



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

BZA APPLICATION FORM

Plan No: BZA-016961-2018

GENERAL INFORMATION

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

Special Permit : v Variance : Appeal :

PETITIONER : Sprint Spectrum Realty Company, LLC - C/O Simon Brighenti, JD Centerline Com

PETITIONER'S ADDRESS : 750 West Center Street Floor 3 West Bridgewater, MA 02379

LOCATION OF PROPERTY : 400 Main St Cambridge, MA 02142

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

REASON FOR PETITION :

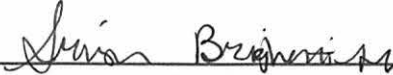
Other: Remove and Replace existing telecom equipment

DESCRIPTION OF PETITIONER'S PROPOSAL :

Remove existing previously-permitted rooftop telecommunication equipment and replace with upgraded equipment. This is an eligible facility request pursuant to 47 USC 1455 (a)

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>4.40 (Footnote 49) (Telecommunication Facility).</u>
Article <u>6409</u>	Section <u>47 USC 1455 (a)</u>

Original Signature(s) : 
 (Petitioner(s) / Owner)

Simon Brighenti, JD.
 (Print Name)

Address : 750 West center St. Ste. 301
West center Bridgewater, MA 02379

Tel. No. : 413-237-1550

E-Mail Address : sbrighenti@clinellc.com

Date : 10/25/18



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Simon Brighenti, J.D.
(Print Name)

Address : 750 West Center Street Ste. 301
West Bridgewater, MA 02379

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

Simon Brighenti, J.D.
 (Print Name)

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

Tel. No. : 413-237-1550

E-Mail Address : Sbrighenti@clinellc.com

Date : 10/25/18

OWNERSHIP CERTIFICATE

Project Address: 400 Main Street

Application Date:

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: 400 Main Street
 for which the record title stands in the name of: MIT
 whose address is: 400 Main Street

by a deed duly recorded in the: Book: 9737 Page: 321
 Registry of Deeds of County: Book: 12083 Page: 668
 OR Registry District of the Land Book: 12954 Page: 374
 Court, Book: Page:
Certificate No.:



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

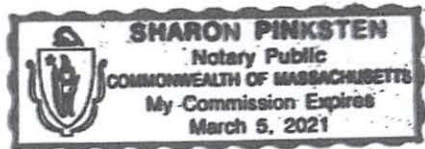
To be completed by Notary Public:

Commonwealth of Massachusetts, County of

The above named Anthony P. Sharon personally appeared before me,
 on the month, day and year October 23, 2018 and made oath that the above statement is true.

Notary: Sharon Pinksten

My Commission expires:



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 400 Main St Cambridge, MA 02142 (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:
The existing base station is an eligible support structure pursuant to Section 6409 of the Middle-Class Tax Relief and Job Creation Act of 2012, 47 USC 1455 Section 6409. There will be little to no change to the existing conditions.
- 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 additional traffic or congestion created subsequent to the minimal disruption concomitant with the removal and replacement of the subject equipment.
- 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 impact upon the existing cited 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 detriment to the health, safety and/or welfare of the residents of and visitors to the area. To the contrary, enhanced and more robust telecommunication service will supplement the ability to communicate in both emergency and non-emergency situations.
- 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 supplemental information.

BZA APPLICATION FORM

DIMENSIONAL INFORMATION

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

LOCATION: 400 Main St Cambridge, MA 02142 **ZONE:** Residence C-3B 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>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(max.)
<u>LOT AREA:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>RATIO OF GROSS FLOOR AREA</u> <u>TO LOT AREA:</u> ²	<u>NA</u>	<u>NA</u>	<u>NA</u>	(max.)
<u>LOT AREA FOR EACH DWELLING UNIT:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>SIZE OF LOT:</u> <u>WIDTH</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>DEPTH</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	
<u>SETBACKS IN FEET:</u> <u>FRONT</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>REAR</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>LEFT SIDE</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>RIGHT SIDE</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>SIZE OF BLDG.:</u> <u>HEIGHT</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(max.)
<u>LENGTH</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	
<u>WIDTH</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	
<u>RATIO OF USABLE OPEN SPACE</u> <u>TO LOT AREA:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>NO. OF DWELLING UNITS:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(max.)
<u>NO. OF PARKING SPACES:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min./max)
<u>NO. OF LOADING AREAS:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(min.)
<u>DISTANCE TO NEAREST BLDG.</u> <u>ON SAME LOT:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	(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.

NA

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'.



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

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Tel. No. : 413-237-1550

E-Mail Address : Sbrighenti@clinellc.com

Date : 10/25/18



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 400 Main 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 demolition permit application anticipated.
- 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 July 16, 2018

Received by Uploaded to Energov

Date July 16, 2018

Relationship to project BZA 16961-2018

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>

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.



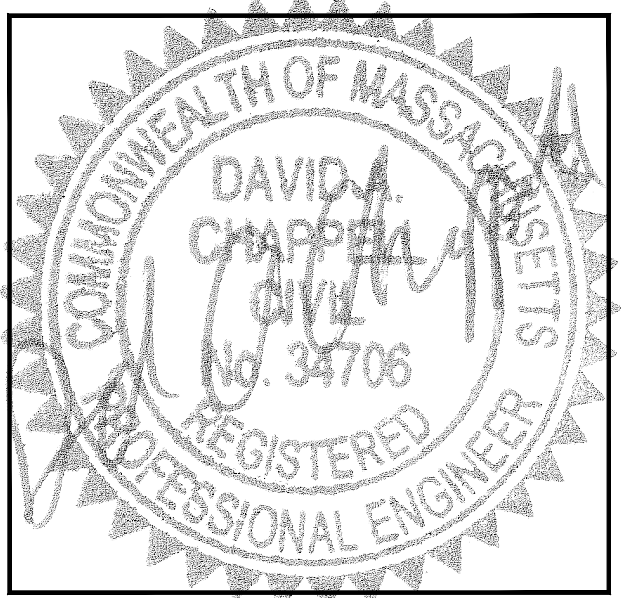
PROJECT: DO MACRO UPGRADE
SITE NAME: MIT EAST
SITE CASCADE: BS80XC001
SITE ADDRESS: 400 MAIN STREET
 CAMBRIDGE, MA 02139
SITE TYPE: ROOFTOP

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.

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

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

CHAPPELL ENGINEERING ASSOCIATES, LLC
 Civil - Structural - Land Surveying
 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, SUITE 200
 CAMBRIDGE, MA 02142

LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 N 42° 21' 44.36"
 42.362322°

LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 W 71° 05' 16.04"
 71.087789°

COUNTY:
 MIDDLESEX

ZONING JURISDICTION:
 CITY OF CAMBRIDGE

ZONING DISTRICT:
 RESIDENCE C-3B

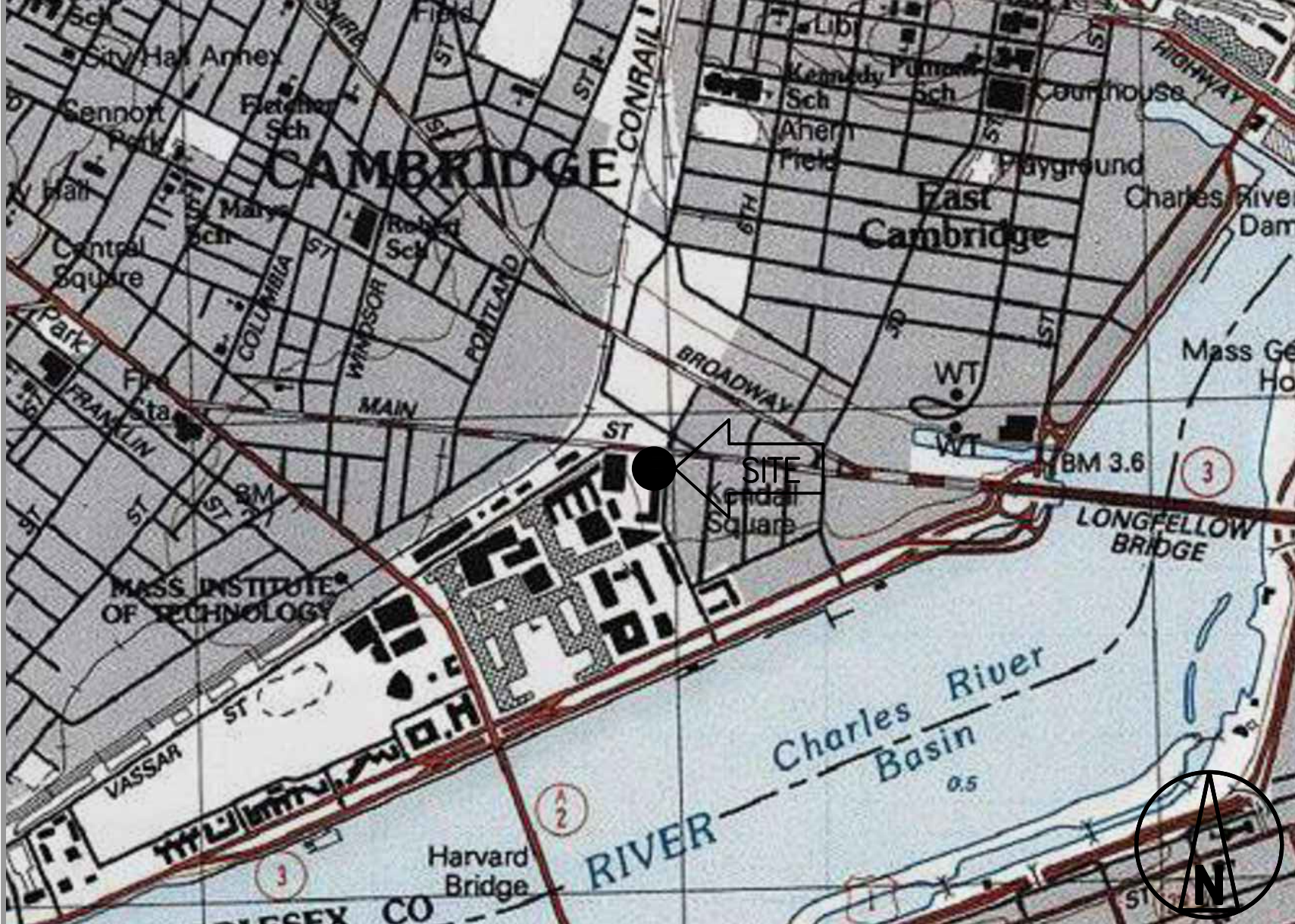
POWER COMPANY:
 NSTAR ELECTRIC
 PHONE: 1-888-633-3797

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
- (1) ADDITIONAL BATTERY STRING(S) WITHIN EXISTING BATTERY RACK

TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:

- (6) PANEL ANTENNAS TO REPLACE EXISTING (3) PANEL ANTENNAS
- (6) 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).

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

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.

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: _____

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



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

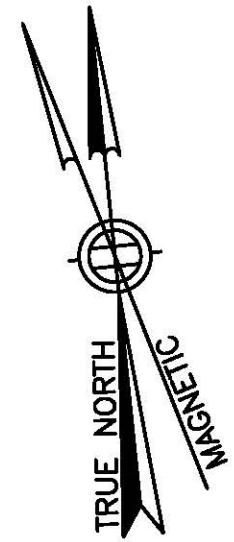
SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



GAMMA SECTOR
EXIST. SPRINT 800 & 1900MHz RRH'S (TOTAL OF 1 EACH) MOUNTED TO EXIST. PIPES ON EXIST. STEEL FRAME (TO REMAIN)

GAMMA SECTOR
INSTALL SPRINT 800/1900MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20" RF TRANSPARENT FLUE TO REPLACE EXIST. SPRINT ANTENNAS

GAMMA SECTOR
INSTALL SPRINT 800/2500MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20" RF TRANSPARENT FLUE

GAMMA SECTOR
INSTALL SPRINT 800MHz & 2500MHz RRH'S TO PROP. PIPES MOUNTED TO EXIST. STEEL FRAME. (TOTAL OF 1 EACH)

ALPHA SECTOR
INSTALL SPRINT 800MHz & 2500MHz RRH'S TO PROP. UNISTRUT ON EXIST. PENTHOUSE FACADE (TOTAL OF 1 EACH)

ALPHA SECTOR
EXIST. SPRINT 800 & 1900MHz RRH'S (TOTAL OF 1 EACH) MOUNTED TO EXIST. UNISTRUT ON EXIST. PENTHOUSE FACADE (TO REMAIN)

ALPHA SECTOR
INSTALL SPRINT 800/1900MHz ANTENNAS TO FLUSH MOUNTED ON EXIST. BUILDING FACADE REPLACE EXIST. SPRINT ANTENNAS (PAINT TO MATCH)

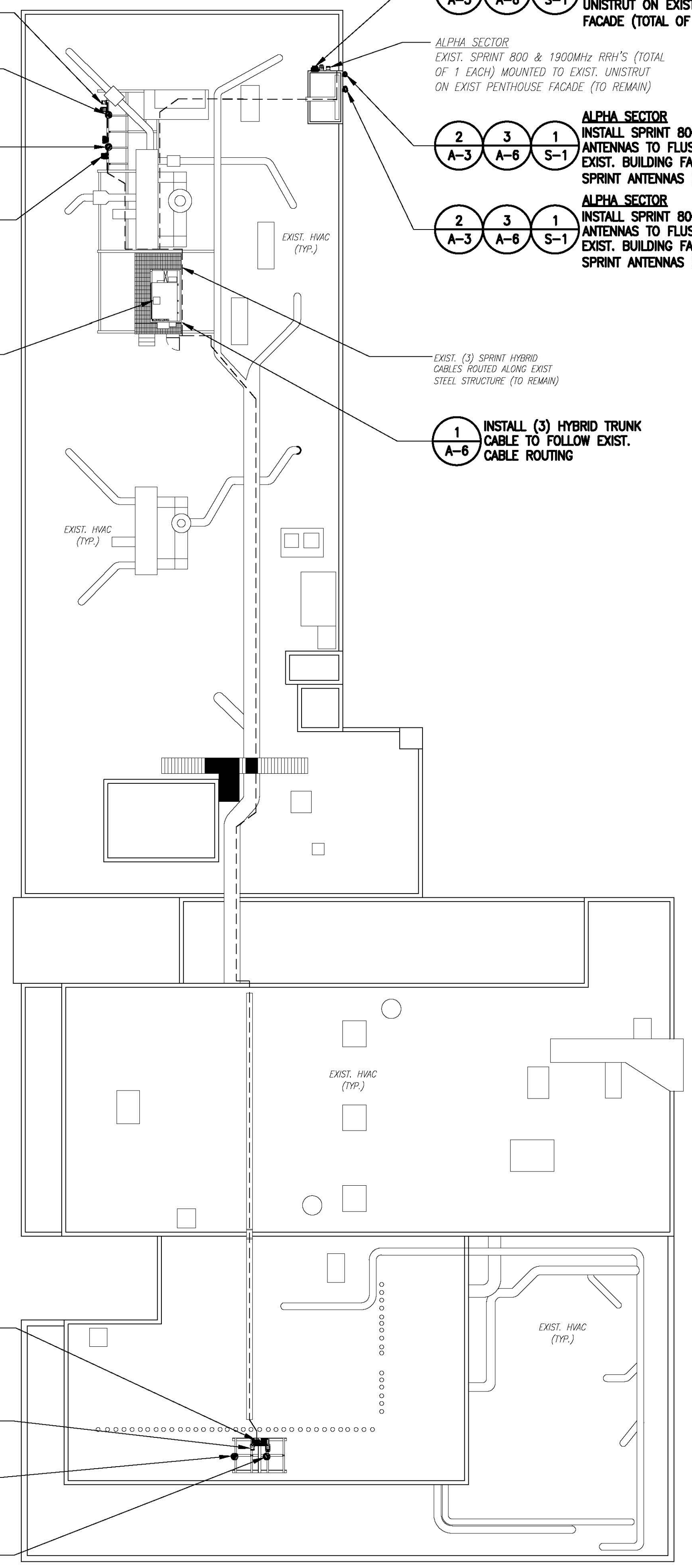
ALPHA SECTOR
INSTALL SPRINT 800/2500MHz ANTENNAS TO FLUSH MOUNTED ON EXIST. BUILDING FACADE REPLACE EXIST. SPRINT ANTENNAS (PAINT TO MATCH)

INSTALL PROP. SPRINT EQUIPMENT AS NEEDED WITHIN EXIST. EQUIPMENT SHELTER

EXIST. (3) SPRINT HYBRID CABLES ROUTED ALONG EXIST. STEEL STRUCTURE (TO REMAIN)

INSTALL (3) HYBRID TRUNK CABLE TO FOLLOW EXIST. CABLE ROUTING

2
A-2



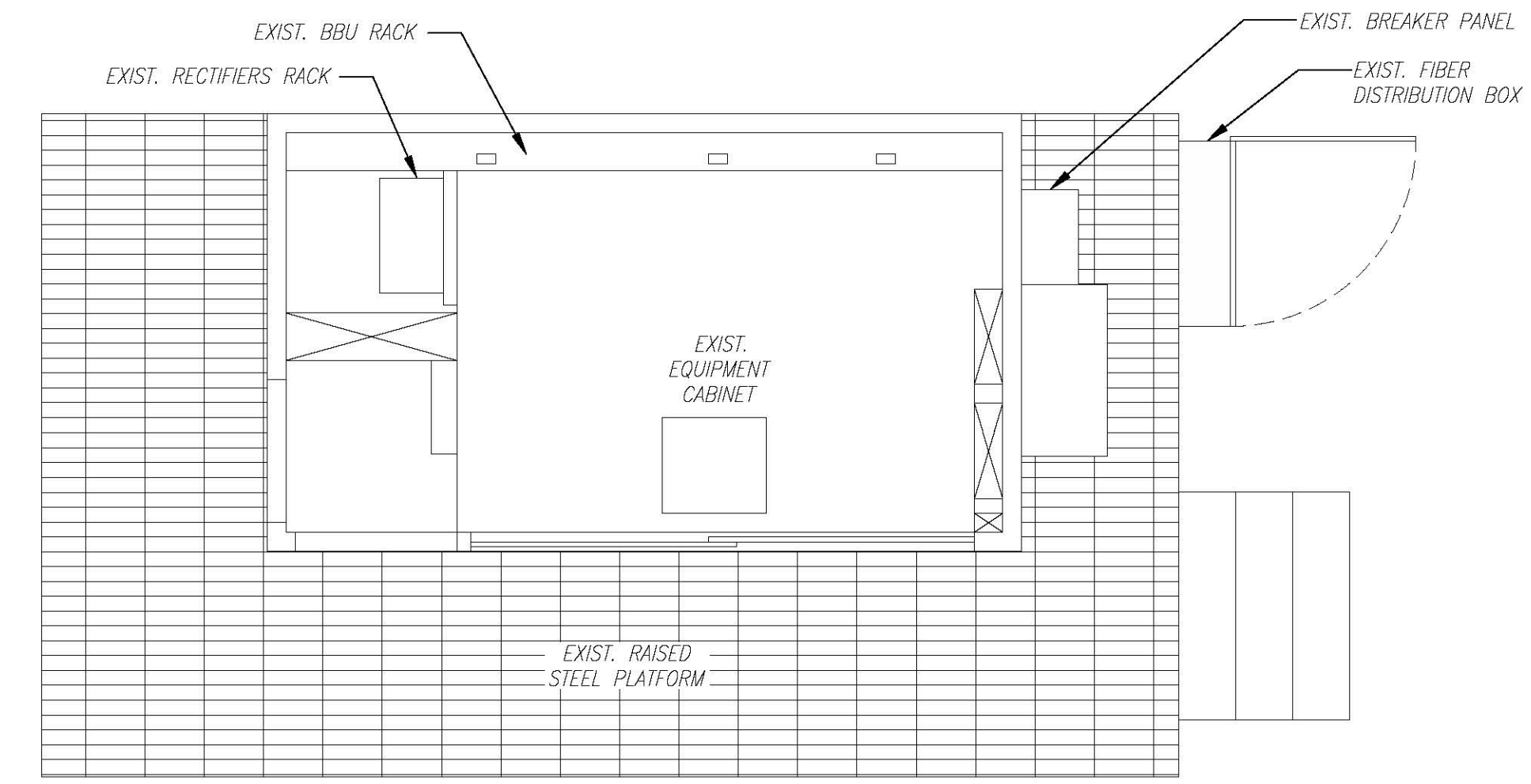
ROOF PLAN
SCALE: 1" = 10'-0"
1
A-1

GAMMA SECTOR
INSTALL SPRINT 800MHz & 2500MHz RRH'S TO PROP. PIPES MOUNTED TO EXIST. STEEL FRAME. (TOTAL OF 1 EACH)

GAMMA SECTOR
EXIST. SPRINT 800 & 1900MHz RRH'S (TOTAL OF 1 EACH) MOUNTED TO EXIST. PIPES ON EXIST. STEEL FRAME (TO REMAIN)

ALPHA SECTOR
INSTALL SPRINT 800/1900MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20" RF TRANSPARENT FLUE TO REPLACE EXIST. SPRINT ANTENNAS

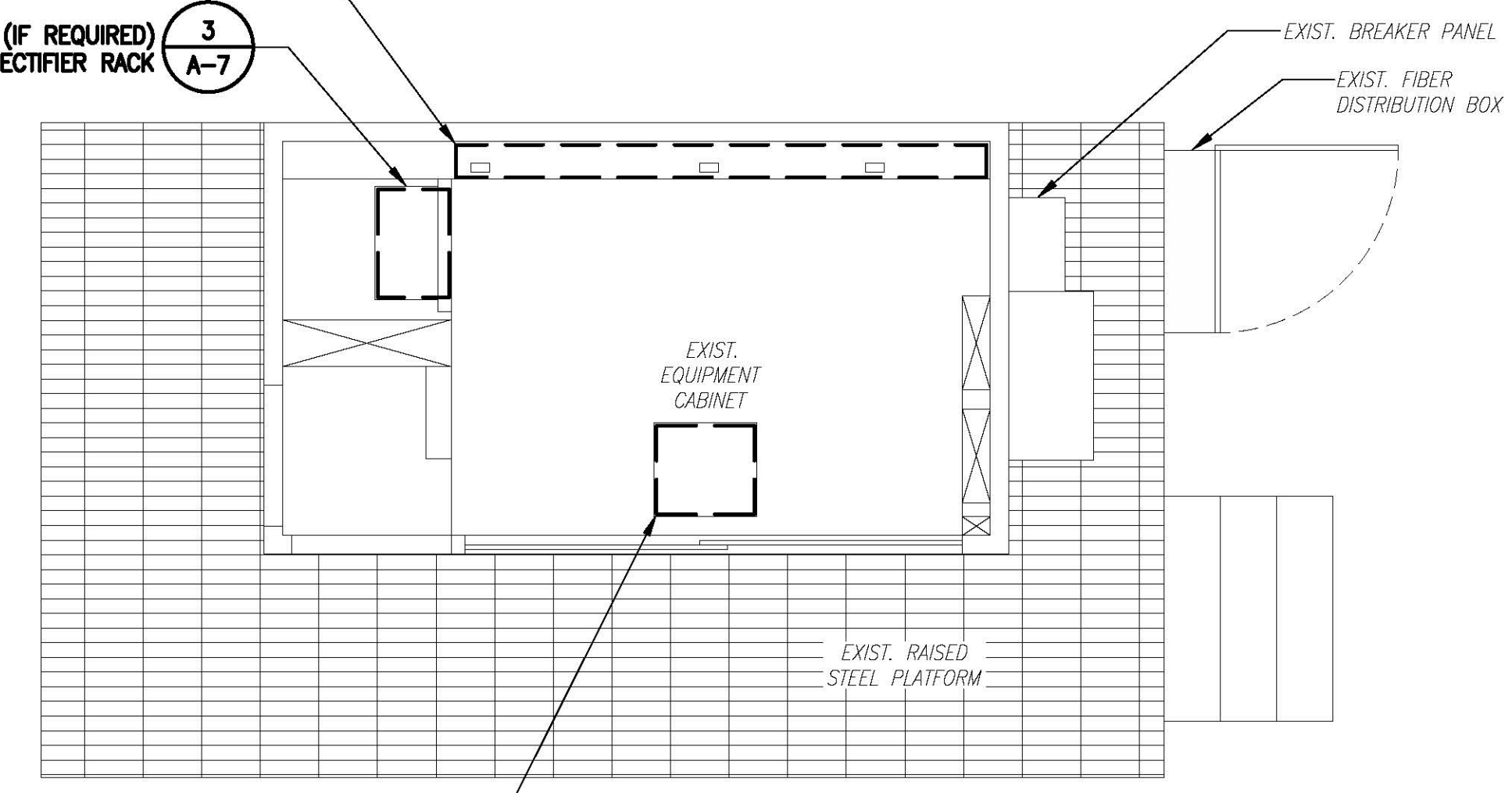
GAMMA SECTOR
INSTALL SPRINT 800/2500MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20" RF TRANSPARENT FLUE



EXISTING EQUIPMENT PLAN
SCALE: 3/8" = 1'-0"
2
A-1

INSTALL NEW BATTERY STRING WITHIN EXIST. BBU RACK (AS REQ'D)

(3) RECTIFIERS (IF REQUIRED) WITHIN EXIST. RECTIFIER RACK



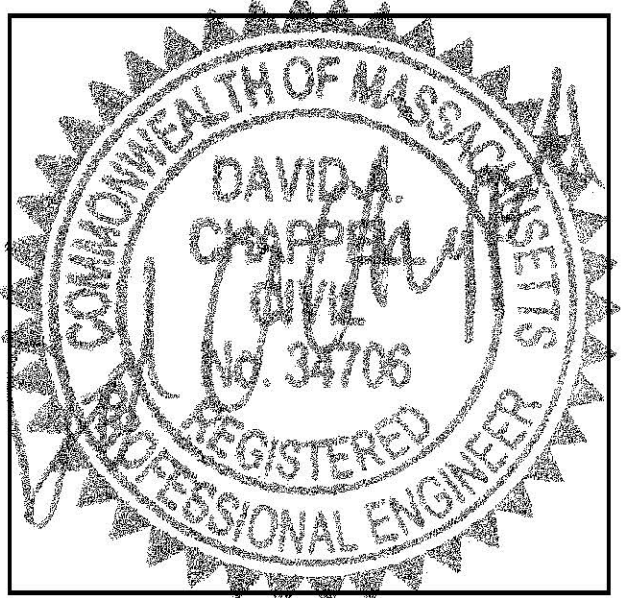
INSTALL (1) NEW LTE BBU 2.5GHz RETROFIT KIT WITHIN EXIST. MM-BTS EQUIPMENT CABINET (COORDINATE WITH SPRINT; REPLACE WITH MM-BTS 9927 EQUIPMENT CABINET, IF REQUIRED)

PROPOSED EQUIPMENT PLAN
SCALE: 3/8" = 1'-0"
3
A-1

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

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE, SUITE 1
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Civil - Structural - Land Surveying
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	08/22/18	ISSUED FOR REVIEW	JRW

SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
ROOF & EQUIPMENT PLANS

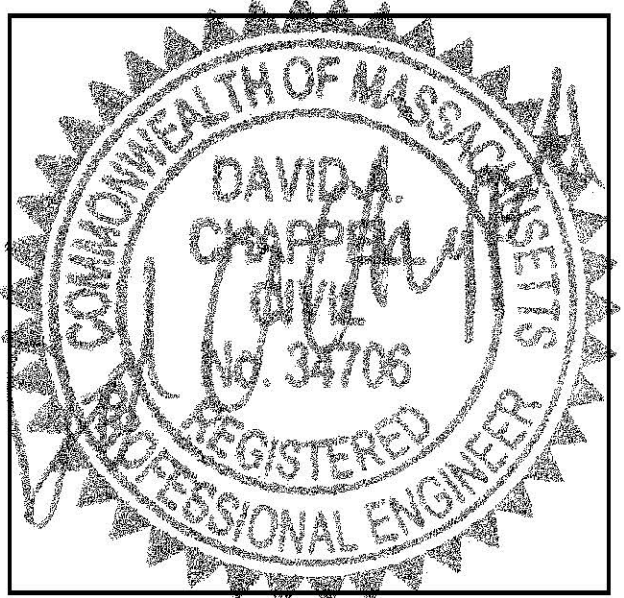
SHEET NUMBER
A-1

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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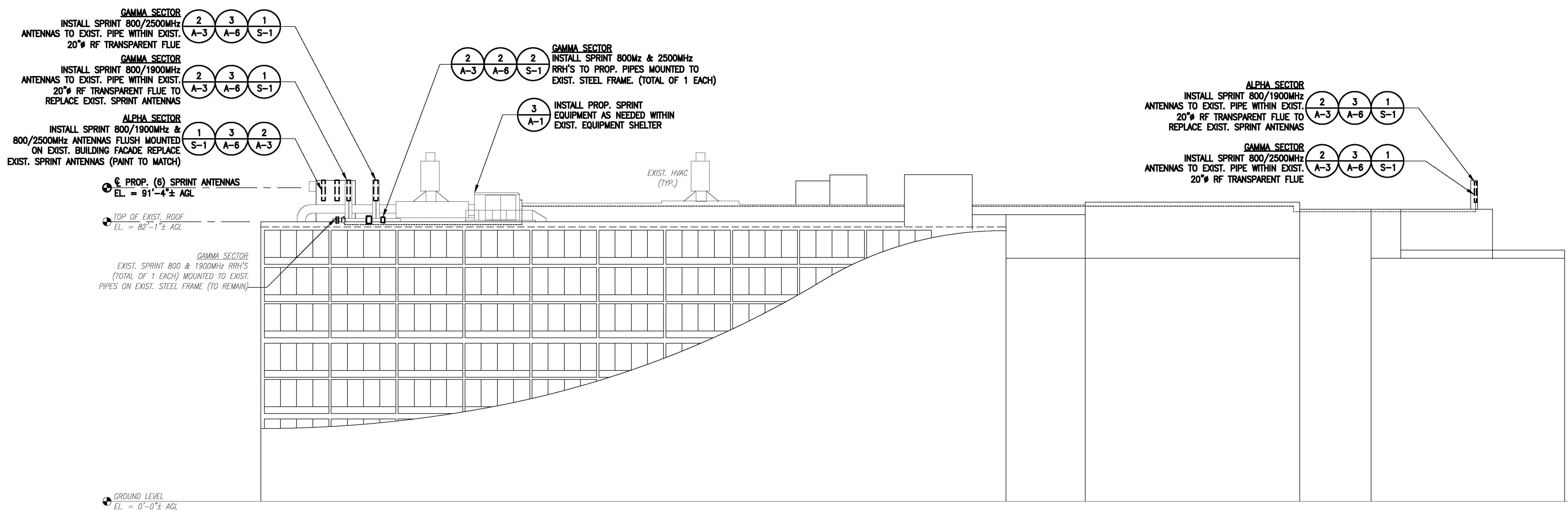
APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	08/22/18	ISSUED FOR REVIEW	JRW

SITE NUMBER:
BS80XC001
 SITE NAME:
MIT EAST
 SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
ELEVATION

SHEET NUMBER
A-2

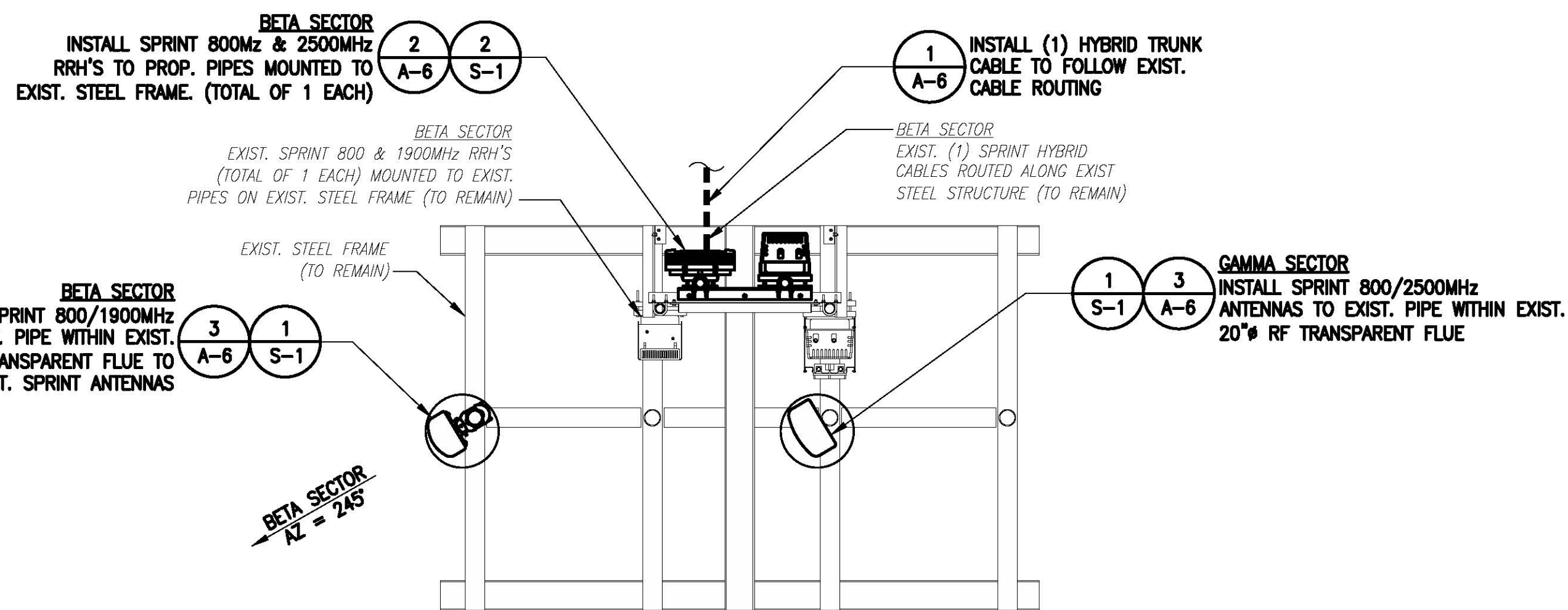
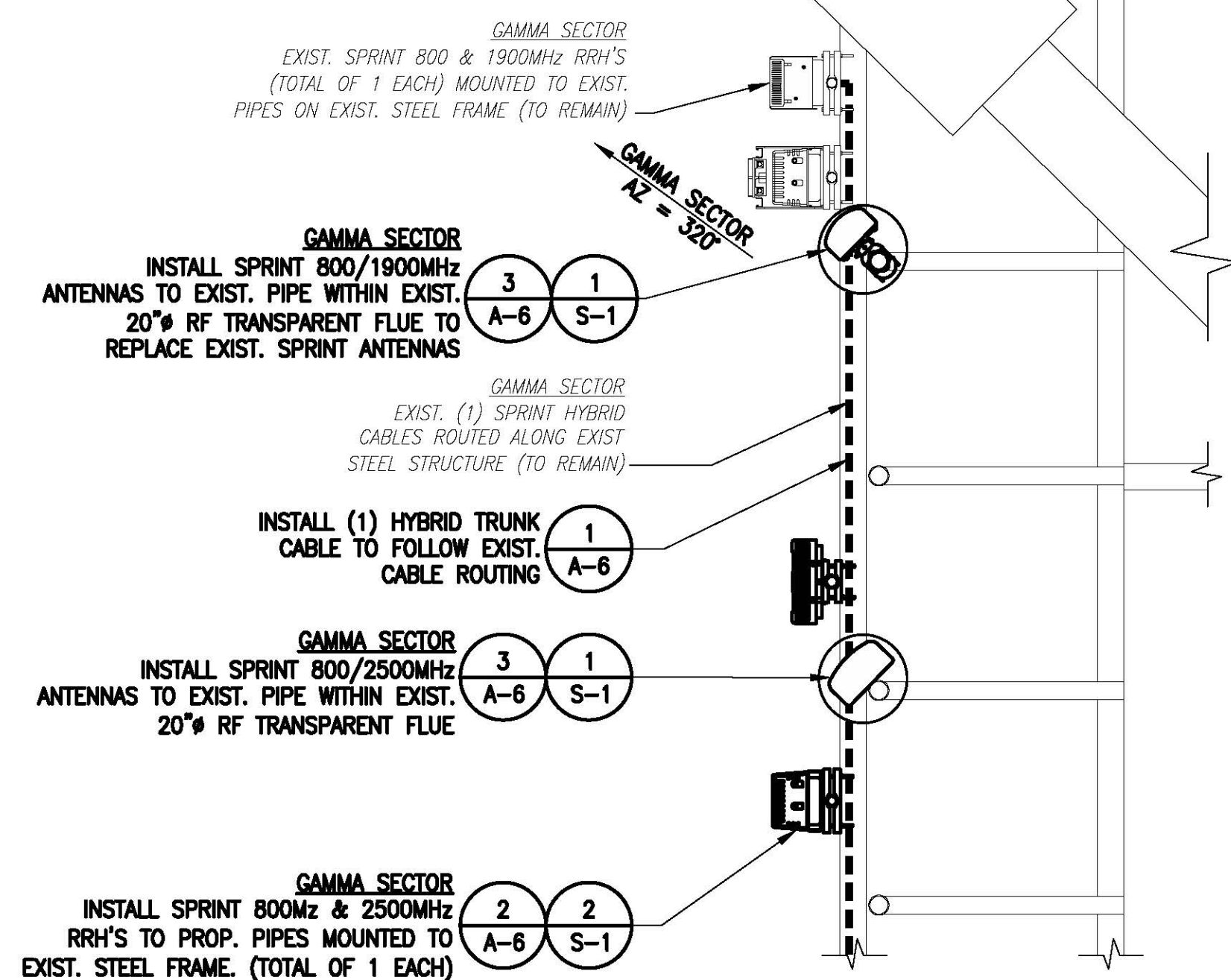
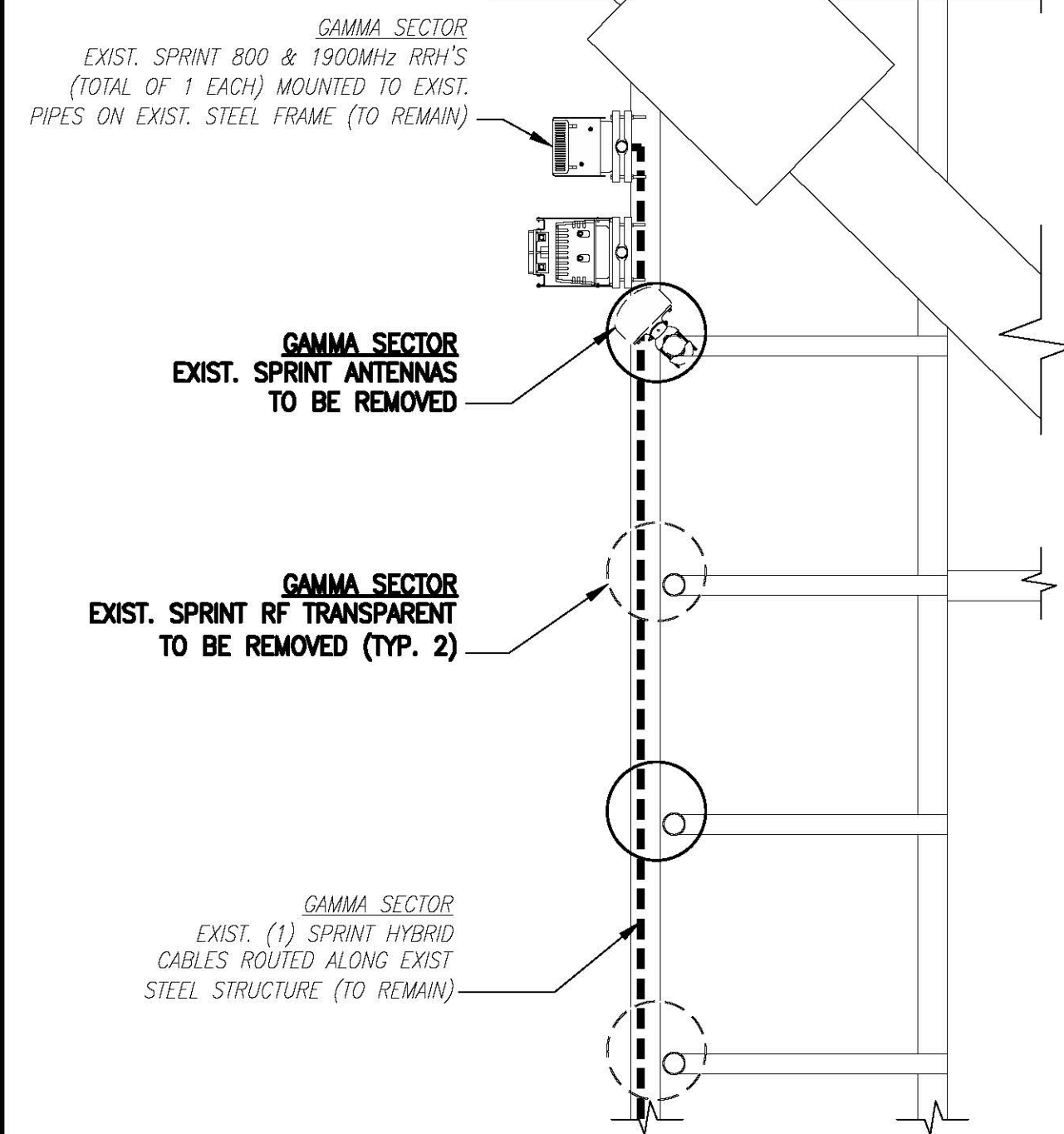
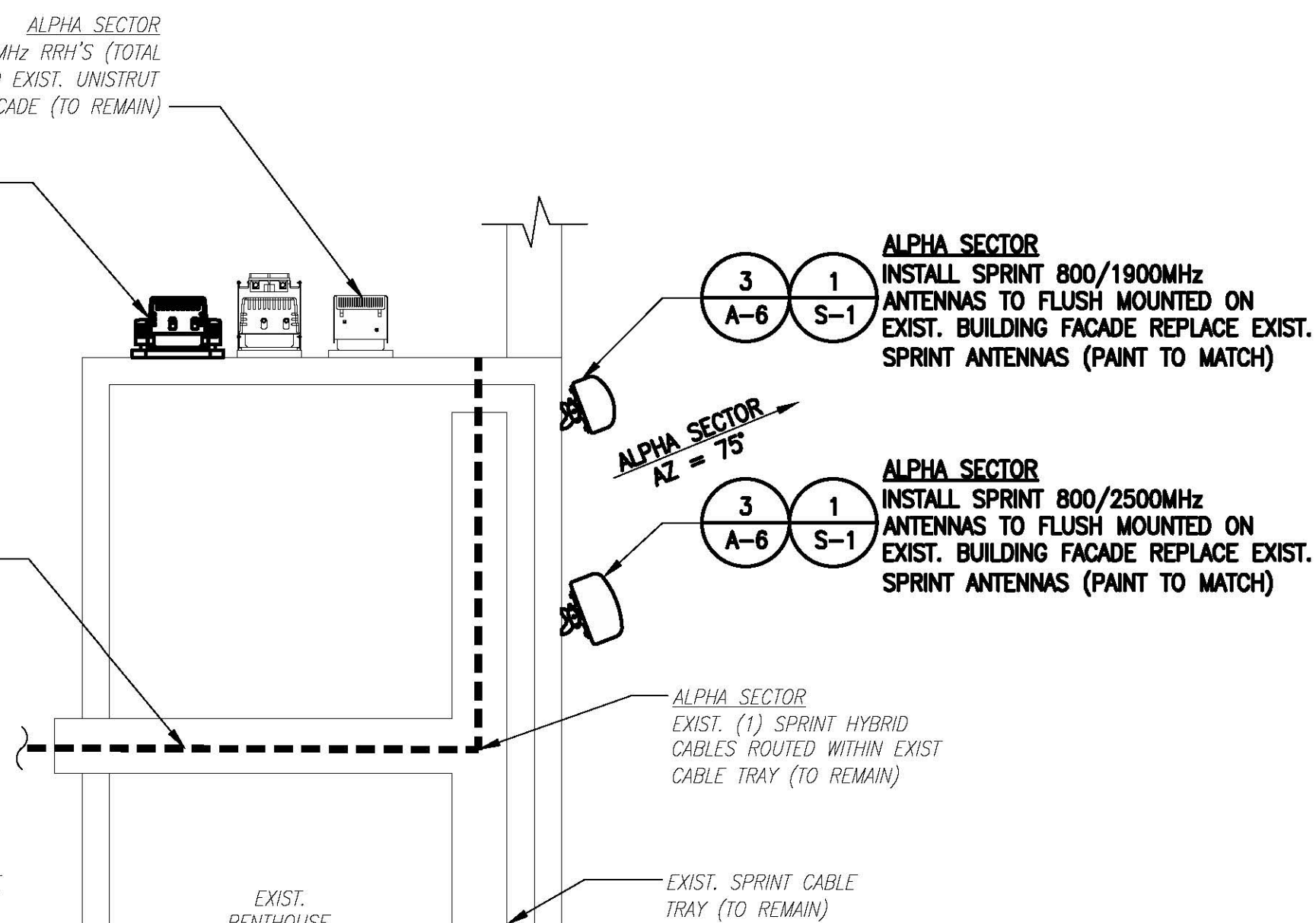
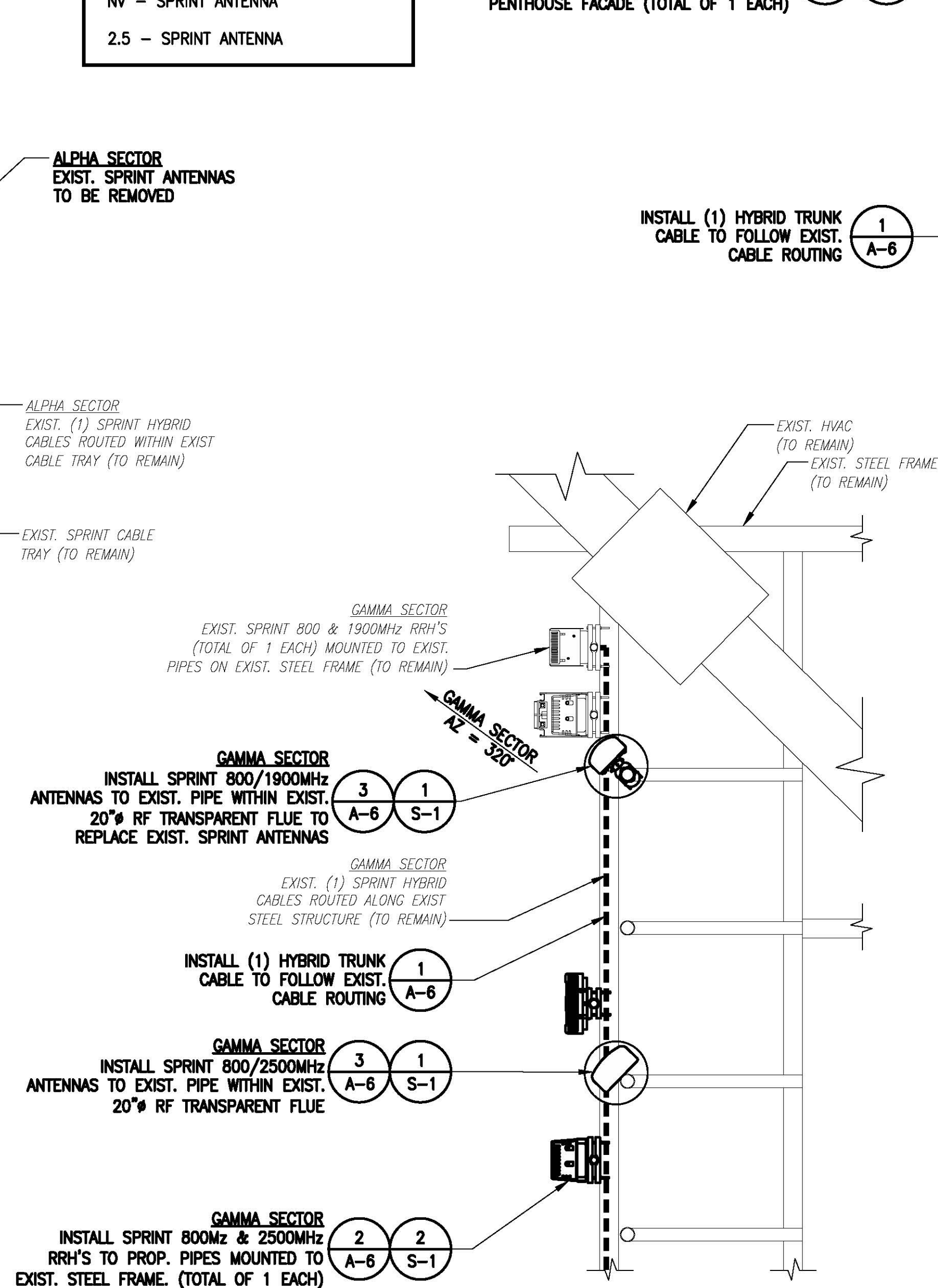
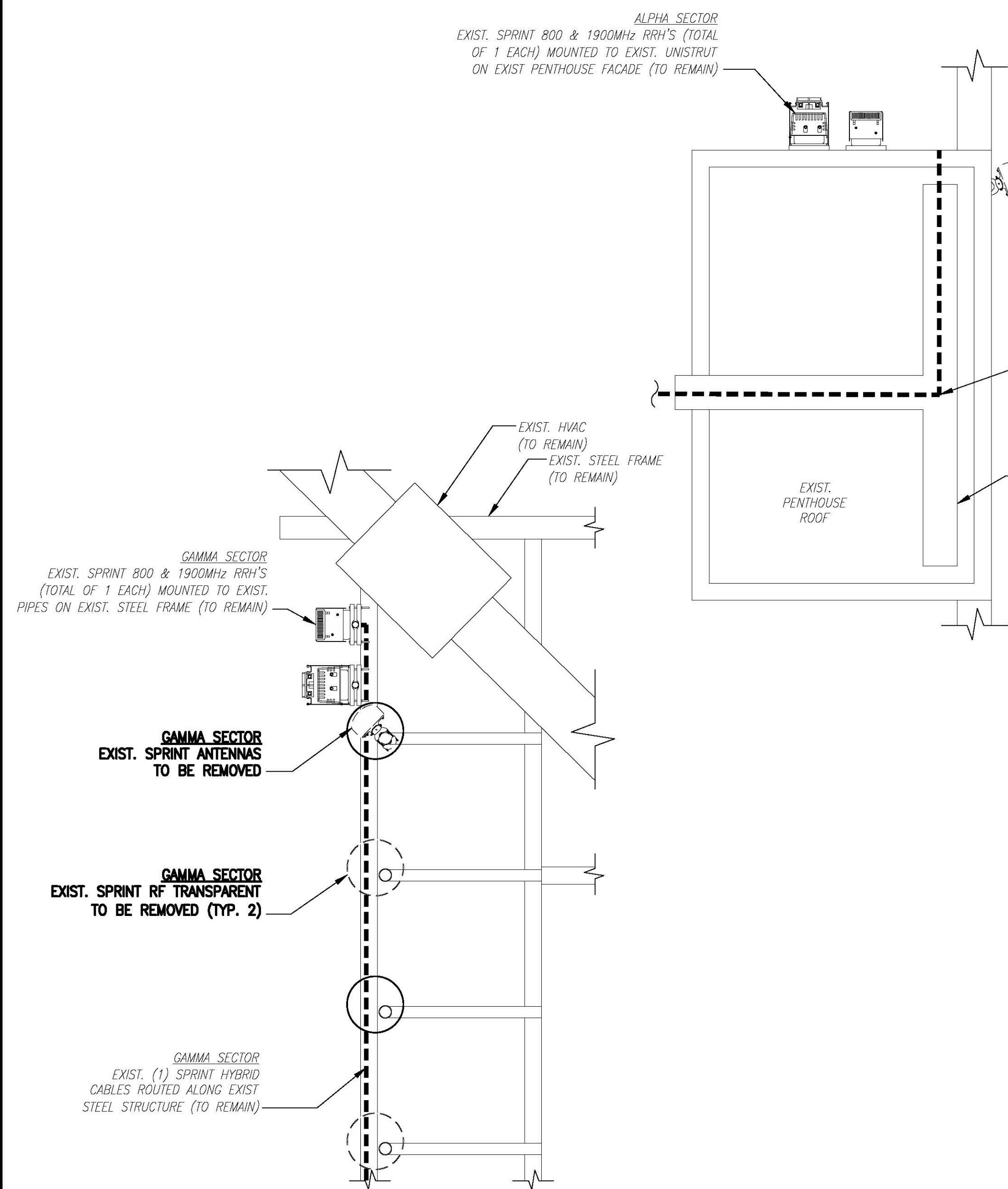


EAST ELEVATION
 SCALE: 1/16" = 1'-0"
 0 16'-0" 32'-0" 48'-0"
 1
 A-2

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.

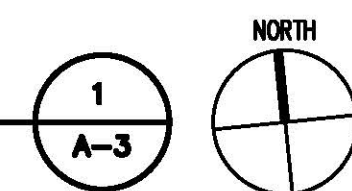
ANTENNA STATUS LEGEND:

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

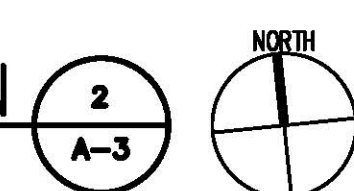


NOTE:
 EXISTING AZIMUTHS FROM
 CEA SITE VISIT, DATED
 4/18/2018.

EXISTING ANTENNA PLAN
 SCALE: N.T.S.



PROPOSED ANTENNA PLAN
 SCALE: N.T.S.

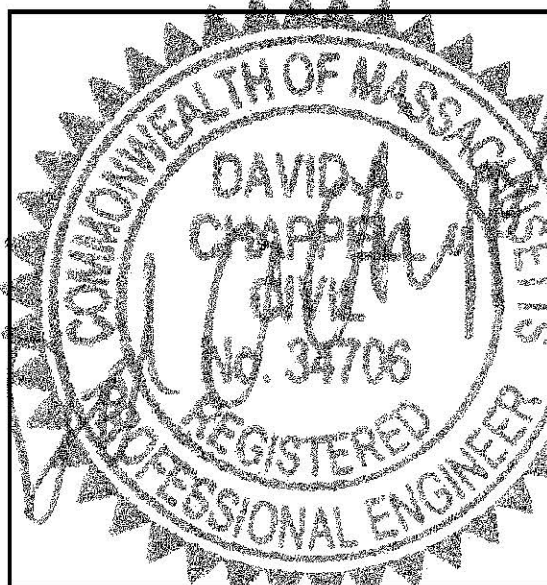


NOTE:
 VERIFY PROPOSED AZIMUTHS
 WITH RF ENGINEER PRIOR
 TO INSTALLATION.

Sprint VISION
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
 BS80XC001
 SITE NAME:
 MIT EAST
 SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
 ANTENNA PLANS

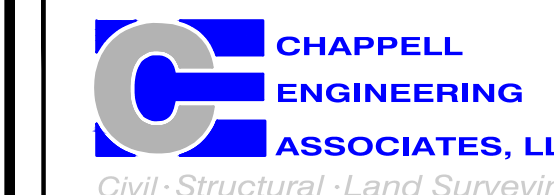
SHEET NUMBER
 A-3



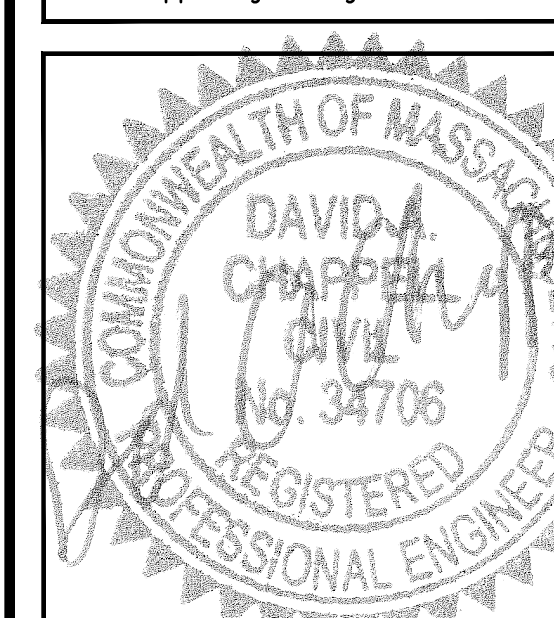
1 INTERNATIONAL BLVD, SUITE 800
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
RF DATA SHEET

SHEET NUMBER
A-4

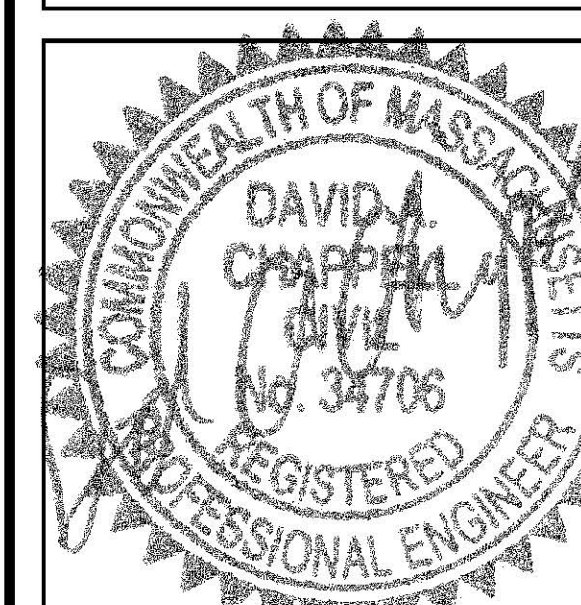
Region:	Market:	Boston	Revision 2.2	Rev Date: 20-Nov-2017
Cascade ID	BS80XC001		BTS OEM: ALU	RFDS Type: Preliminary
Augment Import Code: SPDOMU01_DO_Macro_Upgrade	Augment: DO Macro Upgrade		Structure Type: Rooftop	
Address: 400 Main Street, Cambridge, MA, 02142	Sprint Eng. Name: Bill Hastings		Eng. Phone: 978-590-9700	
Latitude: 42.362322 Longitude: -71.087785	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 using NV + dual 800/2.5 G antenna. Adding 2nd 800 RRH, 1900 RRH and 2.5 RRH.	Filter Analysis Complete: YES	Border Analysis Complete: YES	Channel Plan Complete: YES	
	Alpha	Beta	Gamma	
1900MHz_Azimuth	75	245	320	
1900MHz_No_of_Antennas	1	1	1	
1900MHz_RADCenter(ft)	91.3	91.3	91.3	
1900MHz_AntennaMake	RFS	RFS	RFS	
1900MHz_AntennaModel	APXVSP18-C-A20	APXVSP18-C-A20	APXVSP18-C-A20	
1900MHz_Horizontal_Beamwidth	65	65	65	
1900MHz_Vertical_Beamwidth	6	6	6	
1900MHz_AntennaDimensions(ft)&Weight(lbs)	72 x 11.8 x 7.9 62 (lbs)	72 x 11.8 x 7.9 62 (lbs)	72 x 11.8 x 7.9 62 (lbs)	
1900MHz_AntennaGain(dBi)	18	18	18	
1900MHz_E_Tilt	0	0	0	
1900MHz_M_Tilt	0	0	0	
1900_Effective_Tilt	0	0	0	
1900MHz_Carrier_Forecast_Year_2017				
1900MHz_RRHManufacturer	ALU	ALU	ALU	
1900MHz_RRHModel	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	
1900MHz_RRHCount	1	1	1	
1900MHz_RRHSpecs	25 x 11.1 x 11.4 (60 lbs)	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	Top of the Pole/Tower	
1900MHz_CombinerModel	No Combiner Required	No Combiner Required	No Combiner Required	
1900MHz_PowerSplitRatio(Main/Split)				
1900MHz_SplitterManufacturer				
1900MHz_SplitterModel	No Splitter Required	No Splitter Required	No Splitter Required	
1900MHz_NumberofSplitters	0	0	0	
1900MHz_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGroundMount,ft)	8	8	8	
1900MHz_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGroundMount)	LCF12-50J	LCF12-50J	LCF12-50J	
1900MHz_Top_Jumper#2_Length(RRHtoCombinerforTTifapplicable,ft)				
1900MHz_Top_Jumper#2_Cable_Model(RRHtoCombinerforTTifapplicable)				
1900MHz_Main_Cable_Length(ft)	116.3	116.3	116.3	
1900MHz_Main_Cable_Model	HB114-1-08U4-M5F	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	75	245	320
800MHz_Azimuth	75	245	320
800MHz_No_of_Antennas	1	1	1
800MHz_RADCenter(ft)	91.3	91.3	91.3
800MHz_AntennaMake	NA	NA	NA
800MHz_AntennaModel	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band
800MHz_Horizontal_Beamwidth	NA	NA	NA
800MHz_Vertical_Beamwidth	NA	NA	NA
800MHz_AntennaDimensions(ft)&Weight(lbs)	NA NA	NA NA	NA NA
800MHz_AntennaGain(dBi)	NA	NA	NA
800MHz_E_Tilt	0	0	0
800MHz_M_Tilt	0	0	0
800MHz_EffectiveTilt(degrees)	0	0	0
800MHz_RRHManufacturer	ALU	ALU	ALU
800_Combiner_Model	No Combiner Required	No Combiner Required	No Combiner Required
800MHz_RRHModel	RRH 800 MHz 2x50W	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)	15.8 x 13.0 x 14.0 (64 lbs)
800MHz_RRHCount	2	2	2
800MHz_RRHLocation	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
800MHz_BILTBorderFilter	na	na	na
800MHz_SplitterManufacturer			
800MHz_SplitterModel			
800MHz_NumberofSplitters	0	0	0
800_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)	8	8	8
800_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)	LCF12-50J	LCF12-50J	LCF12-50J
800MHz_Main_Cable_Length(ft)	NA	NA	NA
800MHz_Main_Cable_Model	NA	NA	NA
800_Bottom_Jumper#1_Length(GroundbasedRRHtoMainCoax)			
800_Bottom_Jumper#1_Cable_Model(GroundbasedRRHtoMainCoax)			
2500MHz_Azimuth	75	245	320
2500MHz_No_of_Antennas	1	1	1
2500MHz_RADCenter(ft)	91.3	91.3	91.3
2500MHz_AntennaMake	RFS	RFS	RFS
2500MHz_AntennaModel	APXVTS18-C-I20	APXVTS18-C-I20	APXVTS18-C-I20
2500MHz_Horizontal_Beamwidth	70	70	70
2500MHz_Vertical_Beamwidth	5	5	5
2500MHz_AntennaHeight(ft)	72 x 14.6 x 8.1 40.8 (lbs)	72 x 14.6 x 8.1 40.8 (lbs)	72 x 14.6 x 8.1 40.8 (lbs)
2500MHz_AntennaGain(dBi)	17.3	17.3	17.3
2500MHz_E_Tilt	0	0	0
2500MHz_M_Tilt	0	0	0
2500MHz_EffectiveTilt(degrees)	0	0	0
2500MHz_RRHManufacturer	ALU	ALU	ALU
2500_Combiner_Model	No Combiner Required	No Combiner Required	No Combiner Required
2500MHz_RRHModel	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25
2500MHz_RRHCount	1	1	1
2500MHz_RRHLocation	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
2500MHz_PowerSplitRatio(Main/Split)			
2500MHz_SplitterManufacturer			
2500MHz_SplitterModel			
2500MHz_NumberofSplitters	0	0	0
2500_Top_Jumper#1_Length(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)	8	8	8
2500_Top_Jumper#1_Cable_Model(RRHtoAntennaforTTorMainCoaxtoAntennaforGM)	LCF12-50J	LCF12-50J	LCF12-50J
2500MHz_Main_Cable_Length(ft)	116.3	116.3	116.3
2500MHz_Main_Cable_Model	HB114-08U3M12-xxxF	HB114-08U3M12-xxxF	HB114-08U3M12-xxxF
2500_Bottom_Jumper#1_Length(GroundbasedRRHtoMainCoax)			
2500_Bottom_Jumper#1_Cable_Model(GroundbasedRRHtoMainCoax)			



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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

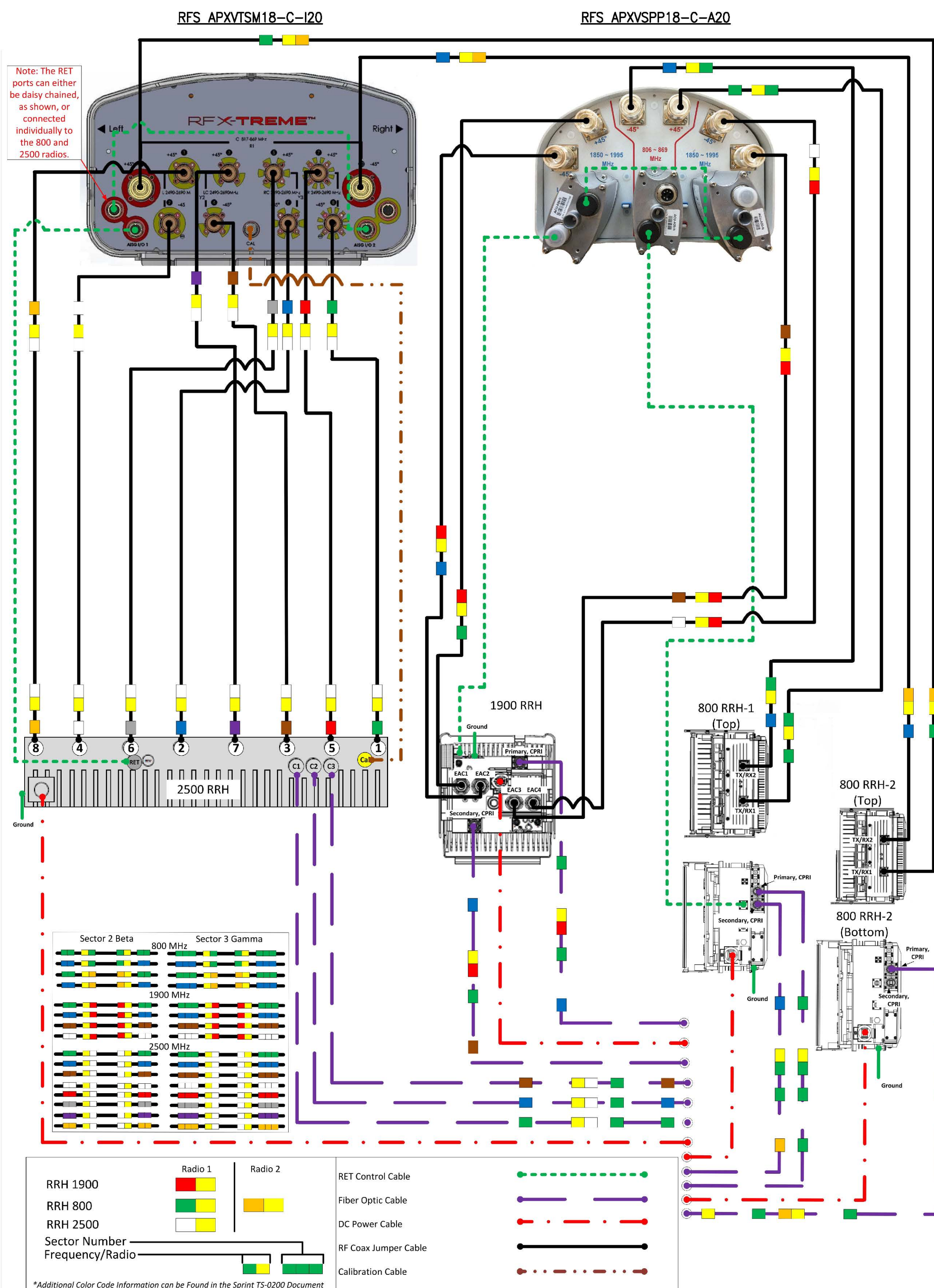
SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE

RAN WIRING DIAGRAMS

SHEET NUMBER

A-5



PLUMBING DIAGRAM

SCALE: N.T.S.

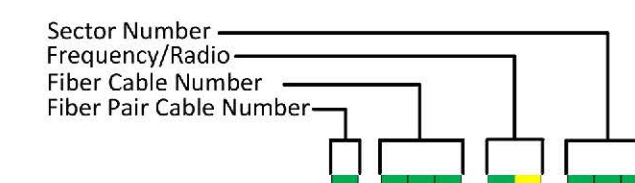
1
A-5

Existing Cable(s)

- NV Cable 1 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 1
- NV Cable 2 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 2
- NV Cable 3 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 3

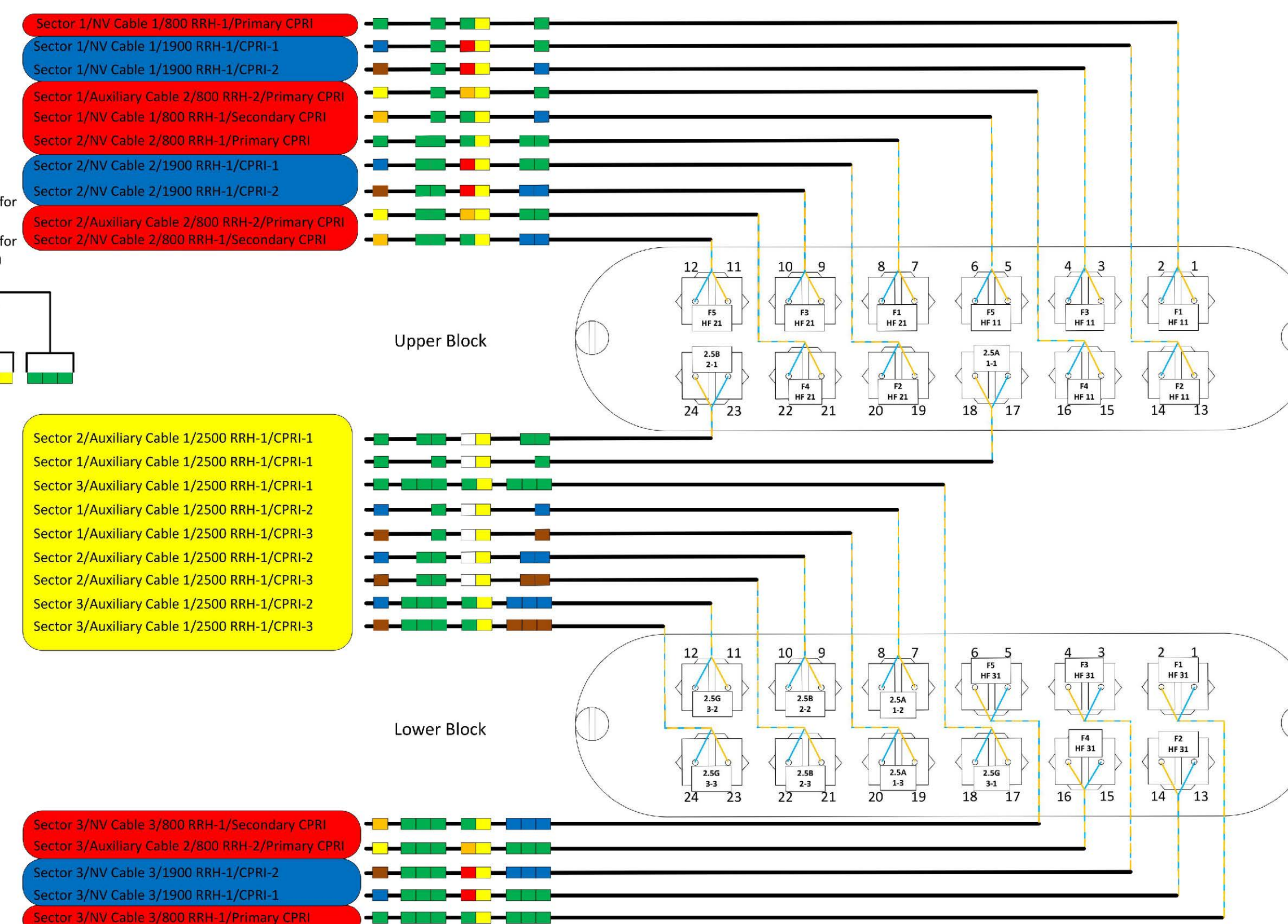
New Cable(s)

- Auxiliary Cable 1 - Provides power and fiber for all 2500 RRHs (All Three Sectors)
- Auxiliary Cable 2 - Provides power and fiber for all of the Second 800 RRHs (All Three Sectors)



Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Taps	No Taps
1	2	Blue	No Taps	No Taps
1	3	White	No Taps	No Taps
1	4	White	No Taps	No Taps
1	5	No Taps	No Taps	No Taps
1	6	Gray	No Taps	No Taps
1	7	Purple	No Taps	No Taps
1	8	Orange	No Taps	No Taps
2 Beta	1	Orange	No Taps	No Taps
2	2	Blue	No Taps	No Taps
2	1	Red	No Taps	No Taps
2	4	White	No Taps	No Taps
2	5	Red	No Taps	No Taps
2	6	Gray	No Taps	No Taps
2	7	Purple	No Taps	No Taps
2	8	Orange	No Taps	No Taps
3 Gamma	1	Green	No Taps	No Taps
3	2	Blue	No Taps	No Taps
3	1	Red	No Taps	No Taps
3	4	White	No Taps	No Taps
3	5	Red	No Taps	No Taps
3	6	Gray	No Taps	No Taps
3	7	Purple	No Taps	No Taps
3	8	Orange	No Taps	No Taps

Frequency/Model	Indicator	ID
800 #1	Yellow	Orange
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Red
1900 #3	Yellow	Blue
1900 #4	Yellow	Blue
2500 #1	Yellow	White
2500 #2	Yellow	White
2500 #3	Yellow	Purple
2500 #4	Yellow	Purple



CABLE COLOR-CODING SCHEMATIC

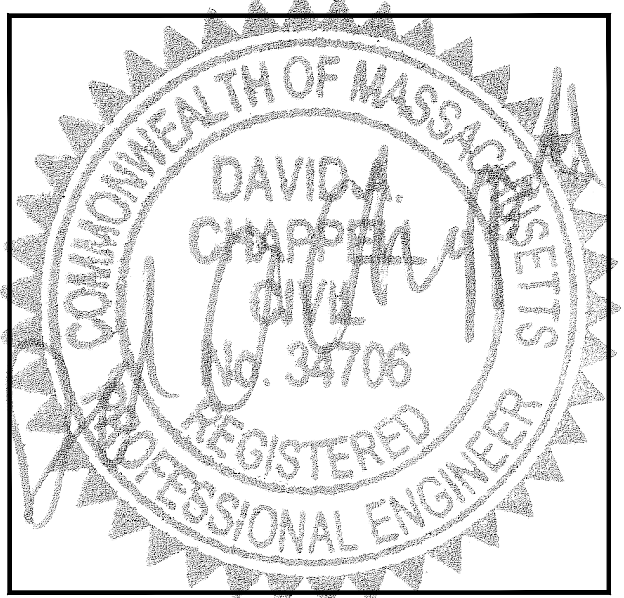
SCALE: N.T.S.

2
A-5

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: EXCEPT 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 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-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. [HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/](http://www.3ztelem.com/antenna-alignment-tool/).



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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

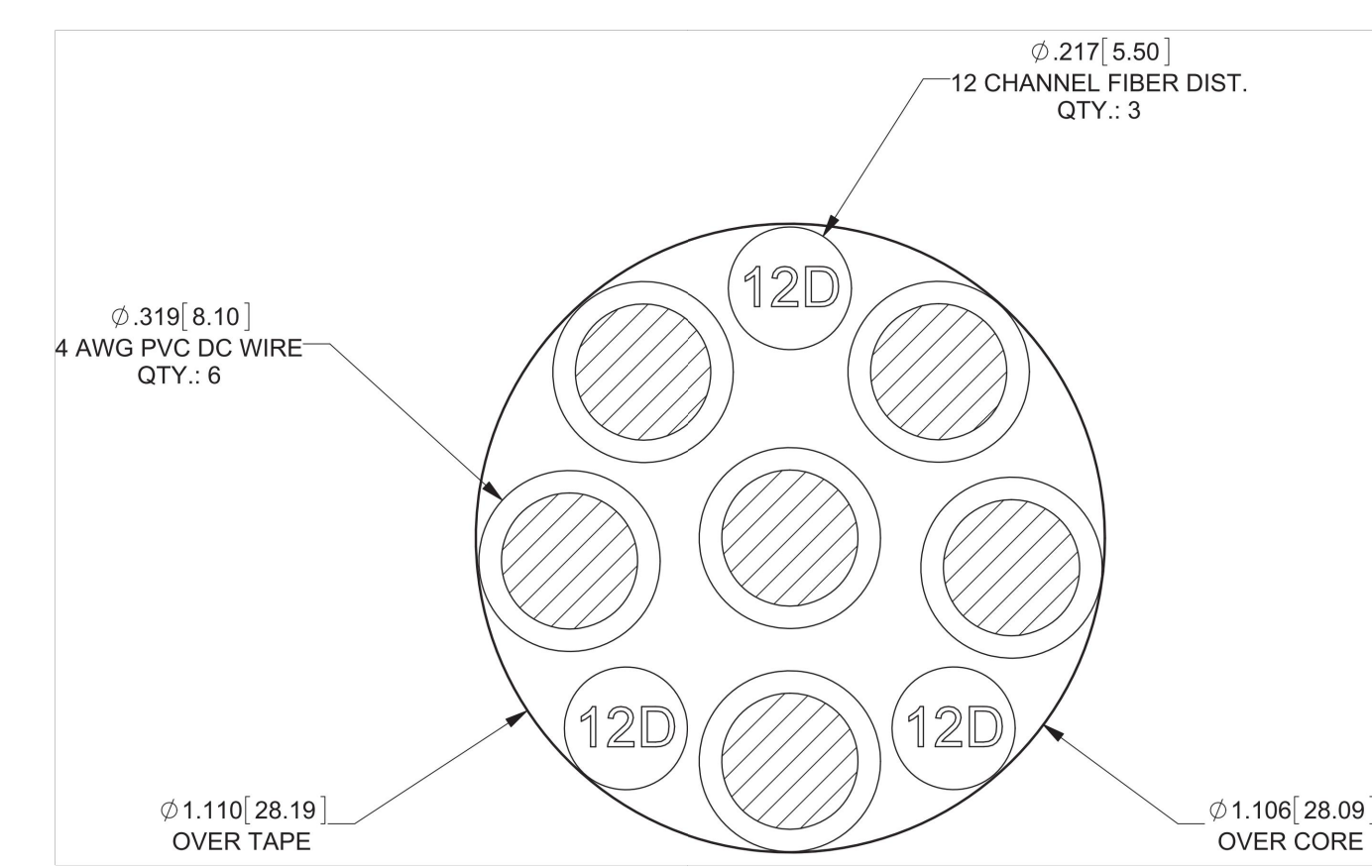
HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF. RFS	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"

RFS HYBRIFLEX RISER CABLE 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, 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
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, 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
MN: HB114-08U3M12-200F	200 ft	
6 AWG Power	Hybrid cable 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	Hybrid cable 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

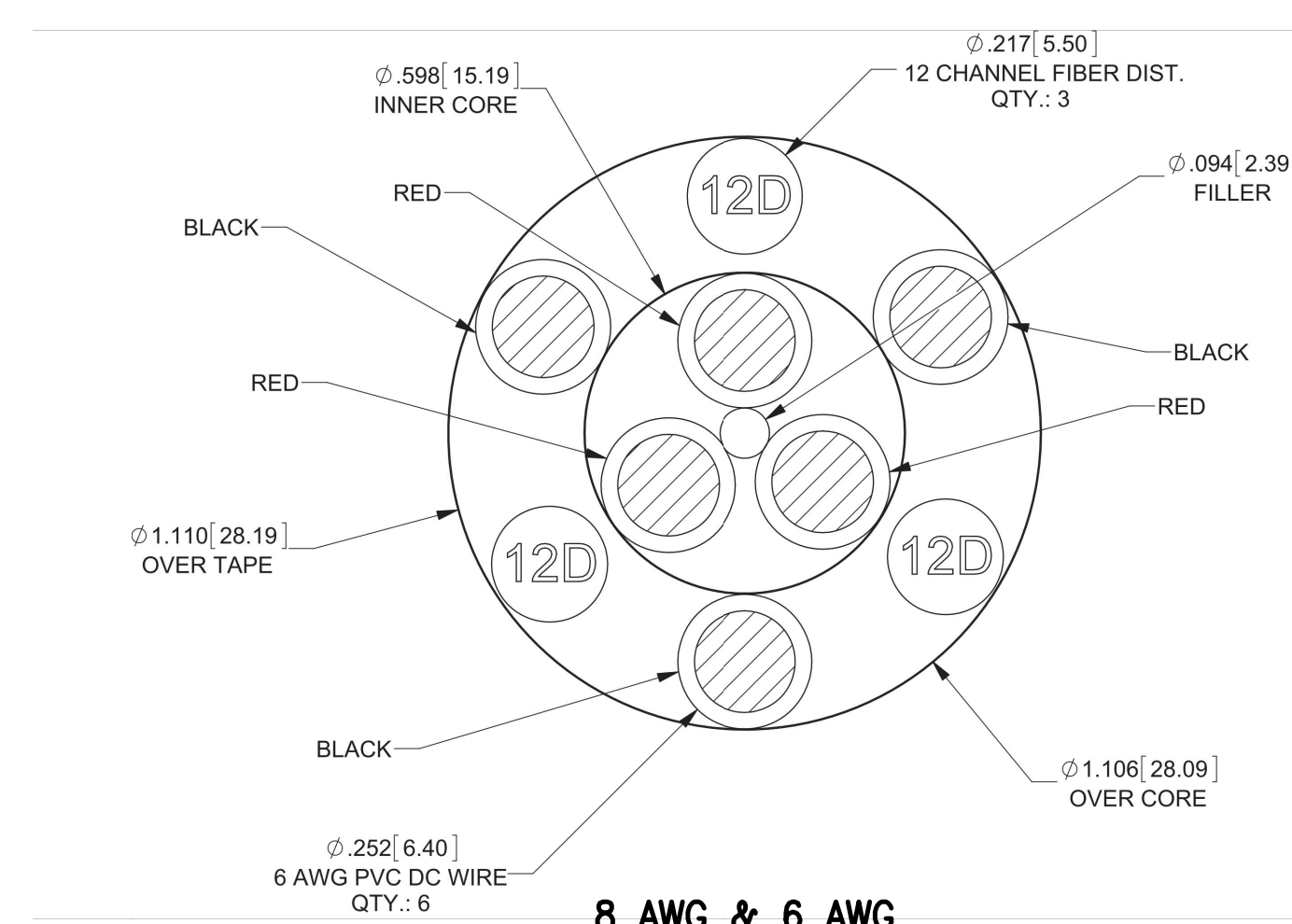
RFS HYBRIFLEX JUMPER CABLE SCHEDULE		
Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	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

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

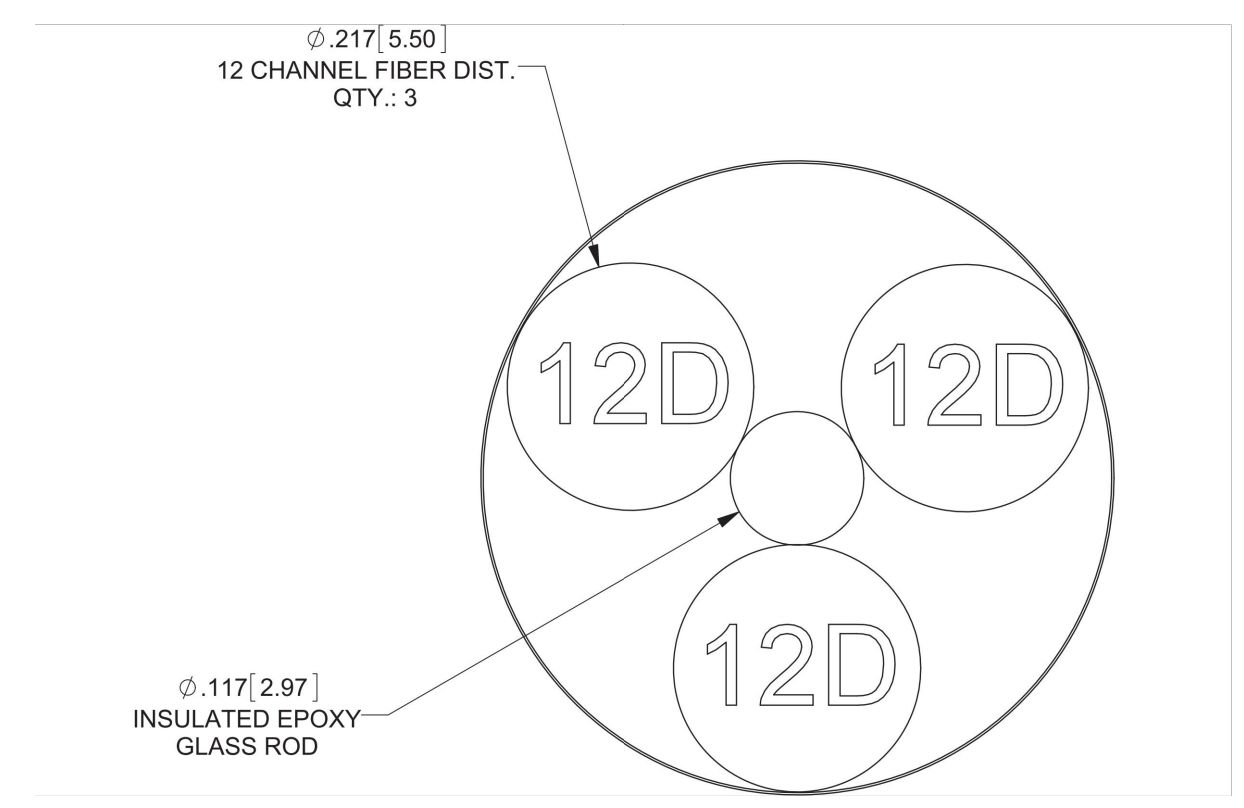
2500MHz HYBRID CABLE X-SECTION & DATA
 SCALE: NTS



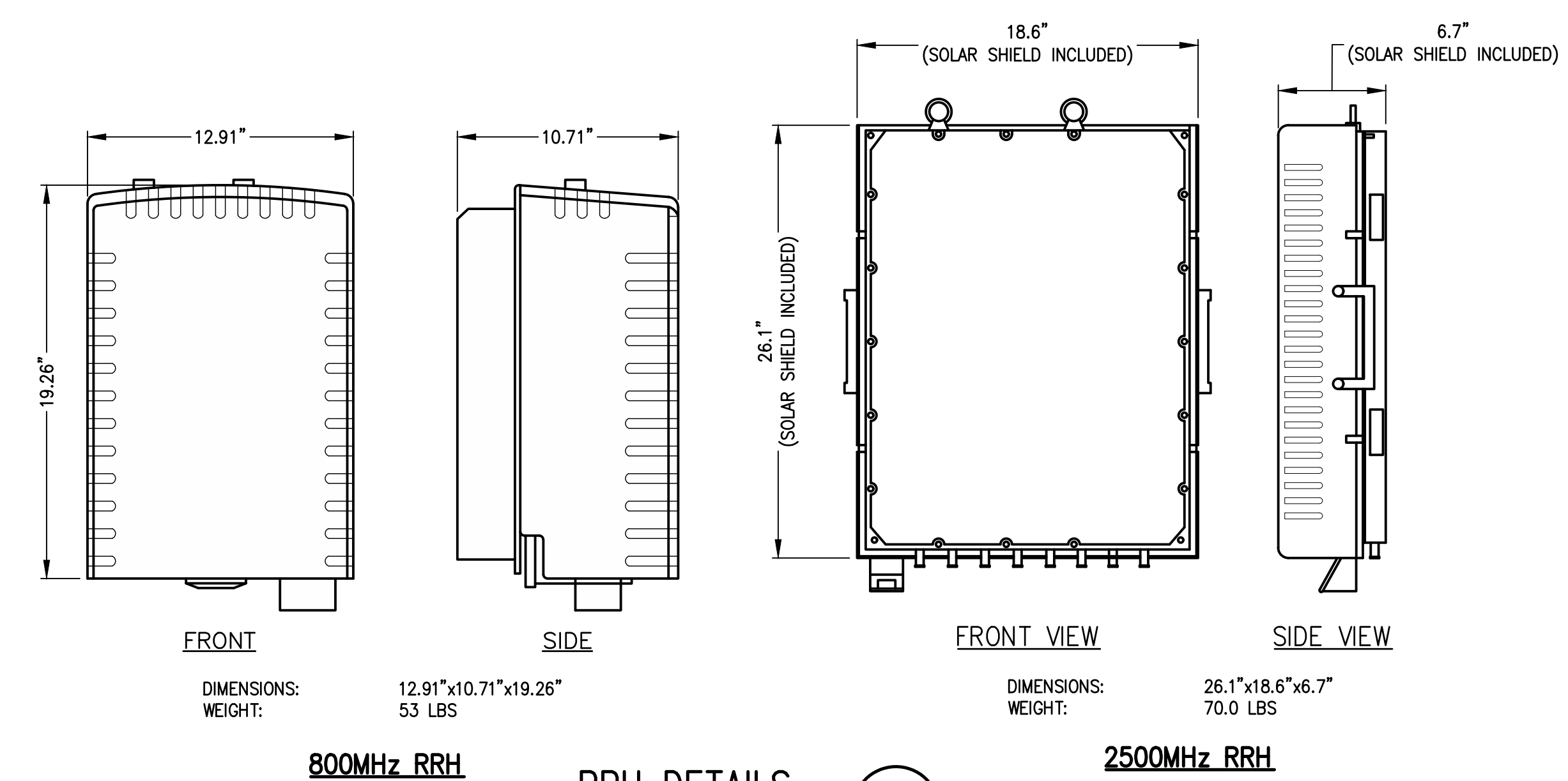
4 AWG



8 AWG & 6 AWG



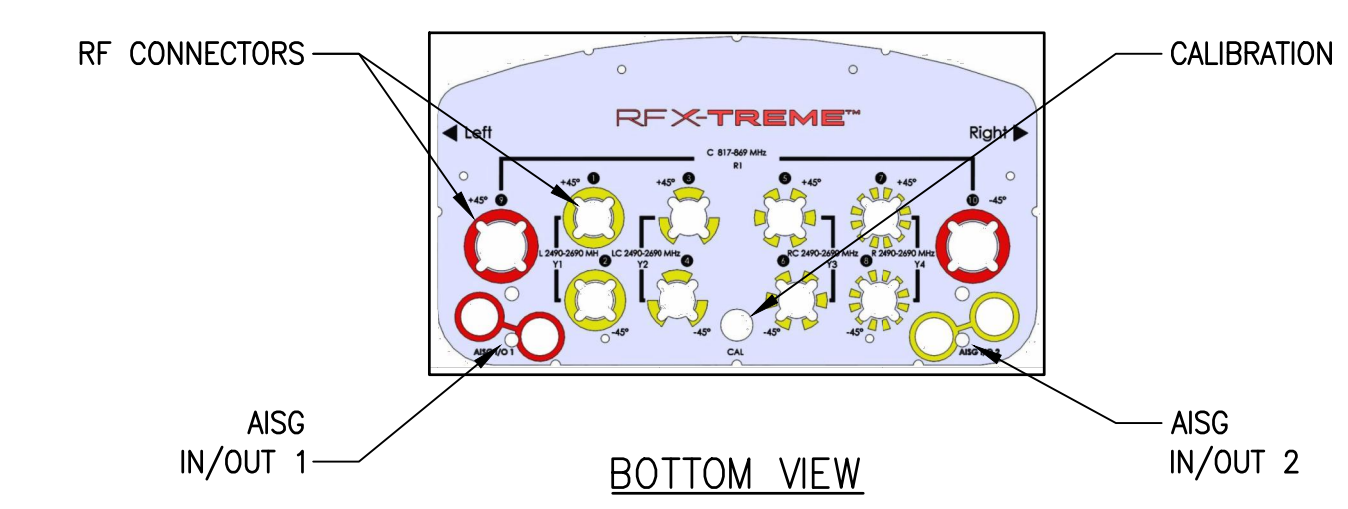
FIBER ONLY



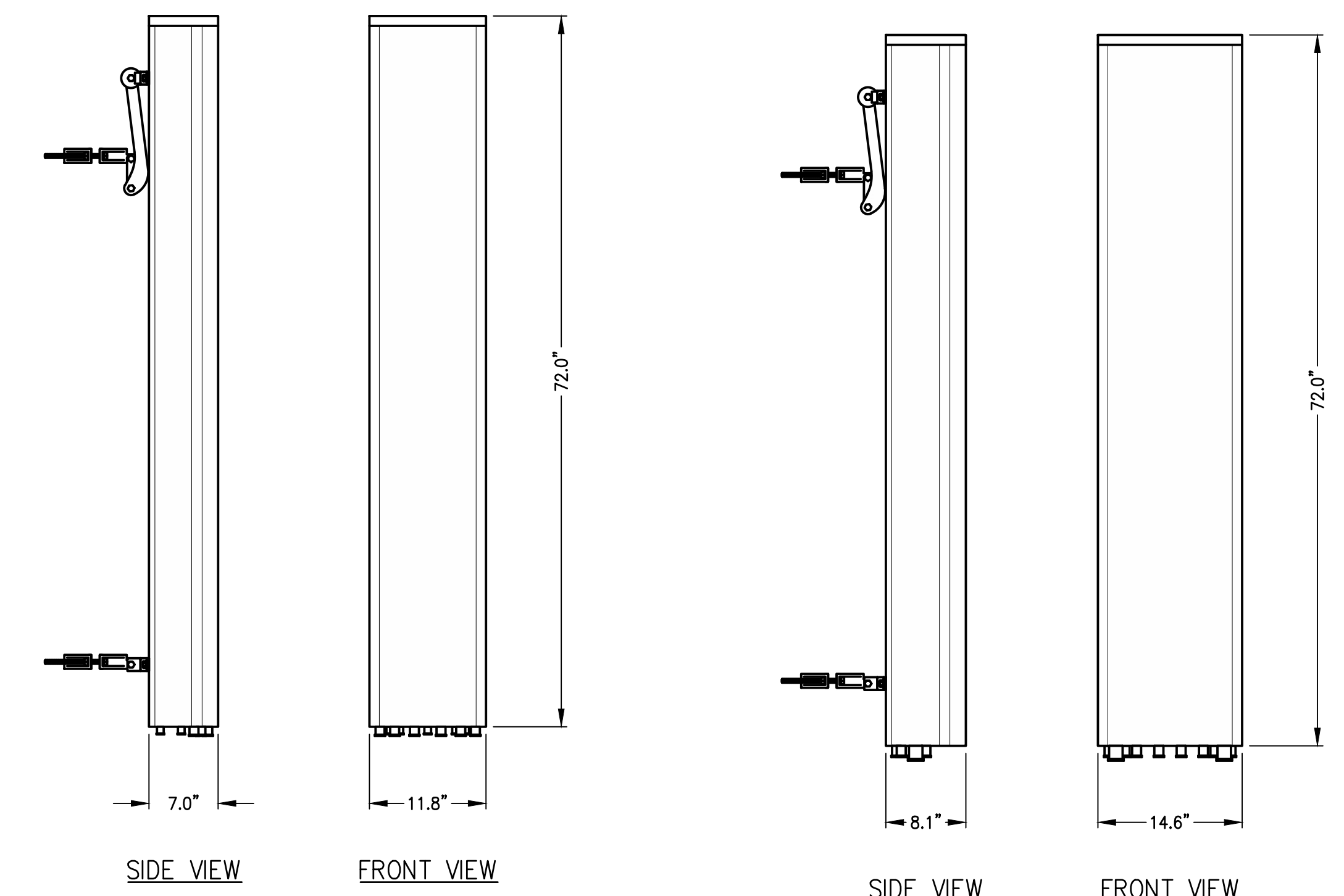
800MHz RRH

RRH DETAILS
N.T.S.

2500MHz RRH



BOTTOM VIEW



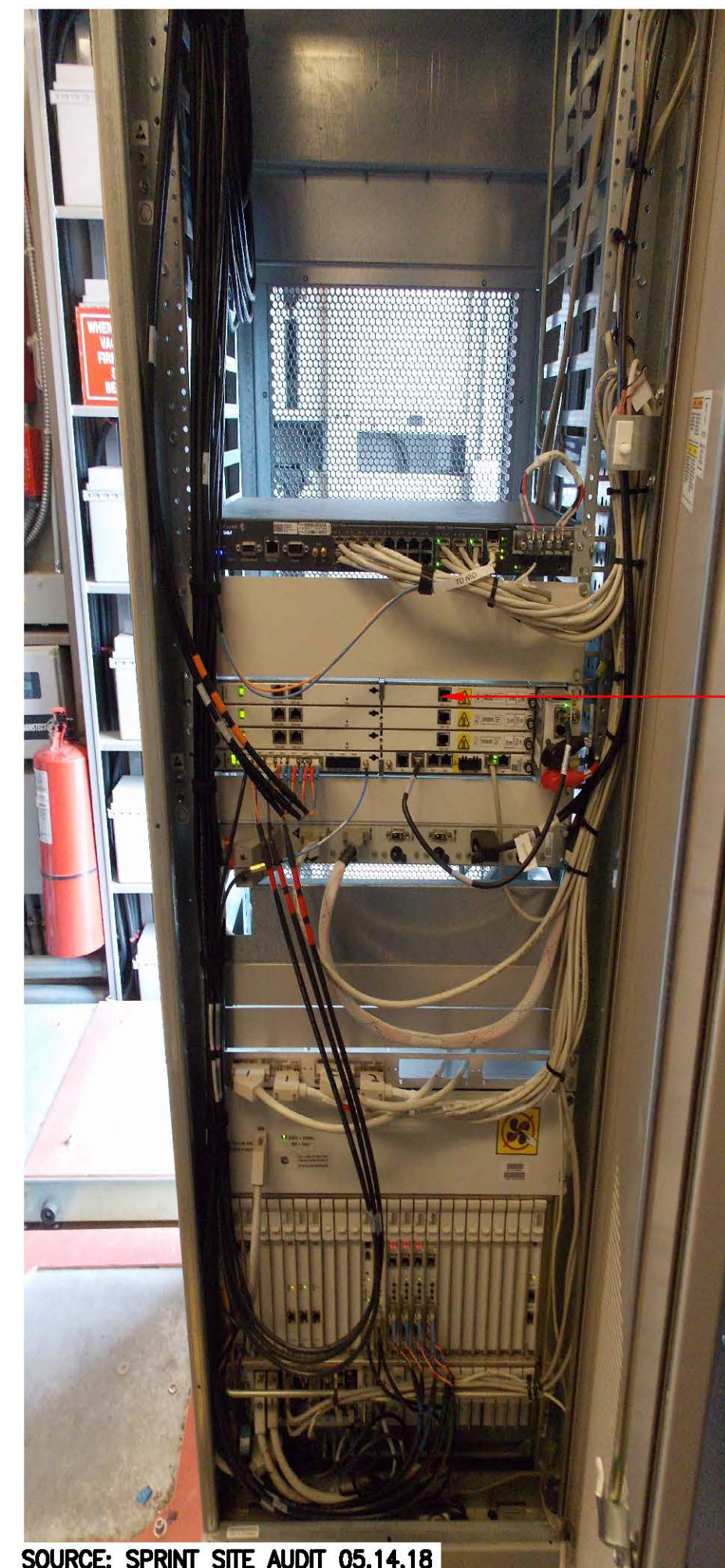
800/1900MHz ANTENNA

REF. APXVSP18-C-A20 PANEL ANTENNA
 DIMENSIONS: 72.0"x11.8"x7.0"
 WEIGHT: 64.5 LBS W/ HARDWARE
 FREQUENCY RANGE: 806-869 MHZ
 1850-1995 MHZ

800/2500MHz ANTENNA

COMMSCOPE APXYTSM18-C-I20 PANEL ANTENNA
 DIMENSIONS: 72.0"x14.6"x8.1"
 WEIGHT: 87.5 LBS W/ HARDWARE
 FREQUENCY RANGE: 817-869 MHZ
 2490-2690 MHZ

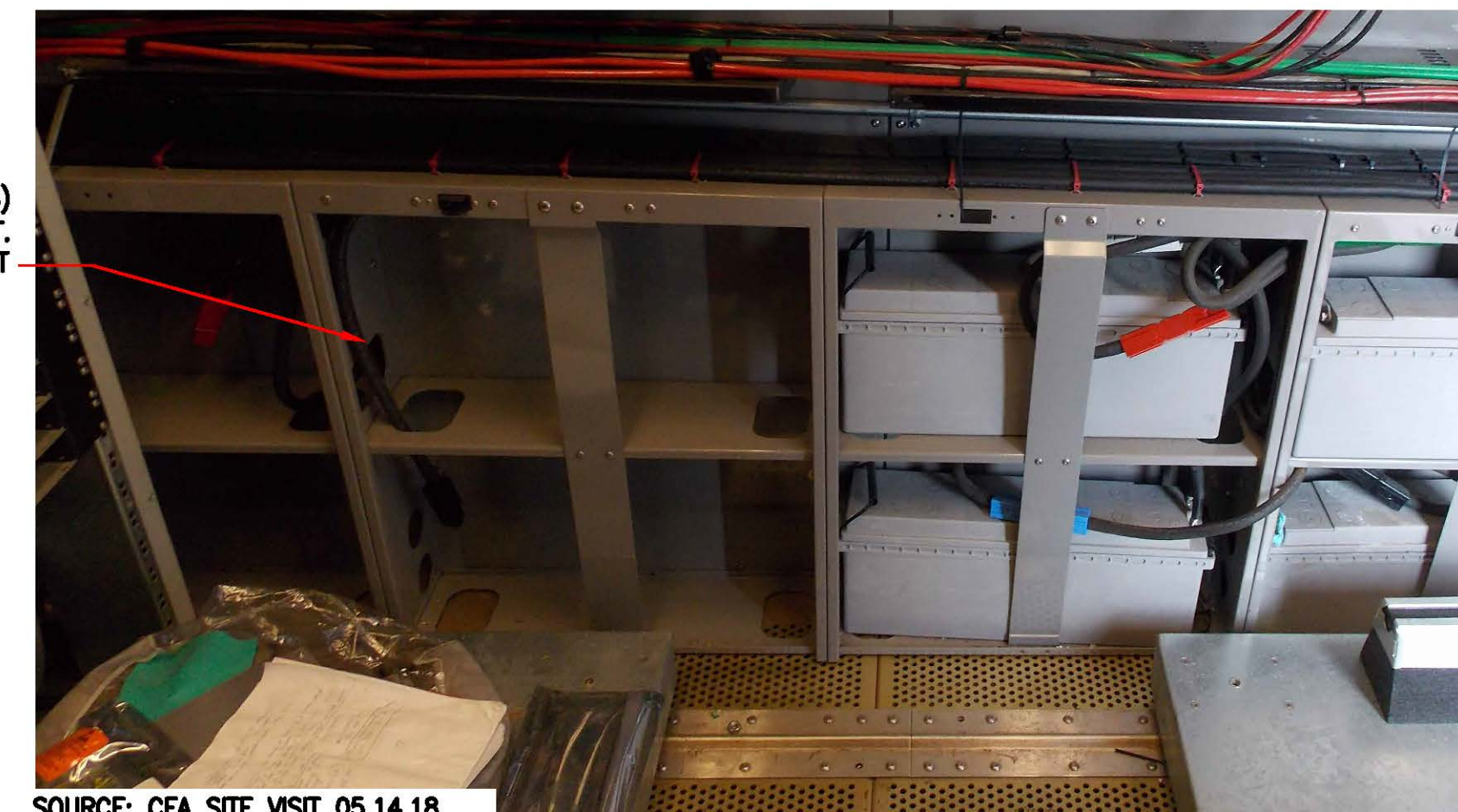
ANTENNA DETAILS
N.T.S.



SOURCE: SPRINT SITE AUDIT 05.14.18

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

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



SOURCE: CEA SITE VISIT 05.14.18

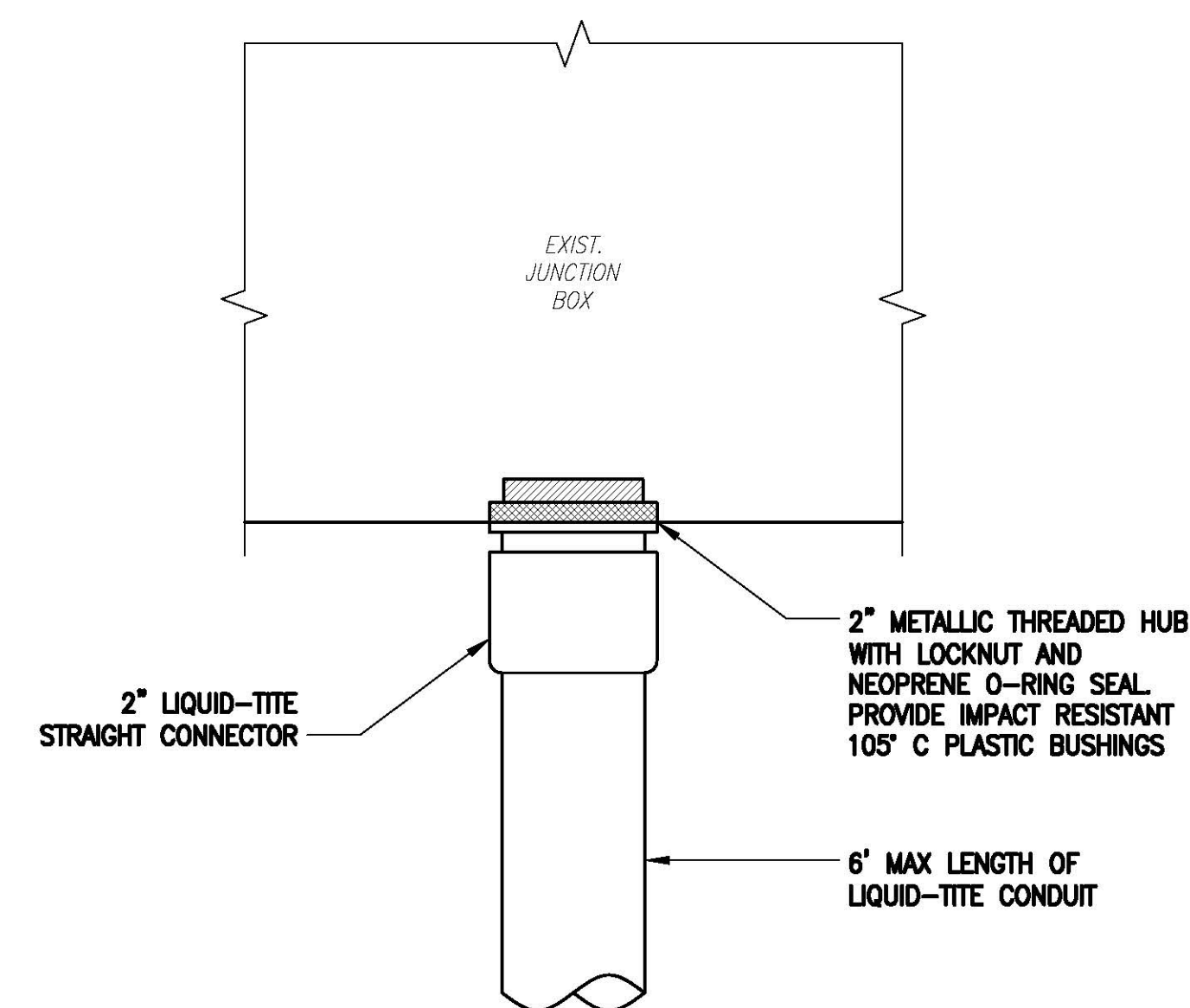
INSTALL BATTERY STRING(S) AS REQ'D TO EXIST. BATTERY BACKUP CABINET

FRONT VIEW
EXISTING BATTERY RACK 1
SCALE: NTS



FRONT VIEW
EXISTING RECTIFIER RACK 3
SCALE: NTS

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



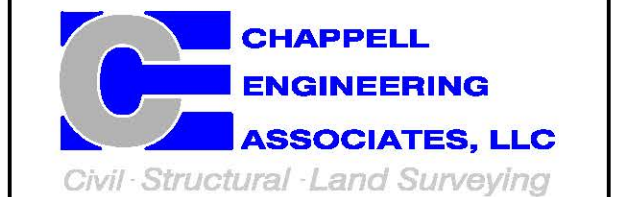
FIBER JUNCTION BOX PENETRATION 4
SCALE: NTS



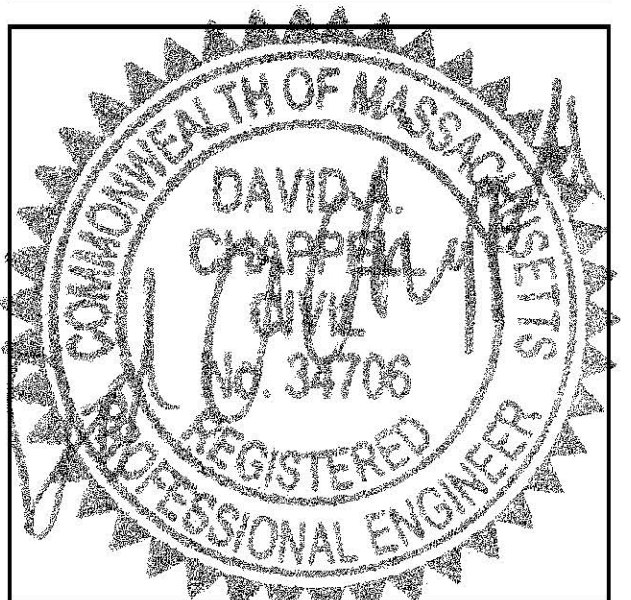
1 INTERNATIONAL BLVD, SUITE 800
MAHAH, NJ 07495
(800) 357-7641



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



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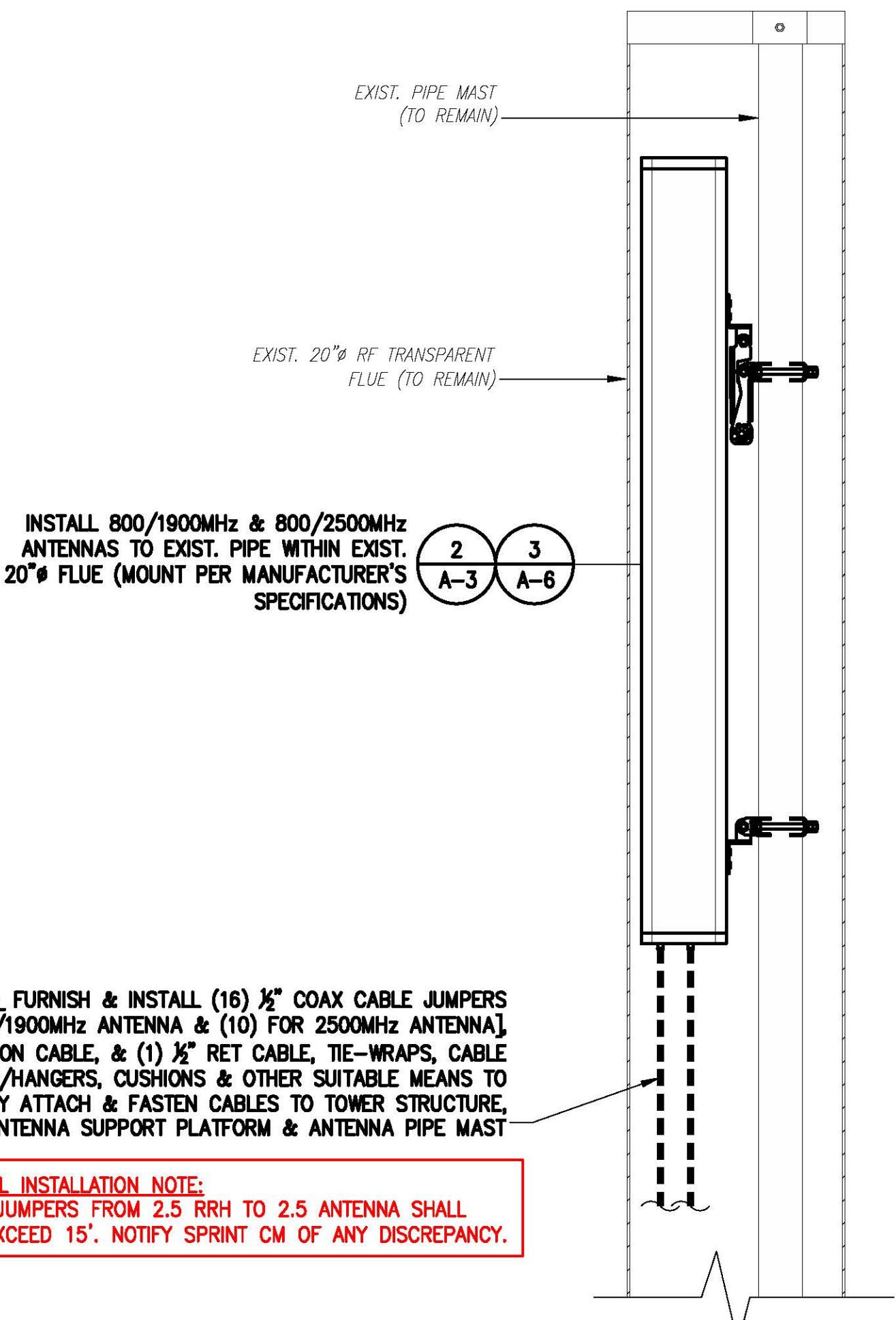
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	08/22/18	ISSUED FOR REVIEW	JRW

SITE NUMBER:
BS80XC001
SITE NAME:
MIT EAST
SITE ADDRESS:
400 MAIN 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.

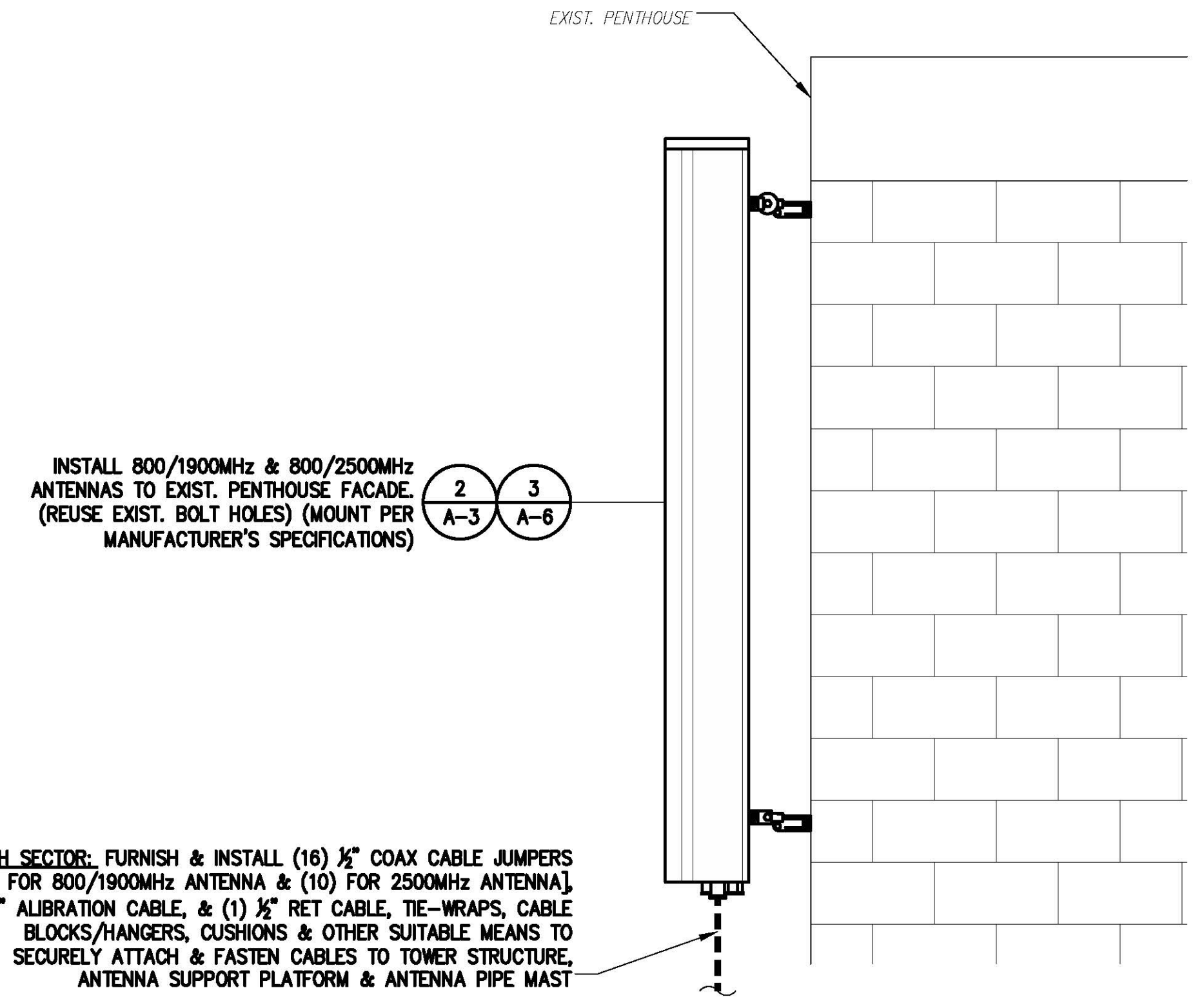


INSTALL 800/1900MHz & 800/2500MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20" FLUE (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

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

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

BETA & GAMMA SECTORS
 800/1900MHZ ANTENNA &
 800/2500MHZ ANTENNA



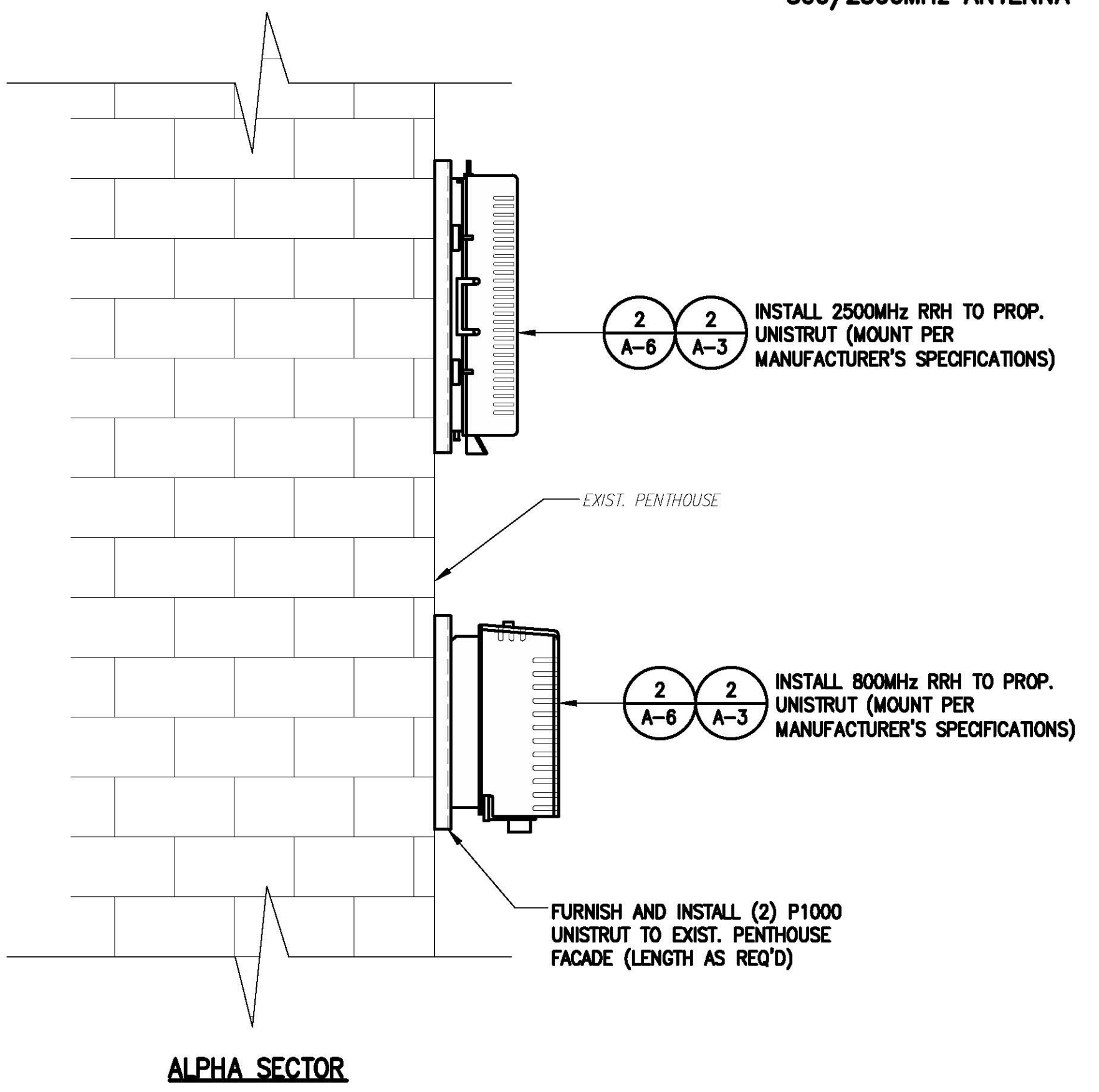
INSTALL 800/1900MHz & 800/2500MHz ANTENNAS TO EXIST. PENTHOUSE FACADE (REUSE EXIST. BOLT HOLES) (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

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

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

ALPHA SECTOR
 800/1900MHZ ANTENNA &
 800/2500MHZ ANTENNA

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

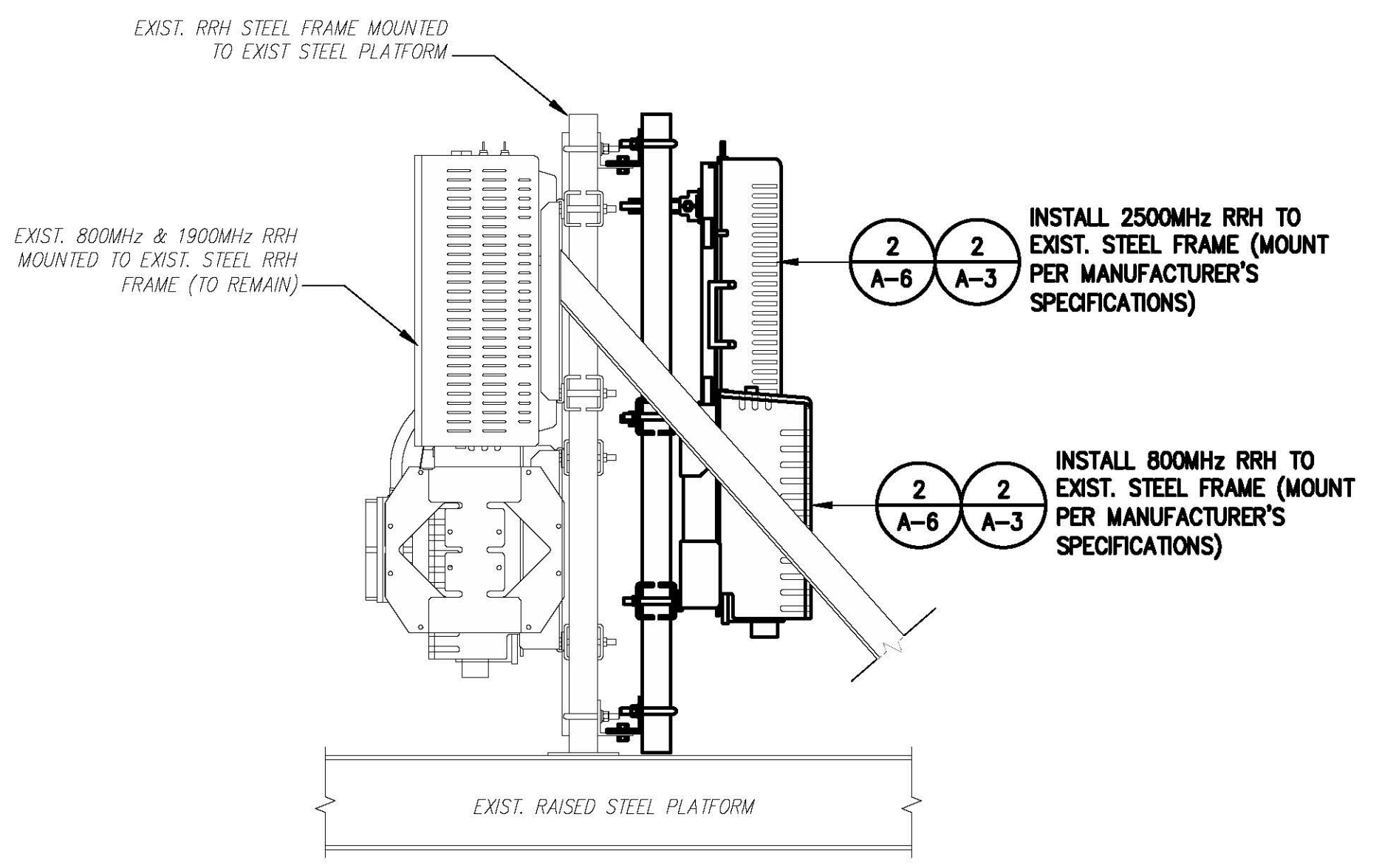


INSTALL 2500MHz RRH TO PROP. UNISTRUT (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

INSTALL 800MHz RRH TO PROP. UNISTRUT (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

FURNISH AND INSTALL (2) P1000 UNISTRUT TO EXIST. PENTHOUSE FACADE (LENGTH AS REQ'D)

ALPHA SECTOR

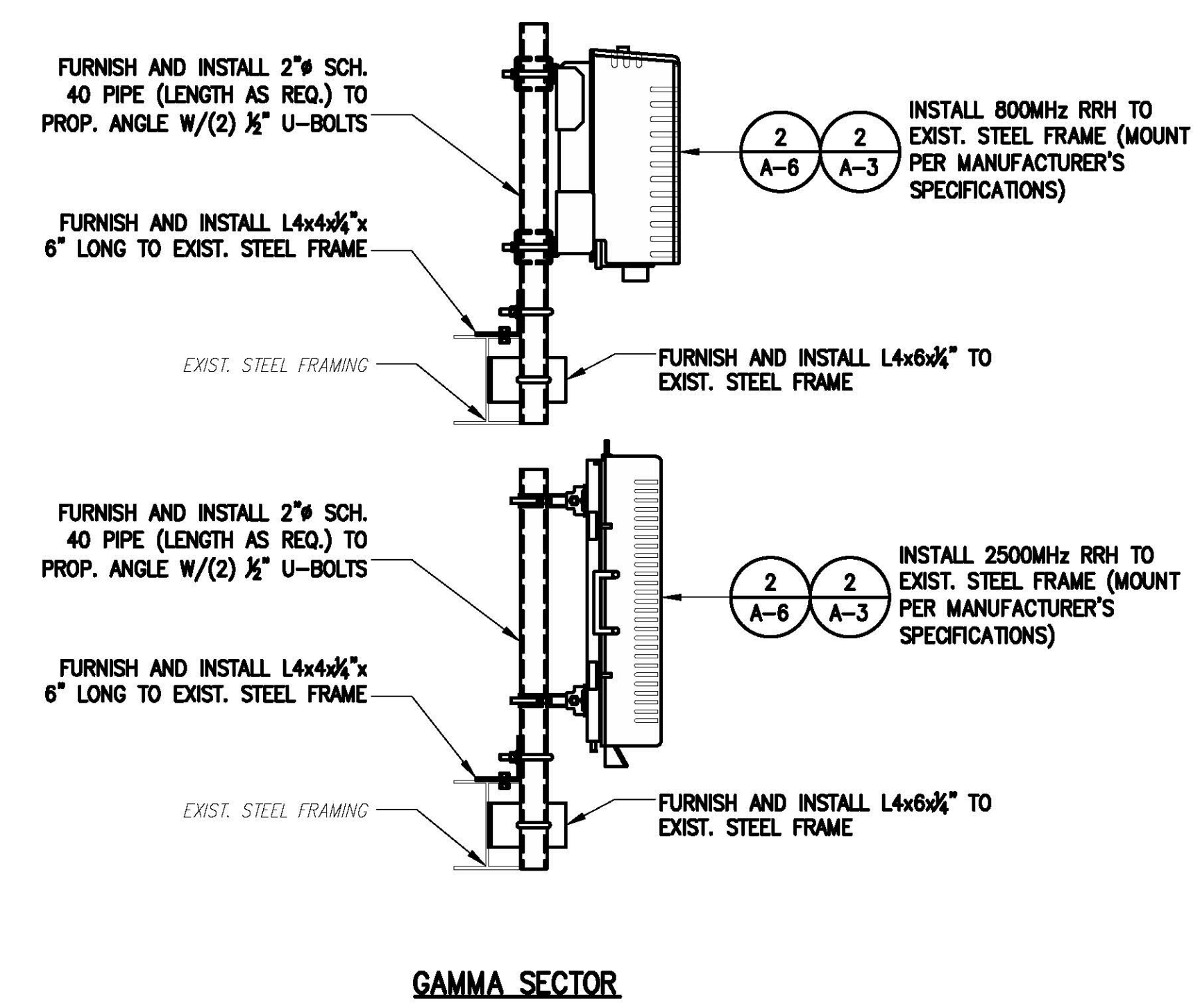


INSTALL 2500MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

INSTALL 800MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

BETA SECTOR

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



FURNISH AND INSTALL 2" SCH. 40 PIPE (LENGTH AS REQ.) TO PROP. ANGLE W/(2) 1/2" U-BOLTS

FURNISH AND INSTALL L4x4x1/4" x 6" LONG TO EXIST. STEEL FRAME

INSTALL 800MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

FURNISH AND INSTALL L4x6x1/4" TO EXIST. STEEL FRAME

FURNISH AND INSTALL 2" SCH. 40 PIPE (LENGTH AS REQ.) TO PROP. ANGLE W/(2) 1/2" U-BOLTS

FURNISH AND INSTALL L4x4x1/4" x 6" LONG TO EXIST. STEEL FRAME

INSTALL 2500MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

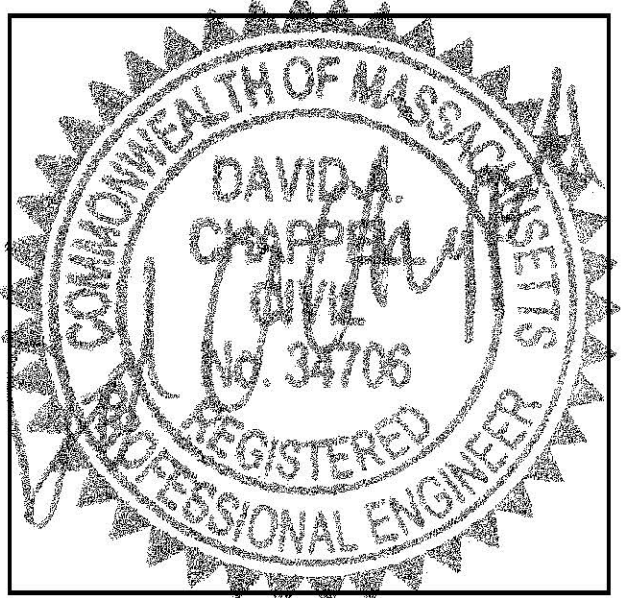
FURNISH AND INSTALL L4x6x1/4" TO EXIST. STEEL FRAME

GAMMA SECTOR

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

CENTERLINE COMMUNICATIONS
 95 RYAN DRIVE, SUITE 1
 RAYNHAM, MA 02767
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CHAPPELL ENGINEERING ASSOCIATES, LLC
 Civil - Structural - Land Surveying
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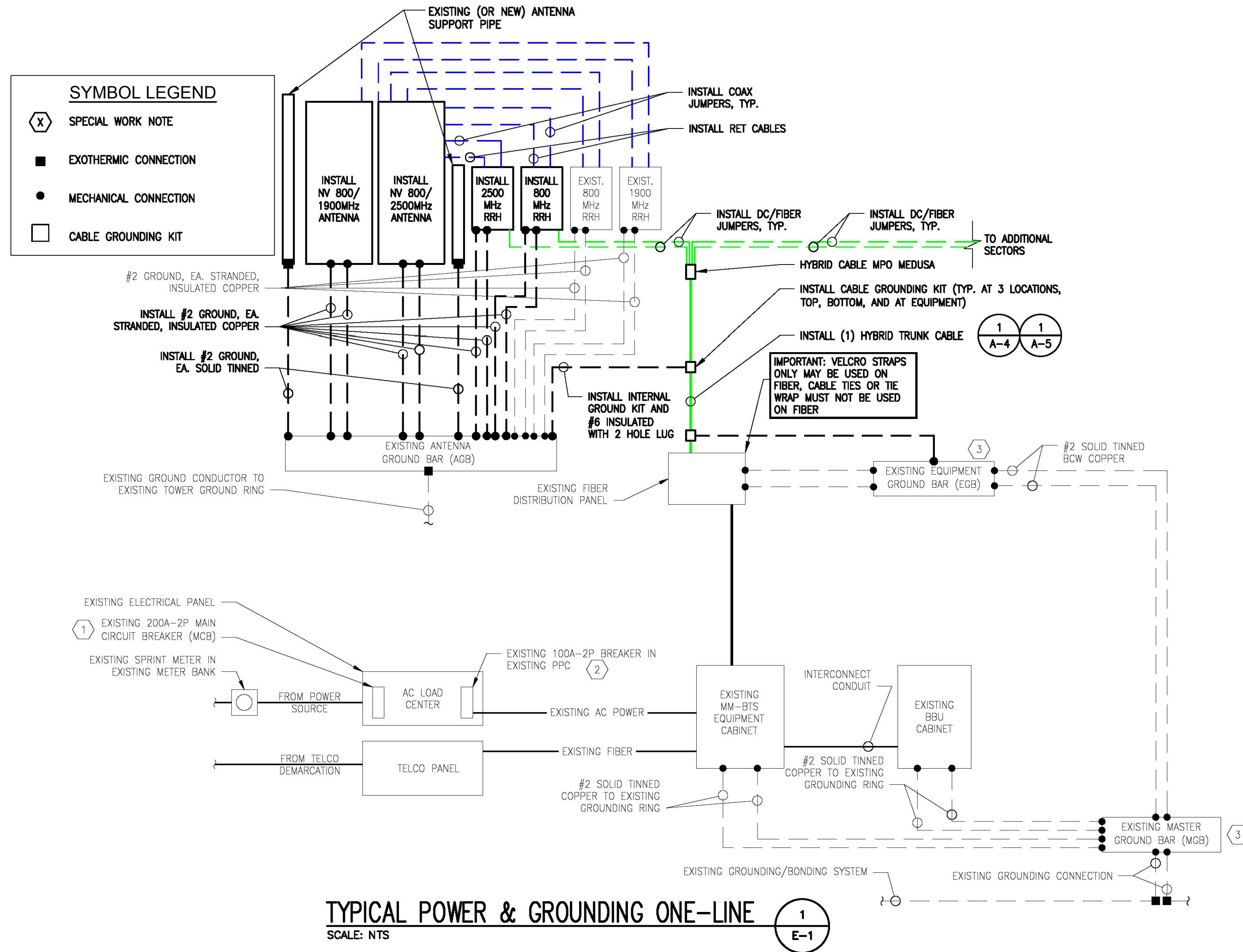
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
 BS80XC001
 SITE NAME:
 MIT EAST
 SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-1



SPECIAL WORK NOTE:

- 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)
- 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.
- 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

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
- ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
- ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- 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.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- 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.
- 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.
- FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
- COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

Sprint VISION

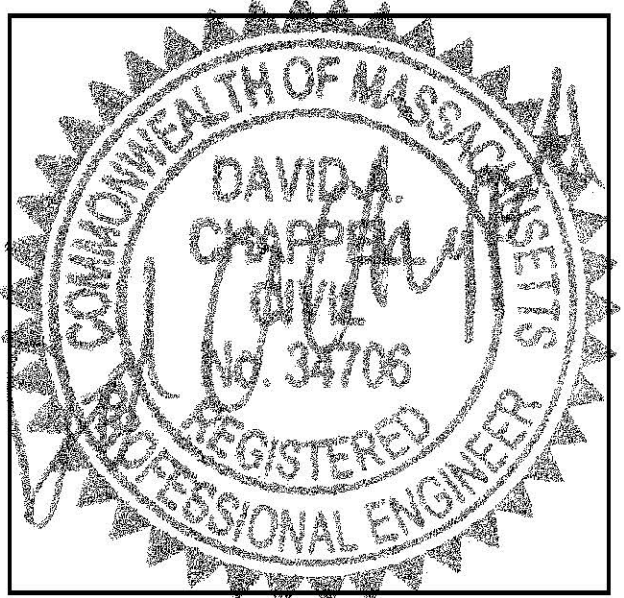
1 INTERNATIONAL BLVD, SUITE 800
MAYNHAM, NJ 07495
(800) 357-7641

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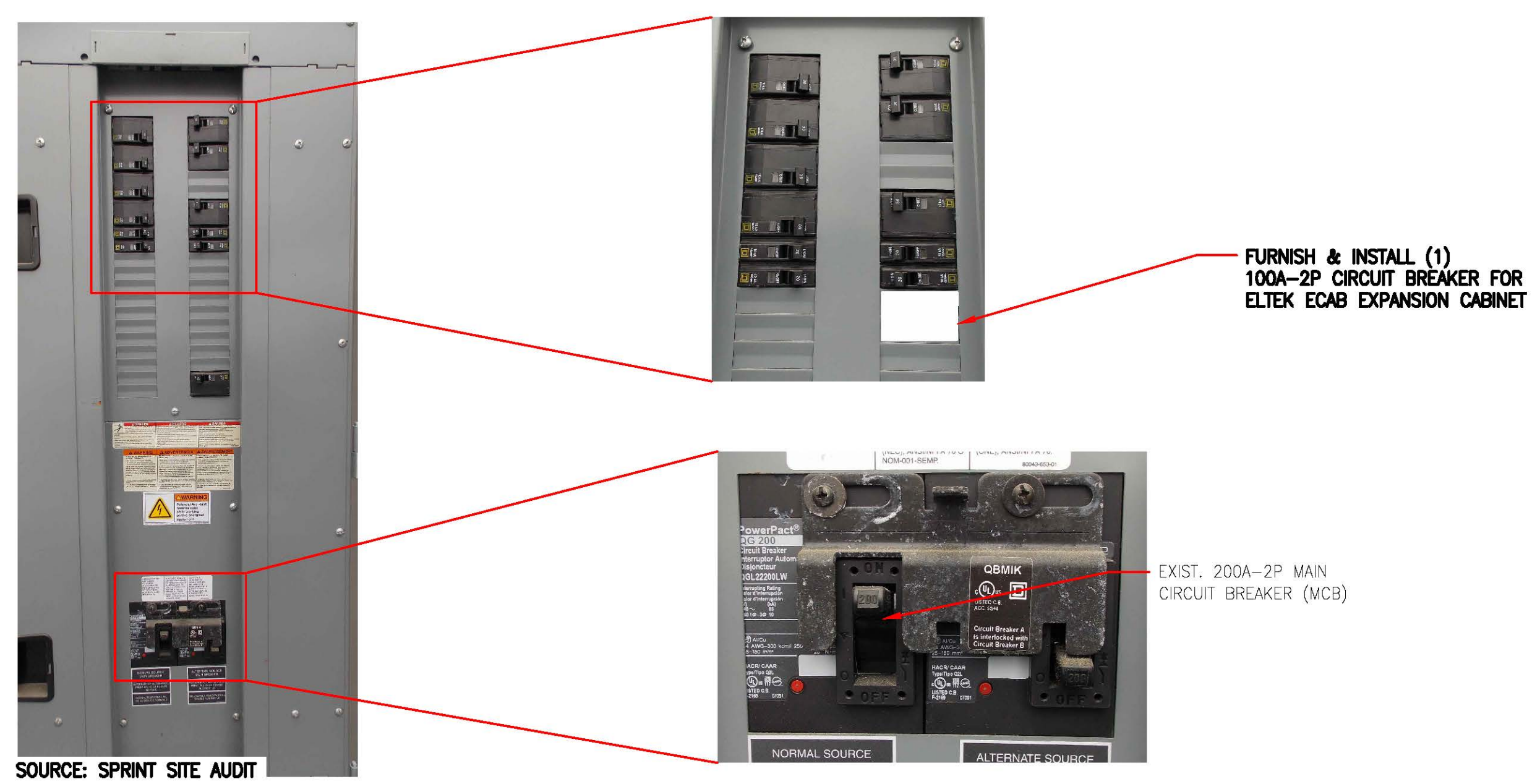
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BS80XC001

SITE NAME:
MIT EAST

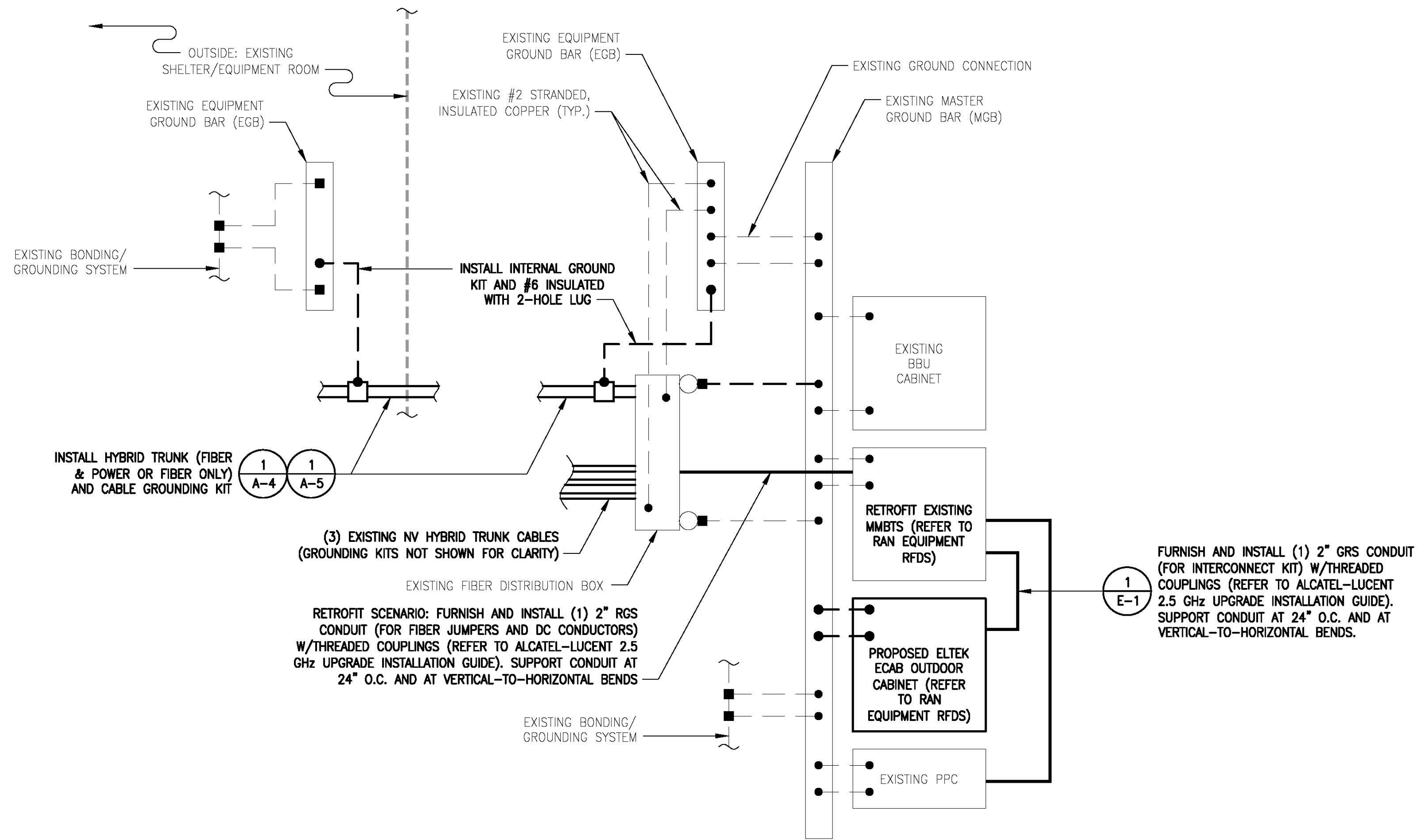
SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
ONE-LINE DIAGRAM & PPC DETAILS

SHEET NUMBER
E-1



EXIST. BREAKER PANEL
SCALE: NTS



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

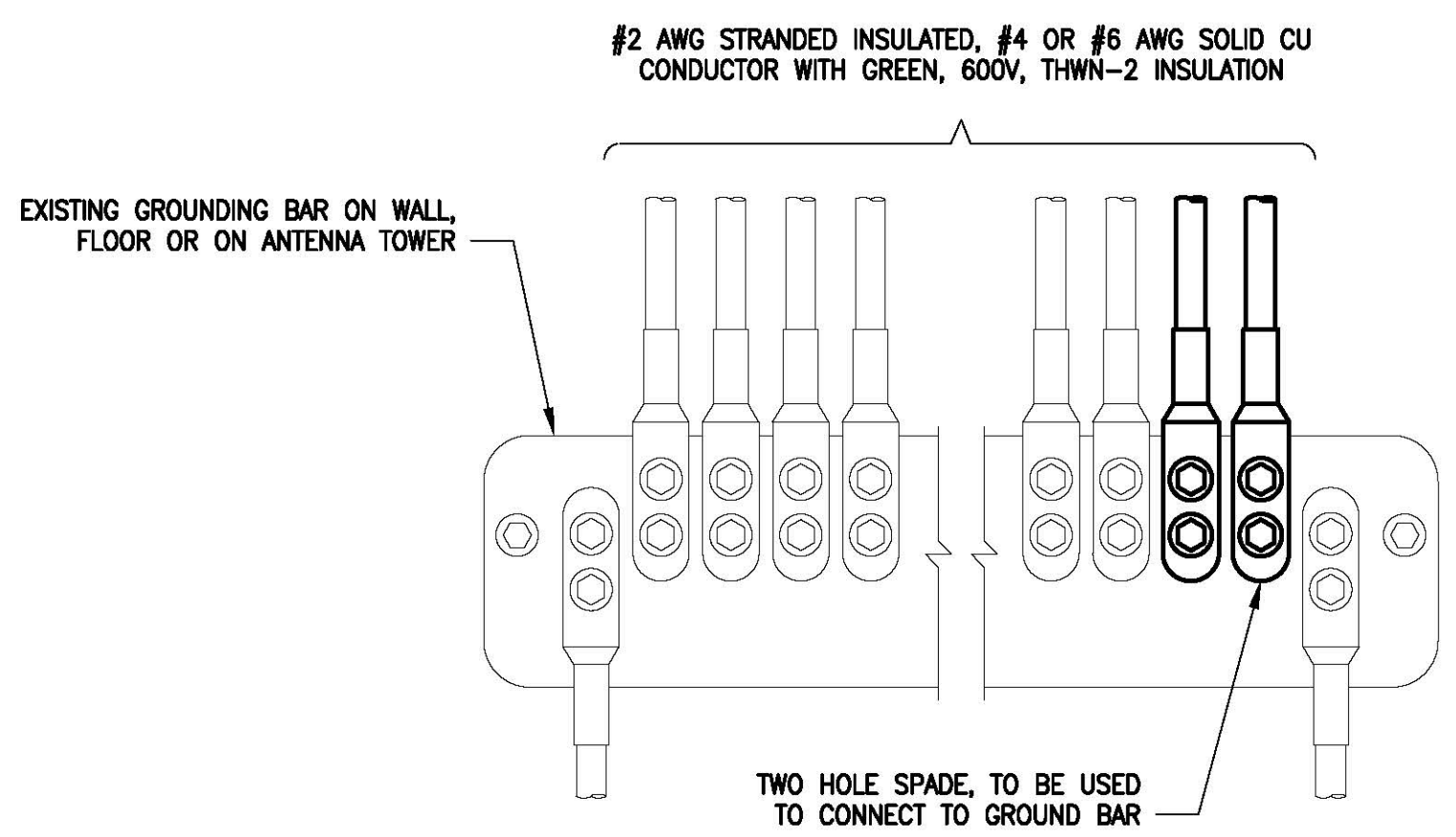
■	EXOTHERMIC CONNECTION
●	MECHANICAL CONNECTION
□	CABLE GROUNDING KIT
---	GROUNDING/BONDING
—	CONDUIT

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.

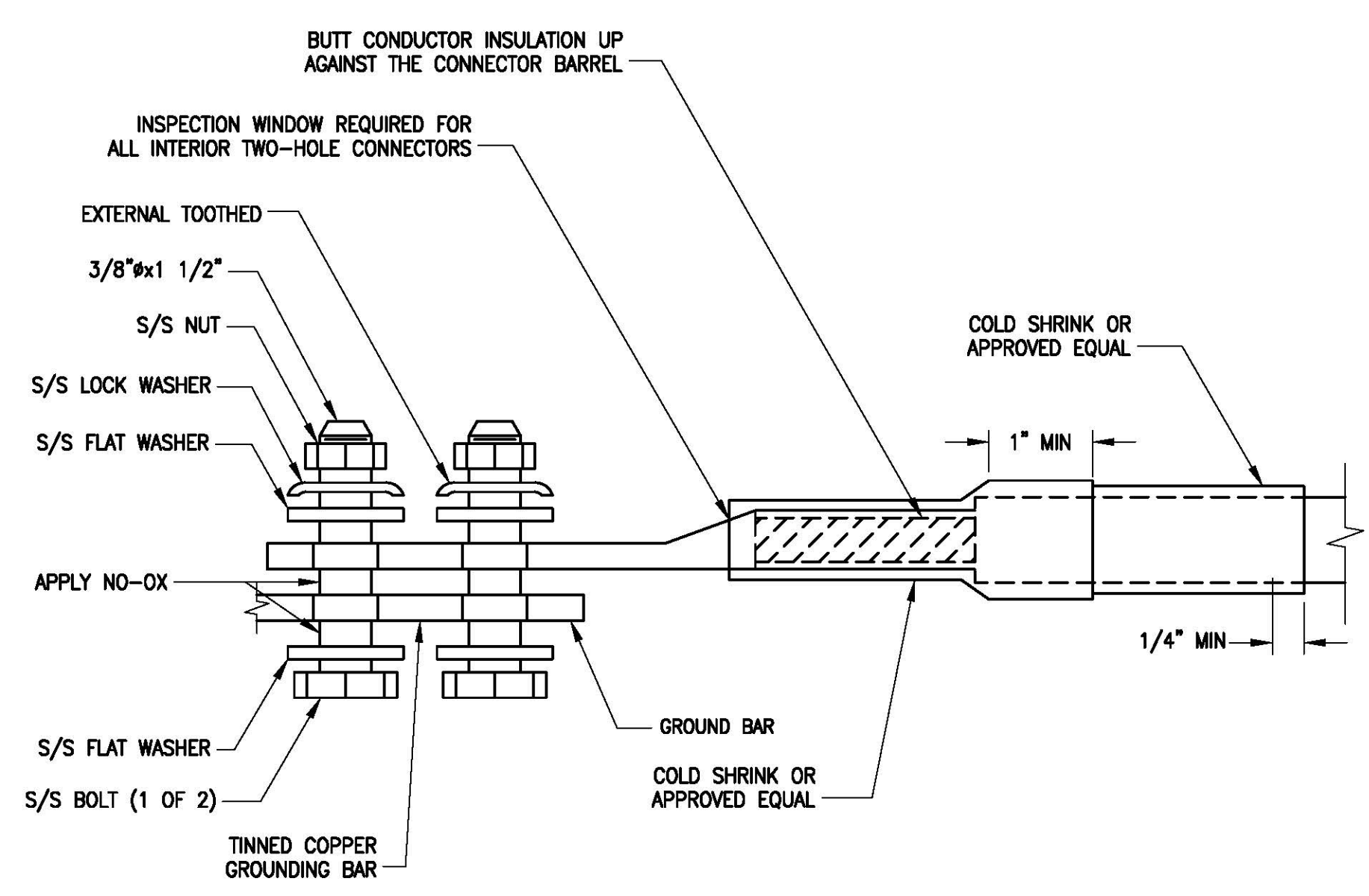
PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

- 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-SHIELD) 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.

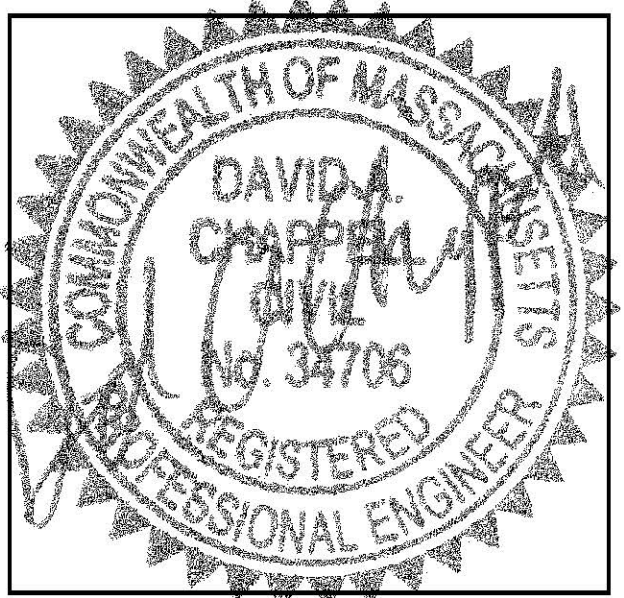


TWO HOLE LUG
SCALE: N.T.S.

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www.centerlinecommunications.com

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	08/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS80XC001
SITE NAME:
MIT EAST
SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
E-2

June 27, 2018

Sprint
1 International Blvd
Suite 800
Mahwah, NJ 07495

Structural Evaluation of Antenna Loads

RE:

Candidate Number	BS80XC001
Candidate Name	MIT East
Candidate Address	400 Main 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 completed on 05-14-2018, the existing antenna mounts consist of antennas mounted to the façade of the existing rooftop penthouse (alpha sector), mounted within existing RF flues secured to a self-supporting ballast frame (beta sector), and mounted within existing RF flues secured to the existing HVAC frame (gamma sector)

The current Sprint antenna is summarized below:

<u>Sector</u>	<u>Antenna(s)</u>	<u>Remote Radio Unit</u>	<u>Antenna Support</u>
Alpha	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Façade Pipe Mount on Penthouse Face
Beta	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Inside RF Radome Flue on Ballast Frame
Gamma	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Inside RF Radome Flue on HVAC Frame

* Existing RRH's are mounted in separate locations adjacent to panel antennas

Sprint currently proposes to reconfigure the existing site to include the additional antennas and final configuration listed below:

<u>Sector</u>	<u>Antenna(s)</u>	<u>Remote Radio Unit</u>	<u>Antenna Support</u>
Alpha	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Façade Pipe Mount on Penthouse Face
	Commscope APXVTSM18-C-120	800MHz & 2500MHz*	Façade Pipe Mount on Penthouse Face
Beta	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Inside RF Radome Flue on Ballast Frame
	Commscope APXVTSM18-C-120	800MHz & 2500MHz*	Inside RF Radome Flue on Ballast Frame
Gamma	(1) RFS APXVSPP18-C-A20	800MHz & 1900MHz*	Inside RF Radome Flue on HVAC Frame
	Commscope APXVTSM18-C-120	800MHz & 2500MHz*	Inside RF Radome Flue on HVAC Frame

* Existing RRH's are mounted in separate locations adjacent to panel antennas

The proposed antennas will replace the existing in-service antennas.

Sprint also proposes to run (1) new Hybriflex trunk cable along the existing cable path. The new cable will be run alongside the existing in-service cables within the rooftop cable tray along the existing roof and wall structure.

Based upon our site evaluation on 05/14/2018 and a review of the proposed antenna/RRH sizes, the proposed antennas/RRHs being installed represent an acceptable increase in both the static and wind loaded conditions on the existing structure and on the overall stability of the structure. Chappell Engineering Associates, LLC has determined that the existing structure has adequate capacity to support the proposed DO Macro upgrade configuration as shown above. Photos of the existing antennas and the proposed locations of the new antennas/RRHs are enclosed for your convenience. A copy of the DO Macro upgrade mounting plan being proposed by Chappell Engineering Associates, LLC is also enclosed.

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

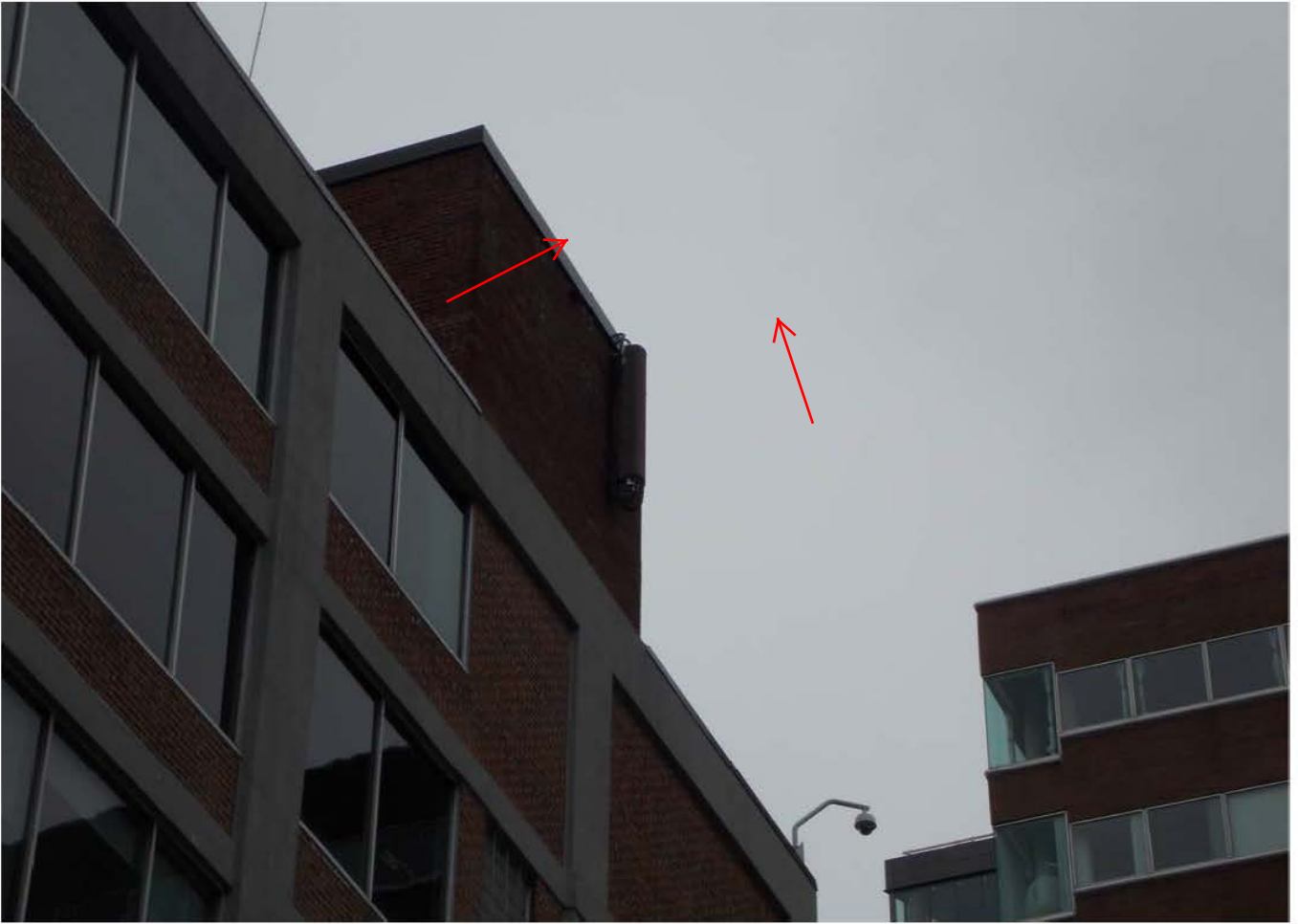
Very truly yours,

CHAPPELL ENGINEERING ASSOCIATES, LLC


Clement J Salek, P.E.
CJS/cjs



Existing Alpha Sector RRH's Mounted to Wall Face



Existing Alpha Sector Antennas



Existing Beta Sector Antenna Frame and RRH's



Existing Beta Sector Antenna Frame



Existing Gamma Sector RRH's



Existing Gamma Sector Antenna Flues



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.



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 SERVING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

PROJECT: DO MACRO UPGRADE
SITE NAME: MIT EAST
SITE CASCADE: BS80XC001
SITE ADDRESS: 400 MAIN STREET
 CAMBRIDGE, MA 02139
SITE TYPE: ROOFTOP

Sprint VISION
 1 INTERNATIONAL BLVD, SUITE 800
 MAHWAH, NJ 07495
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER: BS80XC001
SITE NAME: MIT EAST
SITE ADDRESS: 400 MAIN STREET
 CAMBRIDGE, MA 02139

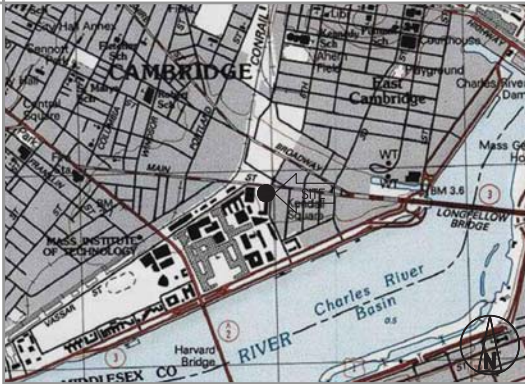
SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1

SITE INFORMATION

PROPERTY OWNER:
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 238 MAIN STREET, SUITE 200
 CAMBRIDGE, MA 02142
LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 N 42° 21' 44.36"
 42.362322
LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
 W 71° 05' 16.04"
 71.087789
COUNTY:
 MIDDLESEX
ZONING JURISDICTION:
 CITY OF CAMBRIDGE
ZONING DISTRICT:
 RESIDENCE C-3B
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
 • (1) ADDITIONAL BATTERY STRING(S) WITHIN EXISTING BATTERY RACK
 TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:
 • (6) PANEL ANTENNAS TO REPLACE EXISTING (3) PANEL ANTENNAS
 • (6) 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



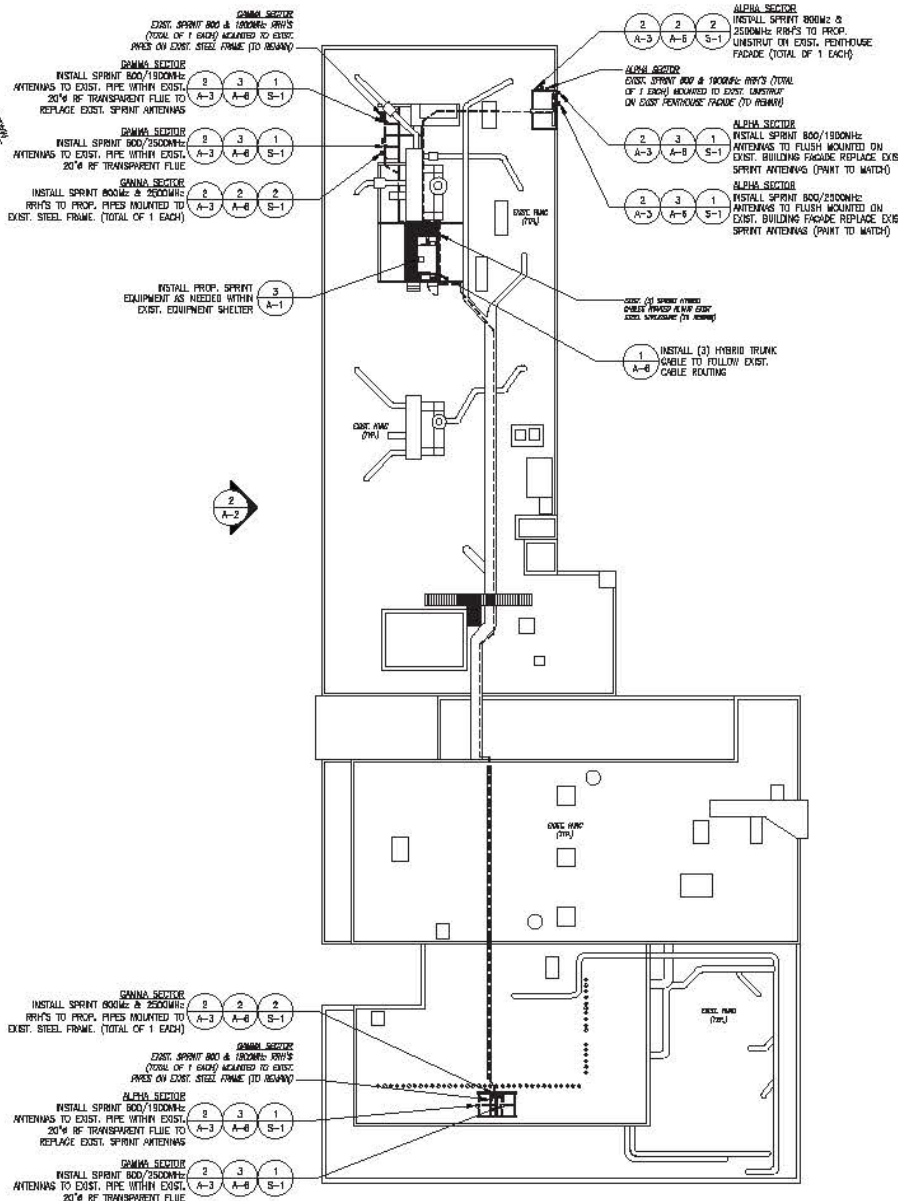
DRAWING INDEX

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

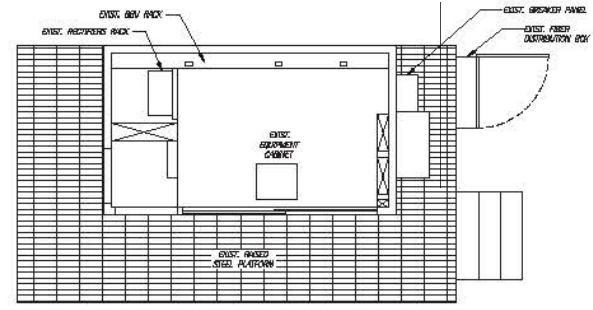
APPROVALS

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.

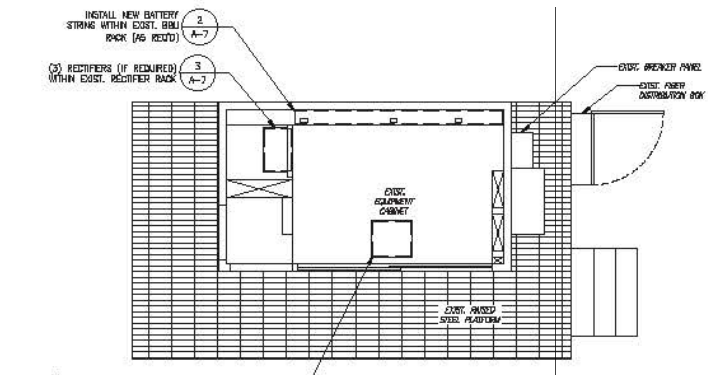
SPRINT: _____ DATE: _____
 CONSTRUCTION MANAGER: _____ DATE: _____
 LEASING/SITE ACQUISITION: _____ DATE: _____
 RF ENGINEER: _____ DATE: _____
 LANDLORD/TOWER OWNER: _____ DATE: _____



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



EXISTING EQUIPMENT PLAN
SCALE: 3/8" = 1'-0"
2
A-1



PROPOSED EQUIPMENT PLAN
SCALE: 3/8" = 1'-0"
3
A-1

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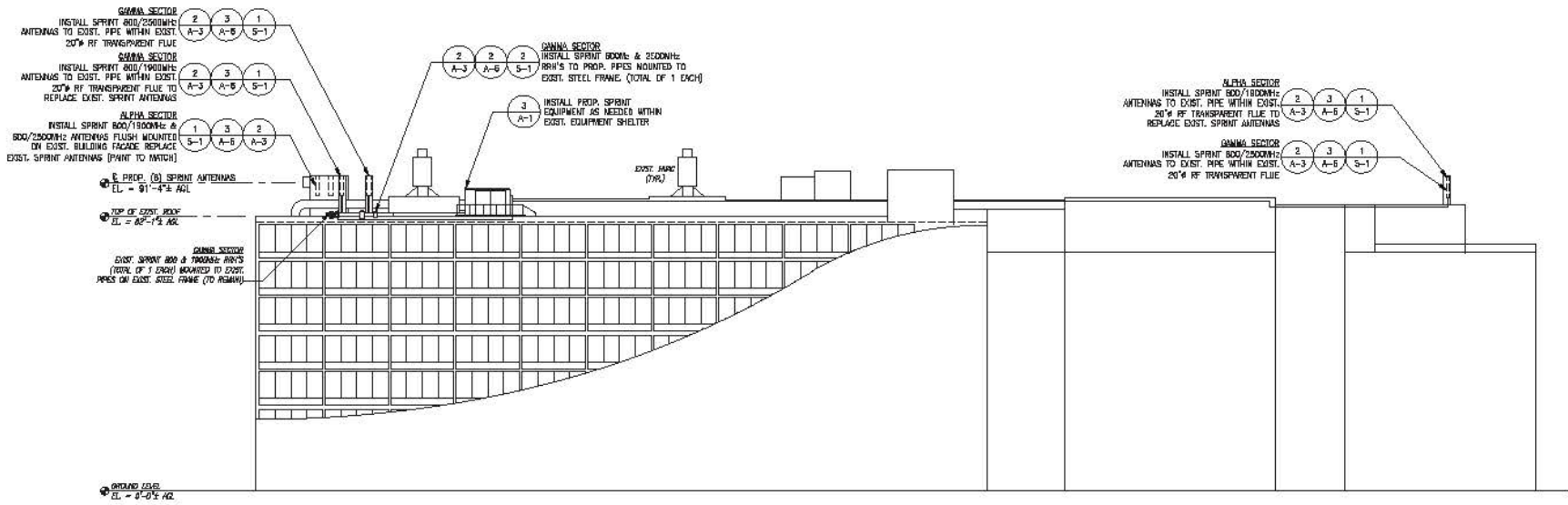
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/10	ISSUED FOR REVIEW	JMT

SITE NUMBER:
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SITE NAME:
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SITE ADDRESS:
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CAMBRIDGE, MA 02139

SHEET TITLE
ROOF & EQUIPMENT PLANS

SHEET NUMBER
A-1

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



EAST ELEVATION
 SCALE 1/16" = 1'-0"
 0 18'-0" 36'-0" 48'-0"

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 CAMBRIDGE, MA 02139

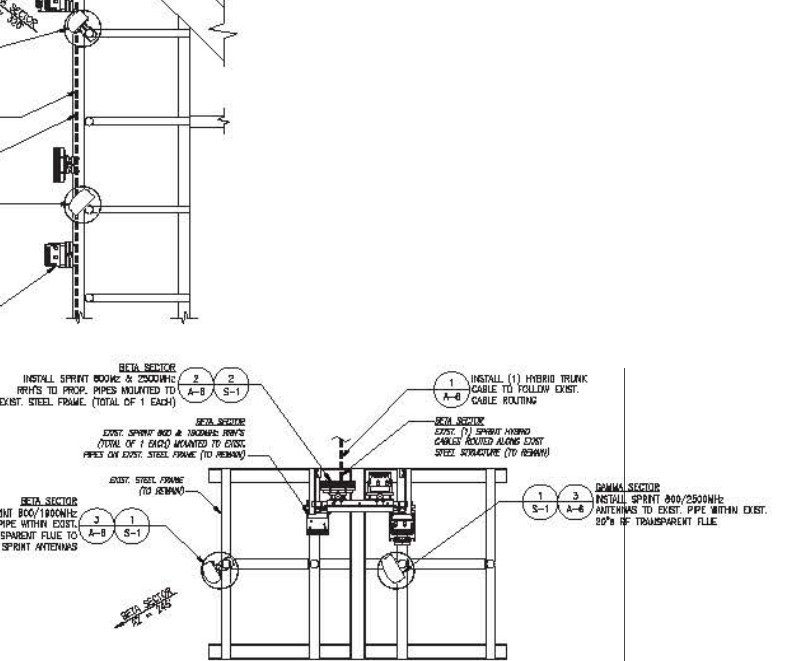
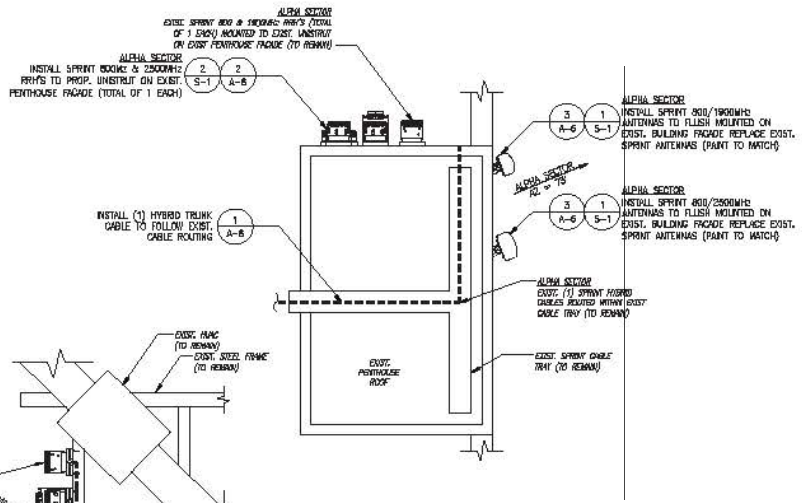
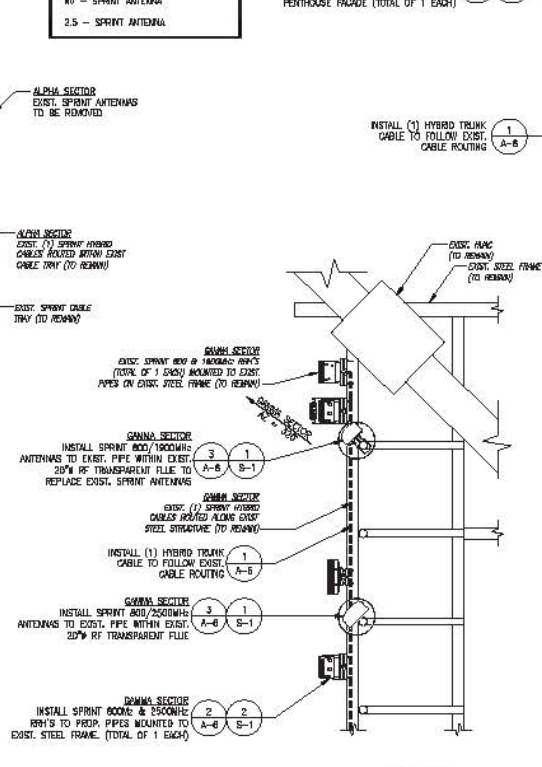
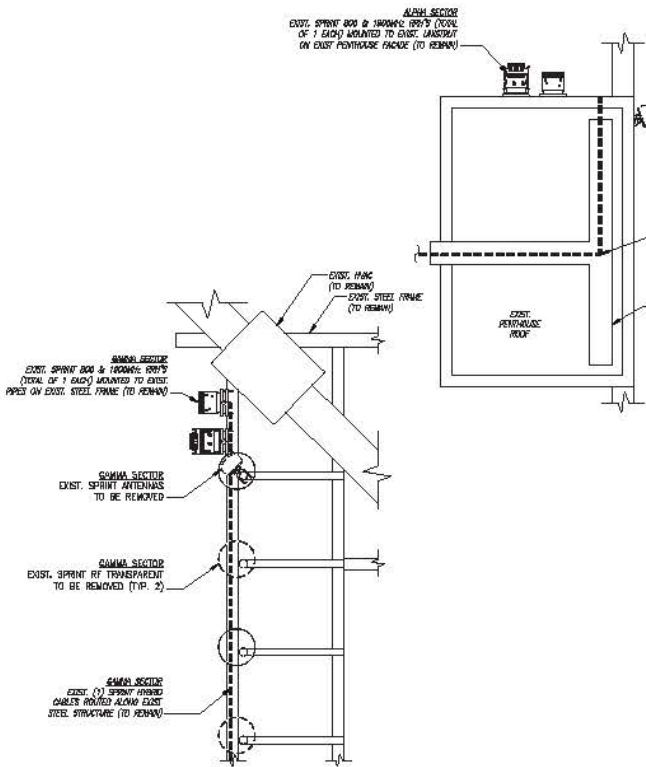
SHEET TITLE
ELEVATION

SHEET NUMBER
A-2

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/RISK MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A/E VENDOR).
 * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS NOTICED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

ANTENNA STATUS LEGEND:

(E) - EXISTING
(P) - INSTALL
(W) - SPRINT ANTENNA
2.5 - SPRINT ANTENNA



NOTES:
 EXISTING ANTENNAS FROM DEP. SITE VISIT, DATED 4/16/2018.

EXISTING ANTENNA PLAN
 SCALE: NTS.

PROPOSED ANTENNA PLAN
 SCALE: NTS.

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

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1 INTERNATIONAL DRIVE, SUITE 909
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DAVID A. CHAPPELL
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JMT

SITE NUMBER:
 BS80XC001

SITE NAME:
 MIT EAST

SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE

ANTENNA PLANS

SHEET NUMBER

A-3

1728.009

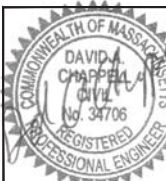
Region: Northeast	Market	Boston	Revision J.2	Rev Date: 20-Nov-2017
Cascade ID	BS80XC01		BTS OEM: ALU	RFDS Type: Preliminary
Alignment Import Code: SDDMU01_00_Macro_Upgrade	Alignment: DO Macro Upgrade		Structure Type: Rooftop	Eng. Phone: 978-590-9700
Address: 800 Main Street, Cambridge, MA, 02142	Sprint Eng. Name: Bill Hastings		Bill.M.Hastings@sprint.com	Manager Phone: 617-233-2920
Latitude: 42.362522 Longitude: -71.08778	Manager Name: Jonathan Hull		Jonathan.Hull@sprint.com	RFE Phone: 901-728-0006
Detailed RFDS Description:		Filter Analysis Complete: YES	Border Analysis Complete: YES	Channel Plan Complete: YES
Triband final config using NV + dual 800/2.5 G antenna. Adding 2nd 800 RRH, 1900 RRH and 2.5 RRH.				
	800MHz	1900MHz	2500MHz	
1900MHz_Azimuth	75	245	320	
1900MHz_No_of_Antennas	1	1	1	
1900MHz_RADCenter(H)	91.3	91.3	91.3	
1900MHz_AntennaMake	RF5	RF5	RF5	
1900MHz_AntennaModel	APXVSP18-C-A20	APXVSP18-C-A20	APXVSP18-C-A20	
1900MHz_Horizontal_Beamwidth	65	65	65	
1900MHz_Vertical_Beamwidth	6	6	6	
1900MHz_AntennaDimensions (H) & Weight (lbs)	72 x 11.8 x 7.9 62 (lbs)	72 x 11.8 x 7.9 62 (lbs)	72 x 11.8 x 7.9 62 (lbs)	
1900MHz_AntennaGain(dBi)	18	18	18	
1900MHz_M_Tilt	0	0	0	
1900MHz_Effective_Tilt	0	0	0	
1900MHz_Carrier_Forecast_Year_2017	ALU	ALU	ALU	
1900MHz_RRH_Manufacturer	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	
1900MHz_RRH_Count	1	1	1	
1900MHz_RRH_Specs	25 x 11.1 x 11.4 (60 lbs)	25 x 11.1 x 11.4 (60 lbs)	25 x 11.1 x 11.4 (60 lbs)	
1900MHz_RRH_Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower	
1900MHz_Combiner_Model	No Combiner Required	No Combiner Required	No Combiner Required	
1900MHz_Power_Split_Ratio (Main/Split)	No Splitter Required	No Splitter Required	No Splitter Required	
1900MHz_Splitter_Manufacturer	No Splitter Required	No Splitter Required	No Splitter Required	
1900MHz_Splitter_Model	No Splitter Required	No Splitter Required	No Splitter Required	
1900MHz_Number_of_Splitters	0	0	0	
1900MHz_Top_Jumper#1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to Antenna for Ground Mount)	8	8	8	
1900MHz_Top_Jumper#1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax to Antenna for Ground Mount)	LCF12-50J	LCF12-50J	LCF12-50J	
1900MHz_Top_Jumper#2_Length (RRH to Combiner for TT if applicable)				
1900MHz_Top_Jumper#2_Cable_Model (RRH to Combiner for TT if applicable)				
1900MHz_Main_Cable_Length (ft)	116.3	116.3	116.3	
1900MHz_Main_Cable_Model	HB114-1-08U4-MSF	HB114-1-08U4-MSF	HB114-1-08U4-MSF	
1900MHz_Bottom_Jumper#1_Length (Ground based RRH to Combiner OR Main Coax)				
1900MHz_Bottom_Jumper#1_Cable_Model (Ground based RRH to Combiner OR Main Coax)				
1900MHz_Bottom_Jumper#2_Length (Ground based-Combiner to Main Coax)				
1900MHz_Bottom_Jumper#2_Cable_Model (Ground based-Combiner to Main Coax)				

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

	75	245	320
800MHz_Azimuth	75	245	320
800MHz_No_of_Antennas	1	1	1
800MHz_RADCenter(H)	91.3	91.3	91.3
800MHz_AntennaMake	NA	NA	NA
800MHz_AntennaModel	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band
800MHz_Horizontal_Beamwidth	NA	NA	NA
800MHz_Vertical_Beamwidth	NA	NA	NA
800MHz_AntennaDimensions (H) & Weight (lbs)	NA NA	NA NA	NA NA
800MHz_AntennaGain (dBi)	NA	NA	NA
800MHz_M_Tilt	0	0	0
800MHz_Effective_Tilt (degrees)	0	0	0
800MHz_RRH_Manufacturer	ALU	ALU	ALU
800MHz_Combiner_Model	No Combiner Required	No Combiner Required	No Combiner Required
800MHz_RRH_Model	RRH 800 MHz 2x50W	RRH 800 MHz 2x50W	RRH 800 MHz 2x50W
800MHz_RRH_Specs	15.8 x 13.0 x 14.0 (64 lbs)	15.8 x 13.0 x 14.0 (64 lbs)	15.8 x 13.0 x 14.0 (64 lbs)
800MHz_RRH_Count	2	2	2
800MHz_RRH_Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
800MHz_BILT_Border_Filter	na	na	na
800MHz_Splitter_Manufacturer			
800MHz_Splitter_Model			
800MHz_Number_of_Splitters	0	0	0
800_Top_Jumper#1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)	8	8	8
800_Top_Jumper#1_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)	LCF12-50J	LCF12-50J	LCF12-50J
800MHz_Main_Coax_Cable_Length (ft)	NA	NA	NA
800MHz_Main_Coax_Cable_Model	NA	NA	NA
800_Bottom_Jumper#1_Length (Ground based RRH to Main Coax)			
800_Bottom_Jumper#1_Cable_Model (Ground based RRH to Main Coax)			
2500MHz_Azimuth	75	245	320
2500MHz_No_of_Antennas	1	1	1
2500MHz_RADCenter(H)	91.3	91.3	91.3
2500MHz_AntennaMake	RF5	RF5	RF5
2500MHz_AntennaModel	APXVTS18-C-I20	APXVTS18-C-I20	APXVTS18-C-I20
2500MHz_Horizontal_Beamwidth	70	70	70
2500MHz_Vertical_Beamwidth	5	5	5
2500MHz_AntennaGain (ft)	72 x 14.6 x 8.1 40.8 (lbs)	72 x 14.6 x 8.1 40.8 (lbs)	72 x 14.6 x 8.1 40.8 (lbs)
2500MHz_AntennaGain (dBi)	17.3	17.3	17.3
2500MHz_M_Tilt	0	0	0
2500MHz_Effective_Tilt (degrees)	0	0	0
2500MHz_RRH_Manufacturer	ALU	ALU	ALU
2500MHz_Combiner_Model	No Combiner Required	No Combiner Required	No Combiner Required
2500MHz_RRH_Model	TD-RRHx20-25	TD-RRHx20-25	TD-RRHx20-25
2500MHz_RRH_Count	1	1	1
2500MHz_RRH_Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
2500MHz_Power_Split_Ratio (Main/Split)			
2500MHz_Splitter_Manufacturer			
2500MHz_Splitter_Model			
2500MHz_Number_of_Splitters	0	0	0
2500_Top_Jumper#1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)	8	8	8
2500_Top_Jumper#1_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)	LCF12-50J	LCF12-50J	LCF12-50J
2500MHz_Main_Cable_Length (ft)	116.3		
2500MHz_Main_Cable_Model	HB114-08U3M12-xxxif		
2500_Bottom_Jumper#1_Length (Ground based RRH to Main Coax)			
2500_Bottom_Jumper#1_Cable_Model (Ground based RRH to Main Coax)			



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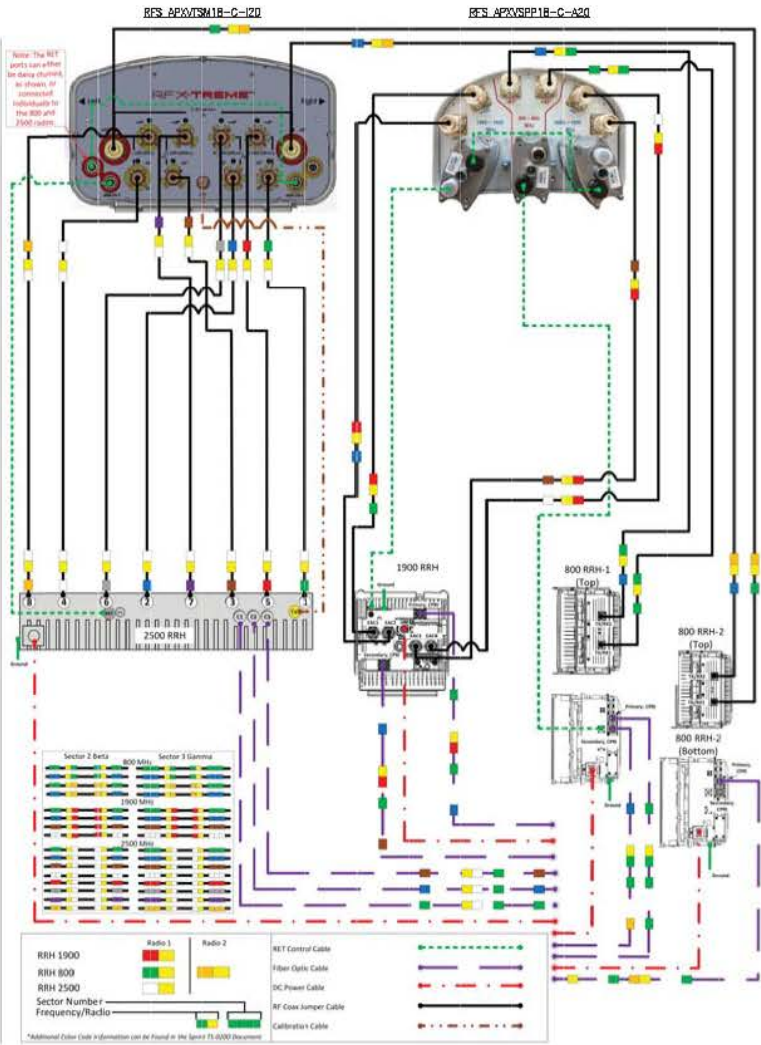
APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JRV

SITE NUMBER:
BS80XC001
 SITE NAME:
MIT EAST
 SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
 RF DATA SHEET

SHEET NUMBER
A-4



PLUMBING DIAGRAM
SCALE: N.T.S. 1
A-5

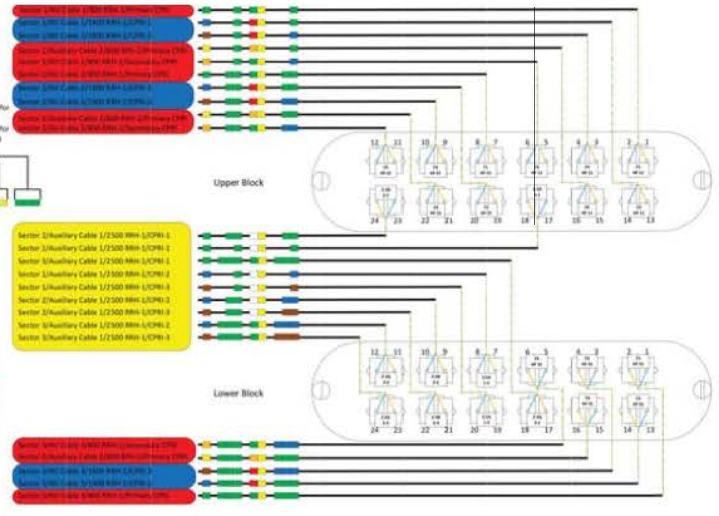
Existing Cable(s)

- RV Cable 1 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 1
- RV Cable 2 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 2
- RV Cable 3 - Provides power and fiber for the first 800 and 1900 RRHs of Sector 3

New Cable(s)

- Auxiliary Cable 1 - Provides power and fiber for all 1900 RRHs (All Three Sectors)
- Auxiliary Cable 2 - Provides power and fiber for all of the Second 800 RRHs (All Three Sectors)

Sector Number	Frequency/RRH	Fiber Cable Number	Fiber Fan Cable Number
1	1900 MHz	1	1
1	800 MHz	1	1
2	1900 MHz	2	2
2	800 MHz	2	2
3	1900 MHz	3	3
3	800 MHz	3	3



CABLE COLOR-CODING SCHEMATIC 2
SCALE: N.T.S. A-B

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: EXCEPT 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.
 - ASG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND ALSO CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT ASG EQUIPMENT INCLUDING 800MHz, 1.9GHz, AND 2.5GHz. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT ALSO 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.3ztelec.com/antenna-alignment-tool/).

Sprint VISION

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RAVENSCLIFF, NJ 07078
(908) 748-8878
www.centerlinecommunications.com

CHAPPELL
800 BIRCH HILL
ARCHITECT, L.L.C.

Civil Structural - Land Surveying

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301 BEDFORD POST ROAD WEST, SUITE 101
ANDOVER, MA 01922
(508) 481-7400
www.chappellinc.com

DAVID A. CHAPPELL
CIVIL
No. 34706
REGISTERED PROFESSIONAL ENGINEER

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CHECKED BY: JNT

APPROVED BY: JNT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/29/18	ISSUED FOR REVIEW	JNT

SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
FAN WIRING DIAGRAMS

SHEET NUMBER
A-5

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE				
WAVE	MFS	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	WAVE	USE W/ HYBRID	USE W/ HYBRID	6/8"
HYBRIFLEX	CR01	8 AWG	1-1/4"	
HYBRIFLEX	225-300'	8 AWG	1-1/4"	
HYBRIFLEX	303-370'	4 AWG	1-1/4"	

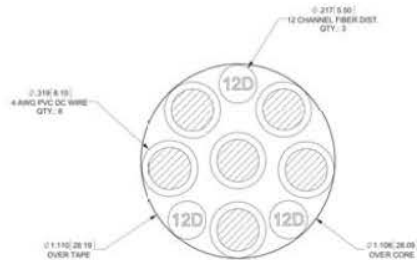
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable	Length
M/N: HB05B-A012-050F	12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8" cable, 50 ft	50 ft
M/N: HB05B-M12-075F	75 ft	75 ft
M/N: HB05B-M12-100F	100 ft	100 ft
M/N: HB05B-M12-125F	125 ft	125 ft
M/N: HB05B-M12-150F	150 ft	150 ft
M/N: HB05B-M12-175F	175 ft	175 ft
M/N: HB05B-M12-200F	200 ft	200 ft

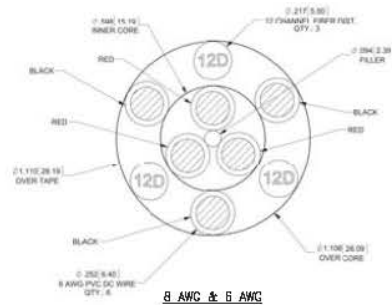
8 AWG Power	Hybrid cable	Length
M/N: HB114-08U1M12-050F	3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/2" cable, 50 ft	50 ft
M/N: HB114-08U1M12-075F	75 ft	75 ft
M/N: HB114-08U1M12-100F	100 ft	100 ft
M/N: HB114-08U1M12-125F	125 ft	125 ft
M/N: HB114-08U1M12-150F	150 ft	150 ft
M/N: HB114-08U1M12-175F	175 ft	175 ft
M/N: HB114-08U1M12-200F	200 ft	200 ft

8 AWG Power	Hybrid cable	Length
M/N: HB114-13U1M12-225F	3x 8 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/2" cable, 225 ft	225 ft
M/N: HB114-13U1M12-250F	250 ft	250 ft
M/N: HB114-13U1M12-275F	275 ft	275 ft
M/N: HB114-13U1M12-300F	300 ft	300 ft

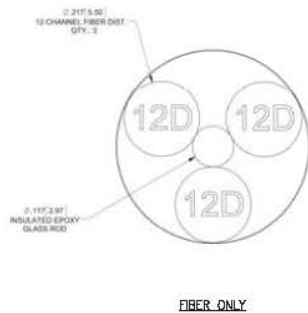
4 AWG Power	Hybrid cable	Length
M/N: HB114-21U1M12-325F	3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/2" cable, 325 ft	325 ft
M/N: HB114-21U1M12-350F	350 ft	350 ft
M/N: HB114-21U1M12-375F	375 ft	375 ft



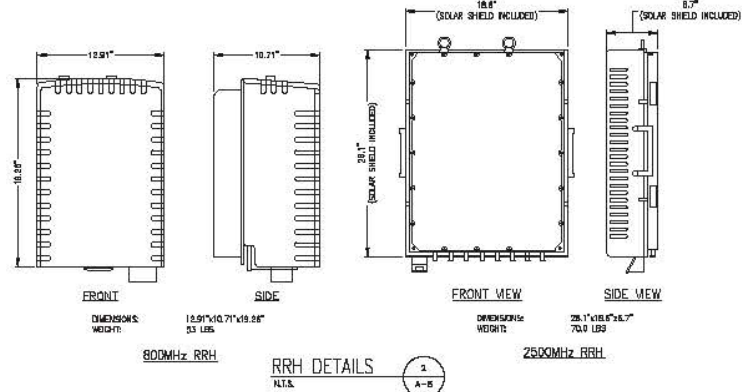
4 AWG



8 AWG & 6 AWG

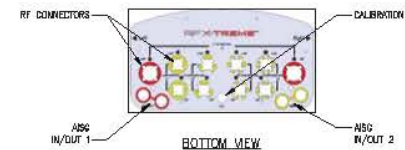


FIBER ONLY



800/2500MHz ANTENNA

DES: APXVSTR18-C-120 PANEL ANTENNA
 DIMENSIONS: 72.0" x 11.8" x 7.0"
 WEIGHT: 64.5 LBS W/ HARDWARE
 FREQUENCY RANGE: 800-900 MHz
 1850-1900 MHz



800/2500MHz ANTENNA

DES: APXVSTR18-C-120 PANEL ANTENNA
 DIMENSIONS: 72.0" x 11.8" x 7.0"
 WEIGHT: 67.5 LBS W/ HARDWARE
 FREQUENCY RANGE: 800-900 MHz
 2480-2600 MHz

ANTENNA DETAILS

N.T.S.

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable	Length
M/N: HBFD12-M13-5F1	5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2" cable	5 ft
M/N: HBFD12-M13-10F1	10 ft	10 ft
M/N: HBFD12-M13-15F1	15 ft	15 ft
M/N: HBFD12-M13-20F1	20 ft	20 ft
M/N: HBFD12-M13-25F1	25 ft	25 ft
M/N: HBFD12-M13-30F1	30 ft	30 ft

8 AWG Power	Hybrid Jumper cable	Length
M/N: HBFD18-08U1M13-5F1	5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 1/2" cable	5 ft
M/N: HBFD18-08U1M13-10F1	10 ft	10 ft
M/N: HBFD18-08U1M13-15F1	15 ft	15 ft
M/N: HBFD18-08U1M13-20F1	20 ft	20 ft
M/N: HBFD18-08U1M13-25F1	25 ft	25 ft
M/N: HBFD18-08U1M13-30F1	30 ft	30 ft

8 AWG Power	Hybrid Jumper cable	Length
M/N: HBFD18-13U1M13-5F1	5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 1/2" cable	5 ft
M/N: HBFD18-13U1M13-10F1	10 ft	10 ft
M/N: HBFD18-13U1M13-15F1	15 ft	15 ft
M/N: HBFD18-13U1M13-20F1	20 ft	20 ft
M/N: HBFD18-13U1M13-25F1	25 ft	25 ft
M/N: HBFD18-13U1M13-30F1	30 ft	30 ft

4 AWG Power	Hybrid Jumper cable	Length
M/N: HBFD18-21U1M13-5F1	5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 1/2" cable	5 ft
M/N: HBFD18-21U1M13-10F1	10 ft	10 ft
M/N: HBFD18-21U1M13-15F1	15 ft	15 ft
M/N: HBFD18-21U1M13-20F1	20 ft	20 ft
M/N: HBFD18-21U1M13-25F1	25 ft	25 ft
M/N: HBFD18-21U1M13-30F1	30 ft	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

SCALE: NTS

Sprint
 VISION
 1 INTERNATIONAL BLVD, SUITE 800
 MERRILL, NJ 07965
 (800) 367-7841

CENTERLINE
 COMMUNICATIONS
 95 ROW DRIVE, SUITE 1
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 (943) 730-8878
 www.centerlinecommunications.com

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DAVID A. CHAPPELL
 CIVIL
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SUBMITTALS

REV	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JMT

SITE NUMBER:
 BS80XC001
 SITE NAME:
 MIT EAST
 SITE ADDRESS:
 400 MAIN STREET
 CAMBRIDGE, MA 02139

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6



INSTALL NEW LTE BBU 2.5 QIC IN EXIST. MM-BTS 8628 EQUIPMENT CABINET

SOURCE: SPRINT SITE AUDIT BS-14,18

FRONT VIEW
EXISTING MM-BTS EQUIPMENT CABINET
SCALE: NTS



INSTALL (3) RECTIFIERS IN EXIST. RECTIFIER RACK (P. REF'D.)

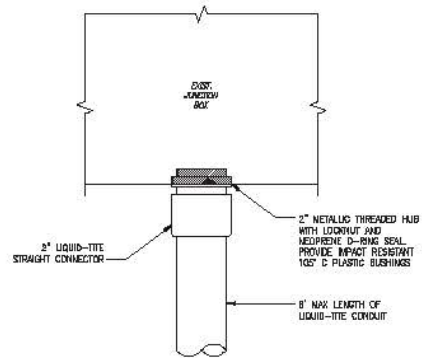
FRONT VIEW
EXISTING RECTIFIER RACK
SCALE: NTS



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

SOURCE: DEA SITE VISIT 06.14.18

FRONT VIEW
EXISTING BATTERY RACK
SCALE: NTS



FIBER JUNCTION BOX PENETRATION
SCALE: NTS

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 300
WARRAH, NJ 07746
(800) 357-7841

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COMMUNICATIONS
85 HIGH DRIVE, SUITE 1
ROXBURY, MA 02107
(844) 746-8878
www.centerlinemunicom.com

CHAPPELL ASSOCIATES, LLC
Civil Structural - Land Use/Planning
P.L.C. EXECUTIVE OFFICE
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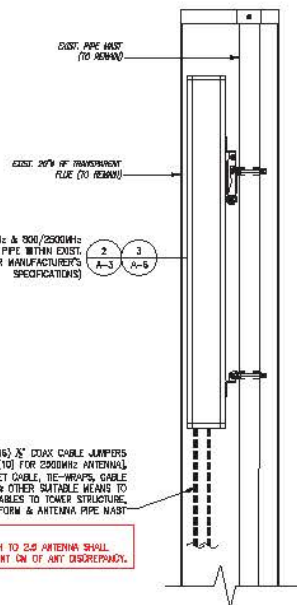
APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	06/22/18	ISSUED FOR REVIEW	JMT

SITE NUMBER:
BS80XC001
SITE NAME:
MIT EAST
SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
EQUIPMENT
DETAILS

REVISION
A-7

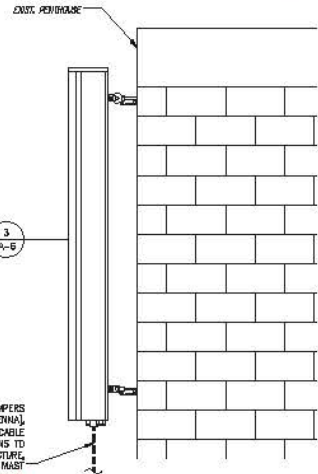


INSTALL 800/1900MHz & 900/2500MHz ANTENNAS TO EXIST. PIPE WITHIN EXIST. 20\"/>

EACH SECTOR, FURNISH & INSTALL (16) 3\"/>

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

BETA & GAMMA SECTORS
800/1900MHz ANTENNA &
800/2500MHz ANTENNA



INSTALL 800/1900MHz & 800/2500MHz ANTENNAS TO EXIST. PENHOUSE FACADE. (REUSE EXIST. BOLT HOLES (MOUNT PER MANUFACTURER'S SPECIFICATIONS))

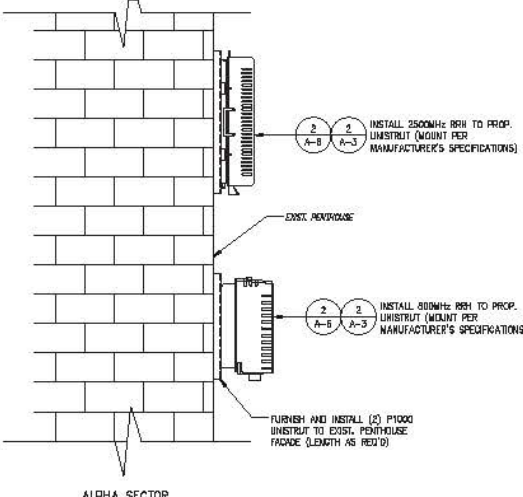
EACH SECTOR, FURNISH & INSTALL (16) 3\"/>

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

ALPHA SECTOR
800/1900MHz ANTENNA &
800/2500MHz ANTENNA

TYPICAL ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

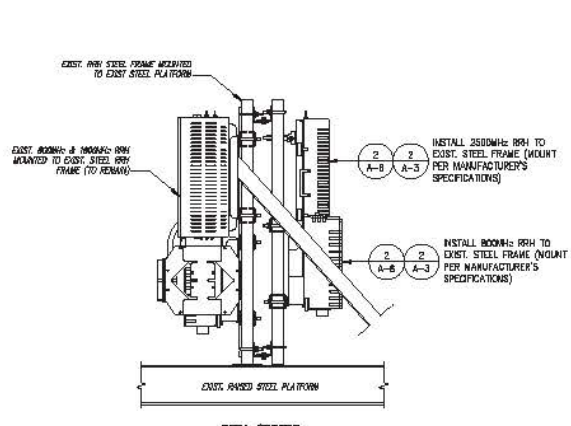


INSTALL 2500MHz RRH TO PROP. UNISTRUT (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

INSTALL 800MHz RRH TO PROP. UNISTRUT (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

FURNISH AND INSTALL (2) P1000 UNISTRUT TO EXIST. PENHOUSE FACADE (LENGTH AS REQ'D)

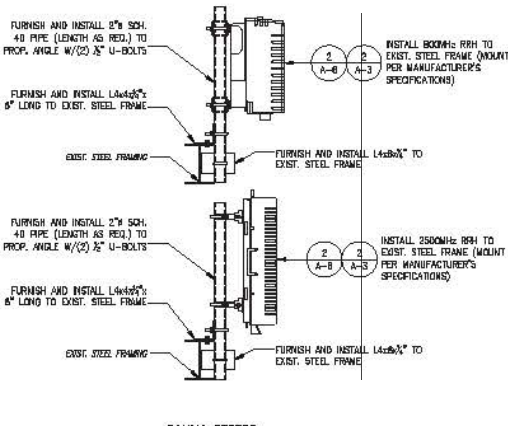
ALPHA SECTOR



INSTALL 2500MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

INSTALL 800MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

BETA SECTOR



FURNISH AND INSTALL 2\"/>

FURNISH AND INSTALL 14x14x1/2\"/>

FURNISH AND INSTALL 2\"/>

FURNISH AND INSTALL 14x14x1/2\"/>

FURNISH AND INSTALL 2\"/>

FURNISH AND INSTALL 14x14x1/2\"/>

INSTALL 800MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

INSTALL 2500MHz RRH TO EXIST. STEEL FRAME (MOUNT PER MANUFACTURER'S SPECIFICATIONS)

GAMMA SECTOR

TYPICAL RRH MOUNTING DETAIL

SCALE: N.T.S.

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

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 909
WARREN, NJ 07060
(800) 357-7841

CENTERLINE COMMUNICATIONS
85 IRON DRIVE, SUITE 1
ROXBURY, MA 02107
(844) 700-8878
www.centerlinecommunications.com

CHAPPELL ASSOCIATES, LLC
Civil Structural - Land Use/Planning
P.L.C. EXECUTIVE OFFICE
201 BOSTON POST ROAD WEST, SUITE 101
WATERLOO, MA 01752
(508) 481-7400
www.chappellengineering.com

COMMONWEALTH OF MASSACHUSETTS
DAVID A. CHAPPELL
CIVIL
No. 34706
REGISTERED PROFESSIONAL ENGINEER

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CHECKED BY: JMT

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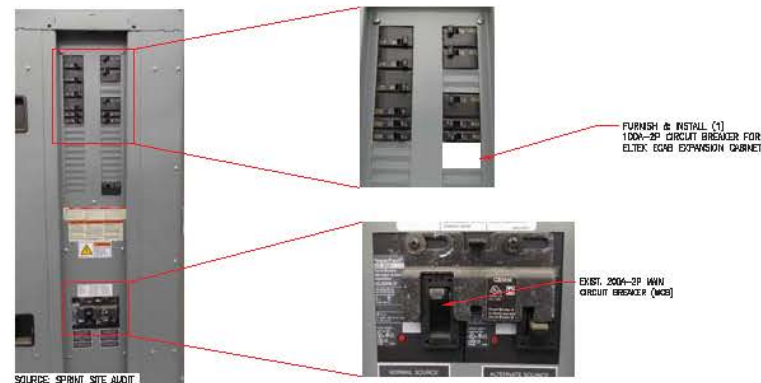
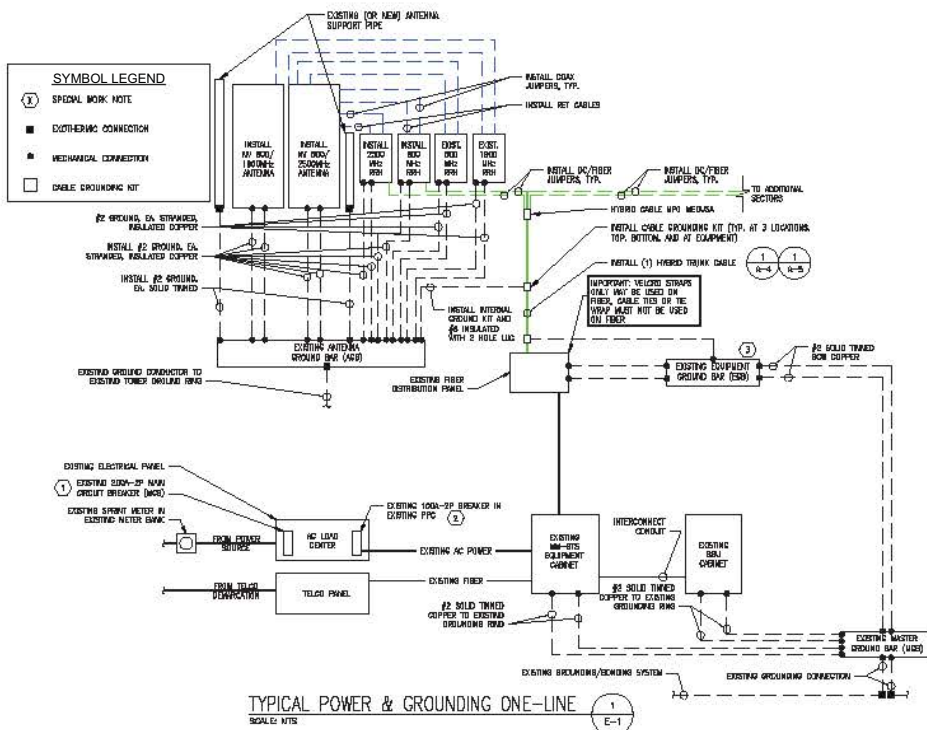
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/10	ISSUED FOR REVIEW	JMT

SITE NUMBER:
BS80XC001
SITE NAME:
MIT EAST
SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
STRUCTURAL DETAILS

DEED NUMBER
S-1



EXIST. BREAKER PANEL
SCALE: NTS (E-1)

Sprint
VISION

1 INTERNATIONAL BLVD, SUITE 300
WARRAH, NJ 07968
(800) 357-7841

CENTERLINE
COMMUNICATIONS

85 IRON DRIVE, SUITE 1
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(847) 790-8878
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AND COMPANY
ASSOCIATES, L.L.C.

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/10	ISSUED FOR REVIEW	JMW

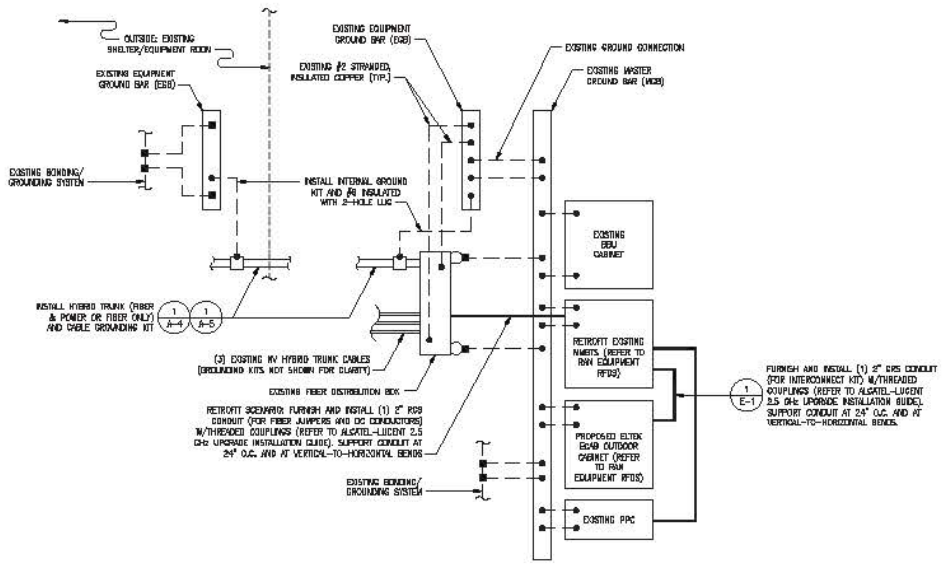
SITE NUMBER:
BS80XC001

SITE NAME:
MIT EAST

SITE ADDRESS:
400 MAIN STREET
CAMBRIDGE, MA 02139

SHEET TITLE
**ONE-LINE DIAGRAM
& PPC DETAILS**

DESIGNED BY
E-1



NOTE: HYBRIFLEX (FIBER & POWER) AND HYBRIFLEX (FIBER-ONLY) SHOULD REFER TO RAN EQUIPMENT PDS FOR SITE-SPECIFIC SCENARIOS.

EQUIPMENT GROUNDING SCHEMATIC SCALE: N.T.S.

SYMBOL LEGEND

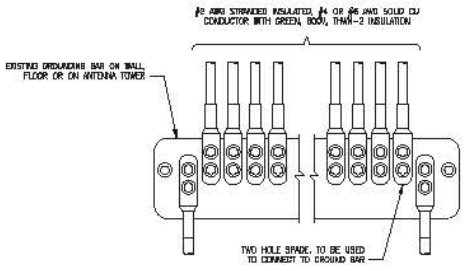
- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- CABLE GROUNDING KIT
- GROUNDING/BONDING
- CONDUIT

UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE #2 SOLID THINNED BOX.

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

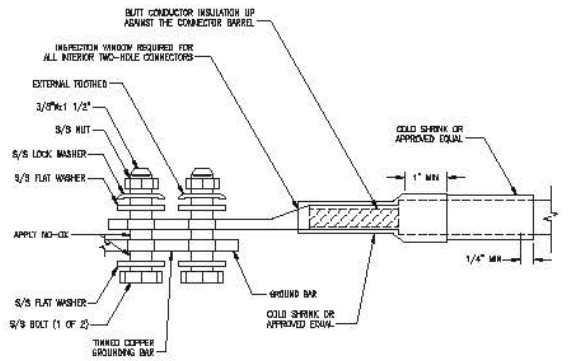
PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
2. GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSED DOCUMENTS 3.018/02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018/10.003 "SITE RESISTANCE TO EARTH TESTING".
3. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, ACCESSORIES AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
4. GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING. APPLY A NON-CORROSIVE APPROVED EQUIPMENT TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS, WHERE BONDING/BOUNDED IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVANOL" OR EQUAL.
5. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GROUND BIDDING AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
6. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PFC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE), DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE PATH AROUND ANY GROUNDING CONDUCTOR.
7. ALL GROUND WIRES SHALL BE #2 SOLID THINNED BOX UNLESS NOTED OTHERWISE.
8. PROVIDE DEDICATED #12 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CABLE.
9. GROUND ANTENNA BARRIERS, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED THINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO ISOLATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
10. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MIG) WITH #2 SOLID THINNED BOX EQUIPMENT CABINETS SHALL HAVE (2) CONNECTIONS.
11. 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 500', GROUND AT INTERVALS NOT EXCEEDING 100'.
12. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
13. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLE, LONG BARRED, LUGS OR DOUBLE CRIMP "D" CLAMP, THE COPPER CABLES SHALL BE COATED WITH AN ANTI-CORROSION (ZINC DUST COPPER-BASED) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
14. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANELS 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-DRAINING SCREWS.
15. THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x12" COPPER FOR OUTDOOR APPLICATIONS IT SHALL BE THINNED COPPER AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE MGB SHALL BE SECURED TO THE HOIS SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS CONNECTED.
16. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
17. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS 788 COPR SHOULD VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
18. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING CALLOUTS: -ANT-REPT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION) -SPRINT ENGINEERING LETTER EL-4504 DATED 04-29-12 (OR CURRENT VERSION)



- NOTES
1. APPLY NO-OK TO LUG AND BAR CONTACT SURFACE. DO NOT COAT MALLE LUG.
 2. IF STAINLESS STEEL 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.

1 INTERNATIONAL ROAD, SUITE 300
WALTHAM, MA 01790
(800) 357-7841

85 IRON DRIVE, SUITE 1
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(847) 792-2878
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CHAPPELL ASSOCIATES, LLC
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	06/22/10	ISSUED FOR REVIEW	JMT

SITE NUMBER: BS80XC001
SITE NAME: MIT EAST
SITE ADDRESS: 400 MAIN STREET CAMBRIDGE, MA 02139

SHEET TITLE: GROUNDING DETAILS & NOTES
SHEET NUMBER: E-2



**City of Cambridge
Assessing Department**
795 Massachusetts Ave.
Cambridge, MA 02139

- Buildings
- Water
- Lot Line
- Sub-Parcel Line
- Block Line
- Easement
- City Boundary
- Railway

10 Lot Number
48 Block Number
10 Can. Street Number
(125.0) Deed Dimension

100 Parcel size in Sq. Ft.
44.0L.C. Land Court Dimension
65.0 Survey Dimensions

DISCLAIMER:
All Parcel Property shown on this map was compiled from Cambridge's Tax Maps (1998, 2002, 2007, 2012) and the Massachusetts Office of the Assessor's Office (2010-2012). It is not a guarantee of accuracy. The City of Cambridge is not responsible for any errors or omissions on this map.

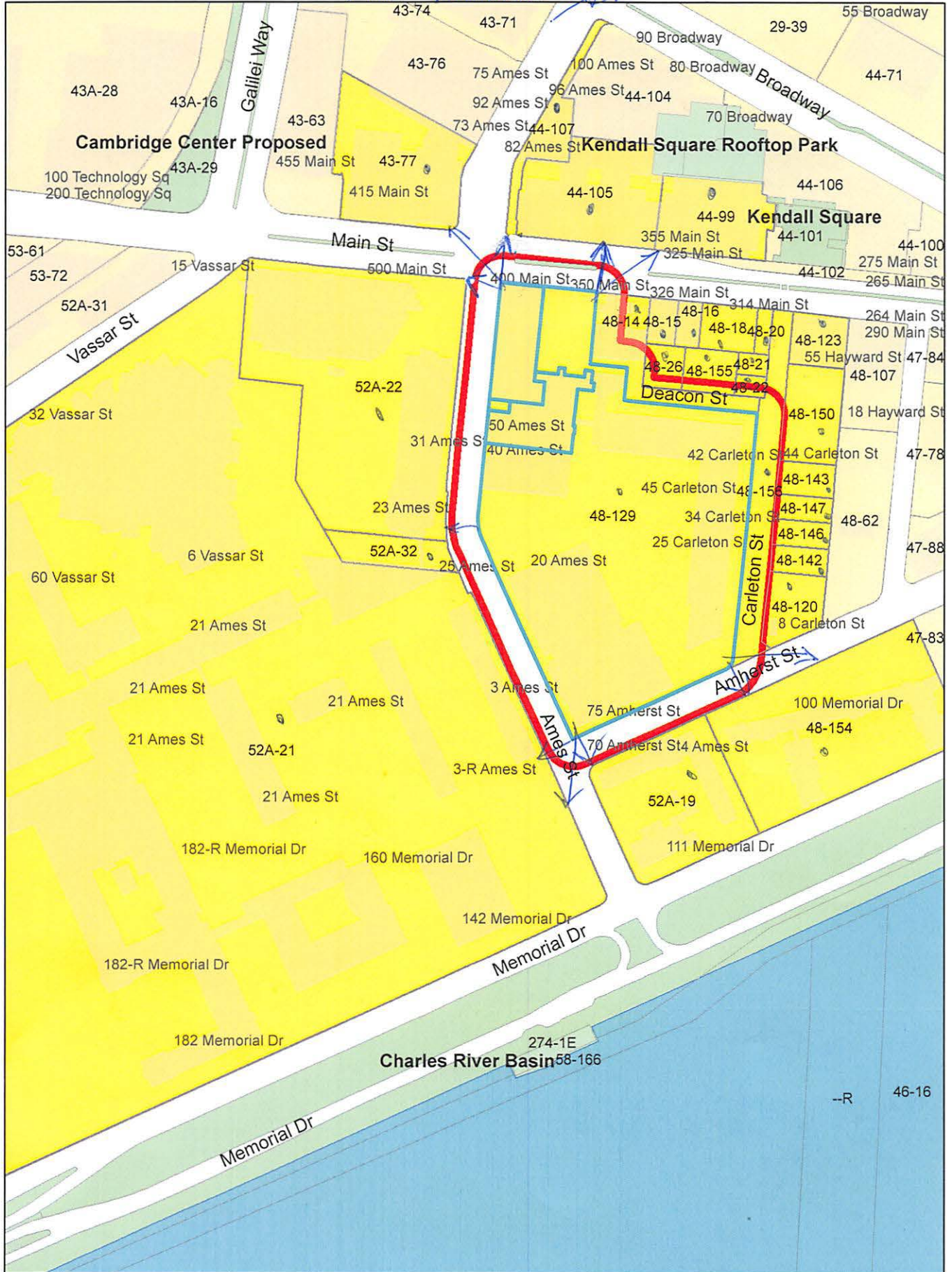


0 25 50 100 Feet
1 inch = 53 feet



Parcel Block Map
48

400 Main St.



400 Main St

Petitioner

44-105
BP FIVE CC LLC, C/O BOSTON PROPERTIES LP
800 BOYLSTON ST, STE #1900
BOSTON, MA 02199

44-99
ZUCKERMAN, MORTIMER B., EDWARD H. LINDE &
DAVID BARRETT, TRS. OF THREE CAMBRIDGE
C/O BOSTON PROPERTIES INC
800 BOYLSTON ST
BOSTON, MA 02199

CENTERLINE COMMUNICATIONS, LLC
C/O SIMON BRIGHENTI
750 WEST CENTER ST.- Floor 3
WEST BRIDGEWATER, MA 02379

48-15-16-18-21-22-26-123-129-142-143-146
48-147-150-155 / 52A-19-21-22-32
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
C/O OFFICE OF THE TREASURER
238 MAIN ST. SUITE 200
CAMBRIDGE, MA 02142

48-120
MIT 8 CARLETON STREET LLC, C/O MIT
INVESTMENT MANAGEMENT COMPANY
238 MAIN ST. SUITE 200
CAMBRIDGE, MA 02142

48-20
MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY
10 PARK PLAZA
BOSTON, MA 02116

48-154
NEW ENGLAND MUTUAL LIFE INSURANCE
COMPANY - C/O THE DOLBEN CO.
100 MEMORIAL DRIVE
CAMBRIDGE, MA 02142

48-14
FIREHOUSE INN, LLC
6 PRENTISS STREET
CAMBRIDGE, MA 02140

44-107
BP CAMBRIDGE CENTER RESIDENTIAL LLC
800 BOYLSTON ST., STE#1900
BOSTON, MA 02199

48-156
CAMBRIDGE CITY OF
C/O LOUIE DEPASQUALE
CITY MANAGER

48-156
CITY OF CAMBRIDGE
C/O NANCY GLOWA
CITY SOLICITOR

43-77
MIT 415 MAIN STREET FEE OWNER LLC
C/O MIT INVESTMENT MGMT CO
238 MAIN ST., SUITE 200
CAMBRIDGE, MA 02142

July 12, 2018

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

RE: Sprint Spectrum Realty Company, LLC Special Permit Application -
400 Main Street, Cambridge, MA

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 400 Main Street and to replace it with upgraded equipment. This structure has hosted telecommunications equipment for several years. As disclosed in the accompanying plans and the photographic simulations, 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 requests 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

July 12, 2018

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

RE: Sprint Spectrum Realty Company, LLC
Special Permit Application
400 Main Street, Cambridge, MA
Supporting Statement

Dear Chair and Members:

I am a network development consultant to Sprint Spectrum Realty Company, LLC successor in interest to Sprint Spectrum LP ("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 operated by MIT at 400 Main Street. The building is located in a non-residential use and structure in a residential 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 hospital 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 no 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; in fact, there will be a reduction in number.

*400 Main Street
Cambridge, MA 02139
Application for Special Permit
July 12, 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.

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