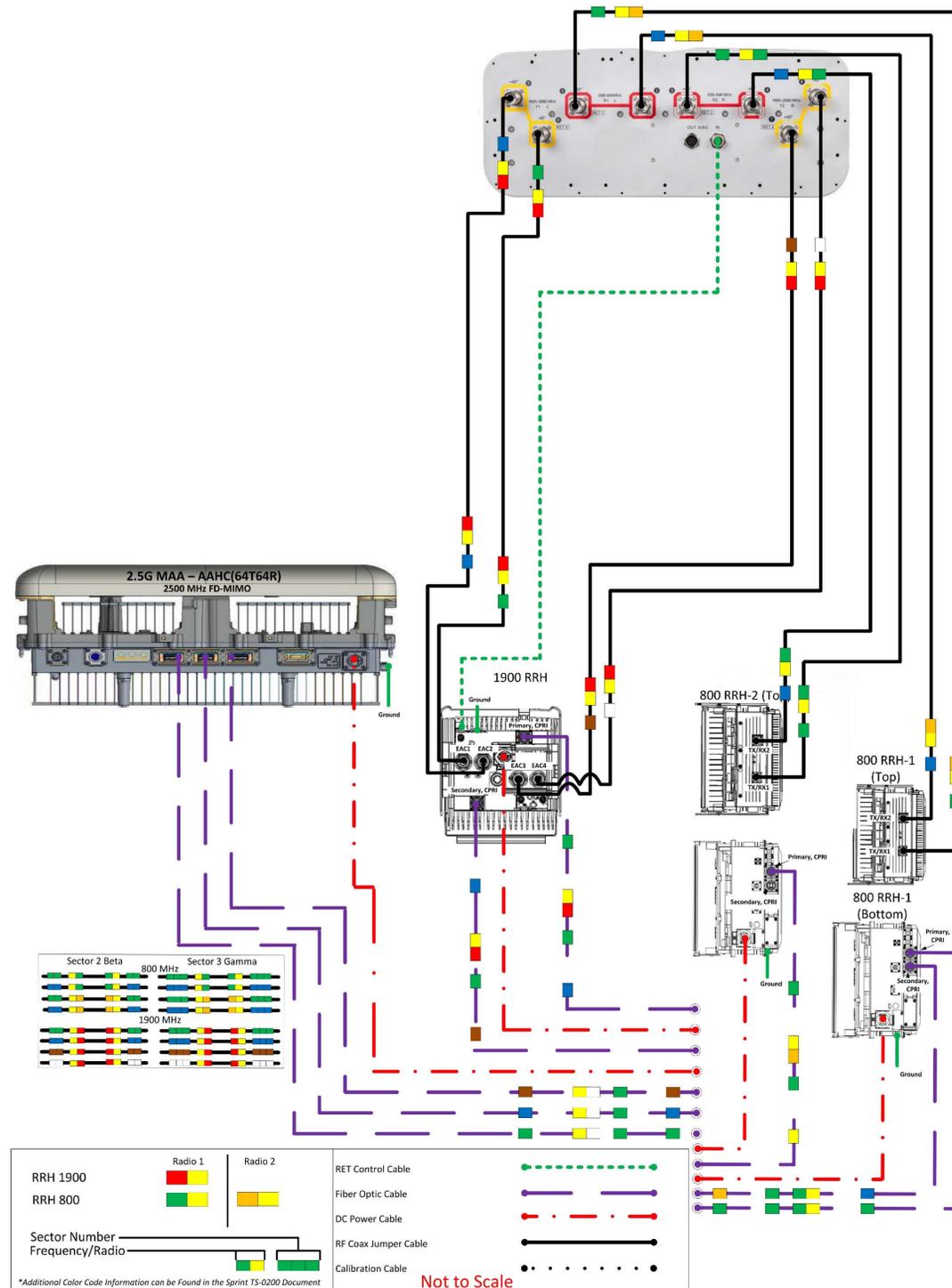
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/04/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS73XC160
SITE NAME:
MIT WEST
SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
RF DATA SHEET

SHEET NUMBER
A-4

COMMSCOPE_NNW-65B-R4



PLUMBING DIAGRAM
SCALE: N.T.S.

1
A-4

SPRINT CONSTRUCTION STANDARDS:

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

- CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES - (CURRENT VERSION), INCLUDING EXHIBITS A-M.
- CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A - STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (CURRENT VERSION).
- GROUNDING STANDARDS: EXTERIOR GROUNDING SYSTEM DESIGN.
- GROUNDING STANDARDS (SUPPLEMENT): ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412 AND SPRINT ENGINEERING LETTER EL-0504 DATED 04.20.12.
- WEATHER PROOFING STANDARDS: EXCERPT FROM CONSTRUCTION STANDARDS EXHIBIT A, SECTION 3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS.
- COLOR CODING: SPRINT NEXTEL ANT AND LINE COLOR CODING PER SPRINT TS-0200 CURRENT VERSION.
- GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT IN RFDS, HALT ANTENNA WORK FOR WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING SPRINT-PROVIDED CONTACT INFORMATION FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5GHz ANTENNA AT SAME CL AS 1.9GHz ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILT DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900MHz AND 800MHz ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
- AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHz, 1.9GHz, AND 2.5GHz. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
- GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5GHz ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
- GENERAL CONTRACTOR IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREE. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILTS SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. [HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/](http://www.3ztelecom.com/antenna-alignment-tool/).



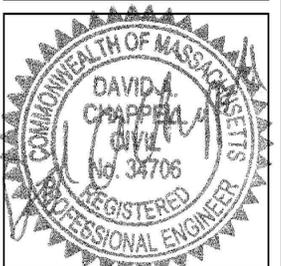
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BS73XC160

SITE NAME:
MIT WEST

SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
RAN WIRING
DIAGRAMS

SHEET NUMBER
A-5

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF. RFS	CABLE	LENGTH	DC CONDUCTOR
	FIBER ONLY	VARIES	USE NV HYBRIFLEX
	HYBRIFLEX	<200'	8 AWG
	HYBRIFLEX	225-300'	6 AWG
	HYBRIFLEX	325-375'	4 AWG

RFS HYBRIFLEX RISER CABLE SCHEDULE

Power	Hybrid cable	Length
Fiber Only (Existing DC Power)	MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	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
8 AWG Power	MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	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
6 AWG Power	MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
4 AWG Power	MN: HB114-21U3M12-300F	300 ft
	MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

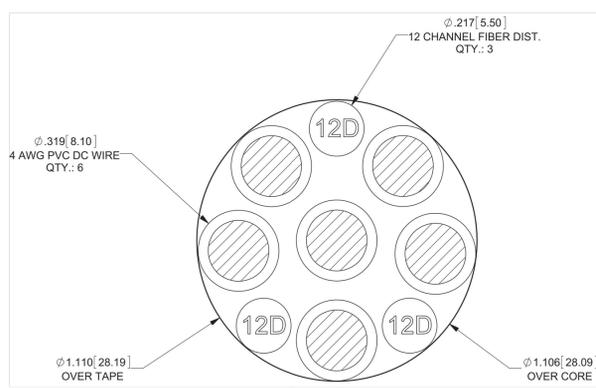
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Power	Hybrid Jumper cable	Length
Fiber Only	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	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	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	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

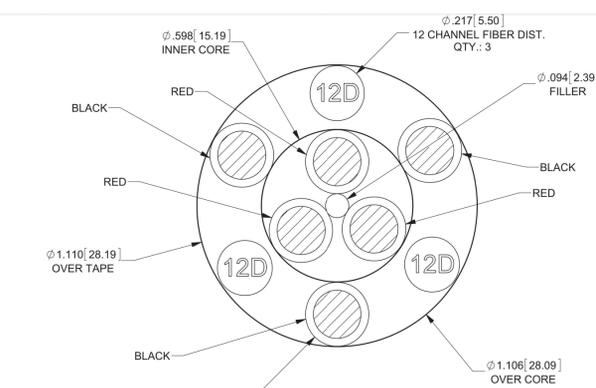
* NOTE: SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.

2500MHz HYBRID CABLE X-SECTION & DATA

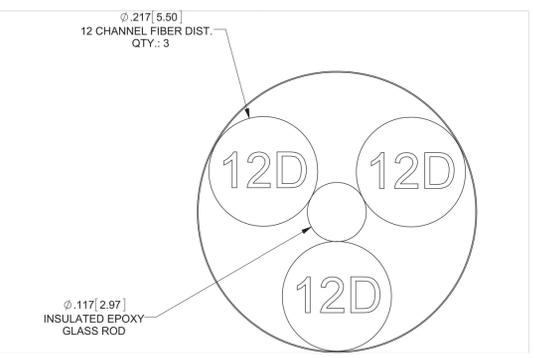
1
A-6



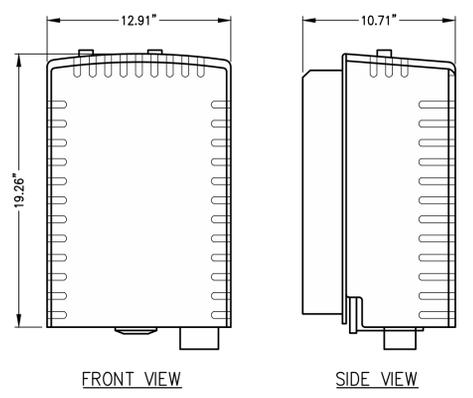
4 AWG



8 AWG & 6 AWG

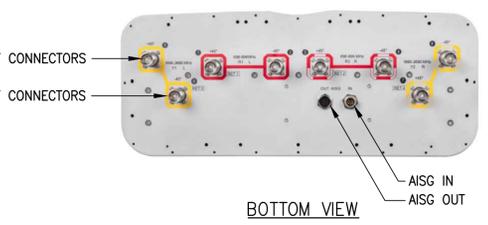


FIBER ONLY

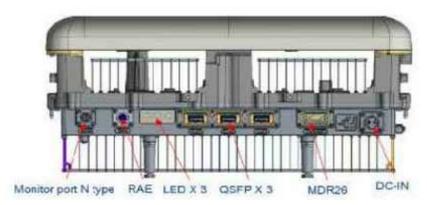


800MHz RRH
DIMENSIONS: 12.91"x10.71"x19.26"
WEIGHT: 53 LBS

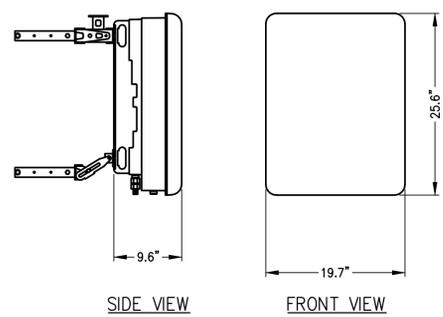
RRH DETAILS
N.T.S.



BOTTOM VIEW

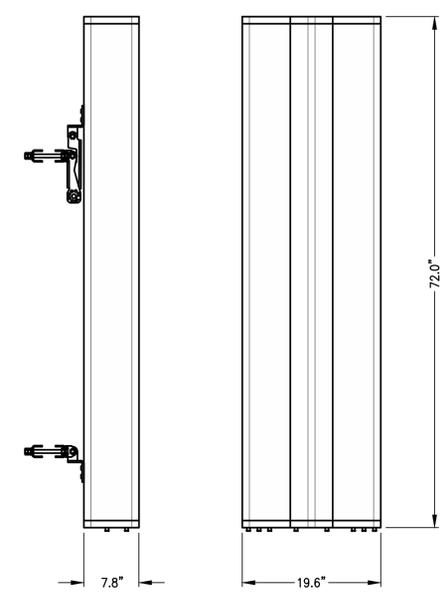


BOTTOM VIEW



2500MHz ANTENNA

NOKIA AAHC PANEL ANTENNA
DIMENSIONS: 25.6"x19.7"x9.6"
WEIGHT: 103.6 LBS W/ HARDWARE
FREQUENCY RANGE: 2496-2690 MHZ



800/1900MHz ANTENNA

COMMSCOPE NNWV-65B-R4 PANEL ANTENNA
DIMENSIONS: 72.0"x19.6"x7.8"
WEIGHT: 77.4 LBS W/ HARDWARE
FREQUENCY RANGE: 694-896 MHz
1695-2690 MHz

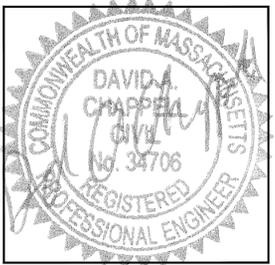
ANTENNA DETAILS
N.T.S.

3
A-6

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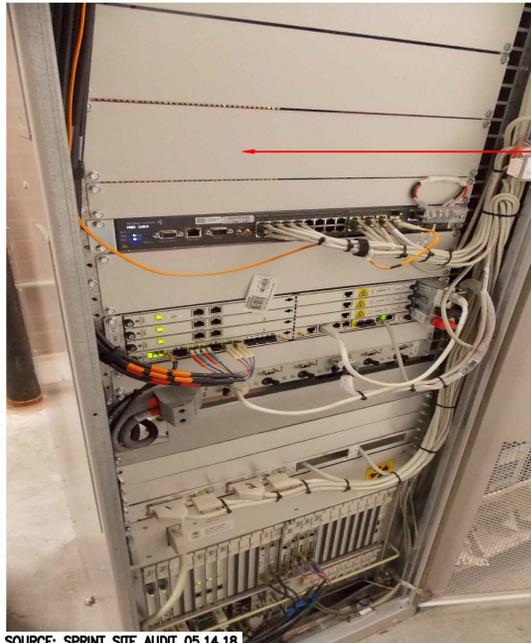
SITE NUMBER: BS73XC160
SITE NAME: MIT WEST
SITE ADDRESS: 120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6



INSTALL (3) RECTIFIERS IN EXIST. RECTIFIER RACK (IF REQ'D.)



INSTALL NEW LTE BBU 2.5 GHz IN EXIST. MM-BTS 9928 EQUIPMENT CABINET

SOURCE: SPRINT SITE AUDIT 05.14.18

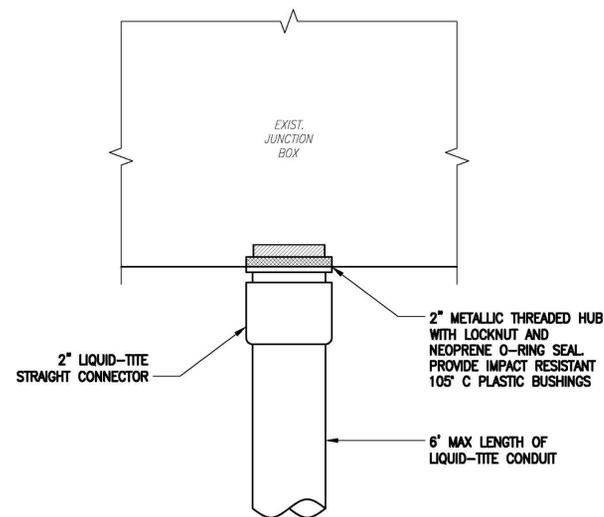
FRONT VIEW
EXISTING MM-BTS EQUIPMENT CABINET 1
A-7
SCALE: NTS



INSTALL BATTERY STRING(S) AS REQ'D TO EXIST. BATTERY BACKUP CABINET

SOURCE: CEA SITE VISIT 05.14.18

FRONT VIEW
EXISTING BATTERY RACK 1
A-7
SCALE: NTS



FIBER JUNCTION BOX PENETRATION 3
A-7
SCALE: NTS



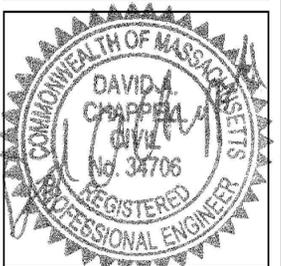
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
BS73XC160

SITE NAME:
MIT WEST

SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
EQUIPMENT
DETAILS

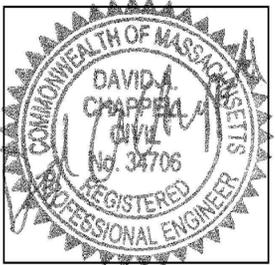
SHEET NUMBER
A-7

SPECIAL CONSTRUCTION NOTE:
 SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
 * COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER OR A&E VENDOR).
 * COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
 * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

Sprint VISION
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/04/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
 BS73XC160
 SITE NAME:
 MIT WEST
 SITE ADDRESS:
 120 VASSAR STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
 STRUCTURAL
 DETAILS

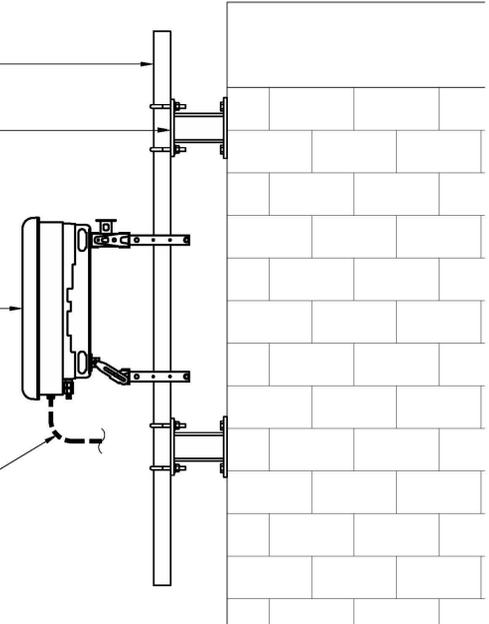
SHEET NUMBER
 S-1

FURNISH AND INSTALL 2 1/2" SCH. 40 PIPE (LENGTH AS REQ'D)
 INSTALL PROP. WALL MOUNTED STANDOFF MOUNT ON EXIST. BOLTS (REPLACE EXIST. BOLTS IF REQ'D) (TYP. 2 PER PIPE)

INSTALL 2500MHz ANTENNA TO PROP. PIPE (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

EACH SECTOR: INSTALL (3) HYBRID JUMPER CABLES. FURNISH & INSTALL CABLE BLOCKS/HANGERS, CUSHIONS & OTHER SUITABLE MEANS TO SECURELY ATTACH & FASTEN CABLE FROM MPO MEDUSA TO RRH

SPECIAL INSTALLATION NOTE:
 COAX JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.



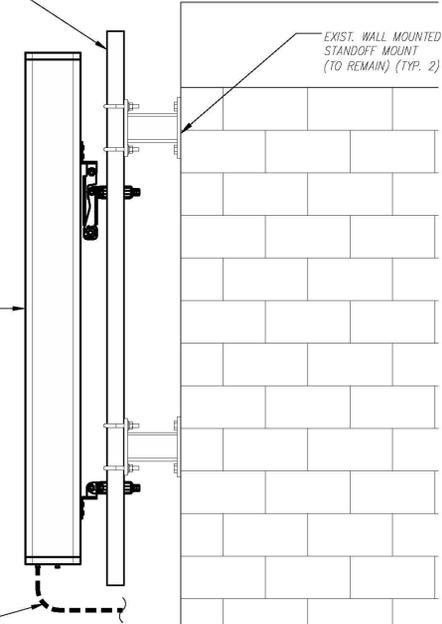
2500MHZ ANTENNA

FURNISH AND INSTALL 2 1/2" SCH. 40 PIPE (LENGTH AS REQ'D)

INSTALL 800/1900MHz ANTENNA TO EXIST. PIPE (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

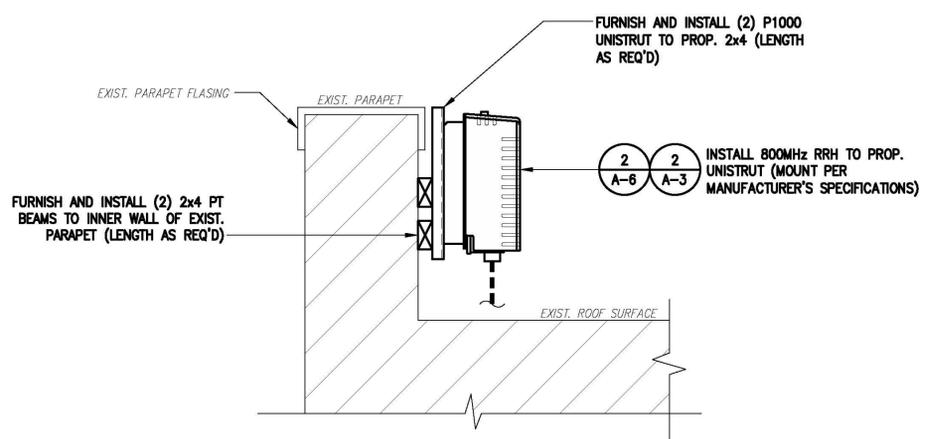
EACH SECTOR: FURNISH & INSTALL (16) 1/2" COAX CABLE JUMPERS [(6) FOR 800/1900MHz ANTENNA & (10) FOR 2500MHz ANTENNA], (1) 1/2" ALIBRATION CABLE, & (1) 1/2" RET CABLE, TIE-WRAPs, CABLE BLOCKS/HANGERS, CUSHIONS & OTHER SUITABLE MEANS TO SECURELY ATTACH & FASTEN CABLES TO TOWER STRUCTURE, ANTENNA SUPPORT PLATFORM & ANTENNA PIPE MAST

EXIST. WALL MOUNTED STANDOFF MOUNT (TO REMAIN) (TYP. 2)

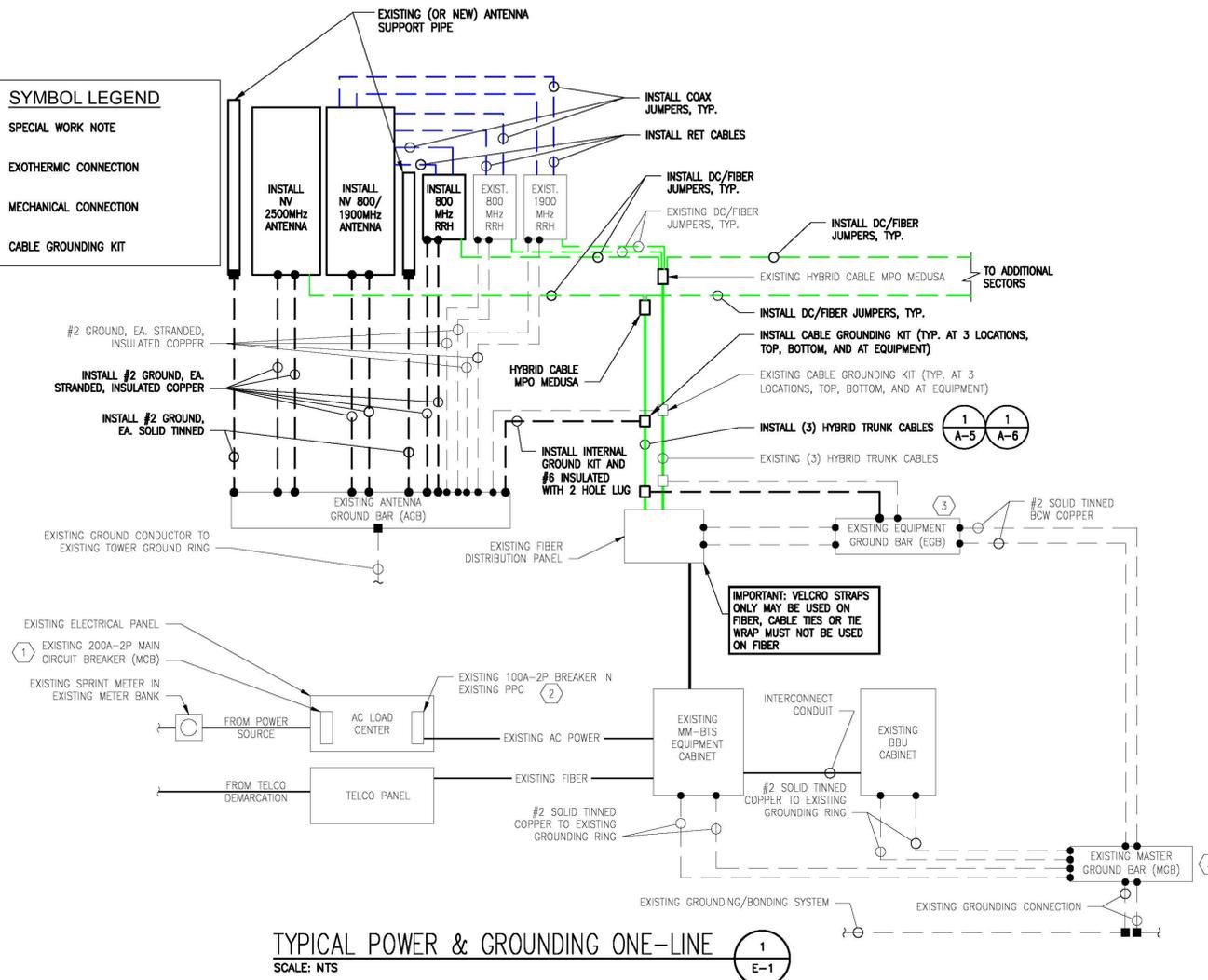
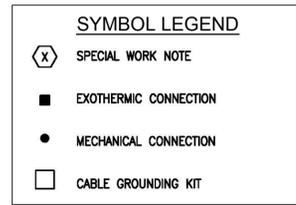


800/1900MHZ ANTENNA

TYPICAL ANTENNA MOUNTING DETAIL 1 S-1
 SCALE: N.T.S.



TYPICAL RRH MOUNTING DETAIL 2 S-1
 SCALE: N.T.S.

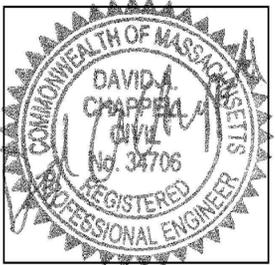


SPECIAL WORK NOTE:

1. G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0" (OR CURRENT VERSION)
2. G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING FOR A 100-AMP, 240V CIRCUIT.
3. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
-ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
-SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)

ELECTRICAL 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) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
- 3) ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
- 4) ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- 5) GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
- 6) ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- 7) THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- 8) GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- 9) 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.
- 10) BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- 11) ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- 12) RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- 13) RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BITS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- 14) FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
- 15) COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.



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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/04/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS73XC160

SITE NAME:
MIT WEST

SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
ONE-LINE DIAGRAM
& PPC DETAILS

SHEET NUMBER
E-1

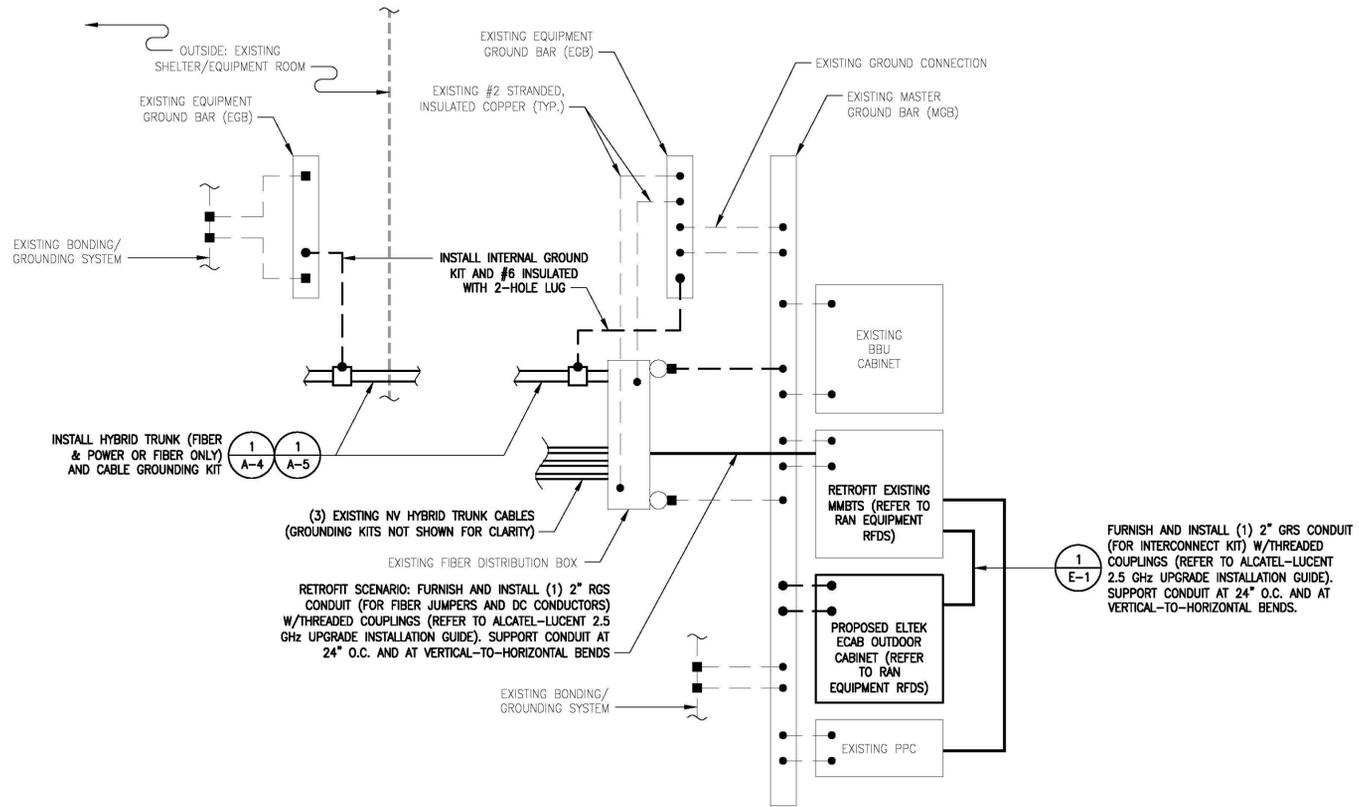


EXIST. 200A-2P MAIN CIRCUIT BREAKER (MCB) WITHIN EXIST. CIRCUIT BREAKER

FURNISH & INSTALL (1) 100A-2P CIRCUIT BREAKER FOR ELTEK ECAB EXPANSION CABINET. (IF REQ'D)

EXIST. BREAKER PANEL
SCALE: NTS

2
E-1



NOTE: HYBRIFLEX (FIBER & POWER) AND HYBRIFLEX (FIBER-ONLY) SHOWN. REFER TO RAN EQUIPMENT RFDS FOR SITE-SPECIFIC SCENARIO.

EQUIPMENT GROUNDING SCHEMATIC
SCALE: N.T.S.

SYMBOL LEGEND

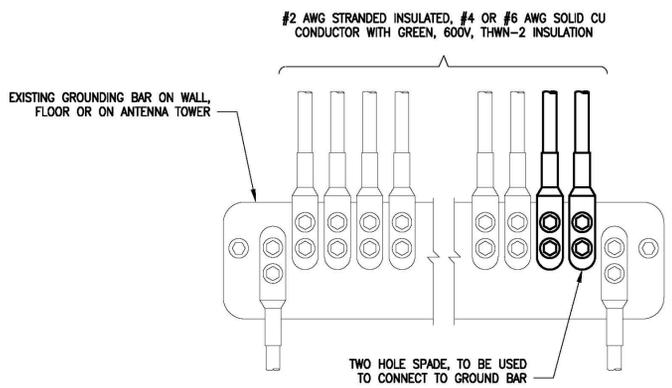
■	EXOTHERMIC CONNECTION
●	MECHANICAL CONNECTION
□	CABLE GROUNDING KIT
---	GROUNDING/BONDING
—	CONDUIT

UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE 2# SOLID TINNED BCW.

NOTE: EXISTING NV EQUIPMENT CONDUITS NOT SHOWN FOR CLARITY. REFER TO RECORD AS-BUILT NV PHOTOS AND NV AS-BUILT DRAWINGS.

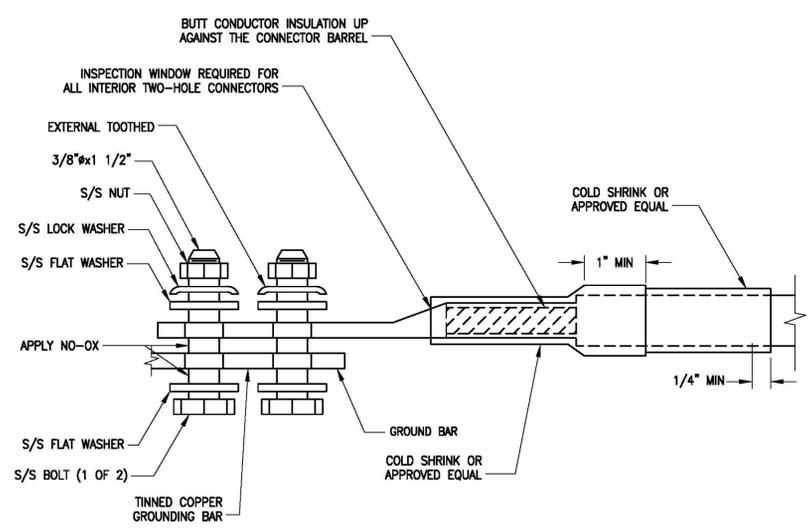
PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

- GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250—GROUNDING AND BONDING.
- GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSEO DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING".
- PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
- GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON-CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
- 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.
- ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
- ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
- 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.
- EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WILL HAVE (2) CONNECTIONS.
- GROUND HYBRIFLEX SHIELD AT TOP, BOTTOM AND AT TRANSITION TO HYBRIFLEX JUMPER CABLES AT EQUIPMENT CABINET ENTRANCE USING MANUFACTURER'S GUIDELINES. WHEN HYBRIFLEX CABLE EXCEEDS 200', GROUND AT INTERVALS NOT EXCEEDING 100'.
- THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
- EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE. THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH AN ANTI-OXIDANT (THOMAS BETTS KOPR-SHILD) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
- 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.
- THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x2" COPPER (FOR OUTDOOR APPLICATIONS IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
- ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
- ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
- FOR NEW OR REPAIRED GROUNDING EQUIPMENT. REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
-ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
-SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)



- NOTES**
- APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
 - IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR
SCALE: N.T.S.

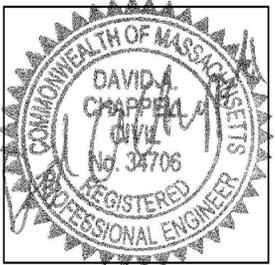


TWO HOLE LUG
SCALE: N.T.S.

Sprint VISION
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/04/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS73XC160
SITE NAME:
MIT WEST
SITE ADDRESS:
120 VASSAR STREET
CAMBRIDGE, MA 02139

SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
E-2

June 28, 2018

Sprint
1 International Blvd
Suite 800
Mahwah, NJ 07495

Structural Evaluation of Antenna Loads

RE:

Candidate Number	BS73XC160
Candidate Name	MIT West
Candidate Address	120 Vassar Street, Cambridge, MA 02139

To whom it may concern:

Chappell Engineering Associates, LLC has reviewed the existing antenna installation at the above referenced location. Based upon the site audit, the existing antenna mounts consist of antennas mounted to the existing penthouse façade.

The current Sprint antenna configuration consists of:

Antenna(s)	Remote Radio Unit	Antenna Support
(2) RFS APXV9ERR18-C-A20	(2)800MHz + (2)1900MHz*	Exist. façade mount on penthouse
* Existing RRU's are mounted below antennas on pipe mounts		

Sprint currently proposes to reconfigure the existing site to add the additional antennas listed below:

Antenna(s)	Remote Radio Unit	Antenna Support
(2) NNVV-65B-R4	(2)800MHz + (2)1900MHz*	Exist. façade mount on penthouse
(2) Nokia AAHC	(2)800MHz + (2)2500MHz*	Exist. façade mount on penthouse
* Proposed RRU's will be mounted below/behind the proposed antenna on inside of pipe mounts		

The proposed antennas will supplement the existing in-service antennas and RRU's currently installed at the site.

Based upon our review of the existing antenna mounts and our review of the proposed aggregate antenna and associated hardware loads, Chappell Engineering Associates, LLC has determined that the existing structure and the proposed antenna and RRU mounting configuration are adequate. Photos of the existing installation as well as the appropriate antenna and RRU mounting details have been included in our construction drawings which are enclosed for your convenience.

If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,

CHAPPELL ENGINEERING ASSOCIATES, LLC


Clement J Salek, P.E.
CJS/cjs





July 31, 2018

City of Cambridge
Board of Zoning Appeals
831 Massachusetts Avenue
Cambridge, MA 02139

RE: Sprint Spectrum Realty, LLC Special Permit Application – 120 Vassar Street, Cambridge
Supporting Statement

Dear Chair and Members:

I am a network development consultant to Sprint Spectrum, LLC (“Sprint”). Sprint is an FCC-licensed provider of wireless telecommunications services to the general public in the City of Cambridge and throughout the Commonwealth of Massachusetts. The purpose of this supplement is to provide support to the within application seeking approval to modify the existing *base station*¹ or *eligible support structure* previously installed at the building owned by Massachusetts Institute of Technology (“MIT”) at 120 Vassar Street. The building is located in a substantially non-residential neighborhood within the Residence C-3 zoning district and has hosted at least one wireless facility for several years. The existing Sprint *base station* consists of antennas secured by mounts to the roof of the building and camouflaged behind screening. The within application seeks to replace existing antennas with a new generation of antennas which will provide more robust service to the students and visitors to the MIT facility and surrounding properties and roads.

Applicant submits that this application constitutes an *eligible facilities request* in that the request for modification does not substantially change the physical dimensions of the *base station*. There is no increase in height of the *support structure*, nor does the proposed modification defeat the *concealment elements* of the *support structure*²

Approval of the within Application will result in little visible change to the existing facility. There will be no increase in vehicular or pedestrian traffic subsequent to installation, no increased impact on municipal resources, and Sprint will continue to monitor and maintain the facility pursuant to current practice.

¹ Certain italicized terms in context shall be defined as set forth in Section 6409 of the Middle-Class Tax Relief and Job Creation Act of 2012, 47 U.S.C. 1455 Section 6409.

² Note that one sector does not currently incorporate a *concealment element*. However, in that case, there will be no addition to the number of antennas.

*120 Vassar Street
Cambridge, MA 02139
Application for Special Permit
July 31, 2018
Page 2 of 2*

The Applicant submits that the accompanying application materials meet the requirements of the City of Cambridge Zoning Ordinance and respectfully request that the requested relief be granted by the Board of Zoning Appeal.

Simon J. Brighenti, Jr. _____

Simon J. Brighenti, Jr., JD
Senior Site Acquisition Consultant
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sbrighenti@clinellc.com |
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